Douglas PARTNERS

GROUNDED EXPERTISE

Revised Dewatering Management Plan (Temporary Dewatering for Construction)

Newcastle High School Upgrade
25a National Park Street, Newcastle West

Prepared for Hansen Yuncken Pty Ltd

Project 213618.04

15 March 2024

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

Signature		Date
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FS604853

Douglas Partners acknowledges Australia's First Peoples as the Traditional Owners of the Land and Sea on which we operate. We pay our respects to Elders past and present and to all Aboriginal and Torres Strait Islander peoples across the many communities in which we live, visit and work. We recognise and respect their ongoing cultural and spiritual connection to Country.

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Revised Dewatering Management Plan (Temporary Dewatering for Construction)
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1. Introduction

This revised dewatering management plan has been prepared for temporary dewatering for construction for the Newcastle High School Upgrade at 25a National Park Street, Newcastle West. The investigation was commissioned in an email dated 12 February 2024 by Robert Petersen of Hansen Yuncken Pty Ltd (HY) and was undertaken with reference to Douglas Partners Pty Ltd (Douglas) proposal 213618.04.P.002.Rev1 dated 12 February 2024.

This revised DMP provides methods and strategies for temporary dewatering for construction. This revised DMP supersedes the September 2023 DMP prepared by Douglas (Douglas, 2023h) and has been updated:

- Following detailed design and further review of the extent of excavations required by the Construction Contractor (HY) which has resulted in an overall reduction in dewatering requirements;
- In response to the following consent conditions related to dewatering (State Significant Development Application No. SSD-41814831):
    - *B32. Prior to the commencement of construction, the Dewatering Management Plan prepared by Douglas Partners dated September 2023 shall be updated in consultation with the Department (DPE Water).*
    - *B33. The Applicant shall submit the revised required under B32 to the Planning Secretary for approval, together with suitable evidence the updated Dewatering Management Plan meets the requirements of the Department (Water).*
- In response to the following consent conditions related to dewatering:

Details of the consultation with NSW Department of Environment Water (DPE Water) in the preparation of this revised DMP is included in Section 3.2.

It is understood that the proposed development comprises a new learning hub building (three-storey), new multipurpose hall, demolition and relocation of some existing structures, ancillary works and implementation of a landscaping strategy for continued secondary school use. Localised and temporary dewatering may be required for installation and/or removal of services up to 3 m where dewatering is unavoidable, depending on groundwater levels at the time. Further details are provided in Section 5.

This revised DMP follows on from previous reports by Douglas for the proposed upgrade:

- *Report on Mine Subsidence Assessment* (Douglas, 2022a) and *Mine Subsidence Investigation* (Douglas, 2022b).
- *Report on Infiltration Testing* (Douglas, 2023a);
- *Report on Preliminary Site Investigation and Detailed Site Investigation* (Douglas, 2023b);
- *Report on Geotechnical Investigation* (Douglas, 2023c);
- *Desktop Review - Soil and Water* (Douglas, 2023d);
- *Acid Sulfate Soil Management Plan* (Douglas, 2023e).
- *Remediation Action Plan* (Douglas, 2023f);
- *Mine Bore Backfill and Grouting* (Douglas, 2023g);
- *Report on Preliminary Contamination Testing for Borrow Pit and Capping Feasibility* (Douglas, 2023i).
- *Investigation summary Report on Geotechnical Testing for Proposed Borrow Pit and Capping Material* (Douglas, 2023j);
- *Memorandum on Results of Groundwater Level Monitoring* (Douglas, 2024a).

Relevant information obtained from the previous reports has been utilised in preparation of this DMP, including a seven-week period of groundwater level monitoring which was undertaken to further assess groundwater level conditions (refer Section 4.3).

This DMP includes the following:

- Review of DPE Water comments on the project EIS provided by the client (refer Appendix D);
- Desktop review/summary of previous reports by Douglas including environmental setting, hydrogeological setting, groundwater level and quality data;
- Review of the proposed development and comments on anticipated dewatering requirements;
- Estimates of groundwater inflow rates and volumes for dewatering during construction as a daily inflow rate;
- Comments on the possible dewatering strategies, methods and timing;
- Development of a construction monitoring program including recommendations for test parameters, frequency, sample collection and handling procedures, contingency measures and reporting.

This DMP has been prepared with reference to the following guidelines:

- DPE (2022a). Guidelines for Groundwater Documentation for SSD/SSI Projects. Technical guideline. NSW Department of Planning and Environment;

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

2. Site Description

Site Address	25a National Park Street, Newcastle West, NSW
Legal Description	Part Lot 1 Deposited Plan (D.P) 150725 Part Lot 1 D.P. 575171 Part Lot 1 D.P. 794827
Area	Site investigation area approximately 21,700 m^2 (2.17 ha) – red in Figure 1 Total area of above lots (overall school) approximately 46,000 m^2 (4.6 ha) – yellow in Figure 1. Refer Drawing 1 in Appendix E.
Zoning	Zone R2 Low density residential
Local Council Area	Newcastle City Council
Current Use	Secondary (high) school
Surrounding Uses	North / north-east: • Fearnley Dawes Athletic Centre (private recreational field); • Merewether Scout Hall North-east / east: • Public netball courts and playing fields (National Park No 5 and 6 Sportsground) • Private recreation (Wanderers Rugby Club and National Park No 2 Sportsground South-east, south, west and north-west: • Residential

Figure 1: Newcastle High School boundary in yellow, and site investigation boundary 'the site' in red.

3. DPE Water

3.1 EIS Comments (August 2023)

The September 2023 DMP (Douglas, 2023h) was required in response to DPE Water review of the Environmental Impact Statement (EIS) under SSD application No. SSD-41814831. DPE Water comments on the project EIS provided by the client are included in Appendix D.

The key points raised prior to approval and the relevant sections in this revised DMP which have addressed these items are summarised in Table 1.

Table 1: Summary of Water NSW Pre Approval Comments

Item	Relevant report section
A dewatering management plan is required that details:	This document
• The maximum depth of excavation for construction	Section 5.2 (Table 4)
• The maximum annual volume of water take due to aquifer interference activities required for the project.	Section 6.2

It is noted that DPE also requested that the DMP "should also specifically nominate a drained method for the proposed development". The DMP relates to temporary dewatering for construction. Whilst subsurface installations are required for services, footings, infiltration pits (refer Section 5), permanent excavations for drained or fully tanked basements and the like are not proposed.

3.2 Consultation on Revised DMP (March 2024)

The Draft B version of this revised DMP was provided to DPE Water for review in March 2024. In a response letter dated 15 March 2024, DPE Water advised their acceptance of the revised DMP with no further actions required. A copy of the response is included in Appendix D.

4. Data Summary

4.1 Environmental Setting

Site Topography	Site levels range from about RL 4.5 (AHD) on the southern and western parts to about RL 2.5 on the eastern site of the lot. The land falls gently to the north-east for most of the site, which terraces down to the lowest areas in the north-east near the northern lot boundary.
Regional Topography	Regionally, topography is relatively flat in the order of RL 4 (AHD) to RL 6 with locally lower areas, typically in drainage canals.
Geology	Reference to the NSW Seamless Geology mapping indicates the site is underlain by the following: • Clastic sediment (QP_u) in the southern and central portion of the site which typically comprises clay, silt and marine sand; • Anthropogenic deposits (Q_h) in the northern portion of the site which typically comprises anthropogenic fill; and • Alluvial floodplain deposits (QH_af) in the north western portion of the site which typically comprises silt, sand and clay.  **Figure 2: Geology mapping, site shown in yellow.**

Soil landscape	Reference to the NSW Soil Landscape index indicates the site is underlain by soils typical of the Hamilton soil landscape. General limitations of this soil landscape include wind erosion, groundwater pollution, strong acidity and non-cohesive soils.
Acid Sulfate Soils (ASS)	The site is mapped as a low probability occurrence of ASS greater than 3 m below the ground surface. ASS typically occur at levels of RL 5 or below, but typically at elevations less than 1 AHD in coastal environments. ASS testing has been undertaken at the site by Martens (2021) which was limited to depths of 5.6 m and 8.3 (RL -4.3 to 2.9). The testing indicated net acidity results did not exceed the action criteria. Because proposed CFA piles extending below the depth of investigation by Martens, Douglas prepared an ASS management plan (Douglas, 2023e) which detailed treatment of ASS below 8.3 m depth (approximate RL-4.3) as a precautionary measure. The ASSMP also included provisions for ASS monitoring for any site dewatering which have the potential to lower the groundwater table. It is noted that Douglas conducted further ASS testing in conjunction with contamination testing which confirmed the presence of ASS conditions below RL -4 requiring management. Update of the ASSMP was recommended to confirm liming rates and procedures. The recommended management option, as detailed in the ASSMP, is neutralisation of ASS by full lime treatment and pH adjustment of waters, if required.
Surface Water	There are no permanent or ephemeral surface water bodies located on the site. An unnamed water course is located to the north (off-site) and comprises a concrete lined stormwater channel/drain. The mapping is based on data by NSW Department of Lands (2006) and indicates the feature is a “natural water course” and is “non perennial” (ie surface water is not likely to be present at all times). Review of the NSW Department of Environmental and Industry web mapping portal indicates that the stormwater channel is classified as First Order Strahler stream. This indicates that the stream is at the top of the catchment and would flow to Cottage Creek Stormwater Channel (Second Order stream) located about 200 m east of the site, which then drains to Throsby Creek and ultimately the Hunter River (estuarine environment).

	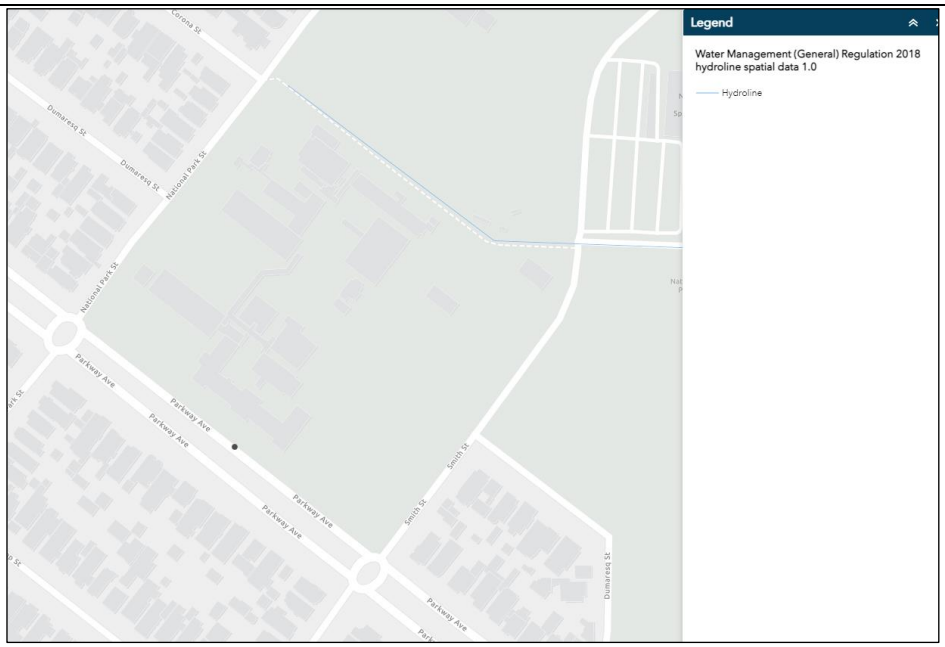 **Figure 3: Hydroline spatial data mapping for under Water Management (General) Regulation 2018 (Source DPIE Web App, 22 Feb 2023)** This watercourse is expected to be a freshwater environment and receives some runoff from the school campus. Whilst the stream / stormwater channel does not continue further upgradient of the site, it is expected that the stream / stormwater channel receives stormwater runoff from areas to the north, west and south-west which are upgradient of the site via stormwater infrastructure.
Groundwater	A search of the publicly available registered groundwater bore database indicated a number of registered groundwater bores within a 500 m radius of the site. These bores are reviewed in detail in Douglas Report on Detailed Site Investigation (DSI) (Douglas, 2023b). In summary, most bores are registered for 'water supply' and are listed as functioning. The installation depths are generally shallow (typically < 7 m depth) and would be expected to be screened within the alluvial water bearing zone. The majority of bores were installed in the 1980s or prior and it would be expected that they may have been for domestic irrigation which was common at this time. A number of bores were also registered for 'irrigation' for playing fields in the local area (north / north-west). Based on the urban setting, availability of potable sources and information published in the Water Sharing Plan for the North Coastal Sands Groundwater Sources 2016, potable use of water in the local area is expected to be unlikely. Beneficial use of the groundwater for irrigation is likely. Further discussion on groundwater is included in Section 4.2 and 7.

	 **Figure 4: Registered groundwater bores in blue, site in yellow.**
Groundwater Dependant Ecosystems (GDE)	A review of the Bureau of Meteorology Groundwater Dependant Ecosystems Atlas indicates that there are no mapped aquatic, subterranean or terrestrial GDEs within 1 km of the site. The closest GDE to the site is approximately 1.3 km south-east which comprises a moderate potential for terrestrial GDE (South Coast Sands Dry Sclerophyll Forests). No springs were listed within 500 m of the NSW Hydrography Spatial Data site (The Central Resource for Sharing and Enabling Environmental Data in NSW, SEED).
Salinity	A review of NSW Government online eSPADE mapping indicates limited salinity data within the Newcastle area. Mapping indicates one data point approximately 400 m north of the site as “no salting evident”. A review of the Australia Dryland Salinity Assessment Spatial Data (1:2,500,000) - NLWRA 2001 indicates the site lies outside a mapped high salinity risk or high salinity hazard area with the nearest mapped area located approximately 7 km away. Groundwater field testing of monitoring wells and the adjacent surface water drain as part of the DSI (Douglas, 2023b) indicated electrical conductivity (EC) were “fresh” which is consistent with the limited salinity data (ie EC 243 to 642 µS/cm).
Applicable NSW Water Sharing Plan	North Coast Coastal Sand Groundwater Sources 2016 Water Sharing Plan Area (Hawkesbury to Hunter Coastal Sands Groundwater Source).

4.2 Previous Investigations

4.2.1 Martens - Geotechnical Investigation (Martens, 2021)

A geotechnical investigation by Martens Consulting Engineers (Martens) included drilling of 11 bores to depths up to 9 m, collection of soil samples for ASS and geotechnical testing for the proposed development. Relevant ASS findings are summarised in Section 4.1.

Pertinent results from this investigation include:

- Subsurface conditions at the site consist of:
  - Fill (mainly sand) to depths ranging between 0.2 m and 2.5 m; underlain by
  - Alluvial soils initially comprising sand which transitioned into sandy clay below about 7.5 m depth.
- Deepest fill was observed in the north-eastern portion of the site;
- Groundwater was encountered at depths ranging between 2.0 m and 5.6 m bgl.

It is noted that the groundwater depth range of 2 m to 5.6 m bgl correlate to RL -2.6 to 2 AHD based on the interpolated survey levels on logs. It is noted that groundwater levels recorded during drilling are not always representative of stabilised conditions. Some of the levels reported by Martens (2021) are likely to be spurious based on subsequent monitoring by Douglas as summarised below.

4.2.2 Douglas – Geotechnical Investigation (Douglas, 2022a)

Douglas has undertaken a geotechnical and mine subsidence investigations at the site. These included seven cone penetration tests (CPTs) to depths ranging between 12.34 m and 32.10 m , shallow bores ranging between 1.1 m and 2.2 m and deeper bores drilled into abandoned mine workings up to 55 m.

Pertinent findings include the following:

- Subsurface conditions at the site consists of mainly sandy fill up to 1.2 m depth overlying alluvial soils to approximately 30 m depth. The alluvial soils consisted of predominately sand with a clay layer at about 6 m to 8 m depth. The sand layer continued to depths of 12.3 m to 14.4 m and was underlain by a layer of clay to the top of weathered rock at depths of approximately 29 m to 35 m;
- Bores confirmed the presence of abandoned mining within the Borehole Seam at a depth of approximately 55 m;
- Deepest fill was observed in the north-eastern portion of the site; and
- Groundwater was encountered at depths ranging between 0.5 m and 2.5 m. These groundwater levels may not have reflected actual groundwater levels as the groundwater level measurements were undertaken during or shortly after drilling / testing and groundwater levels may not have had sufficient time to stabilise when the measurement was completed.

4.2.3 Douglas – Infiltration Testing (Douglas, 2023a)

Preliminary infiltration testing was undertaken at the location of three proposed stormwater infiltration systems to assess subsurface conditions, the permeability of soils and their suitability for stormwater infiltration. It is noted that infiltration pit locations were relocated from the initial testing locations.

The investigation comprised drilling of three boreholes (Bores 201 to 203) and in-situ testing comprising constant head permeameter and double ring infiltrometer tests. Borehole logs and in situ testing reports are included in Appendix A, with the test results summarised in Table 2 and Table 3.

Table 2: Summary of Constant Head Permeameter Testing (Douglas, 2023a)

Bore	Test Range (m bgl)	Dominant Material Type	Saturated Hydraulic Conductivity (m/sec)	Saturated Hydraulic Conductivity (m/day)
201	0.1 to 0.5	Fill / silty sand	1.9×10^{-5}	1.65
202	0.1 to 0.5	Fill / silty sand	1.8×10^{-5}	1.5
203	0.1 to 0.5	Fill / gravelly sand and sand	2.7×10^{-5}	2.3

Note to Table:
m bgl – metres below ground level

Table 3: Summary of Double Ring Infiltrometer Tests (Douglas, 2023a)

Bore	Depth (m bgl)	Dominant Material Type	Saturated Hydraulic Conductivity (m/sec)	Saturated Hydraulic Conductivity (m/day)
201	0.3	Fill / silty sand	9.9×10^{-5}	21
202	0.3	Fill / silty sand	$1.1 \times 10^{-3*}$	240*
203	0.3	Fill / gravelly sand and sand	1.5×10^{-4}	32

Note to Table:
m bgl – metres below ground level
* Refer to comments below

The results of the double ring infiltration testing at Bore 202 (0.3 m) was unusually high and inconsistent with the other results and is high for a typical silty sand. It is possible that water within the double ring was leaking from the system resulting in an abnormally high result.

Douglas (2023a) noted that the proposed infiltration systems could result in localised short-term mounding of the groundwater following periods of rainfall. The systems were expected to have negligible effect on the regional groundwater levels and adjacent structures such as the stormwater channels, provided the systems are designed for appropriate infiltration rates and have sufficient redundancy to account for factors such as long-term clogging. Further design advice on infiltration rates is presented in Douglas report (Douglas, 2022b).

4.2.4 Douglas – Preliminary and Detailed Site Investigation (Contamination) (DSI) (Douglas 2023b) and Remediation Action Plan (Douglas, 2023f)

Douglas completed a concurrent PSI and DSI for contamination which included a desktop/site history review, site inspection, and extensive subsurface investigation comprising 86 soil testing locations (pits / boreholes/surface samples), six groundwater monitoring wells, two surface water locations, landfill gas screening and laboratory testing. Contamination reporting was subject to a statutory Audit review by NSW EPA Auditor Fiona Robinson.

The PSI/DSI identified fill to depths of 0.1 m and 3.1 m, and deepest in the north-eastern part of the site associated with historic fill placement.

The investigations concluded that remediation and/or management of the site will be required to address the heavy metals, TRH, BTEX, PAH and asbestos impacted soil/fill at the site. A Remediation Action Plan (Douglas, 2023g) was prepared for on-site management / capping of contamination as the most practical remediation approach (ie capping of contamination beneath new buildings / permanent pavements and landscaped areas). It is noted that location of proposed stormwater infiltration pits was relocated to areas which would allow infiltration into natural ground, rather than deep fill.

Generally low-level contaminants were identified in groundwater, however, groundwater remediation was not considered to be required. Groundwater was not suitable for ongoing irrigation at the school.

The results of groundwater quality testing from the PSI/DSI are discussed in Section 7 with regards to dewatering disposal options.

4.2.5 Douglas - Mine Bore Backfill and Grouting (Douglas, 2023g)

Deep bores drilled to the underlying mine workings (Bores 1 to 6) were grouted to the surface in April and July 2023 to seal the potential pathway for potential hazardous ground gases (HGG) to reach the surface. The work meets the recommendations of the DSI (Douglas, 2023g) and RAP (Douglas, 2023f) and the requirements of the appointed Site Auditor.

4.2.6 Douglas – Borrow Pit Feasibility (Douglas, 2023i; 2023j; 2024a)

Douglas conducted further preliminary contamination testing, geotechnical testing and groundwater level monitoring in November 2023 to January 2024 for proposed excavation of borrow pit(s) in the central area of the site. The pits were proposed for sourcing of capping material and to allow placement / capping of on-site contaminated materials,

including topsoil, to minimise off-site waste disposal and imported fill requirements. The proposed borrow pit locations are shown on Drawing 1 in Appendix F.

The preliminary contamination and geotechnical testing indicated the general suitability of re-use of natural materials (underneath upper fill) as capping in other parts of the site, subject to segregation and validation as per the RAP (Douglas, 2023f). Some restrictions on re-use of the material were noted regarding geotechnical properties. From a practical perspective, it was recommended that the base level of the borrow pits remains above the long term / average groundwater level in order to allow for excavation in sandy materials and appropriate reinstatement with respect to geotechnical requirements (refer Douglas (2023j)).

The results of groundwater level monitoring for a seven-week period from 27 November 2023 to 16 January 2024 are shown on Figure F1 in Appendix D and discussed in Section 4.3 below.

4.3 Summary of Groundwater Levels

As reported in Douglas' *Desktop Review - Soil and Water* report (Douglas, 2023d), the sandy soils in the upper 12 m to 14 m of the alluvium are considered to represent an unconfined aquifer and therefore water levels in these layers are expected to fluctuate with climatic and drainage conditions. The deeper clay layer is considered to represent the base of the unconfined aquifer and therefore the total unconfined aquifer thickness at this site is about 12 m to 14 m (including the unsaturated zone above the measured groundwater level). In this regard, a continuous thin (<2.2 m) clay layer was encountered in each CPT within the sand layer. Previous investigations completed by Douglas outside of the school site suggests that the clay layer was discontinuous but for the purposes of this specific site, the thin clay layer represents the base of the unconfined aquifer. The top of this clay layer was encountered at RL-3.3 to RL-4.1 AHD.

A summary of groundwater levels is provided in Table C1 in Appendix C and included data from:

- Martens (2021) from bores / test pits;
- Douglas in 2022 and 2023 from bores / test pits;
- Douglas in 2023 and 2024 for groundwater monitoring wells.

Groundwater level monitoring using automated dataloggers was undertaken in three wells near and downgradient of the proposed borrow pits (Wells 402, 404 and 405) from 27 November 2023 to 16 January 2024. Groundwater levels versus rainfall are shown on Figure F1 in Appendix C. Contours from 23 March 2023 from Douglas (2023e) are shown in Figure 5.

Figure 5: Inferred groundwater contours – 23 March 2023 (Douglas, 2023b)

It is noted groundwater levels recorded during drilling or from CPTs are not always representative of stabilised conditions and levels in monitoring wells would generally be considered more accurate. The levels reported by Martens (2021) which are 0 AHD or less are likely to be spurious, and as a minimum would be expected > RL 0.5.

It is noted that rainfall over the seven-week datalogger monitoring period (27 November 2023 to 16 January 2024) was minimal with a maximum daily rainfall of 24.8 mm on 27 November 2023. A minor groundwater level increase of about 0.05 m was recorded for all loggers in response to the rainfall event. Levels declined slowly and this trend occurred for most of the overall monitoring period due to the low frequency and magnitude of the daily rainfall events.

A review of the overall groundwater level monitoring data indicated the following:

- North-easterly groundwater flow direction and a 0.7 m to 0.8 m gradient change across the site which was consistent for each monitoring event in 2022, 2023 and 2024;
- Groundwater levels have generally been RL 2 AHD or less which corresponds to:
  - Minimum 2 m below ground level for the southern parts of the site which are more elevated and have ground levels at about RL 4;
  - About 0.8 to 1 m below ground level for the northern parts of the site which are more low lying and have ground levels at about RL 2;

- The groundwater levels recorded by the automated data loggers were within range reported in the previous assessments, exclusive of the spurious levels noted above.

It is noted that the monitoring to date has not established long-term / average groundwater level across the site, however, indicate that it would be reasonable to assume that groundwater levels at the site could be in the order of RL 1.8 to 2 considering average climatic conditions.

Based on the data collected to date and experience in the area, groundwater could be expected to rise to about ground level for the lower parts of the site to around RL 2 to 2.8 in periods of high and/or sustained rainfall such as encountered in the 2022 investigations where climatic conditions were considered wetter than average. It is possible that groundwater levels could be at or near the ground surface during periods of excessive rain or flood events. The time for groundwater levels to return to average conditions would vary and could be in the order of days or weeks.

It is noted that neither of the above groundwater levels are considered a design groundwater level as defined in Structural Design Actions Standard AS1170.1, 2002.

5. Proposed Development

5.1 Overview

It is understood that the development at the Newcastle High School (Newcastle Education Campus) seeks update and to provide improved facilities to meet the educational needs of staff and students. The upgrades will cater for a total student population of 1420 and will include the following scope:

- Demolition of eight (8) existing buildings;
- Construction of a new three (3) storey learning hub located on the southwestern corner of the campus, including a new library, canteen, covered outdoor learning area (COLA), support learning unit, general learning spaces, hospitality teaching spaces, and science labs;
- Construction of a new multi-purpose facility (MPF) located in the north-eastern corner of the campus including a gymnasium, stage, fitness lab, flexible learning spaces, outdoor courts, and end-of-trip (EOT) facilities;
- Internal refurbishment works within the existing administration building on Parkway Ave to form a new student hub;
- New student entry from Parkway Avenue;
- Relocation of Block H approximately 50 m south;
- Ancillary works to enable the proposed upgrades and include new civil infrastructure and a comprehensive landscaping strategy.

Plans of the proposed development and drainage plans are shown in Appendix E. It is understood that the works will be undertaken in five stages as shown on the Staging Site Plan in Appendix E.

5.2 Earthworks and Dewatering Requirements

The final bulk earthworks plan (Appendix E) indicates substantial cuts (4342 m^3) and fill (4607 m^3) for an overall balance of fill at 265 m^3. It is understood that this plan has considered the capping requirements outlined in the RAP. The north-eastern part of the site will remain at similar levels for flooding requirements.

Further review of the required civil and subsurface works were undertaken by HY (Construction Contractor) to assist with refinement of dewatering requirements. HY provided the following information:

- Infiltration pits are required to be above the water table, meaning the system and associated civil pipe runs will not be expected to encounter groundwater based on interim groundwater level advice provided by Douglas (Douglas, 2023i);
- Borrow pits will not be excavated below the groundwater table;
- Service trenches and pits are anticipated to be above the water table;
- The sewer mains connection for new installations is expected to be above the groundwater table;
- The sewer holding/pumping tanks is under design review to be above the water table, with a contingency for possible localised minor dewatering;
- Removal of existing in-ground services may require excavations up to 2 m to 3 m depth, depending on installations, and may require localised dewatering.

It is understood that during or following periods of high or above average monthly rainfall and /or known elevated groundwater level conditions (i.e. > RL 1.8 to 2.0), HY will implement the following strategies:

A. Review excavation requirements to assess whether excavation/dewatering can be delayed to when groundwater levels return to more average conditions, therefore negating/minimising the need to dewater. Delays could typically be in the order of days or weeks, subject to conditions;

B. Implement the strategies/procedures in this DMP where localised / temporary dewatering is unavoidable.

Based on the information provided by the contractor and the supplied plans, site excavation, depths and dewatering requirements are summarised in Table 4.

Table 4: Summary of Site Excavation and Dewatering Works

Item	Description	Anticipated Depth (m bgl)	Dewatering Requirements
General shallow excavations for site redevelopment	Stripping of topsoil, excavation of fill / soils for shallow footings for buildings / structures, excavation of fill for placement of required capping layers for on site management of contamination (refer RAP (Douglas, 2033f))	Bulk cuts will typically be between 0.25 m and 0.75 m depth.	Not expected, unless in periods of inclement weather / flooding and elevated groundwater table. Contractor to implement Strategy A above.
Borrow pits for sourcing of capping material and capping	Stripping and segregation of topsoil, fill and underlying natural soils above the groundwater table. Placement / capping of on-site contaminated materials back into the excavation (refer RAP (Douglas, 2033f)).	Up to about 2.0 to 2.3 m, depending on groundwater level. Base of borrow pits to remain above groundwater table.	Not required.
Continuous flight auger (CFA) piles and/or screw piles	Proposed for the MPF building in the north-eastern corner	Depths of 8 m to 10.5 m below ground level (up to approx. RL -8.5 RL) for CFA or screw piles	Piling method (if adopted) not expected to require dewatering.
Infiltration pits	Excavation of underground infrastructure pits	Depths of up to 1.4 m to be founded into natural soils. These pits vary in size (12 x 40 m, 9 x 31 m, 3 x 27 m long)	Pits are designed to be installed above the groundwater table. Contractor to implement Strategy A above.
Installation of general service pits and trenches	Pits and trenches for underground service installations including drains.	Trenches in general can be up to about 2 m depth subject to specific service requirements. HY has advised that service depths for Stages 1 to 3 have been reviewed and are expected to be above the groundwater table level (RL 1.8 to 2.0).	Not expected, unless in periods of inclement weather / flooding and elevated groundwater table. Contractor to implement Strategy A above. Implement procedures in this DMP for localised dewatering where unavoidable (Strategy B).

Item	Description	Anticipated Depth (m bgl)	Dewatering Requirements
Removal of existing inground services	Removal of services including sewer lines e.g. sewer under Building B	Excavations possibly up to about 2 m to 3 m depth, depending on service depth.	Contractor to implement Strategy A above. Implement procedures in this DMP for localised dewatering where unavoidable (Strategy B).
Installation of sewer connections – National Park Street	Excavation for sewer connection to an invert level of RL 1.435 based on drainage plan.	Approximate excavation depth of 2.6 m to achieve invert.	Invert is close to or slightly below groundwater table based on monitoring to date (RL 1.4-1.6). HY have indicated that connection will be coordinated after a period of no rain to reduce the likelihood of works intersecting the groundwater table. Localised dewatering may be required as a contingency (several days duration only).
Installation of sewer holding/pump tank – MPB in north-eastern part of site.	Excavation for sewer holding tank to RL 2.17 based on drainage plan.	Approximate excavation depth of 2.6 m subject to tank size.	HY have indicated that the excavation depth will be dependent upon tank size. The tank size is to be designed to be above the groundwater table. HY have indicated that minor localised dewatering may still be required in for the tank as a contingency (several days duration only).

Note to Table:
m bgl – metres below ground level

It is noted that basements or other permanent excavations are not proposed which would require permanent or long-term dewatering at the site (i.e. “drained method” as defined by Water NSW).

The requirements for dewatering will depend on groundwater level conditions at the time, which are affected by climatic conditions and soil permeability, confirmation of service installation depths and the staging of the works. As noted above, it is understood that the site excavations would be minimised and following periods of prolonged dry weathered to reduce the likelihood of intersecting the groundwater and the need for dewatering.

6. Groundwater Inflow Estimates

6.1 Conceptual Groundwater and Model

As noted in Section 5.2, dewatering is proposed to be avoided / minimised by delaying works during or following periods of high or above average rainfall or where groundwater levels are elevated (i.e. > RL 1.8 to 2.0). Localised dewatering may be required as outlined in Table 4 in Section 5.2 where localised / temporary dewatering is unavoidable.

Based on the previous subsurface investigations, the following preliminary conceptual hydrogeological (CHM) model has been prepared for the purposes of estimating groundwater inflows, in the instance that dewatering is required. The various layers are illustrated in Figure 6. Estimated ranges of hydraulic conductivities presented in Table 5 based on measured parameters and published literature by Fetter (2001) and experience with similar soils.

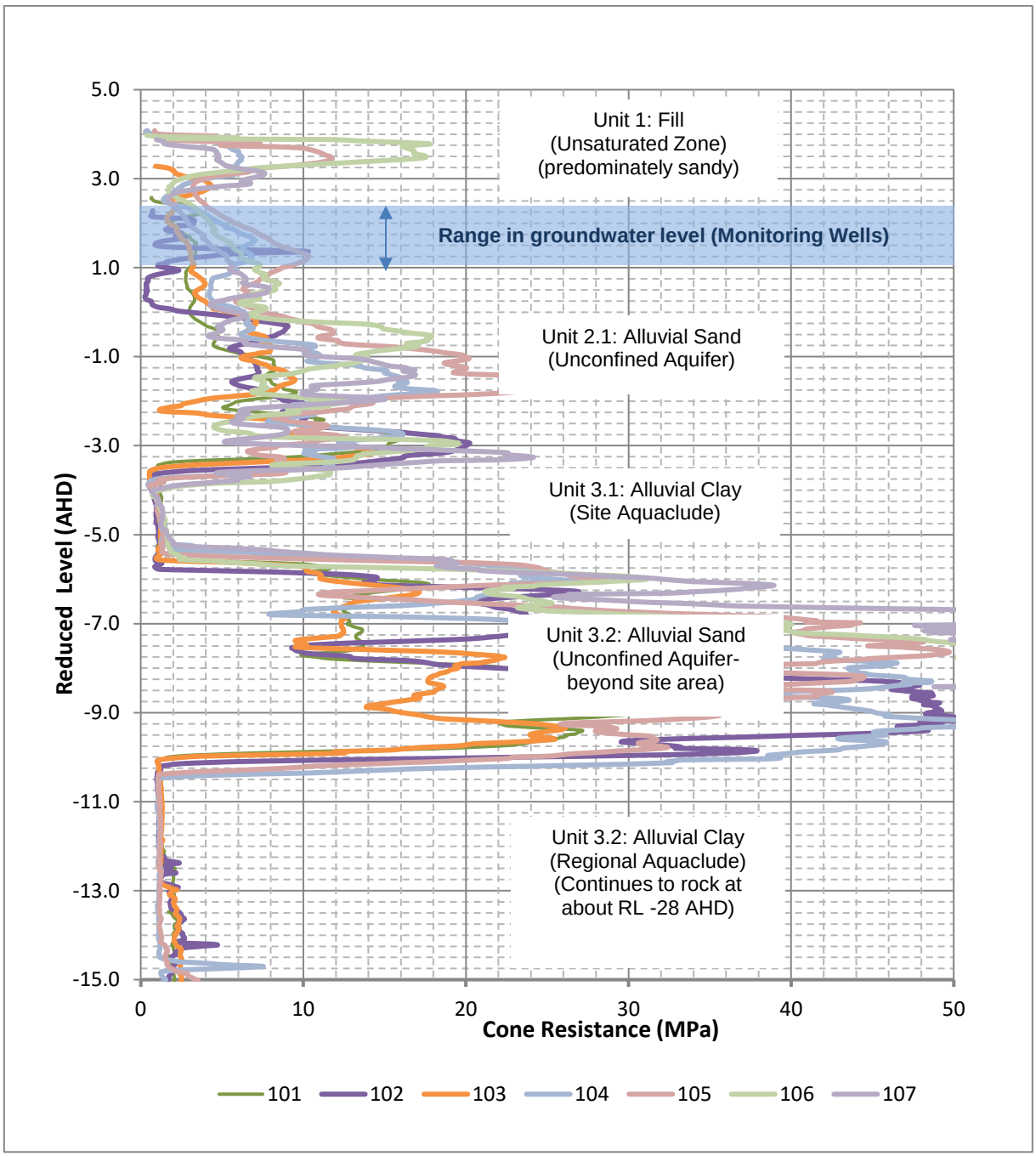

Figure 6: CPT plot showing cone resistance compared to elevation (AHD)

Table 5: Soil Units and Hydraulic Conductivity Parameters

Unit	Material Type	Description	Level at Top of Unit (AHD)	Estimated Permeability Range (m/s)
1	Fill	Variable (sand, silty sand, clayey sand, gravelly sand, sandy gravel, silt, clay, silty clay) but predominately sand / silty sand	2.5 to 4.5 [3.0]	Modelled as same properties as Unit 2.1 sand.
2.1	Sand / Silty Sand	Found in most test locations beneath fill	1.1 to 3.8 [2.5]	2×10^{-5} to 3×10^{-5}
3.1	Clay / Sandy Clay / Clayey Sand	CPTs 101 to 107	-3.2 to -3.8 [-3.5]	Modelled as impervious ie base of unconfined aquifer

Notes to table:
Numbers in [x] are the adopted soil layer in the groundwater inflow model (refer Section 6.2)

The deeper Unit 2.2 sand has not been considered in the model as all in ground service excavations will be in the Unit 1 or Unit 2.1 sand and the flow estimates will be governed by the unconfined aquifer thickness extending to the Unit 3.1 clay unit.

6.2 Inflow Estimates

Estimates of inflow have been based on radial flow into a circular excavation in an unconfined aquifer which provides inflow from both sides of the excavation as shown in Figure 7.

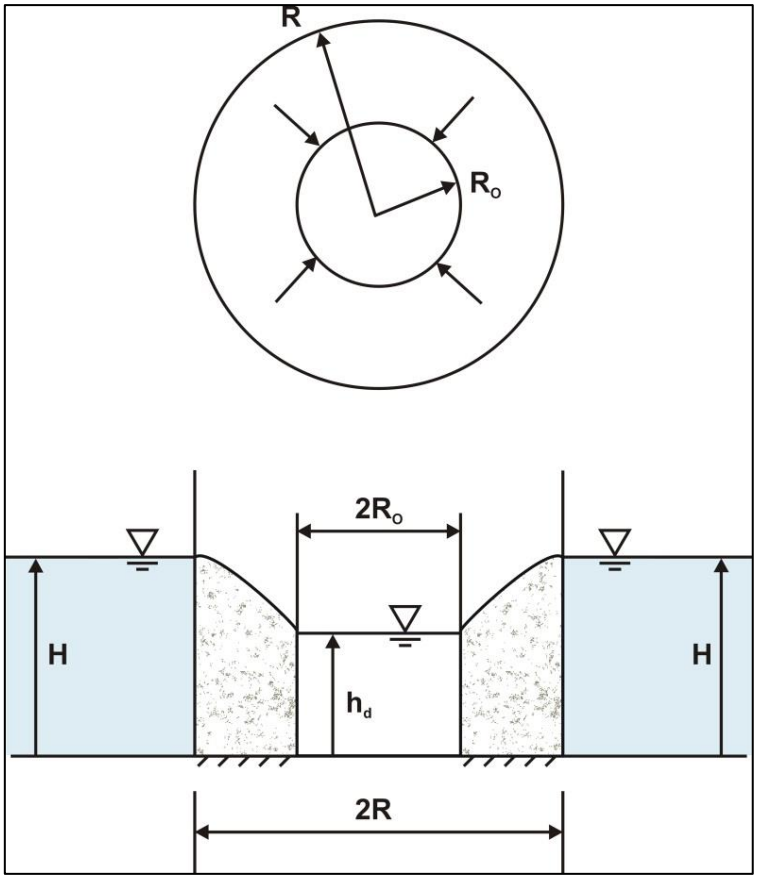

Figure 7: Radial unconfined flow into a circular excavation

The following assumptions have been made regarding site excavations:

- Average typical groundwater level of 1.8 AHD for modelling purposes;
- The excavations for would be up to 2 m wide (radius, R=1 m) and for the following two scenarios:
  - Case 1 - dewatering to a depth of 0.5 m below the groundwater table (corresponding to RL 1.3) and within the Unit 2 sand / silty sand;
  - Case 2 - dewatering to a depth of 1 m below the groundwater table corresponding to RL 0.8 and within the Unit 2 sand / silty sand.
- The excavation would be dewatered to the level of the base of the excavation to the above RLs indicated above;
- Excavations would be supported by a temporary shoring wall system that would not provide an impermeable barrier along the side wall of the excavation;
- A lower bound (LB) permeability of k_{sat} = 2 x 10^{-5} m/s for Unit 2.1 (water bearing zone);
- An upper bound (UB) permeability of k_{sat} = 3 x 10^{-5} m/s for Unit 2.1 (water bearing zone);
- A vertical to horizontal permeability (k_y/k_x) ratio of 1.0;

- The boundary conditions for the model were set to a distance of 20 m from the centre of the excavation (R) for long term steady state dewatering. The boundary conditions were modelled as 3 m to represent short term dewatering;
- Aquifer thickness of 6 m (to RL -3.5).

The estimates of inflow rates are summarised in Table 6.

Table 6: Estimated inflow into circular excavation

Case	Description	Estimated Inflow Volume (Short Term < 1 week)		Estimated Inflow Volume (Long Term – Steady State)	
		m^3/day	ML/day	m^3/day	ML/day
1	Drawdown of groundwater table by 0.5 m (RL 1.3)	25 to 35	0.025 to 0.035	10 to 15	0.010 to 0.015
2	Drawdown of groundwater table by 1 m (RL 0.8)	50 to 70	0.050 to 0.070	15 to 30	0.015 to 0.030

The modelling indicates that inflows and dewatering volumes per day are expected to be minor for both cases and the permeability ranges. Given the duration of dewatering, where required, may be in the order of days only, dewatering is expected to be significantly less than 3 ML /year which would trigger a Water Access Licence (WAL) under the Water Management Act 2000.

It is considered that the works may meet exemption requirements for construction projects that require temporary dewatering where water take is less than 3 ML/year.

7. Groundwater Quality and Disposal Options

Groundwater quality sampling was undertaken from six monitoring wells (Bores 401 to 406) in March 2023 for the PSI/DSI (Douglas, 2023e). The adjacent surface water drain was also tested at two locations (SW1 and SW2). Testing was undertaken for the following identified potential contaminants, rather than a broad assessment of water quality parameters for groundwater disposal assessment:

- Dissolved metals (groundwater only) – arsenic (As), aluminium (Al), beryllium (Be), boron (B), cadmium (Cd), chromium (Cr), cobalt (Co), copper (Cu), lead (Pb), manganese (Mn), mercury (Hg), molybdenum (Mo), nickel (Ni), silver (Ag), selenium (Se), zinc (Zn);
- Total metals (groundwater only) – as above;

- Benzene, toluene, ethylbenzene, xylene (BTEX);
- Total recoverable hydrocarbons (TRH);
- Polycyclic aromatic hydrocarbons (PAH);
- Volatile organic compounds (VOC);
- Per- and polyfluoroalkyl substances (PFAS).

The results are shown in Tables B1 in Appendix B against the applicable fresh water discharge criteria. Field results and observations during sampling are shown in Table B2.

The testing indicated the general absence of gross contamination, however, several contaminants exceeded the adopted site criteria for fresh water systems summarised in Table 7. The remainder of analytes not listed were all below the adopted site assessment criteria (SAC).

Table 7: Summary of Groundwater Results and Surface water Results that Exceeded the SAC

Analyte	SAC	Groundwater Locations	Surface Water Locations
Dissolved arsenic	ANZG fresh water DGVs	402	-
Dissolved copper	ANZG fresh water DGVs	401, 402, 404,405, 405	SW1 SW2
Dissolved copper	ANZECC (2000) Irrigation Long Term	GW1	-
Total copper	ANZG fresh water DGVs	Not tested	SW1, SW2 (all locations)
Dissolved manganese	ANZECC (2000) Irrigation Long Term	401	-
Dissolved nickel	ANZG fresh water DGVs	403	-
Dissolved zinc	ANZG fresh water DGVs	401, 402, 404,405, 405,GW1 (all locations)	SW1, SW2 (all locations)
Total zinc	ANZG fresh water DGVs	Not tested	SW1, SW2 (all locations)
Anthracene and Benzo(a)pyrene (PAH)	ANZG fresh water DGVs	402, 404	-
Phenanthrene (PAH)	ANZG fresh water DGVs	404	-
PFAS	PFAS NEMP 2020 Freshwater 99% LOP	401 to 406 (All locations except GW1)	SW1, SW2 (all locations)

Notes to table:
DGV – default guideline value
LOP – level of protection
PFAS – per- and polyfluoroalkyl substances (PFAS)
SAC – site assessment criteria
ANZG (2018) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality.*
NEMP (HEPA (2020) *PFAS National Environmental Management Plan (NEMP).*
ANZECC (2000): Australian and New Zealand Guidelines for Fresh and Marine Water Quality.

Water requiring disposal needs to be managed and disposed of in accordance with the requirements of the *Protection of the Environment Operations Act 1997* (POEO Act).

The options for management of excavation pump-out water or dewatered groundwater, dependent upon the test results, are for disposal of the water as follows:

- Discharge to stormwater with prior approval from Council. Provided the test results comply with ANZG fresh water criteria (ANZG, 2018), or any other compliance requirements stipulated by Council. On site treatment for metals/PAH/PFAS may be required to comply with water quality criteria;
- Discharge to sewer, as industrial trade wastewater, with prior approval from Hunter Water. This option would require the analysis of a larger list of analytes, and compliance with the Hunter Water acceptance standards and discharge conditions. It is noted this option is typically only considered when all other options have been assessed; or
- Pumping by a liquid waste contractor for removal of the water off-site to an aqueous treatment plant, in accordance with regulatory requirements.

The three management options, as outlined above, are required to meet different assessment criteria and associated licences/approvals. It is anticipated that disposal would be via stormwater, however, the water would require treatment prior to disposal to stormwater to:

- Adjust pH;
- Reduce total suspended solids (TSS);
- Reduce the concentrations of metals, PAH and PFAS and any other contaminants such that they meet the criteria.

Groundwater quality testing as part of the DSI indicated that groundwater was not suitable for irrigation at the surface or on landscape areas. Reinfiltration of groundwater in a temporary sump or basin is therefore not likely to be feasible, unless a location can be identified that is:

- Away / downgradient from the excavation and buildings;
- Excavated below upper contaminated fill (i.e. will not induce leaching of contaminants in soil);
- Not in areas which have already been remediated / capped as per the RAP;
- Acceptable to the Site Auditor.

8. Dewatering Strategy and Water Management

As extensive dewatering of deep excavations is not proposed, it is anticipated that the following general set-up may be applicable for the dewatering system:

- Dewater from suction pumps or submersible pump(s) installed within the excavation and/or internal sumps; and/or
- Water from should be collected in a multicell holding tank;
- A flow meter should be attached the holding tank to record flow volumes as a total measurement of volume (i.e. outlet volume monitoring);
- The holding tank would allow for monitoring of the water quality and treatment as required prior to discharge (i.e. dosing/pH adjustment or removal of sediments);
- A water treatment system could be connected to the system as required;
- Extracted groundwater could be discharged to suitable location, such as a nominated stormwater location subject to regulatory approvals.

Dewatering spears around the perimeter of an excavation could also be considered, if required, and would similarly require connection to the holding tank.

Dewatering requirements should be reassessed by the Construction Contractor as the works progress. This may include periodic review of groundwater levels in monitoring wells (Wells 401 to 406) and review of excavation depths and dewatering methods prior to excavations. Should the actual requirements or groundwater level conditions differ from those outlined in Sections 5 and 6, review is recommended to ensure volumes remain minimal and do not exceed 3 ML annually. Prolonged dewatering at any specific location during construction (ie more than say 3 weeks) should be avoided to minimise the total volume extracted from the aquifer.

It is noted that excavation methods and dewatering are also required to follow the procedures in the following documents:

- Remediation Action Plan (Douglas, 2023e) – regarding excavation, capping and validation. Discharge / disposal of groundwater will need to be away from progressively capped / validated areas;
- Acid Sulfate Soil Management Plan (Douglas, 2022b) – applicable for excavations / dewatering below RL -4.

Additional specific requirements may rise from the NSW EPA Site Auditor pertaining to groundwater disposal during the audit process.

9. Monitoring Program

9.1 Objectives

The objectives of the DMP are to ensure that the proposed dewatering does not adversely affect the surrounding environment, the structural integrity of neighbouring structures or result in environmental pollution because of the discharge of water of unacceptable quality.

This DMP outlines the responsibilities, monitoring requirements, reporting requirements and contingency plans to be followed during temporary dewatering for construction of the proposed development. The requirements in this plan should be followed during all excavation and construction works on-site and until all temporary dewatering pumps are switched off.

Water requiring disposal needs to be managed and disposed of in accordance with the requirements of the *Protection of the Environment Operations Act 1997* (POEO Act).

9.2 Responsibilities

The Principal Contractor for the proposed development is responsible for:

- Overall implementation of all the measures outlined in this plan;
- Engagement of qualified and experienced Dewatering Contractors and Environmental Consultants, and
- Compliance with any relevant conditions of consent or approvals, including requirements of the ASSMP and Site Auditor.

The site-specific activities and responsibilities required as part of this DMP are summarised in Table 8.

Table 8: Activities and Responsibilities

Activity	Responsibility
Licensing and approvals	Client or nominated Contractor
Installation of collection tanks and flow meters on pumps	Dewatering Contractor
Measurement of groundwater inflow/dewatering volumes	Dewatering Contractor - collect data and supply to Environmental Consultant
Measurement of volumes of water disposed off-site	Dewatering Contractor - collect data and supply to Environmental Consultant
Chemical testing of water from site prior to disposal	Environmental Consultant
Review of contractor supplied information	Environmental Consultant
Preparation of periodic reports	Environmental Consultant
Preparation of dewatering compliance report (if required)	Environmental Consultant

It is recommended that a pre-start meeting including all relevant parties is held to confirm the requirements of site plans, including this DMP, and roles and responsibilities.

9.3 Monitoring Systems and Frequencies

9.3.1 Overview

The required monitoring systems, frequencies, review procedures and reporting requirements for monitoring of the temporary dewatering as listed in Table 9. The systems should be integrated with the final design by the dewatering contractor and any specific conditions of Council, regulatory authorities, Site Auditor or licence requirements.

Table 9: Monitoring Frequency and Reporting Requirements

Item	Monitoring System	Monitoring Frequency	Monitoring Parameters	Investigation Level	Review Process	Reporting
Chemical testing of water from site prior to discharge/disposal	Samples to be collected from holding tank(s)	Twice daily, or once holding tank is filled (whichever is more frequent), for the first two weeks. After steady groundwater inflow rates are established then daily.	Field parameters: - Visual inspection - pH - EC - Turbidity - ORP - Dissolved oxygen - Temperature	Visual - No visual indicators of contamination observed (slicks, staining, odours). For off-site disposal to stormwater, comparison against ANZG guidelines for fresh water as summarised in Table 11. For off-site disposal to sewer, comparison against trade waste agreement levels.	Tabulate and chart results over time for each parameter, compare to ANZG and check for compliance. Implement water treatment measures if water quality objectives are not met.	After each test event and then weekly
		Prior to discharge. Weekly quality testing for the duration of dewatering.	Laboratory analytes: - Total Suspended Solids - Heavy Metals (total) (1) - Oil and grease~ - TRH, PAH, BTEX (2) - Ammonia - Total phosphorus - PFAS - BOD5 (trade waste only)			
Measurement of volumes of water for disposal	Calibrated flow meters connected to the pump-out system	Continuously using flow meter at holding tank outlet	Flow rate (L/day) / total volume (ML)	Extracted volume not to exceed 3 ML annually (July to June) for construction exemption. Extracted volume not to exceed WAL conditions	Tabulate results and review against predicted / approved volumes . Implement measures to reduce inflows (trench.	Daily

Notes to Table:
Refer to Table 11 for disposal/treatment criteria.
(1) Heavy metals – arsenic (As), aluminium (Al), beryllium (Be), boron (B), cadmium (Cd), chromium (Cr), cobalt (Co), copper (Cu), lead (Pb), manganese (Mn), mercury (Hg), molybdenum (Mo), nickel (Ni), silver (Ag), selenium (Se), zinc (Zn)
(2) The ongoing requirement for analysis of TRH/BTEX/PAH and oil and grease may be reviewed by the dewatering/environmental consultant if the initial monitoring period records results below PQL for these analytes and no visual indicators are observed.

The results are be reviewed on an ongoing basis and include checking for exceedance of investigation levels as well as for general trends, which may be indicative of a potential issue.

As extensive dewatering / long term dewatering is not proposed, a reduction in the monitoring program outlined in Table 9 (e.g. weekly / monthly frequency) is not considered appropriate.

Table 9 should be readopted for each excavation / dewatering task.

In addition to the above, visual inspection of the water leaving the discharge point is to be undertaken by the site manager, or nominated representative, twice daily to confirm the water is not displaying signs of contamination (e.g. discolouration, odours, sheen).

9.3.2 Holding Tank Sampling Methods

Monitoring and sampling should be conducted by suitably qualified and experienced personnel under strict QA/QC protocols. The sample should be collected from the holding tank (near the outlet) using a new laboratory prepared bottle (non-preserved), with/without a telescopic pole as required. A new pair of disposable nitrile gloves are worn at each sample site to minimise potential for cross-contamination.

All sampling data should be recorded on chain of custody (COC) sheets, with the general sampling procedure comprising:

- Decontamination of all non-disposable sampling equipment using a 3% solution of phosphate free detergent (Decon 90) and tap water prior to collecting each sample;
- The use of new disposable gloves for each sampling location;
- Placement of the samples into analyte specific laboratory-prepared containers filled with zero-headspace and capping immediately to avoid loss of volatiles. Care should be taken to ensure that containers with preservatives are not overfilled;
- Collection of 10% replicate samples for QA/QC purposes;
- Labelling of sample bottles with individual and unique identification, including project number, sample location and sampling date;
- Placement of the sample bottles into a cooled, insulated and sealed container for transport to the laboratory within recommended holdings times for analysis;
- Use of COC documentation ensuring that sample tracking and custody could be cross-checked at any point in the transfer of samples from the field to the laboratory. COC documentation should include sample location, sample ID, time / date collected, container type (i.e. glass / plastic), storage location, who collected the sample and sample despatch details;
- Adherence to laboratory recommended holding times for samples and use of appropriately preserved sample bottles. It should be noted that sample holding times vary depending on the analyte to be tested;
- Calibration of all hand-held monitoring equipment (i.e. pH, EC and multi-parameter meter) undertaken prior to each sampling round;

- Record the field parameters and observations on a sampling record sheets using a calibrated multi-parameter meter as follows:
  - Time;
  - Date;
  - pH;
  - Electrical Conductivity (EC);
  - Oxidation-Reduction Potential (ORP);
  - Dissolved Oxygen;
  - Turbidity;
  - Temperature;
  - Comments / observations / climatic conditions / sampler name.

9.3.3 Quality Assurance/Quality Control

Quality Control (QC) of the field and laboratory program should be achieved by the following means:

- Check replicate – a specific sample is split in the field, placed in separate containers, labeled with different sample numbers, and sent to the laboratory for analysis. Comparison of laboratory results (RPD analysis) of the two samples is subsequently undertaken (10% of primary samples);
- Check rinsate - a rinsate water sample is taken and sent to the laboratory at the completion of sampling to ensure decontamination of sampling equipment was adequate (5% of primary samples). Only required where non-disposable equipment is used;
- Method blanks – laboratory reagent blanks to confirm the equipment and standard used were uncontaminated;
- Laboratory replicates – laboratory split samples internally and conduct tests on separate extracts;
- Laboratory spikes – samples were spiked by the laboratory with a known concentration of contaminants and subsequently tested for percent recovery.

The Relative Percent Difference (RPD) between replicate results is used as a measure of laboratory reproducibility and is given by the following:

$$\text{RPD} = \frac{\text{ABS (Replicate result 1} - \text{Replicate result 2)}}{\text{(Replicate result 1} + \text{Replicate result 2)/2}} \times 100$$

The RPD can have a value between 0% and 200%. An RPD data quality objective of up to 50% is generally considered to be acceptable for organic analysis, and 35% for inorganics (i.e. Metals).

The recommended Data Quality Indicators (DQIs) to assess the achievement of the Data Quality Objectives are summarised in Table 10.

Table 10: Data Quality Indicators

DQI	Achievement Evaluation Procedure	Target
Completeness	Critical Samples collected - location and depth Experienced field staff Documentation correct Critical samples analysed Chemical analysis per DMP Complied with holding times	95%
Comparability	Consistent sampling procedures Climatic / physical site conditions Experienced field staff Same laboratories used	Qualitative
Representativeness	Appropriate media sampled All analytes in DMP sampled All samples analysed per DMP	Qualitative
Precision (variability or reproducibility)	Analysis of field and laboratory replicates and achievement of acceptable RPDs, acceptable levels for laboratory QC criteria.	RPD 0 - 50%[1] RPD 0 -35%[2]
Accuracy (bias)	Analysis of field blanks, rinsate blanks, matrix spikes, surrogate spikes, etc.	60 - 140%[3] 70 - 130%[4]

Notes to table:

1. Relative Percentage Difference for Organics for results > 5xPQL
2. Relative Percentage Difference for Inorganics for results > 5xPQL
3 Laboratory Recovery of Spikes for Organics for results > 5xPQL
4 Laboratory Recovery of Spikes for Inorganics for results > 5xPQL

9.3.4 **Assessment of Holding Tank Water Quality**

Extracted groundwater should be assessed against the criteria shown in Table 11 below and the following:

- The magnitude of an exceedance with respect to criteria
- Previous baseline monitoring (Table B1 in Appendix B) and the trend of the parameter leading up the exceedance;
- Results of QA/QC testing on the samples and reliability of results (may require re-sampling and testing for confirmation);
- Potential for adverse environmental impact associated with the exceedance;
- If warranted, undertake an additional round of sampling as soon as practical and analyse for parameter(s) of concern.

Table 11: Assessment Criteria for Laboratory Testing of Discharge Waters

Analyte	Measurement Units	PQL	Environmental Screening Values - Fresh Water 95% Level of Protection [1]	Treatment Option
pH (field)	pH	0.1	6.5-8.0 [2]	Lime or similar
Turbidity (field)	NTU	0.1	50 [2]	Use flocculants to remove suspended sediments.
TSS			50 [2]	
Ammonia	mg/L	0.1	0.9	Use flocculants to remove nutrients in suspended sediments.
Total Phosphorus	mg/L	0.05	0.025 (low land rivers)[2]	
Aluminium	mg/L	0.01	0.055	Use flocculants to remove metals suspended in sediments. Ion exchange or activated carbon absorption
Arsenic	mg/L	0.001	0.013	
Cadmium	mg/L	0.0001	0.0002	
Chromium (III+IV)	mg/L	0.001	0.001	
Copper	mg/L	0.001	0.0014	
Lead	mg/L	0.001	0.0034	
Manganese	mg/L	0.005	1.9	
Mercury	mg/L	0.00005	0.00006	
Nickel	mg/L	0.001	0.011	
Zinc	mg/L	0.001	0.008	
Benzene	mg/L	0.001	0.6	Activated carbon and aeration air stripping
Ethylbenzene	mg/L	0.001	0.08	
Toluene	mg/L	0.001	0.18	
Xylene (o)	mg/L	0.001	0.05	
Anthracene	mg/L	0.0001	0.00001	
Benzo(a) pyrene	mg/L	0.0001	0.0001	
Naphthalene	mg/L	0.0001	0.016	
Fluoranthene	mg/L	0.001	0.001	
Phenanthrene	mg/L	0.0001	0.0006	
Oil and Grease	mg/L	0.0001	0.3	
PFOS (99% LOP)	mg/L	0.00000023	0.0000002	Activated carbon
PFOA (99% LOP)	mg/L	0.00000023	0.019	

Note to Table:

1. ANZG, *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (2018) for the 95% level of protection for marine ecosystems.
2. ANZECC, *Australian Water Quality Guidelines (2000)*, Tables 3.3.2-3.3.3 Default trigger values for physical and chemical stressors in south-east Australia for slightly disturbed ecosystems (ANZECC 2000).
3. 99% level of protection (LOP) as recommended in NEPM (HEPA, 2020) for bio accumulative contaminants

9.4 Contingencies

The following possible site events have been identified as contingency items and nominated actions.

Table 12: Contingency Plan

Item	Action
Groundwater Flows	
Overflow of the water collection tank.	Cease works The site supervisor is to contact the Principal Contractor and Environmental Consultant; If necessary, notify NCC; Implement measures to ensure overflow does not occur again.
Higher groundwater levels and/or flow rates than expected	Delayed release of water, and/or temporarily turn off or reduce pumping rates if possible; Implement back-up storage, such as additional holding tanks or undertake disposal via off site tanker to a licensed facility; Environmental Consultant to review flow and estimates and assess against licencing / exemption conditions; Undertake additional submissions to Water NSW for additional water licence extraction if required.
Water Quality	
Water quality criteria not being met	Review site procedures, dewatering set up and areas for improvement to system; Implement treatment measures / systems for water if required; Off site disposal via water truck to licensed facility.
pH outside the disposal criteria range pH 6.5-8.0	pH adjustment using various additives.
Elevated sediments / turbidity	Flocculants used to reduce turbidity and suspended solids.
Elevated metals	Treatment system such as ion exchange or activated carbon absorption.
Other contaminants such as TRH, BTEX	Treatment system such as activated carbon and aeration air stripping.

Monitoring, management and treatment (where required) will be conducted to minimise the risk of adverse impacts on groundwater aquifers and downgradient aquatic environments.

Advice should be sought from an environmental consultant to determine a suitable course of action and/or water treatment for implementing the contingency procedures above (i.e. advice on pH adjustment, flocculants, removal of metals if required).

The Construction Contractor is responsible for implementing contingency plans, as required.

9.5 Monitoring and Reporting

As above, the results be reviewed on an ongoing basis. This should include checking for exceedance of investigation levels and investigations levels as well as for general trends, which may be indicative of a potential issue as outlined in Table 9.

At the completion of the dewatering, a final dewatering compliance report that includes a discussion on the results of dewatering monitoring should be compiled. The report should include the following:

- Periods of pumping;
- All the water testing results;
- Actual volumes of dewatering;
- Water treatment measures;
- Inclement weather (i.e. preventing pumping or resulting in high flows);
- Implementation of contingency measures;
- Summary of compliance against approvals.

A return submissions to Water NSW will be required for dewatering to confirm compliance with the temporary dewatering for construction exemption (< 3 ML per annum) under the *Water Management (General) Regulation 2018*).

10. Conclusions and Recommendations

This revised DMP provides methods and strategies for temporary dewatering for construction for the Newcastle High School Upgrade. This revised DMP has been prepared in consultation with DPE Water.

It is considered that implementation of this plan can achieve the objective to ensure that dewatering does not adversely affect the surrounding environment or result in environmental pollution because of the discharge of water of unacceptable quality.

Modelling indicates that inflows and dewatering volumes are expected to be minor given the localised dewatering proposed and short duration. It is considered the proposed dewatering may meet exemption requirements for construction projects as the volume is not expected to exceed 3 ML/year.

Dewatering requirements should be reassessed by the Construction Contractor as the works progress. This may include periodic review of groundwater levels in monitoring wells and review of excavation depths and dewatering methods prior to excavations. Should the actual requirements or groundwater level conditions differ from those outlined in Sections 5 and 6, review is recommended to ensure volumes remain minimal and do not exceed 3 ML annually.

11. References

ANZECC. (2000). *Australian and New Zealand Guidelines for Fresh and Marine Water Quality.* Australia and New Zealand Environment and Conservation Council.

ANZG. (2018). *Australian and New Zealand Guidelines for Fresh and Marine Water Quality.* Canberra, ACT: Australian and New Zealand Governments and Australian state and territory governments.

Douglas. (2022a). *Report on Geotechnical Investigation, Newcastle High School Upgrade, 25a National Park Street, Newcastle West.* Document No. 213618.01.R.002.Rev0: Douglas Partners Pty Ltd (Douglas).

Douglas. (2022a). *Report on Mine Subsidence Assessment, Newcastle High School Upgrade, 25a National Park Street, Newcastle West.* Report 213618.00.R.001.Rev2: Douglas Partners Pty Ltd (Douglas).

Douglas. (2022b). *Report on Infiltration Testing, Newcastle High School Upgrade, 25a National Park Street, Newcastle West.* Report 213618.01.R.003.Rev1.

Douglas. (2022b). *Report on Mine Subsidence Investigation, Newcastle High School Upgrade, 25a National Park Street, Newcastle West.* Report 213618.01.R.001.Rev1: Douglas Partners Pty Ltd (Douglas).

Douglas. (2023). *Report on Detailed Site Investigation (DSI) (Contamination), Newcastle High School Upgrade, 25a National Park Street, Newcastle West.* Document No. 213618.02.R.001.Rev1: Douglas Partners Pty Ltd (Douglas).

Douglas. (2023a). *Report on Infiltration Testing, Newcastle High School Upgrade, 25a National Park Street, Newcastle West.* Report 213618.01.R.003.Rev1: Douglas Partners Pty Ltd (Douglas).

Douglas. (2023b). *Report on Preliminary Site Investigation and Detailed Site Investigation (Contamination), Newcastle High School Upgrade, 25a National Park Street, Newcastle West.* Document No. 213618.02.R.001.Rev1: Douglas Partners Pty Ltd (Douglas).

Douglas. (2023c). *Report on Geotechnical Investigation, Newcastle High School Upgrade, 25a National Park Street, Newcastle West.* Document No. 213618.01.R.002.Rev0: Douglas Partners Pty Ltd (Douglas).

Douglas. (2023d). *Report on Desktop Review - Soil and Water.* Douglas Partners Pty Ltd (Douglas): Document No. 231618.02.R.002.Rev2.

Douglas. (2023e). *Acid Sulfate Soil Management Plan, Newcastle High School Upgrade, 25a National Park, Street, Newcastle West.* Douglas Partners Pty Ltd (Douglas): Document No. 213618.02.R.004.Rev1.

Douglas. (2023f). *Remediation Action Plan, Newcastle High School Upgrade, 25a National Park Street, Newcastle West.* Document. 213618.02.R.005.Rev0.RAP: Douglas Partners Pty Ltd (Douglas).

Douglas. (2023g). *Newcastle High School Upgrade, Mine Bore Backfill and Grouting.* Document No 213618.01.M.001.Rev1: Douglas Partners Pty Ltd (Douglas).

Douglas. (2023h). *Dewatering Management Plan (Temporary Dewatering for Construction).* Report 213618.02.R.007.Rev0.DMP: Douglas Partners Pty Ltd (Douglas).

Douglas. (2023i). *Report on Preliminary Contamination Testing for Borrow Pit and Capping Feasibility, 25a National Park Street, Newcastle West.* Document 213618.04.R.002.Rev0.Contam: Douglas Partners Pty Ltd (Douglas).

Douglas. (2023j). *Investigation Summary Report - Geotechnical Testing for Proposed Borrow Pit and Capping Material, Newcastle High School Upgrade, 25a National Park Street, Newcastle West.* Report 213618.04.R.003.Rev0.Geo: Douglas Partners Pty Ltd (Douglas).

Douglas. (2024). *Memorandum on Results of Groundwater Level Monitoring, Newcastle High School Upgrade, 25a National Park Street, Newcastle West .* 213618.04.R.004.Rev0: Douglas Partners Pty Ltd (Douglas).

DPE. (2022a). *Guidelines for Groundwater Documentation for SSD/SSI Projects. Technical guideline.* NSW Department of Planning and Environment.

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

Fetter. (2001). *Applied Hydrogeology 4th Edition.* Upper Saddle River, New Jersey: Prentice Hall.

LandCom. (2004). *Managing Urban Stormwater: Soils and Construction, Volume 1 ("Blue Book").* 4th Edition, March 2004: LandCom, New South Wales Government.

Martens. (2021). *Geotechnical Investigation, Newcastle High School, 160-200 Parkway Avenue, Hamilton South, NSW.* Document No. P2007929JR05V01: Martens Consulting Engineers.

Martens. (2021). *Geotechnical Investigation: Newcastle High School, 160-200 Parkway Avenue, Hamilton South, NSW.* Martens & Associates Pty Ltd Report P2007929JR05V01 dated February 2021.

WA Department of Water and Environmental Regulation. (2022). *Understanding Salinity*. Retrieved from Western Australian Department of Water and Environmental Regulation: https://www.water.wa.gov.au/water-topics/water-quality/managing-water-quality/understanding-salinity.

12. Limitations

Douglas Partners (Douglas) has prepared this report for this project at 25a National Park Street, Newcastle West in accordance with Douglas' proposal 213618.04.P.002.Rev1 dated 12 February 2024 and acceptance received from Robert Petersen dated 12 February 2024. The work was carried out under Douglas' Engagement Terms.

This report is provided for the exclusive use of Hansen Yuncken Pty Ltd for this project only and for the purposes as described in the report. It should not be used by or relied upon for other projects or purposes on the same or other site or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of Douglas, does so entirely at its own risk and without recourse to Douglas for any loss or damage. In preparing this report Douglas has necessarily relied upon information provided by the client and/or their agents.

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

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

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

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

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

Appendix A

About this Report
Terminology, Symbols and Abbreviations
Soil Descriptions
Rock Descriptions
Sampling, Testing and Excavation Methodology
Borehole Logs (Bores 1a, 5a and 107a)
Borehole Log (Bore 4)
Borehole Logs (Bores 201A to 220 and 301 to 303, 401 to 406)
Test Pit Logs (304 to 316)
Borehole / Test Pit Logs (501 to 525 and 601 to 605)
Cone Penetration Tests (CPT 101 to 107)

About this Report

August 2020

Introduction

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

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

Copyright

Borehole and Test Pit Logs

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

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

Groundwater

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

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

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

Reports

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

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

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

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

continued next page

Site Anomalies

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

Information for Contractual Purposes

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

Site Inspection

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

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Introduction to Terminology, Symbols and Abbreviations

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

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

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

Abbreviation Codes

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

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

Data Integrity Codes

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

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

Graphic Symbols

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

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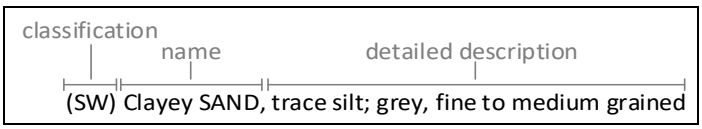
Introduction

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



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

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

Particle size designation and Behaviour Model

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

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

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

[1] – refer grain size subdivision descriptions below

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

Component proportions

The relative proportion of the dry mass of each particle size fraction is assessed to be a "primary", "secondary", or "minor" component of the soil mixture, depending on it's influence over the soils behaviour.

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

[1] – As defined in AS1726-2017 6.1.4.4

[2] – in the detailed material description, minor components are split into two further sub categories. Refer "identification of minor components" below

Composite Materials

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

Classification

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

Soil Name

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

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

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

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

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

Identification of minor components

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

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

Soil Composition

Plasticity

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

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

Grain Size

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

Grading

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

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

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Soil Condition

Moisture

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

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

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

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

Consistency/Density/Compaction/Cementation/Extremely Weathered Rock

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

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

Quantitative engineering performance of these materials may be determined by laboratory testing, or estimated by correlated field tests (for example penetration or shear vane testing), or by tactile methods, as appropriate.

Consistency (fine grained soils)

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

Relative Density (coarse grained soils)

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

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

Compaction (anthropogenically modified soil)

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

Cementation (natural and anthropogenic)

Cementation Term	Abbreviation Code
Moderately cemented	MCE
Weakly cemented	WKCE
Cemented	CE
Strongly bound	SB
Weakly bound	WB
Unbound	UB

Extremely Weathered Rock

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

Soil Origin

Term	Description	Abbreviation Code
Residual	Derived from in-situ weathering of the underlying rock	RES
Extremely weathered material	Formed from in-situ weathering of geological formations. Has strength of less than 'very low' as per as1726 but retains the structure or fabric of the parent rock.	XWM
Alluvial	Deposited by streams and rivers	ALV
Estuarine	Deposited in coastal estuaries	EST
Marine	Deposited in a marine environment	MAR
Lacustrine	Deposited in freshwater lakes	LCS
Aeolian	Carried and deposited by wind	AEO
Colluvial	Soil and rock debris transported down slopes by gravity	COL
Topsoil	Mantle of surface soil, often with high levels of organic material	TOP
Fill	Any material which has been moved by man	FILL
Littoral	Deposited on the lake or sea shore	LIT
Unidentifiable	Not able to be identified	UID

Cobbles and Boulders

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

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

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Rock Strength

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

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

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

[1] Assumes a ratio of 20:1 for UCS to $I_{s(50)}$. It should be noted that the UCS to $I_{s(50)}$ ratio varies significantly for different rock types and specific ratios may be required for each site.

On investigation logs only, the following data contiguity codes may be in rock strength tables for layers or seams of material "within rock", but for which the equivalent UCS strength is less than 0.6 MPa.

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

Degree of Weathering

The degree of weathering of rock is classified as follows:

Weathering Term	Description	Abbreviation Code
Residual Soil[1,2]	Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are no longer visible, but the soil has not been significantly transported.	RS
Extremely weathered[1,2]	Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are still visible	XW
Highly weathered	The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable. Rock strength is significantly changed by weathering. Some primary minerals have weathered to clay minerals. Porosity may be increased by leaching, or may be decreased due to deposition of weathering products in pores.	HW
Moderately weathered	The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable, but shows little or no change of strength from fresh rock.	MW
Slightly weathered	Rock is partially discoloured with staining or bleaching along joints but shows little or no change of strength from fresh rock.	SW
Fresh	No signs of decomposition or staining.	FR
Note: If HW and MW cannot be differentiated use DW (see below)		
Distinctly weathered	Rock strength usually changed by weathering. The rock may be highly discoloured, usually by iron staining. Porosity may be increased by leaching or may be decreased due to deposition of weathered products in pores.	DW

[1] – AS1726-2017 6.1.9 provides similar definitions for "residual soil" and "extremely weathered material" as soil origins. Generally, the soil origin terms would be used above the depth at which very low strength or stronger rock material is first encountered, while both soil origin and weathering should may be stated for soil encountered below the first contact with rock material, where appropriate.

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

Degree of Alteration

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

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

Degree of Fracturing

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

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

Rock Quality Designation

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

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

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

Stratification Spacing

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

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

Defect Descriptions

Defect Type

Term	Abbreviation Code
Bedding plane	B
Clay seam	CS
Cleavage	CV
Crushed zone	CZ
Decomposed seam	DS
Fault	F
Joint	J
Lamination	LAM
Parting	PT
Sheared zone	SZ
Vein	VN
Drilling/handling break	DB , HB
Fracture	FCT

Rock Defect Orientation

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

Rock Defect Coating

Term	Abbreviation Code
Clean	CLN
Coating	CO
Healed	HE
Infilled	INF
Stained	STN
Tight	TI
Veneer	VEN

Rock Defect Infill

Term	Abbreviation Code
Calcite	CA
Carbonaceous	CBS
Clay	CLY
Iron oxide	FE
Manganese	MN
Silty	SLT

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Rock Defect Shape/Planarity

Term	Abbreviation Code
Curved	CU
Irregular	IR
Planar	PL
Stepped	ST
Undulating	UN

Rock Defect Roughness

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

Other Rock Defect Attributes

Term	Abbreviation Code
Fragmented	FG
Band	BND
Quartz	QTZ

Defect Orientation

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

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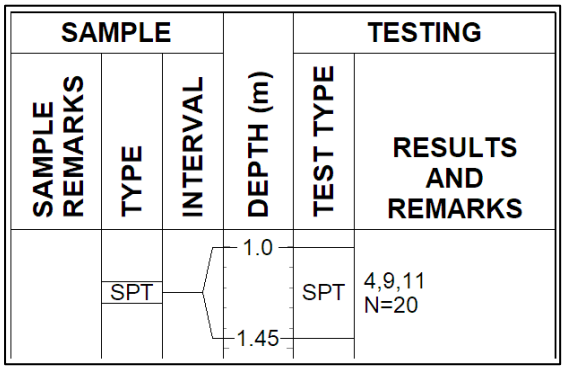
Sampling, Testing and Excavation Methodology

Terminology
Symbols
Abbreviations

August 2020

Sampling and Testing

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



Sampling

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

Sample Type	Code
Auger sample	A
Acid sulfate sample	ASS
Bulk sample	B
Core sample	C
Disturbed sample	D
Sample from SPT test	SPT
Environmental sample	E
Gas sample	G
Jar sample	J
Undisturbed tube sample	U[1]
Water sample	W
Piston sample	P
Core sample for unconfined compressive strength testing	UCS

[1] – numeric suffixes indicate tube diameter/width in mm

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

Field and Laboratory Testing

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

Test Type	Code
Pocket penetrometer (kpa)	PP
Photo ionisation detector	PID
Standard Penetration Test	SPT
Shear vane (kpa)	V
Unconfined compressive strength, (MPa)	UCS
Point load test, axial (A), diametric (D), irregular (I)	PLT(_)

Field and laboratory testing (continued)

Test Type	Code
Dynamic cone penetrometer, followed by blow count penetration increment in mm (cone tip, generally in accordance with AS1289.6.3.2)	DCP/150
Perth sand penetrometer, followed by blow count penetration increment in mm (flat tip, generally in accordance with AS1289.6.3.3)	PSP/150

Groundwater Observations

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

Drilling or Excavation Methods/Tools

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

Method	Abbreviation Code
Excavator/backhoe bucket	B[1]
Toothed bucket	TB[1]
Mud/blade bucket	MB[1]
Ripping tyne/ripper	RT
Rock breaker/hydraulic hammer	RB
Hand auger	HA[1]
NMLC series coring	NMLC
HMLC series coring	HMLC
NQ coring	NQ
HQ coring	HQ
PQ coring	PQ
Push tube	PT [1]
Rock roller	RR[1]
Solid flight auger. Suffixes (TC) and (V) indicate tungsten carbide or v-shaped tip respectively	SFA[1]
Sonic drilling	SON[1]
Vibrocore	VC[1]
Wash bore (unspecified bit type)	WB[1]
Existing exposure	X
Hand tools (unspecified)	HT
Predrilled	PD
Specialised bit (refer report)	SPEC[1]
Diatube	DT[1]
Hollow flight auger	HFA[1]
Vacuum excavation	VE

[1] – numeric suffixes indicate tool diameter/width in mm

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: 160-200 Parkway Avenue, Hamilton South

SURFACE LEVEL: 3.2 AHD
COORDINATE E:383998 **N:** 6355595.5
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 1a
PROJECT No: 213618.01
DATE: 08/07/22
SHEET: 1 of 1

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	SAMPLE TYPE	SAMPLE INTERVAL	DEPTH (m)
	3	0.0	FILL/ (ML) Sandy SILT; dark brown; silt fraction fine; sand fraction fine to medium; trace rootlets and organics		FILL	NA	<PL		D		0.0
		0.15	FILL/ (GP) Sandy GRAVEL; dark brown black; gravel fraction fine to medium; sand fraction fine to coarse; with white inclusions, slag with coal		FILL	NA	M		D		0.1 / 0.15
		0.25	(SP) SAND, with silt; grey brown		ALV	MD	M		D		0.25 / 0.3 / 0.4
		0.5	(SP) SAND; pale grey		ALV	MD	M to W		D		0.6 / 0.8
		0.85	(SP) SAND, with silt, trace gravel; pale brown; gravel fraction fine to medium, sub-rounded		ALV	MD	M to W		D		0.9 / 1
		1	0.95-1.1m: brown								
		1.1	Borehole discontinued at 1.10m depth partial bore collapse from 0.7m								1.1
	2										
	1										
		2									2

TESTING AND REMARKS

TEST TYPE: PSP/150

RESULTS AND REMARKS: 5 | 10 | 15

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

PLANT: Push Tube Rig
METHOD: PT to 1.1m
REMARKS: Groundwater likely between 0.5m and 0.8m depth

OPERATOR: Chaplin
CASING:

LOGGED: Chaplin

EXPORTED 05/09/22 13:51. TEMPLATE ID: DP_101.02.00_SOILLOG

Refer to explanatory notes for symbol and abbreviation definitions

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: 160-200 Parkway Avenue, Hamilton South

SURFACE LEVEL: 4.1 AHD
COORDINATE **E:**383845 **N:** 6355630
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 5a
PROJECT No: 213618.01
DATE: 08/07/22
SHEET: 1 of 1

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	SAMPLE TYPE	SAMPLE INTERVAL	DEPTH (m)	TESTING AND REMARKS: TEST TYPE / RESULTS AND REMARKS
	4	0.0	FILL/ (ML) Sandy SILT; dark brown; low plasticity; trace rootlets and organics		FILL	NA	<PL					
		0.1	FILL/ (ML) Sandy SILT; dark brown; silt fraction low plasticity; sand fraction fine to medium 0.2-0.3m: with concrete rubble		FILL	NA	<PL to =PL					
		0.3	(SP) SAND, with silt; grey; fine to medium 0.35-0.4m: with fine gravel (SR)		ALV	D	M		D		0.5 0.6	PSP/150
		0.7	(SP) SAND; pale grey; fine to medium		ALV	MD	M					
		0.9	(SP) SAND, with silt; brown; fine to medium		ALV	MD	M		D		0.9 1.0	
	3	1.0	(SP) SAND; grey; fine to medium 1.2-1.3m: with fine to medium gravel (SR)		ALV	MD	M		D		1.2 1.3	
		1.3	(SP) SAND, with clay; brown dark brown; sand fraction fine to medium; clay fraction fine to medium, sub-rounded		ALV	MD	M					
		1.5	(SP) SAND; pale grey yellow; fine to medium		ALV	MD	M to W					
	2	2							D		1.9 2	
		2.1	Borehole discontinued at 2.10m depth Virtual refusal due to hole collapse at 2.1m								2.1	

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

PLANT: PTR
METHOD: PT to 2.1m
REMARKS:

OPERATOR: Chaplin
CASING:

LOGGED: Chaplin

EXPORTED 27/07/22 11:32. TEMPLATE ID: DP_101.02.00_SOILLOG

Refer to explanatory notes for symbol and abbreviation definitions

Douglas Partners
Geotechnics | Environment | Groundwater

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: 160-200 Parkway Avenue, Hamilton South

SURFACE LEVEL: 4 AHD
COORDINATE **E:**383821.8 **N:** 6355566.4
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 107a
PROJECT No: 213618.01
DATE: 08/07/22
SHEET: 1 of 1

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	SAMPLE TYPE	SAMPLE INTERVAL	DEPTH (m)
No free groundwater observed		0.0	FILL/ (ML) Sandy SILT; dark brown; silt fraction fine; sand fraction fine to medium; with trace rootlets and organics		FILL	NA	<PL		D		0.0
		0.15	(SP) SAND, with silt; grey; fine to medium		ALV	MD	M		D		0.1
		0.5	(SP) SAND; pale grey; fine to medium		ALV	MD	M		D		0.3
		0.8	(SP) SAND, with silt, trace gravel; dark brown; sand fraction fine to medium; gravel fraction fine to medium, sub-rounded		ALV	MD	M		D		0.4
	3	1									0.6
		1.1	(SP) SAND; pale grey; fine to medium		ALV	MD	M		D		0.7
		1.2	(SP) SAND, with silt, trace gravel; grey; sand fraction fine to medium; gravel fraction fine to medium, sub-rounded		ALV	MD	M to W		D		0.9
		1.4	(SP) SAND; pale grey yellow; fine to medium		ALV	MD	M to W		D		1.0
	2	2	1.8-2.2m: pale grey						D		1.3
		2.2	Borehole discontinued at 2.20m depth Virtual refusal due to hole collapse at 1.2m						D		1.4
											1.5
											1.6
											2.0
											2.2

TESTING AND REMARKS

TEST TYPE: PSP/150

RESULTS AND REMARKS: 5 10 15

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

PLANT: PTR
METHOD: PT to 2.2m
REMARKS: Groundwater likely between 1.2m and 1.4m depth

OPERATOR: Butcher
CASING:

LOGGED: Chaplin

EXPORTED 27/07/22 11:32. TEMPLATE ID: DP_101.02.00_SOILLOG

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: 160-200 Parkway Avenue, Hamilton South

SURFACE LEVEL: 4 AHD
COORDINATE **E:**383791 **N:** 6355598
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 4
PROJECT No: 213618.01
DATE: 06/07/22
SHEET: 2 of 7

CONDITIONS ENCOUNTERED														SAMPLE				TESTING	
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA (SOIL STRENGTH (where encountered), SOIL MOISTURE)	GRAPHIC	WEATH. (RS, XW, HW, DW, MW, SW, FS, FR)	DEPTH (m)	STRENGTH (VL, L, M, H, VH, EH)	RECOVERY (%)	RQD	FRACTURE SPACING (m) (0.01, 0.05, 0.10, 0.50, 1.00, 5.00)	DEFECTS & REMARKS	SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
1.5			Silty CLAY; medium plasticity *(continued)*														
	-7	11													11		
	-8	12													12		
	-9	13													13		
		13.5	Clayey SAND; fine to medium														
	-10	14													14		
		14.75	Silty CLAY; dark grey														
	-11	15													15		
	-12	16													16		
	-13	17													17		
	-14	18													18		
	-15	19													19		

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

PLANT: Hanjin 114
OPERATOR: Total Drilling
LOGGED: Millard

METHOD: SFA to 2.5m, then PD to 33.3m, then HQ core to 62.0m
CASING: PQ to 2.5m, HWT to 36.2m

REMARKS: Soil description and depths are based on drillers logs. Information on soil should be obtained fron nearby Cone Penetration Tests (CPT)

EXPORTED 03/08/22 10:14. TEMPLATE ID: DP_102.02.00_ROCKLOG

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: 160-200 Parkway Avenue, Hamilton South

SURFACE LEVEL: 4 AHD
COORDINATE E:383791 **N:** 6355598
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 4
PROJECT No: 213618.01
DATE: 06/07/22
SHEET: 3 of 7

CONDITIONS ENCOUNTERED														SAMPLE				TESTING	
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA (SOIL STRENGTH (where encountered) / SOIL MOISTURE)	GRAPHIC	WEATH. (RS, XW, HW, DW, MW, SW, FS, FR)	DEPTH (m)	STRENGTH (VL, L, M, H, VH, EH)	RECOVERY (%)	RQD	FRACTURE SPACING (m) (0.01, 0.05, 0.10, 0.50, 1.00, 5.00)	DEFECTS & REMARKS	SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
1.5	-17	21	Silty CLAY; dark grey *(continued)*												21		
	-18	22													22		
	-19	23													23		
	-20	24													24		
	-21	25													25		
	-22	26													26		
	-23	27													27		
	-24	28													28		
	-25	29													29		

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

PLANT: Hanjin 114
OPERATOR: Total Drilling
LOGGED: Millard

METHOD: SFA to 2.5m, then PD to 33.3m, then HQ core to 62.0m
CASING: PQ to 2.5m, HWT to 36.2m

REMARKS: Soil description and depths are based on drillers logs. Information on soil should be obtained fron nearby Cone Penetration Tests (CPT)

EXPORTED 03/08/22 10:14. TEMPLATE ID: DP_102.02.00_ROCKLOG

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: 160-200 Parkway Avenue, Hamilton South

SURFACE LEVEL: 4 AHD
COORDINATE E:383791 **N:** 6355598
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 4
PROJECT No: 213618.01
DATE: 06/07/22
SHEET: 4 of 7

CONDITIONS ENCOUNTERED																SAMPLE				TESTING	
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	SOIL STRENGTH (where encountered) / SOIL MOISTURE	GRAPHIC	WEATH. (RS, XW, HW, MW, SW, FS, FR; DW)	DEPTH (m)	STRENGTH (VL, L, M, H, VH, EH)	RECOVERY (%)	RQD	FRACTURE SPACING (m) (0.01, 0.05, 0.10, 0.50, 1.00, 5.00)	DEFECTS & REMARKS	SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
1.5	-27	31	Silty CLAY; dark grey *(continued)*													31		
	-28	32														32		
	-29	33														33		
		33.3				MW-HW	33.3	M-H				33.3-33.45m: fragmented						
		33.45	CST SST; pale brown grey				33.45											
			CORE LOSS															
	-30	34														34		
	-31	35	33.45-35.92m: possible pebbly sandstone/conglomerate						13	5						35		
		35.92					35.92											
	-32	36	SILTSTONE; grey			HW		VL-L								36		
							36.15	L	100	0		36.15-36.23m: fragmented						
							36.52					36.62-36.7m: DB						
	-33	37				FR		M								37		
							37.16	L				37.16-37.22m: fragmented						
							37.22					37.41-37.51m: PT SH PL, SM						
							37.41					37.63-37.69m: fragmented						
	-34	38				SW			100	51		37.94-37.97m: fragmented				38		
								M				38.64m: J 45° PL, SM						
							38.8					38.8-38.84m: fragmented						
	-35	39				FR						39.0-39.37m: J SV PL, RO, <1mm, trace calcite				39		
									100	71		39.2-39.32m: PT x6 SH PL, RO						
							39.8	M				39.8-39.82m: fragmented						

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

EXPORTED 03/08/22 10:14. TEMPLATE ID: DP_102.02.00_ROCKLOG

PLANT: Hanjin 114
OPERATOR: Total Drilling
LOGGED: Millard

METHOD: SFA to 2.5m, then PD to 33.3m, then HQ core to 62.0m
CASING: PQ to 2.5m, HWT to 36.2m

REMARKS: Soil description and depths are based on drillers logs. Information on soil should be obtained fron nearby Cone Penetration Tests (CPT)

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: 160-200 Parkway Avenue, Hamilton South

SURFACE LEVEL: 4 AHD
COORDINATE E:383791 **N:** 6355598
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 4
PROJECT No: 213618.01
DATE: 06/07/22
SHEET: 5 of 7

CONDITIONS ENCOUNTERED															SAMPLE				TESTING	
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	SOIL STRENGTH (where encountered) / SOIL MOISTURE	GRAPHIC	WEATH.	DEPTH (m)	STRENGTH	RECOVERY (%)	RQD	FRACTURE SPACING (m)	DEFECTS & REMARKS	SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
1.5	-37	41	SILTSTONE; grey *(continued)*			FR		M	100	71		41.6-41.64m: J x3 60° PL, SM 41.84-41.85m: fragmented				41		
	-38	42	42.36-42.45m: lenticular bedding 42.36-42.68m: pale grey				42.36									42		
	-39	43							100	92						43		
	-40	44														44		
	-41	45														45		
	-42	46					46.15	H				46.09-46.12m: fragmented 46.15m: J 60° PL, FE				46		
	-43	47				FS	47.09		100	89		47.09m: J 20° IR, RO, FE				47		
	-44	48				FR										48		
	-45	49							100	79						49		

20% water loss from 46.5m to 55.58m depth

EXPORTED 03/08/22 10:14. TEMPLATE ID: DP_102.02.00_ROCKLOG

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

PLANT: Hanjin 114
OPERATOR: Total Drilling
LOGGED: Millard

METHOD: SFA to 2.5m, then PD to 33.3m, then HQ core to 62.0m
CASING: PQ to 2.5m, HWT to 36.2m

REMARKS: Soil description and depths are based on drillers logs. Information on soil should be obtained fron nearby Cone Penetration Tests (CPT)

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: 160-200 Parkway Avenue, Hamilton South

SURFACE LEVEL: 4 AHD
COORDINATE **E:**383791 **N:** 6355598
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 4
PROJECT No: 213618.01
DATE: 06/07/22
SHEET: 6 of 7

CONDITIONS ENCOUNTERED															SAMPLE				TESTING	
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	SOIL STRENGTH (where encountered) / SOIL MOISTURE	GRAPHIC	WEATH. (RS, XW, HW, MW, SW, FS, FR; DW)	DEPTH (m)	STRENGTH (VL, L, M, H, VH, EH)	RECOVERY (%)	RQD	FRACTURE SPACING (m) (0.01, 0.05, 0.10, 0.50, 1.00, 5.00)	DEFECTS & REMARKS	SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
1.5			SILTSTONE; grey *(continued)*			FR		H	100	79		50.34-50.56m: J 60°-70° UN, RO 50.71-50.77m: clay seam **46.5-55.58: 20% water loss**						
	-47	51														51		
	-48	52							100	72		52.4-52.74m: J 80° PL, SM 52.74-52.89m: fragmented				52		
	-49	53				FS	52.89 53.16		100	69		52.89-53.16m: J SV IR, SM, FE 53.38-53.52m: J 80° PL, SM 53.62-53.68m: J 80° PL, SM				53		
	-50	54				FR										54		
	-51	55				FS	54.92 55.22		100	54		54.92-55.22m: J SV IR, SM, FE				55		
		55.58	COAL; black; (borehole seam)				55.58	L				55.43-55.58m: fragmented						
	-52	56				FR	56.16 56.47 56.75 57.13	M L M L	100	47		55.58-56.16m: fragmented 56.47-56.75m: fragmented 59.75-54.92m: J SV PL, SM 57.13-57.55m: fragmented				56		
	-53	57														57		
		57.55	CORE LOSS; (weak coal - possible crush zone)				57.55					**55.58-60.25: intermittent water loss, 50-100% loss**						
	-54	58							52	0						58		
		58.15	COAL; black				58.15	L				58.15-58.39m: fragmented						
	-55	59				FR	58.39 58.65 58.85 59.0 59.25	M L M L				58.65-58.85m: fragmented 59.0-59.25m: fragmented				59		
								M	100	81		59.4-59.9m: J/2 SV PL, RO						

▼ intermittent water loss 50-100% los from 55.58m to 60.25m depth

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

EXPORTED 03/08/22 10:14. TEMPLATE ID: DP_102.02.00_ROCKLOG

PLANT: Hanjin 114
OPERATOR: Total Drilling
LOGGED: Millard

METHOD: SFA to 2.5m, then PD to 33.3m, then HQ core to 62.0m
CASING: PQ to 2.5m, HWT to 36.2m

REMARKS: Soil description and depths are based on drillers logs. Information on soil should be obtained fron nearby Cone Penetration Tests (CPT)

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: 160-200 Parkway Avenue, Hamilton South

SURFACE LEVEL: 4 AHD
COORDINATE **E:**383791 **N:** 6355598
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 4
PROJECT No: 213618.01
DATE: 06/07/22
SHEET: 7 of 7

CONDITIONS ENCOUNTERED														SAMPLE				TESTING	
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA (SOIL STRENGTH (where encountered), SOIL MOISTURE)	GRAPHIC	WEATH. (RS, XW, HW, MW, SW, FS, FR, DW)	DEPTH (m)	STRENGTH (VL, L, M, H, VH, EH)	RECOVERY (%)	RQD	FRACTURE SPACING (m) (0.01, 0.05, 0.10, 0.50, 1.00, 5.00)	DEFECTS & REMARKS	SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
1.5	60.25	60.25	COAL; black *(continued)*			60.0	L				60.0-60.25m: fragmented				60		
			SILTSTONE; grey			60.25	L				60.25-60.55m: J SV PL, SM						
	60.63	60.63	SANDSTONE; pale grey; fine to medium		FR	60.63	H	100	81		60.55-60.58m: fragmented				61		
	-57	61															
	-58	62.0	Borehole discontinued at 62.00m depth			62.0									62		
	-59	63													63		
	-60	64													64		
	-61	65													65		
	-62	66													66		
	-63	67													67		
	-64	68													68		
	-65	69													69		

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

PLANT: Hanjin 114
OPERATOR: Total Drilling
LOGGED: Millard

METHOD: SFA to 2.5m, then PD to 33.3m, then HQ core to 62.0m
CASING: PQ to 2.5m, HWT to 36.2m

REMARKS: Soil description and depths are based on drillers logs. Information on soil should be obtained fron nearby Cone Penetration Tests (CPT)

EXPORTED 03/08/22 10:14. TEMPLATE ID: DP_102.02.00_ROCKLOG

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 4.0 AHD
COORDINATE **E:**384059.0 **N:** 6355615.0
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 201
PROJECT No: 213618.02
DATE: 16/08/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	FILL/ (SP) Silty SAND, trace gravel; dark brown; sand fraction fine to medium; gravel fraction fine to coarse, sub-angular to sub-rounded; trace plastic, glass, rootlets, ceramic		FILL	NA	M		D E		0.05	PID	<1
								D E		0.3	PID	<1
	0.5	Borehole discontinued at 0.50m depth Limit of investigation						D E		0.5	PID	<1

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

PLANT: Hand Auger
METHOD: Hand auger to 0.5m
OPERATOR: Kramer
CASING: NIL
LOGGED: Kramer

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using a differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:10. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 2.1 AHD
COORDINATE E:384063.3 **N:** 6355617.1
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 201A
PROJECT No: 213618.02
DATE: 30/11/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	2 / 0.0	FILL/ (SP) Silty SAND, with gravels; grey brown grey; sand fraction fine to medium; gravels fraction fine to coarse sub-angular to sub-rounded (crushed natural rock); trace rootlets, glass, tape, ceramic, plastic, slag, coal		FILL	NA	D		D E		0.0 0.05	PID	<1
		0.4m: brown						D E		0.25	PID	<1
								D E		0.5	PID	<1
	1 / 0.6	FILL/ (SP) SAND, trace gravel; intermixed brown grey pale grey; sand fraction fine to medium; gravel fraction fine to coarse sub-angular to sub-rounded; trace coal, shells, slag		FILL		M						
		0.9m: fine to coarse sub-angular to sub-rounded gravels						D E		1.0	PID	<1
	1 / 1.1	Test pit discontinued at 1.10m depth Hand refusal on gravels										
	0 / 2									2		

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

PLANT: Shovel and Hand Auger
OPERATOR: Kramer
LOGGED: Kramer

METHOD: Shovel to 0.3m then hand auger to 1.1m

REMARKS: D1/30.11.22 at 0.5m. Location coordinates are in MGA94 Zone 56. Coordinates obtained using a differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:10. TEMPLATE ID: DP_101.02.00_SOILLOG

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 4.0 AHD
COORDINATE E:383962.0 **N:** 6355686.0
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 202
PROJECT No: 213618.02
DATE: 16/08/26
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	FILL/ (SP) SAND; brown; fine to medium; trace rootlets		FILL				D E		0.05	PID	<1
	0.15	FILL/ (SP) Silty SAND, trace gravel; dark brown; sand fraction fine to medium; gravel fraction fine to coarse, sub-angular to sub-rounded; trace ash, ceramic, glass, rootlets		FILL	NA	M		D E		0.3	PID	<1
	0.5	Borehole discontinued at 0.50m depth Limit of investigation						D E		0.5	PID	<1

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

PLANT: Hand Auger
METHOD: Hand auger to 0.5m
OPERATOR: Kramer
CASING: NIL
LOGGED: Kramer

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using a differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:11. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 2.3 AHD
COORDINATE **E:**383968.0 **N:** 6355688.9
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 202A
PROJECT No: 213618.02
DATE: 30/11/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	2.3 / 0.0	FILL/ (SP) SAND; brown; fine to medium; trace rootlets, fine sub-angular to sub-rounded gravels (crushed natural rock)		FILL	NA	D		D E		0.0 0.05	PID	<1
	2 / 0.2	FILL/ (SP) Silty SAND; dark grey; fine to medium; trace glass, ceramic, coal, brick fragments, slag		FILL		M		D E		0.25	PID	<1
								D E		0.5	PID	<1
	0.7	FILL/ (SP) SAND, trace gravel; brown; sand fraction fine to medium; gravel fraction fine to coarse sub-angular to sub-rounded		FILL		M		D E		0.72	PID	<1
	0.75	Test pit discontinued at 0.75m depth Hand refusal on gravels										
	1									1		
	1											
	2									2		
	0											

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

PLANT: Shovel and Hand Auger
OPERATOR: Kramer
LOGGED: Kramer

METHOD: Shovel to 0.3m then hand auger to 0.75m

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using a differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:11. TEMPLATE ID: DP_101.02.00_SOILLOG

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 4.0 AHD
COORDINATE **E:**383920.0 **N:** 6355606.0
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 203
PROJECT No: 213618.02
DATE: 18/08/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED									SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed		0.0	FILL/ SAND, with silt, trace gravel; brown; sand fraction fine to medium; gravel fraction fine to medium, sub-angular to sub-rounded; trace rootlets		FILL		D to M		D E		0.05	PID	<1
		0.2	FILL/ Gravelly SAND; pale brown; sand fraction fine to medium; gravel fraction fine to medium, sub-angular to sub-rounded		FILL	NA	D to M		D E		0.25	PID	<1
		0.3	SAND; pale grey; fine to medium		ALV		M						
		0.5	Borehole discontinued at 0.50m depth Limit of investigation						D E		0.5	PID	<1

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

PLANT: Hand Tools (75mm diameter hand auger)
METHOD: Hand auger to 0.5m
OPERATOR: Kramer
CASING: NIL
LOGGED: Kramer

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using a differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:12. TEMPLATE ID: DP_101.02.00_SOILLOG

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 2.1 AHD
COORDINATE E:383922.4 **N:** 6355610.1
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 203A
PROJECT No: 213618.02
DATE: 29/11/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	2 / 0.0	FILL/ (SP) Silty SAND; brown; fine to medium; trace roots / rootlets, plastic		FILL		D to M		D E		0.0 0.05	PID	<1
	0.2	FILL/ (SP) Gravelly SAND; brown pale brown; sand fraction fine to medium; gravel fraction fine to coarse sub-angular to sub-rounded (crushed natural rock)		FILL		D		D E		0.25	PID	<1
	0.3	(SP) SAND; pale grey; fine to medium		ALV	NA	D to M		D E		0.5	PID	<1
	0.8	Borehole discontinued at 0.80m depth Limit of investigation										
	1 / 1									1		
	0 / 2									2		

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

PLANT: Hand Auger
METHOD: Hand auger to 0.8m
OPERATOR: Kramer
CASING:
LOGGED: Kramer

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using a differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:12. TEMPLATE ID: DP_101.02.00_SOILLOG

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 3.0 AHD
COORDINATE E:383944.9 **N:** 6355699.7
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 204
PROJECT No: 213618.02
DATE: 11/11/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	FILL/ (SP) SAND; brown grey; fine to medium; trace fine to medium grained, subangular to subrounded gravel (crushed natural rock), glass, dry		FILL	NA	D to M		D E		0.05	PID	<1
		0.4m: fine to medium subangular to subrounded gravels (crushed natural rock)						D E		0.25	PID	<1
	0.7	FILL/ (SP) Silty SAND; dark brown; fine to medium; trace fine to medium subangular to subrounded gravels (crushed natural rock), ceramic, slag, coal reject, brick fragments, dry		FILL				D E		0.5	PID	<1
	0.95	Borehole discontinued at 0.95m depth Hand refusal on cobbles						D E		0.8	PID	<1

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

PLANT: Hand Auger
METHOD: Hand auger to 0.95m
REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using a differential GPS, typical accuracy ±0.1m.

OPERATOR: Kramer
CASING: Uncased

LOGGED: Kramer

EXPORTED 20/04/23 12:13. TEMPLATE ID: DP_101.02.00_SOILLOG

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 3.2 AHD
COORDINATE E:383930.1 **N:** 6355710.6
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 205
PROJECT No: 213618.02
DATE: 11/11/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	FILL/ (SP) SAND; brown; fine to medium; with silt, trace fine to medium subangular to subrounded gravels (crushed natural rock), glass, slag, ash, brick fragments, dry						D, E		0.05	PID	<1
		0.3m: fine to medium subangular to subrounded gravels (crushed natural rock)		FILL	NA	D to M		D, E		0.25	PID	<1
	0.6	Borehole discontinued at 0.60m depth Hand refusal on gravels						D, E		0.5	PID	<1

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

PLANT: Hand Auger
METHOD: Hand auger to 0.6m
OPERATOR: Kramer
CASING: Uncased
LOGGED: Kramer

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using a differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:13. TEMPLATE ID: DP_101.02.00_SOILLOG

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 3.6 AHD
COORDINATE E:383907.7 **N:** 6355729.6
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 206
PROJECT No: 213618.02
DATE: 11/11/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	FILL/ (SP) SAND; grey brown; fine to medium; trace fine to medium subangular to subrounded gravels (crushed natural rock), ash, rootlets, dry		FILL				D, E		0.05	PID	<1
	0.3	(SP) SAND; grey; fine to medium; trace rootlets, dry		ALV	NA	D		D, E		0.5	PID	<1
	0.65	(SP) Silty SAND; brown to dark brown; fine to medium; dry (possible indurated sand)		ALV				D, E		0.7	PID	<1
	0.95	(SP) SAND; pale brown; fine to medium; dry		ALV				D, E		1.0	PID	<1
	1.0	Borehole discontinued at 1.00m depth Limit of investigation										

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

PLANT: Hand Auger
METHOD: Hand auger to 1.0m
OPERATOR: Kramer
CASING: Uncased
LOGGED: Kramer

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using a differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:14. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 3.6 AHD
COORDINATE **E:**383907.4 **N:** 6355729.8
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 206A
PROJECT No: 213618.02
DATE: 20/12/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	FILL/ (SP) SAND, trace gravel; grey brown; sand fraction fine to medium; gravel fraction fine to medium; ash, rootlets, dry to moist		FILL	NA	D to M		D E		0.0 0.05	PID	<1
	0.4	(SP) SAND; grey; fine to medium; trace rootlets		ALV		D		D E		0.5	PID	<1
	0.7	(SP) SAND; brown; fine to medium		ALV		D		D E		0.7	PID	<1
	0.9	Test pit discontinued at 0.90m depth Limit of investigation										

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

PLANT: Shovel
OPERATOR: Kramer
LOGGED: Kramer
METHOD: Shovel to 0.9m
REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:14. TEMPLATE ID: DP_101.02.00_SOILLOG

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 3.4 AHD
COORDINATE E:383855.8 **N:** 6355704.8
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 207
PROJECT No: 213618.02
DATE: 11/11/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	FILL/ (SP) SAND; brown to grey; fine to medium; trace fine to coarse subangular to subrounded gravels (crushed natural rock), rootlets, coal reject, roots, dry		FILL	NA	D		D E		0.05	PID	<1
								D E		0.25	PID	<1
								D E		0.5	PID	<1
	1.05	(SP) SAND; brown; fine to medium; dry		ALV				D E		1.0	PID	<1
								D E		1.3	PID	<1
	1.45	Borehole discontinued at 1.45m depth Limit of investigation										

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

PLANT: Hand Auger
METHOD: Hand auger to 1.45m
OPERATOR: Kramer
CASING: Uncased
LOGGED: Kramer

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using a differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:15. TEMPLATE ID: DP_101.02.00_SOILLOG

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 3.7 AHD
COORDINATE E:383885.2 **N:** 6355697.1
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 208
PROJECT No: 213618.02
DATE: 11/11/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	FILL/ (SP) SAND; brown; fine to medium; with silt, trace fine to medium subangular to subrounded gravels (crushed natural rock), plastic, ash, dry		FILL	NA	D		D E		0.05	PID	<1
	0.25	(SP) SAND; pale grey; fine to medium; dry to moist		ALV	NA	M		D E		0.2	PID	<1
	3							D E		0.5	PID	<1
	0.75	Borehole discontinued at 0.75m depth Limit of investigation										
	1									1		
	2									2		
	2											
	1											

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

PLANT: Hand Auger
METHOD: Hand auger to 0.75m
REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using a differential GPS, typical accuracy ±0.1m.

OPERATOR: Kramer
CASING: Uncased
LOGGED: Kramer

EXPORTED 20/04/23 12:15. TEMPLATE ID: DP_101.02.00_SOILLOG

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 4.0 AHD
COORDINATE E:383812.0 **N:** 6355647.1
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 209
PROJECT No: 213618.02
DATE: 11/11/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	FILL/ (SP) SAND; grey; fine to medium; with fine to coarse subangular to subrounded gravel (crushed natural rock), trace glass, sandstone cobbles, coal reject, dry		FILL				D E		0.05	PID	<1
		0.2-0.3m: fibro fragment observed				M		D E		0.25	PID	<1
	0.3	FILL/ (SP) Gravelly SAND, with gravel; grey brown; sand fraction fine to medium; gravel fraction fine to medium, subangular to subrounded; crushed natural rock, dry		FILL				D E		0.35	PID	<1
	0.4			FILL				D E		0.45	PID	<1
	0.5	FILL/ (SP) SAND; brown; fine to medium; trace fine to medium subangular to subrounded gravels (crushed natural rock), dry			NA							
		(SP) SAND; pale grey; fine to medium; dry to moist		ALV				D E		0.7	PID	<1
	0.85	(SP) SAND; dark brown; fine to medium; dry to moist (indurated sand)		ALV								
	3 1.0	Borehole discontinued at 1.00m depth Limit of investigation						D E		1.0	PID	<1
	2 2									2		

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

PLANT: Hand Auger
METHOD: Hand auger to 1.0m
OPERATOR: Kramer
CASING:
LOGGED: Kramer

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using a differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:16. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 4.0 AHD
COORDINATE E:383810.8 **N:** 6355648.0
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 209A
PROJECT No: 213618.02
DATE: 20/12/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED									SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	4	0.0	FILL/ (SP) SAND, with gravel; brown; sand fraction fine to medium; gravel fraction fine to coarse sub-angular to sub-rounded (crushed natural rock); trace rootlets, ash		FILL	NA	D		D E B D E		0.0 0.05 0.25 0.35	PID PID PID	<1 <1 <1
		0.35	FILL/ (SP) Gravelly SAND; brown pale brown; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded (crushed natural rock)		FILL		D		D E		0.4	PID	<1
		0.45	(SP) SAND; pale grey; fine to medium		ALV		D to M						
		0.65	Test pit discontinued at 0.65m depth Limit of investigation										
	3	1									1		
	2	2									2		

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

PLANT: Shovel
OPERATOR: Kramer
LOGGED: Kramer

METHOD: Shovel to 0.65m

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:16. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 4.1 AHD
COORDINATE E:383813.1 **N:** 6355646.8
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 209B
PROJECT No: 213618.02
DATE: 20/12/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	4 / 0.0	FILL/ (SP) SAND, with gravel; brown; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded (crushed natural rock); trace rootlets, brick, plastic		FILL	NA	D		D E B		0.0 0.05	PID	<1
	0.25	FILL/ (SP) SAND, with gravel; brown; sand fraction fine to medium; gravel fraction fine to coarse sub-angular to sub-rounded (crushed natural rock); trace brick, slag		FILL		D		D E B D E		0.2 0.25 0.5	PID PID PID	<1 <1 <1
	0.6	(SP) SAND; pale grey; fine to medium; trace rootlets		ALV		D				0.6	PID	<1
	0.7	Test pit discontinued at 0.70m depth Limit of investigation										
	3 / 1									1		
	2 / 2									2		

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

PLANT: Shovel
OPERATOR: Kramer
LOGGED: Kramer

METHOD: Shovel to 0.7m

REMARKS: D1/20.12.22 @ 0.2m. Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:16. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 3.9 AHD
COORDINATE **E:**383810.1 **N:** 6355646.7
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 209C
PROJECT No: 213618.02
DATE: 20/12/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED									SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed		0.0	FILL/ (SP) SAND, with gravel; brown; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded (crushed natural rock); trace rootlets		FILL	NA	D		D E		0.0 0.05	PID	<1
		0.1			FILL		D		B				
		0.25	FILL/ (SP) SAND, with silt; brown; fine to medium; trace metal, glass, plastic, fine to medium sub-angular to sub-rounded gravels (crushed natural rock)						D E		0.2 0.25	PID PID	<1 <1
			FILL/ (SP) SAND, trace gravel; brown dark brown; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded (crushed natural rock)		FILL		D		D E		0.5	PID	<1
		0.65	(SP) SAND; pale grey; fine to medium		ALV		D to M		D		0.7	PID	<1
		0.8	(SP) SAND; dark brown; fine to medium		ALV		D to M						
		0.85	Test pit discontinued at 0.85m depth Limit of investigation										

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

PLANT: Shovel
OPERATOR: Kramer
LOGGED: Kramer

METHOD: Shovel to 0.85m

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:17. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 4.0 AHD
COORDINATE E:383809.5 **N:** 6355649.2
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 209D
PROJECT No: 213618.02
DATE: 20/12/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	FILL/ (SP) Silty SAND, trace gravel; brown grey; sand fraction fine to medium; gravel fraction fine to coarse sub-angular to sub-rounded (crushed natural rock); rootlets		FILL	NA	D to M		D E B D E		0.0 0.05 0.25 0.3	PID PID PID	<1 <1 <1
	0.3	(SP) SAND; brown; fine to medium; trace rootlets 0.5m: pale grey		ALV		D		D E		0.5	PID	<1
	0.6	Test pit discontinued at 0.60m depth Limit of investigation										

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

PLANT: Shovel
OPERATOR: Kramer
LOGGED: Kramer
METHOD: Shovel to 0.6m
REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:17. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 3.9 AHD
COORDINATE **E:**383812.4 **N:** 6355649.9
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 209E
PROJECT No: 213618.02
DATE: 20/12/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	FILL/ (SP) Silty SAND, trace gravel; brown grey; sand fraction fine to medium; gravel fraction fine to coarse sub-angular, sub-rounded, angular (crushed natural rock); rootlets, asphalt, brick fragments		FILL		D		D E		0.0 0.05	PID	<1
	0.25	FILL/ (SP) SAND, with gravel; brown; sand fraction fine to medium; gravel fraction fine to coarse sub-angular to sub-rounded (crushed natural rock); trace slag and ash		FILL	NA	M		D E B		0.2	PID	<1
	0.55	(SP) SAND; pale brown; fine to medium		ALV		D		D E		0.5	PID	<1
	0.75	Test pit discontinued at 0.75m depth Limit of investigation						D		0.7	PID	<1

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

PLANT: Shovel
OPERATOR: Kramer
LOGGED: Kramer

METHOD: Shovel to 0.75m

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:17. TEMPLATE ID: DP_101.02.00_SOILLOG

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 4.0 AHD
COORDINATE E:383909.5 **N:** 6355620.0
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 210
PROJECT No: 213618.02
DATE: 11/11/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	FILL/ (GP) Sandy GRAVEL; fine, sub-angular to sub-rounded; with fine to medium grained sand, dry (crusher dust)		FILL				D, E		0.05	PID	<1
	0.07	0.07m: black hessian dividing layer										
		FILL/ (SP) Silty SAND; brown grey; fine to medium; trace fine to medium subangular to subrounded gravels (crushed natural rock), ash, dry		FILL				D, E		0.25	PID	<1
	0.3	(SP) SAND; grey; fine to medium; trace rootlets, dry			NA	D						
		0.5m: pale grey, dry to moist		ALV				D, E		0.5	PID	<1
	0.75	Borehole discontinued at 0.75m depth Limit of investigation										

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

PLANT: Hand Auger
METHOD: Hand auger to 0.75m
OPERATOR: Kramer
CASING: Uncased
LOGGED: Kramer

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using a differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:18. TEMPLATE ID: DP_101.02.00_SOILLOG

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 3.7 AHD
COORDINATE E:383929.6 **N:** 6355659.2
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 211
PROJECT No: 213618.02
DATE: 11/11/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	FILL/ (SP) SAND; brown grey; fine to medium; with silt, trace slag, ash, brick fragments, fine to medium subangular to subrounded gravels (crushed natural rock), sandstone cobble, dry		FILL				D E		0.05	PID	<1
								D E		0.25	PID	<1
	0.4	(SP) SAND; grey; fine to medium; trace rootlets, dry 0.6m: pale grey		ALV	NA	D		D E		0.5	PID	<1
	0.9	Borehole discontinued at 0.90m depth Limit of investigation										

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

PLANT: Hand Auger
METHOD: Hand auger to 0.9m
OPERATOR: Kramer
CASING: Uncased
LOGGED: Kramer

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using a differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:18. TEMPLATE ID: DP_101.02.00_SOILLOG

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 8.2 AHD
COORDINATE E:383936.9 **N:** 6355670.8
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 212
PROJECT No: 213618.02
DATE: 11/11/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	8.2 / 0.0	FILL/ (SP) SAND; brown; fine to medium; with fine to coarse subangular to subrounded gravel (crushed natural rock), trace plastic, rootlets, cobbles, roots, dry		FILL	NA	D		D E		0.05	PID	<1
								D E		0.25	PID	<1
								D E		0.5	PID	<1
	7.6 / 0.6	Borehole discontinued at 0.60m depth Limit of investigation										

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

PLANT: Hand Auger
METHOD: Hand auger to 0.6m
OPERATOR: Kramer
CASING: Uncased
LOGGED: Kramer

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using a differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:19. TEMPLATE ID: DP_101.02.00_SOILLOG

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 3.7 AHD
COORDINATE E:383864.8 **N:** 6355643.5
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 213
PROJECT No: 213618.02
DATE: 29/11/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	FILL/ (SP) SAND, with silt, trace gravel; brown; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded (crushed natural rock)		FILL		D		D, E		0.0 / 0.05	PID	<1
	0.1	FILL/ (SP) Gravelly SAND, with silt; brown; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded (crushed natural rock); trace brick		FILL	NA	D		D, E		0.25	PID	<1
								D, E		0.5	PID	<1
	0.6	Borehole discontinued at 0.60m depth Hand refusal										

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

PLANT: Hand Auger
METHOD: Hand auger to 0.6m
OPERATOR: Kramer
CASING:
LOGGED: Kramer

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using a differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:19. TEMPLATE ID: DP_101.02.00_SOILLOG

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 4.0 AHD
COORDINATE **E:**383863.7 **N:** 6355620.9
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 214
PROJECT No: 213618.02
DATE: 29/11/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED									SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed		0.0	FILL/ (SP) Silty SAND, trace gravel; brown; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded (crushed natural rock); abundant rootlets		FILL	NA	D		D E		0.0 0.05	PID	<1
		0.1	0.1m: possible pavement Borehole discontinued at 0.10m depth Hand refusal										

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

PLANT: Shovel
METHOD: Shovel to 0.1m

OPERATOR: Kramer
CASING:

LOGGED: Kramer

REMARKS: Bore through garden bed. Location coordinates are in MGA94 Zone 56. Coordinates obtained using a differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:20. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 3.9 AHD
COORDINATE **E:**383864.6 **N:** 6355623.4
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 214A
PROJECT No: 213618.02
DATE: 20/12/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	FILL/ (SP) Silty SAND, trace gravel; brown; sand fraction fine to medium; gravel fraction fine to medium, sub-angular to sub-rounded (crushed natural rock); abundant rootlets		FILL		M		D E		0.0 0.05	PID	<1
	0.1	Test pit discontinued at 0.10m depth Limit of investigation										

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

PLANT: Hand Auger
OPERATOR: Kramer
LOGGED: Kramer
METHOD: Hand auger to 0.1m
REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:20. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 4.0 AHD
COORDINATE **E:**383866.0 **N:** 6355621.3
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 214B
PROJECT No: 213618.02
DATE: 20/12/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	4 / 0.0	FILL/ (SP) Silty SAND, trace gravel; brown; sand fraction fine to medium; gravel fraction fine to medium, sub-angular to sub-rounded (crushed natural rock); abundant rootlets		FILL		M		D E		0.0 0.05	PID	<1
	0.1	Test pit discontinued at 0.10m depth Limit of investigation										

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

PLANT: Hand Auger
OPERATOR: Kramer
LOGGED: Kramer
METHOD: Hand auger to 0.1m
REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:20. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 2.3 AHD
COORDINATE E:383989.8 **N:** 6355656.7
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 215
PROJECT No: 213618.02
DATE: 30/11/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN[#]	CONSIS.[*] / DENSITY.[*]	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	FILL/ (SP) Silty SAND, with gravel; brown grey; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded (crushed natural rock); trace rootlets, asphalt, glass, ceramic, metal		FILL		D		D E		0.0 0.05	PID	<1
	0.55	FILL/ (SP) SAND, trace gravel; pale grey pale brown; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded (crushed natural rock)		FILL	NA	D		D E		0.25 0.5 0.7	PID PID PID	<1 <1 <1
	0.8	FILL/ (SP) SAND, with silt; intermixed brown pale brown orange; fine to medium 1.1m: with fine to coarse sub-angular to sub-rounded gravels 1.2m: wet		FILL		M		D E		1.0	PID	<1
	1.3	Test pit discontinued at 1.30m depth Hand refusal on gravels										

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

PLANT: Shovel and Hand Auger
OPERATOR: Kramer
LOGGED: Kramer

METHOD: Shovel to 0.3m then hand auger to 1.3m

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:21. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL:
COORDINATE E: N:
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 216
PROJECT No: 213618.02
DATE: 29/11/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
	0.0	FILL/ (SP) Silty SAND, trace gravel; brown; sand fraction fine to medium; gravel fraction fine to medium subangular to subrounded (crushed natural rock); (crushed natural rock), dry to moist		FILL				D E		0.0 0.05	PID	<1
	0.1	Test pit discontinued at 0.10m depth Limit of investigation										
	1									1		
	2									2		

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

PLANT: Shovel
OPERATOR: Kennedy
LOGGED: Kramer
METHOD: Shovel to 0.1m
REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:21. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL:
COORDINATE E: N:
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 216A
PROJECT No: 213618.02
DATE: 20/12/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	FILL/ (SP) Silty SAND, trace gravel; brown; sand fraction fine to medium; gravel fraction fine to medium, sub-angular to sub-rounded (crushed natural rock)		FILL		D to M		D E		0.0 0.05	PID	<1
	0.1	Test pit discontinued at 0.10m depth Limit of investigation										

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

PLANT: Hand Tools
OPERATOR: Kramer
LOGGED: Kramer
METHOD:
REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:21. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL:
COORDINATE E: N:
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 217
PROJECT No: 213618.02
DATE: 29/11/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
	0.0	FILL/ (SP) Silty SAND, trace gravel; brown; sand fraction fine to medium; gravel fraction fine to medium subangular to subrounded; (crushed natural rock), dry to moist		FILL	NA	D to M		D E		0.0 0.05	PID	<1
	0.1	Test pit discontinued at 0.10m depth Limit of investigation										
	1									1		
	2									2		

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

PLANT: Shovel
OPERATOR: Kennedy
LOGGED: Kramer
METHOD: Shovel to 0.1m
REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL:
COORDINATE E: N:
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 217A
PROJECT No: 213618.02
DATE: 20/12/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	FILL/ (SP) Silty SAND, trace gravel; brown; sand fraction fine to medium; gravel fraction fine to medium, sub-angular to sub-rounded (crushed natural rock)		FILL		D to M		D E		0.0 0.05	PID	<1
	0.1	Test pit discontinued at 0.10m depth Limit of investigation										

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

PLANT: Hand Tools
OPERATOR: Kramer
LOGGED: Kramer
METHOD:
REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:22. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL:
COORDINATE E: N:
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 218
PROJECT No: 213618.02
DATE: 29/11/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
	0.0	FILL/ (SP) Silty SAND, trace gravel; brown; sand fraction fine to medium; gravel fraction fine to medium subangular to subrounded; (crushed natural rock), dry to moist		FILL	NA	D to M		D E		0.0 0.05	PID	<1
	0.15	Test pit discontinued at 0.15m depth Limit of investigation										
	1									1		
	2									2		

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

PLANT: Shovel
OPERATOR: Kennedy
LOGGED: Kramer
METHOD: Shovel to 0.15m
REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:23. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL:
COORDINATE E: N:
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 219
PROJECT No: 213618.02
DATE: 20/12/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED									SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	FILL/ (SP) Silty SAND, trace gravel; brown; sand fraction fine to medium; gravel fraction fine to medium, sub-angular to sub-rounded (crushed natural rock)		FILL		D to M		D E		0.0		
	0.05	Test pit discontinued at 0.05m depth Limit of investigation								0.05	PID	<1

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

PLANT: Hand Tools
OPERATOR: Kramer
LOGGED: Kramer
METHOD:
REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:23. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL:
COORDINATE E: N:
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 220
PROJECT No: 213618.02
DATE: 20/12/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED									SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	FILL/ (SP) Silty SAND, trace gravel; brown; sand fraction fine to medium; gravel fraction fine to medium, sub-angular to sub-rounded (crushed natural rock)		FILL		D to M		D E		0.0		
	0.05	Test pit discontinued at 0.05m depth Limit of investigation								0.05	PID	<1

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

PLANT: Hand Tools
OPERATOR: Kramer
LOGGED: Kramer
METHOD:
REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 3.0 AHD
COORDINATE E:383938.6 **N:** 6355703.5
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 221
PROJECT No: 213618.02
DATE: 20/12/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	3 / 0.0	FILL/ (SP) Silty SAND; brown; fine to medium; with rootlets		FILL		M		D		0.0		
	0.06							E		0.05	PID	<1
	0.11	FILL/ (GP) Sandy GRAVEL, with silt, with slag; brown; medium to coarse, angular to sub-angular, (crushed natural rock); trace brick fragments, glass shards, ceramic shards		FILL		M		D		0.1	PID	<1
		FILL/ (SP) Silty SAND, with gravel; brown dark brown; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded (crushed natural rock); trace coal reject, slag (possibly coal tar asphalt), brick fragments		FILL	NA	M		D		0.3	PID	<1
								E				
										0.5	PID	<1
							coal tar sample	D		0.6	PID	<1
								E				
										0.7	PID	<1
	0.75	Test pit discontinued at 0.75m depth Refusal on brick										
	2 / 1									1		
	1 / 2									2		

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

PLANT: Hand Auger
OPERATOR: Kramer/Helbig
LOGGED: Kramer
METHOD:
REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:24. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 2.8 AHD
COORDINATE E:383951.7 **N:** 6355696.3
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 222
PROJECT No: 213618.02
DATE: 20/12/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED									SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed		0.0	FILL/ (SP) Silty SAND, trace gravel; brown; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded (crushed natural rock); with rootlets		FILL		M		D E		0.0 0.1	PID	<1
		0.3	FILL/ (SP) SAND, with silt, trace gravel; brown; sand fraction fine to medium; gravel fraction fine to coarse sub-angular (crushed natural rock); trace slag, concrete pieces, brick (half bricks and fragments), possible coal tar asphalt fragments		FILL	NA	M		D E		0.4	PID	<1
									D E		0.8	PID	<1
		0.9	(SP) SAND; brown pale brown; fine to medium		ALV		M		D		1.0	PID	<1
		1.1	Test pit discontinued at 1.10m depth Limit of investigation										

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

PLANT: Shovel to 0.5m then hand auger to 1.1m
OPERATOR: Kramer/Helbig
LOGGED: Kramer
METHOD:
REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:25. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 1.1 AHD
COORDINATE E:384002.6 **N:** 6355660.0
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 223
PROJECT No: 213618.02
DATE: 20/12/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	1 / 0.0	FILL/ (SP) Silty SAND, with gravel; brown; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded (crushed natural rock); trace rootlets		FILL		M		D, E		0.0 / 0.05	PID	<1
	0.1			FILL		M		D, E		0.15	PID	<1
	0.2	FILL/ (SP) SAND; brown; fine to medium; trace rootlets			NA					0.2	PID	<1
		FILL/ (SP) Silty SAND; brown to dark brown; fine to medium; trace glass shards, brick fragments, ceramic shards, ash, slag, bolts, copper coil, plastic (hard)		FILL		M		D, E		0.3	PID	<1
								B				
							D2/LAH	D, E		0.5	PID	<1
	0.6	Test pit discontinued at 0.60m depth Limit of investigation								0.6	PID	<1

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

PLANT: Shovel to 0.6m
OPERATOR: Kramer/Helbig
LOGGED: Kramer
METHOD:
REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:25. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 1.8 AHD
COORDINATE E:384022.4 **N:** 6355645.2
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 224
PROJECT No: 213618.02
DATE: 20/12/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	FILL/ (SP) Silty SAND; brown; fine to medium; trace rootlets, ceramic shards, slag, metal shards, glass shards, coal reject		FILL	NA	M		D, E		0.0 / 0.05	PID	<1
								B				
								D, E		0.5	PID	<1
	0.65	FILL/ (SP) SAND; pale brown; fine to medium; trace rootlets		FILL		M				0.7	PID	<1
								D, E		0.8	PID	<1
	1.0	FILL/ (SP) SAND, with clay, with gravel; dark brown dark grey; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded (crushed natural rock)		FILL		M				1		
		1.1m: From 1.1m, trace ceramic and ash				W		D, E		1.1	PID	<1
	1.2	Test pit discontinued at 1.20m depth Limit of investigation								2		

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

PLANT: Shovel to 0.65m then hand auger to 1.2m
OPERATOR: Kramer/Helbig
LOGGED: Kramer
METHOD:
REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:26. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 2.9 AHD
COORDINATE E:384047.2 **N:** 6355627.6
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 225
PROJECT No: 213618.02
DATE: 20/12/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
	0.0	FILL/ (SP) Silty SAND, trace gravel; brown; sand fraction fine to medium; gravel fraction fine to coarse sub-angular to sub-rounded (crushed natural rock); trace rootlets, slag, ash, ceramic shards, glass shards		FILL		M		D E		0.0 0.05	PID	<1
								B				
								D E		0.5	PID	<1
	0.6	FILL/ (SP) SAND; pale brown; fine to medium; trace rootlets, ash, ceramic shards			NA					0.6	PID	<1
				FILL		M		D E		0.8	PID	<1
Free groundwater observed ∇	1.0	FILL/ (SP) SAND, with clay, trace gravel; dark brown dark grey; sand fraction fine to medium; gravel fraction fine to medium sub-rounded (crushed natural rock); pockets of red brown low plasticity sandy clay		FILL		M W	D3/LAH	D E		1.05	PID	<1
	1.2	1.1m: trace glass Test pit discontinued at 1.20m depth Limit of investigation										

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

PLANT: Hand Tools
OPERATOR: Kramer/Helbig
LOGGED: Kramer

METHOD: Shovel to 0.6m then hand auger to 1.2m

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:26. TEMPLATE ID: DP_101.02.00_SOILLOG

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 2.1 AHD
COORDINATE E:384041.4 **N:** 6355631.2
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 301
PROJECT No: 213618.02
DATE: 04/10/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	FILL/ (ML) SILT, trace sand; brown; silt fraction low plasticity; sand fraction fine to medium; trace rootlets, glass, slag, ash, ceramic, fine to coarse sub-angular to sub-rounded gravel		FILL	NA	W to <PL		D E		0.05	PID	<1
								D E		0.3	PID	<1
								D E		0.5	PID	<1
	0.6	FILL/ (SP) SAND, with silt, trace gravel; brown; sand fraction fine to medium; gravel fraction fine to medium, sub-angular to sub-rounded; trace ceramic		FILL	NA	M		D E		0.7	PID	<1
	0.8	(SP) SAND; pale brown; fine to medium		ALV		W		D E		1.0	PID	<1
	1.3	Borehole discontinued at 1.30m depth Limit of investigation										

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

PLANT: 5.5T Excavator with 300mm Auger
METHOD: 300mm solid flight auger to 1.3m
REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using a differential GPS, typical accuracy ±0.1m.

OPERATOR: Tutt Bryant
CASING:

LOGGED: Kramer

EXPORTED 20/04/23 12:27. TEMPLATE ID: DP_101.02.00_SOILLOG

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 2.1 AHD
COORDINATE **E:**384012.6 **N:** 6355654.8
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 302
PROJECT No: 213618.02
DATE: 04/10/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED									SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	2	0.0	FILL/ (ML) SILT, trace sand; brown; silt fraction low plasticity; sand fraction fine to medium grain; trace rootlets, glass, slag, ash, ceramic, fine to coarse sub-angular to sub-rounded gravel		FILL		W to <PL		D, E		0.05	PID	<1
									D, E		0.3	PID	<1
		0.4	FILL/ (SP) Silty SAND; brown; fine to medium; with fine to medium sub-angular to sub-rounded gravels (Cnr), slag gravels, trace ceramic, coal reject, and rootlets		FILL		D to M		D, E		0.5	PID	<1
		0.8	FILL/ (SP) SAND, with silt; grey; fine to medium; fine to medium sub-angular to sub-rounded gravels, trace ceramic, metal, wire and organics		FILL		M		D, E		1.0	PID	<1
	1	1.1	FILL/ (CL) Silty CLAY, with sand; grey; clay fraction low plasticity; sand fraction fine to medium grain; trace brick, rootlets		FILL	NA	W to <PL		D, E		1.15	PID	<1
		1.2	FILL/ (SP) Silty SAND; grey, dark grey; fine to medium; with fine to medium ash gravels, fine to medium sub-angular to sub-rounded gravels (crushed natural rock), trace organics and coal rejects		FILL		M to W		D, E		1.3	PID	<1
		1.4	FILL/ (SP) SAND; grey; fine to medium; trace fine to medium sub-angular to sub-rounded gravels (crushed natural rock)		FILL		W		D, E		1.5	PID	<1
		1.6	FILL/ (ML) SILT; grey brown; low plasticity; trace rootlets		FILL		W to <PL		D		1.65	PID	<1
		1.7	FILL/ (SP) SAND, with silt; grey; fine to medium; organics, fine to medium sub-angular to sub-rounded gravels (crushed natural rock)), brick, rubber		FILL		W		D, E		1.8	PID	<1
	0	1.9	FILL/ (ML) Clayey SILT, trace gravel; grey; silt fraction low plasticity; gravel fraction fine to medium, sub-angular to sub-rounded; with organics		FILL		W to <PL		D, E		2.0	PID	<1
		2.1	2.0m: several bones up to 100mm length Borehole discontinued at 2.10m depth Limit of machine										

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

PLANT: 5.5T Excavator with 300mm Auger
METHOD: 300mm solid flight auger to 2.1m
REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using a differential GPS, typical accuracy ±0.1m.

OPERATOR: Tutt Bryant
CASING:

LOGGED: Kramer

EXPORTED 20/04/23 12:27. TEMPLATE ID: DP_101.02.00_SOILLOG

Refer to explanatory notes for symbol and abbreviation definitions

Douglas Partners
Geotechnics | Environment | Groundwater

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 3.5 AHD
COORDINATE E:383964.9 **N:** 6355622.3
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 303
PROJECT No: 213618.02
DATE: 04/10/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	FILL/ (SP) Silty SAND; brown; fine to medium; trace rootlets, bricks, fine to medium sub-angular to sub-rounded gravels (crushed natural rock)		FILL		M		D, E		0.05	PID	<1
								D, E		0.3	PID	<1
	0.5	FILL(?)/ (SP) SAND, with silt; grey; fine to medium; trace rootlets		possibly FILL		M to W		D, E		0.5	PID	<1
								D, E		0.6		
	0.65	FILL(?)/ (CH) CLAY; pale brown mottled grey; high plasticity; trace rootlets, fine rounded gravels (crushed natural rock)		possibly FILL	NA	W to <PL		D, E		1.0	PID	<1
	1.1	(SP) SAND, with silt; grey; fine to medium; trace rootlets		ALV		M		D, E		1.2	PID	<1
	1.3	(SP) SAND; pale grey; fine to medium		ALV		M		D, E		1.5	PID	<1
	1.7	Borehole discontinued at 1.70m depth Limit of investigation								2		

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

PLANT: 5.5T Excavator with 300mm Auger
METHOD: 300mm solid flight auger to 1.7m
REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using a differential GPS, typical accuracy ±0.1m.

OPERATOR: Tutt Bryant
CASING:

LOGGED: Kramer

EXPORTED 20/04/23 12:28. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 2.4 AHD
COORDINATE E:384044.3 **N:** 6355587.7
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 304
PROJECT No: 213618.02
DATE: 28/11/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED									SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	2	0.0	FILL/ (SP) Silty SAND; brown; fine to medium; trace rootlets, roots, ceramic, glass		FILL		D		D E		0.0 0.05	PID	<1
		0.3	FILL/ (CH) CLAY; grey mottled brown; high plasticity; trace rootlets, fine to medium sub-angular to sub-rounded gravels (crushed natural rock)		FILL		W <PL		D E		0.25 0.4	PID PID	<1 <1
		0.5	(SP) SAND, with silt; grey; fine to medium		ALV	NA	M		D E		0.7	PID	<1
			0.85m: pale grey										
	1	1.0	Test pit discontinued at 1.00m depth Limit of investigation								1		
	0	2									2		

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

PLANT: 5.5T Excavator with 450mm bucket
OPERATOR: Tutt Bryant
LOGGED: Kramer/Krebs
METHOD: 450mm bucket to 1.0m
REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using a differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:28. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 2.3 AHD
COORDINATE **E:**384023.0 **N:** 6355612.5
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 305
PROJECT No: 213618.02
DATE: 28/11/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
Seepage at 1.2m, free groundwater observed at 2.8m	0.0	FILL/ (SP) Silty SAND, with gravel; brown; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded (crushed natural rock); trace rootlets, roots		FILL		D		D E		0.0 0.05	PID	<1
	0.25	FILL/ (SP) Silty Gravelly SAND; dark grey brown; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded (crushed natural rock); trace rootlets, fine to coarse slag gravels, ceramic, glass, ash		FILL		M		D E		0.3	PID	<1
	0.5			FILL		M		D E		0.6	PID	<1
	0.65	FILL/ (SP) Silty SAND; brown; fine to medium; trace brick, glass, metal, ceramic 0.6m: fibro fragment observed (305F)										
	1	FILL/ SAND; fine to medium		FILL				D E		1.0	PID	<1
	1.2	FILL/ SAND; intermixed pale brown grey; fine to medium; trace metal sheets / rods, trace glass, plastic		FILL	NA	W		D E		1.5	PID	<1
	1.8	FILL/ SILT; dark grey; low plasticity; with organics		FILL		W >PL		D E		2.0	PID	<1
	2.1	FILL/ (SP) Silty SAND; grey; fine to medium		FILL		M to W		D E		2.5	PID	<1
	3							D E		3.0	PID	<1
	3.15	Test pit discontinued at 3.15m depth Limit of machine										

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

PLANT: 5.5T Excavator with 450mm bucket
OPERATOR: Tutt Bryant
LOGGED: Kramer/Krebs

METHOD: 450mm bucket to 3.15m

REMARKS: D1/28.11.22. Location coordinates are in MGA94 Zone 56. Coordinates obtained using a differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:28. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 2.3 AHD
COORDINATE E:384000.5 **N:** 6355629.8
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 306
PROJECT No: 213618.02
DATE: 28/11/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED									SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
		0.0	FILL/ (SP) Silty SAND, with gravel; brown; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded (crushed natural rock); trace rootlets, roots, ceramic		FILL		D		D E		0.0 0.05	PID	<1
	2	0.3	FILL/ (SP) Silty Gravelly SAND; dark grey brown; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded (crushed natural rock); trace rootlets, fine to coarse slag gravels, ceramic, glass, ash		FILL		M		D E		0.4	PID	<1
		0.5	SAND; pale brown; fine to medium				M		D E		0.6	PID	<1
		0.7	SAND, trace gravel; intermixed pale brown grey; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded (crushed natural rock); with rusted metal, trace glass, sandstone cobbles				M						
	1	1							D E		1.0	PID	<1
		1.1	FILL/ Clayey SAND; dark grey; trace metal / gravels, fine to medium sub-angular to sub-rounded (crushed natural rock)		FILL	NA	M		D E		1.2	PID	<1
Free groundwater observed ⊻		1.3	FILL/ Sandy Clayey GRAVEL; dark grey; gravel fraction fine to medium, sub-angular to sub-rounded, (crushed natural rock); sand fraction fine to medium		FILL		W		D E		1.4	PID	<1
		1.5	FILL/ Clayey SAND; grey; fine to medium; trace rootlets		FILL		W		D E		1.6	PID	<1
	2	2							D E		2.0	PID	<1
	0	2.1	FILL/ (CL) Silty CLAY; dark grey; low plasticity; trace rootlets		FILL		W >PL		D E		2.2	PID	<1
		2.3	Test pit discontinued at 2.30m depth Pit collapse										

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

PLANT: 5.5T Excavator with 450mm bucket
OPERATOR: Tutt Bryant
LOGGED: Kramer/Krebs

METHOD: 450mm bucket to 2.3m

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using a differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:29. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 2.5 AHD
COORDINATE E:383985.5 **N:** 6355642.7
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 307
PROJECT No: 213618.02
DATE: 28/11/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
	0.0	FILL/ (SP) Silty SAND, with gravel; brown; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded (crushed natural rock); trace rootlets, gravel		FILL		D		D E		0.0 0.05	PID	<1
	0.25	FILL/ Silty SAND, with gravel; grey brown; sand fraction fine to medium; gravel fraction fine to coarse sub-angular to sub-rounded (crushed natural rock); trace glass, brick, terracotta, slag, ceramic, coal 0.3-0.5m: abundant fibro fragments (307F) present		FILL				D E		0.3	PID	<1
	2							D E		0.5	PID	<1
	0.7	FILL/ (SP) SAND; pale brown; fine to medium 0.8m: pale brown grey		FILL		D to M		D E		0.8	PID	<1
	0.9 1	FILL/ (SP) Clayey SAND, trace gravel; intermixed brown grey; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded (crushed natural rock); trace ceramic, brick, glass, rusted metal		FILL	NA			D E		1.0	PID	<1
	1.4 1	FILL/ SAND, with silt; grey; fine to medium; trace organics		FILL				D E		1.5	PID	<1
	1.6	FILL/ (CL) Silty CLAY; dark grey; low plasticity; trace rootlets		FILL		W >PL		D E		1.8	PID	<1
	2.0	FILL/ Clayey SAND; brown grey; fine to medium; with abundant organics 2.0-2.3m: strong decaying organic odor		FILL		W		D E		2 2.2	PID	<1
Seepage	2.3 0	(SP) SAND; grey pale grey; fine to medium		ALV		W		D E		2.5	PID	<1
	2.7	Test pit discontinued at 2.70m depth Limit of investigation										

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

PLANT: 5.5T Excavator with 450mm bucket
OPERATOR: Tutt Bryant
LOGGED: Kramer/Krebs

METHOD: 450mm bucket to 2.7m

REMARKS: D2/28.11.22 at 0.3m. Location coordinates are in MGA94 Zone 56. Coordinates obtained using a differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:29. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 3.5 AHD
COORDINATE E:383956.6 **N:** 6355601.0
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 308
PROJECT No: 213618.02
DATE: 28/11/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED									SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed		0.0	FILL/ (SP) Silty SAND; brown; fine to medium; trace rootlets		FILL		D		D E		0.0 0.05	PID	<1
		0.2	FILL/ (GP) Sandy GRAVEL; grey; fine to medium, sub-angular to sub-rounded, (crushed natural rock); with slag, coal, ash		FILL	NA	D		D E		0.25	PID	<1
		0.35	(SP) SAND; pale grey; fine to medium; trace rootlets		ALV		M		D E		0.5	PID	<1
		0.7	Test pit discontinued at 0.70m depth Limit of investigation										

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

PLANT: 5.5T Excavator with 450mm bucket
OPERATOR: Tutt Bryant
LOGGED: Kramer/Krebs

METHOD: 450mm bucket to 0.7m

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using a differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:30. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 3.4 AHD
COORDINATE E:383971.8 **N:** 6355591.2
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 309
PROJECT No: 213618.02
DATE: 28/11/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED									SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	3	0.0	FILL/ (SP) Silty SAND; brown; fine to medium; trace rootlets		FILL		D		D E		0.0 0.05	PID	<1
		0.2	FILL/ (GP) Sandy GRAVEL; grey; fine to medium, sub-angular to sub-rounded, (crushed natural rock); with slag, coal, ash		FILL		D		D E		0.25	PID	<1
		0.3	(SP) SAND; pale grey; fine to medium; trace rootlets		ALV	NA	M		D E		0.5	PID	<1
		0.7	Test pit discontinued at 0.70m depth Limit of investigation										

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

PLANT: 5.5T Excavator with 450mm bucket
OPERATOR: Tutt Bryant
LOGGED: Kramer/Krebs

METHOD: 450mm bucket to 0.7m

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using a differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:30. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 3.3 AHD
COORDINATE E:383991.5 **N:** 6355574.4
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 310
PROJECT No: 213618.02
DATE: 28/11/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	3 / 0.0	FILL/ (SP) Silty SAND; brown; fine to medium; trace rootlets		FILL	NA	D		D E		0.0 0.05	PID	<1
	0.2	(SP) SAND; pale grey; fine to medium; trace rootlets		ALV		M		D E		0.25	PID	<1
								D E		0.5	PID	<1
	0.6	Test pit discontinued at 0.60m depth Limit of investigation										

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

PLANT: 5.5T Excavator with 450mm bucket
OPERATOR: Tutt Bryant
LOGGED: Kramer/Krebs
METHOD: 450mm bucket to 0.6m
REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using a differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:31. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 3.1 AHD
COORDINATE **E:**384002.8 **N:** 6355589.4
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 311
PROJECT No: 213618.02
DATE: 28/11/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	3 / 0.0	(SP) Silty SAND; brown; fine to medium; trace glass		ALV	NA			D, E		0.0 / 0.05	PID	<1
								D, E		0.25	PID	<1
	0.4	(SP) SAND; pale grey; fine to medium; trace rootlets		ALV		M		D, E		0.5	PID	<1
	2 / 0.8	Test pit discontinued at 0.80m depth Limit of investigation										
	1									1		
	2									2		
	1											

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

PLANT: 5.5T Excavator with 450mm bucket
OPERATOR: Tutt Bryant
LOGGED: Kramer/Krebs

METHOD: 450mm bucket to 0.8m

REMARKS: D3/28.11.22 at 0.25m. Location coordinates are in MGA94 Zone 56. Coordinates obtained using a differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:31. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 3.8 AHD
COORDINATE E:383891.4 **N:** 6355717.2
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 312
PROJECT No: 213618.02
DATE: 29/11/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	FILL/ (SP) Silty SAND; brown; fine to medium; trace rootlets		FILL	NA	M		D, E		0.0		
	0.05									0.05	PID	<1
		FILL/ (SP) SAND, with gravel; brown; sand fraction fine to medium; gravel fraction fine to coarse sub-angular to sub-rounded (crushed natural rock); trace brick, terracotta, rootlets, concrete, plastic		FILL		D		D, E		0.25	PID	<1
	0.35	(SP) SAND; pale brown; fine to medium		ALV		M		D, E		0.5	PID	<1
	1.1	Test pit discontinued at 1.10m depth Limit of investigation						D, E		1.0	PID	<1

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

PLANT: 5.5T Excavator with 450mm bucket
OPERATOR: Tutt Bryant
LOGGED: Kramer
METHOD: 450mm bucket to 1.1m
REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using a differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:32. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 4.9 AHD
COORDINATE **E:**383843.2 **N:** 6355654.9
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 313
PROJECT No: 213618.02
DATE: 29/11/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED									SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed		0.0	FILL/ (SP) SAND, with silt, with gravel; brown; sand fraction fine to medium; gravel fraction fine sub-angular to sub-rounded (crushed natural rock); trace plastic, roots		FILL		D		D E		0.0 0.05	PID	<1
		0.1	FILL/ (SP) SAND, trace gravel; pale brown; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded (crushed natural rock); cobbles		FILL		D		D E		0.25	PID	<1
		0.3	FILL/ (SP) Gravelly SAND; brown; sand fraction fine to medium; gravel fraction fine to coarse sub-angular to sub-rounded (crushed natural rock); trace rootlets, (possible pavement gravels)		FILL		M		D E		0.5	PID	<1
		0.6	FILL/ (SP) Gravelly SAND; brown; sand fraction fine to medium; gravel fraction fine to coarse sub-angular to sub-rounded (crushed natural rock); trace brick, concrete, terracotta, cobbles, plastic, slate, metal		FILL	NA	D		D E		1.0	PID	<1
	4 1	1.3	ASPHALTIC CONCRETE;						D E		1.35	PID	<1
		1.37	FILL/ (SP) Gravelly SAND; pale brown; sand fraction fine to medium; gravel fraction fine to medium sub- angular to sub-rounded; (pavement gravels)		FILL		M		D E		1.5	PID	<1
		1.65	ASPHALTIC CONCRETE;						D		1.67	PID	<1
		1.7	(SP) SAND; pale brown; fine to medium		ALV		M		D E		2.0	PID	<1
	3 2	2.2	Test pit discontinued at 2.20m depth Limit of investigation										
	2												

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

PLANT: 5.5T Excavator with 450mm bucket
OPERATOR: Tutt Bryant
LOGGED: Kramer

METHOD: 450mm bucket to 2.2m

REMARKS: D1/29.11.22 at 1.0m. Location coordinates are in MGA94 Zone 56. Coordinates obtained using a differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:32. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 3.9 AHD
COORDINATE E:383857.4 **N:** 6355649.0
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 314
PROJECT No: 213618.02
DATE: 29/11/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED									SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed		0.0	FILL/ (SP) SAND, with silt; brown; fine to medium; trace rootlets		FILL		D		D E		0.0 0.05	PID	<1
		0.1	FILL/ (SP) Gravelly SAND, with silt; brown; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded (crushed natural rock); trace rootlets, brick		FILL				D E		0.15	PID	<1
		0.2							D E		0.23	PID	<1
		0.25	ASPHALTIC CONCRETE;										
			FILL/ (SP) Gravelly SAND; pale brown; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded; (pavement gravels)		FILL		M		D E		0.4	PID	<1
		0.5	FILL/ (SP) Gravelly SAND; brown; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded (crushed natural rock); trace brick fragments		FILL	NA	M		D E		0.55	PID	<1
		0.7	(SP) SAND; pale brown; fine to medium		ALV		M						
	3								D E		1.0	PID	<1
	1	1.1	Test pit discontinued at 1.10m depth Limit of investigation										
	2	2									2		
	1												

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

PLANT: 5.5T Excavator with 450mm bucket
OPERATOR: Tutt Bryant
LOGGED: Kramer/Krebs
METHOD: 450mm bucket to 1.1m
REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using a differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:33. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 4.9 AHD
COORDINATE E:383836.2 **N:** 6355627.1
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 315
PROJECT No: 213618.02
DATE: 29/11/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	FILL/ Silty SAND; brown; fine to medium		FILL		D		D, E		0.0 / 0.05	PID	<1
	0.1	FILL/ (SP) SAND, trace gravel; pale brown; sand fraction fine to medium; gravel fraction fine to coarse sub-angular to sub-rounded (crushed natural rock); trace sandstone cobbles / boulder		FILL				D, E		0.25	PID	<1
								D, E		0.5	PID	<1
	0.6	FILL/ (SP) SAND, with gravel; brown; sand fraction fine to medium; gravel fraction fine to coarse sub-angular to sub-rounded (crushed natural rock); trace metal, plastic, brick, asphalt, ceramic, terracotta		FILL								
	4							D, E		1.0	PID	<1
	1											
	1.15	FILL/ Gravelly SAND; pale red; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded (crushed natural rock)		FILL	NA	D to M		D, E		1.2	PID	<1
	1.25	FILL/ SAND, with gravel; dark brown; sand fraction fine to medium; gravel fraction fine to medium (crushed natural rock); trace concrete		FILL				D, E		1.5	PID	<1
	1.85	SAND; grey pale grey; fine to medium										
	3							D, E		2.0	PID	<1
	2	2.1m: brown, moist				M						
	2.4	Test pit discontinued at 2.40m depth Limit of investigation										
	2											

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

PLANT: 5.5T Excavator with 450mm bucket
OPERATOR: Tutt Bryant
LOGGED: Kramer/Krebs
METHOD: 450mm bucket to 2.4m
REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using a differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:33. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 5.1 AHD
COORDINATE **E:**383848.7 **N:** 6355618.3
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 316
PROJECT No: 213618.02
DATE: 29/11/22
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	5 / 0.0	FILL/ Silty SAND; brown; fine to medium		FILL		D		D, E		0.0		
	0.1	FILL/ (SP) SAND, trace gravel; pale brown; sand fraction fine to medium; gravel fraction fine to coarse sub-angular to sub-rounded (crushed natural rock); sandstone cobbles / boulder		FILL				D, E		0.05	PID	<1
								D, E		0.25	PID	<1
								D, E		0.5	PID	<1
	0.75	FILL/ (SP) SAND, with silt; dark brown; fine to medium; trace concrete, brick		FILL	NA	D		D, E		1.0	PID	<1
	4 / 1											
	1.35	FILL/ Gravelly SAND; pale red; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded (crushed natural rock)		FILL		D to M		D, E		1.4	PID	<1
	1.45	FILL/ (SP) SAND, trace gravel; brown; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded (crushed natural rock)		FILL		D to M		D, E		1.5	PID	<1
	1.7	(SP) SAND; pale grey; fine to medium		ALV		M						
	3 / 2							D, E		2.0	PID	<1
	2.2	Test pit discontinued at 2.20m depth Limit of investigation										

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

PLANT: 5.5T Excavator with 450mm bucket
OPERATOR: Tutt Bryant
LOGGED: Kramer/Krebs

METHOD: 450mm bucket to 2.2m

REMARKS: D2/29.11.22. Location coordinates are in MGA94 Zone 56. Coordinates obtained using a differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 12:34. TEMPLATE ID: DP_101.02.00_SOILLOG

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 2.1 AHD
COORDINATE E:384063.5 **N:** 6355616.0
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 401
PROJECT No: 213618.02
DATE: 09/03/23
SHEET: 1 of 2

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) DENSITY.(*)	MOISTURE	REMARKS	SAMPLE TYPE	SAMPLE INTERVAL	DEPTH (m)	TESTING AND REMARKS: TEST TYPE	RESULTS AND REMARKS	BACKFILL / WELL PIPE
Free groundwater observed at 1.75m	2	0.0	FILL/ Silty SAND, trace gravel; dark brown; sand fraction fine to medium; gravel fraction fine to coarse angular to sub-angular; trace rootlets, trace hard plastic		FILL	NA	M		ASS D E PFAS	0.0–0.2	0.0	PID	<1	Bentonite
		0.9									0.5	PID	<1	50 mm Diameter Class 18 PVC
	1	1	FILL/ SAND, with silt, trace gravel; brown; gravel fraction fine to coarse angular to sub-angular; trace ceramic shards, trace glass shards		FILL	NA	M		ASS D E PFAS		1.0	PID	1	
	0	2					W				1.5	PID	1	
		2.3	Sandy SILT, trace gravel; dark brown; sand fraction fine; gravel fraction fine sub-angular to sub-rounded		ALV	S	>PL				2.0	PID	<1	
	-1	2.8	SAND, with silt, trace gravel; brown grey; sand fraction fine; gravel fraction fine sub-rounded; trace shell		ALV	NA	W				2.4	PID	3	
		3									3.0	PID	<1	
	-2	4									3.5	PID	2	
											4.0	PID	<1	
	-3	5									5.0	PID	<1	2/5mm Gravel/Sand
	-4	6									6.0	PID	<1	50 mm Diameter Class 18 PVC Machine Slotted
	-5	7									7.0	PID	<1	
	-6	8									8.0	PID	<1	
	-7	9									9.0	PID	<1	

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

PLANT: Geoprobe 6712DT
OPERATOR: Stratacore
LOGGED: Helbig

METHOD: Solid flight auger to 13.0m, then hollow flight auger to 13.0m for the well installation
CASING: None

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 11:34. TEMPLATE ID: DP_101.02.00_SOILLOG

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 2.1 AHD
COORDINATE E:384063.5 **N:** 6355616.0
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 401
PROJECT No: 213618.02
DATE: 09/03/23
SHEET: 2 of 2

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS		
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL / WELL PIPE
	-8 / 11	SAND, with silt, trace gravel; brown grey; sand fraction fine; gravel fraction fine sub-rounded; trace shell *(continued)*		ALV	**NA**	W		ASS, D, E, PFAS		10.0	PID	1	
	-9 / 11.1	SAND; yellow brown; fine to medium						ASS, D, E, PFAS		11.0	PID	<1	
	-10 / 12			ALV	**NA**	W		ASS, D, E, PFAS		12.0	PID	<1	
	-11 / 13.0	Borehole discontinued at 13.00m depth Limit of investigation								13.0			
	-12 / 14									14			
	-13 / 15									15			
	-14 / 16									16			
	-15 / 17									17			
	-16 / 18									18			
	-17 / 19									19			

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

PLANT: Geoprobe 6712DT
OPERATOR: Stratacore
LOGGED: Helbig

METHOD: Solid flight auger to 13.0m, then hollow flight auger to 13.0m for the well installation
CASING: None

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 11:34. TEMPLATE ID: DP_101.02.00_SOILLOG

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 2.2 AHD
COORDINATE E:384012.3 **N:** 6355647.0
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 402
PROJECT No: 213618.02
DATE: 13/03/23
SHEET: 1 of 2

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	SAMPLE TYPE	SAMPLE INTERVAL	DEPTH (m)	TESTING AND REMARKS: TEST TYPE	TESTING AND REMARKS: RESULTS AND REMARKS	BACKFILL / WELL PIPE
Free groundwater observed at 1.6m	2	0.0	FILL/ Silty SAND, trace gravel; dark brown; sand fraction fine to medium; gravel fraction fine to medium angular to sub-angular; trace coal reject, trace ceramic shards, trace glass shards		FILL	NA	M		D, E, PFAS		0.0	PID	<1	Concrete; Backfill
		0.4	FILL/ Clayey SAND, with gravel; brown orange brown; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded; trace fine slag gravels, trace ceramic shards		FILL	NA	M		D, E, PFAS		0.1			
	1	0.8	FILL/ Silty SAND, with clay, with gravel; dark brown; gravel fraction fine to coarse angular, sub-angular to sub-rounded; trace coal reject, trace ceramic shards, trace glass shards		FILL	NA	M to W		D, E, PFAS		0.5	PID	2	Bentonite
		1							D, E, PFAS		1.0	PID	1	
			1.5-2.1m: trace metal wire and fragments						D, E, PFAS		1.5	PID	1	50 mm Diameter Class 18 PVC
	0	2							D, E		2.0	PID	<1	
		2.1	FILL(?)/ Sandy SILT, trace gravel; dark brown; silt fraction low plasticity; sand fraction fine; gravel fraction fine to medium sub-angular to sub-rounded		FILL possibly ALV	S	>PL		D, E, PFAS		2.5	PID	2	
	-1	2.7	SAND, with silt, trace gravel; grey brown; sand fraction fine to medium; gravel fraction fine to medium rounded to sub-rounded; trace shell		ALV	NA	W		D, E		3.0	PID	<1	2/5mm Gravel/Sand
		3							D, E		3.5	PID	<1	
	-2	4							D, E, PFAS		4.0	PID	<1	50 mm Diameter Class 18 PVC Machine Slotted
									D, E		4.5	PID	3	

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

PLANT: Geoprobe 7822DT
OPERATOR: Stratacore
LOGGED: Helbig

METHOD: Solid flight auger to 8.0m, then hollow flight auger to 8.0m for well installation
CASING: None

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 11:34. TEMPLATE ID: DP_101.02.00_SOILLOG

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 2.2 AHD
COORDINATE E:384012.3 **N:** 6355647.0
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 402
PROJECT No: 213618.02
DATE: 13/03/23
SHEET: 2 of 2

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS			
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
	-3		SAND, with silt, trace gravel; grey brown; sand fraction fine to medium; gravel fraction fine to medium rounded to sub-rounded; trace shell *(continued)*		ALV				D E		5.0	PID	<1	2/5mm Gravel/Sand	50 mm Diameter Class 18 PVC Machine Slotted
	-4	6				NA	W		D E		6.0	PID	<1		
		6.8													
	-5	7	Clayey SAND, trace gravel; orange brown; sand fraction fine to medium; gravel fraction fine to coarse rounded to sub-rounded		ALV				D E PFAS		7.0	PID	<1		
		8.0									8				
	-6		Borehole discontinued at 8.00m depth Limit of investigation												
	-7	9									9				

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

PLANT: Geoprobe 7822DT
OPERATOR: Stratacore
LOGGED: Helbig

METHOD: Solid flight auger to 8.0m, then hollow flight auger to 8.0m for well installation
CASING: None

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 11:34. TEMPLATE ID: DP_101.02.00_SOILLOG

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 2.8 AHD
COORDINATE E:383945.0 **N:** 6355704.0
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 403
PROJECT No: 213618.02
DATE: 13/03/23
SHEET: 1 of 2

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	SAMPLE TYPE	SAMPLE INTERVAL	DEPTH (m)	TESTING AND REMARKS: TEST TYPE	TESTING AND REMARKS: RESULTS AND REMARKS	BACKFILL / WELL PIPE
		0.0	TOPSOIL/FILL(?)/ SAND, with silt, trace gravel; brown; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded		TOP possibly FILL	NA	M		D E PFAS		0.0 0.1	PID	1	Concrete
		0.3	FILL/ Silty SAND, trace gravel; dark brown; sand fraction fine to medium; gravel fraction fine to coarse angular to sub-angular; trace asphalt, brick pieces, glass shards, coal reject, ash and slag gravels						D E PFAS		0.5	PID	<1	Backfill
	2								D E PFAS		1.0	PID	<1	
	1				FILL	NA	M to W		D E PFAS		1.5	PID	<1	Bentonite
Free groundwater observed at 2.0m			2.1m: metal sheeting present						D E		2.0	PID	4	50 mm Diameter Class 18 PVC
	0	2.6	Sandy SILT, trace gravel; dark brown; sand fraction fine; gravel fraction fine rounded to sub-rounded		possibly ALV	S	>PL		D E PFAS		2.5	PID	<1	c2/5mm Gravel/Sand
	3								D E		3.0	PID	1	
		3.4	SAND, with silt; brown; fine to medium						D E PFAS		3.5	PID	<1	50 mm Diameter Class 18 PVC Machine Slotted
	-1 4				ALV	NA	W		D E		4.0	PID	<1	
	-2	4.8	SAND; brown yellow; fine to medium		ALV	NA	W							

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

PLANT: Geoprobe 7822DT
OPERATOR: Stratacore
LOGGED: Helbig

METHOD: Solid flight auger to 7.5m, then hollow flight auger to 7.5m for well installation
CASING: None

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 11:35. TEMPLATE ID: DP_101.02.00_SOILLOG

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 2.8 AHD
COORDINATE E:383945.0 **N:** 6355704.0
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 403
PROJECT No: 213618.02
DATE: 13/03/23
SHEET: 2 of 2

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS			
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
	-3		SAND; brown yellow; fine to medium *(continued)*						D E PFAS		5.0	PID	<1		
			5.8m: colour is more yellow												
		6			ALV	NA	W		D E PFAS		6.0	PID	2	2/5mm Gravel/Sand	50 mm Diameter Class 18 PVC Machine Slotted
	-4	6.9													
		7	Sandy CLAY; grey; clay fraction medium plasticity; sand fraction fine to medium		ALV	F TO ST	>PL		D E PFAS		7.0	IPP	80-110		
		7.5	Borehole discontinued at 7.50m depth Limit of investigation												
	-5														
		8									8				
	-6														
		9									9				
	-7														

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

PLANT: Geoprobe 7822DT
OPERATOR: Stratacore
LOGGED: Helbig

METHOD: Solid flight auger to 7.5m, then hollow flight auger to 7.5m for well installation
CASING: None

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 3.9 AHD
COORDINATE E:383944.2 **N:** 6355579.0
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 404
PROJECT No: 213618.02
DATE: 13/03/23
SHEET: 1 of 3

CONDITIONS ENCOUNTERED								SAMPLE			TESTING AND REMARKS		
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
		0.0	FILL/ SAND, trace gravel; brown; sand fraction fine to medium; gravel fraction fine to coarse sub-angular to sub-rounded		FILL	NA	M		D E PFAS		0.0 0.1	PID	<1
		0.2	FILL/ Gravelly SAND, with silt; brown dark brown; sand fraction fine to medium; gravel fraction fine to coarse sub-rounded, angular to sub-angular; trace asphalt, trace brick (whole), trace slag gravels						D E PFAS		0.5	PID	2
	3	1							D E PFAS		1.0	PID	3
					FILL	NA	M						
	2	2							D E PFAS		1.5 2.0	PID PID	1 2
		2.1	SAND; yellow brown; fine to medium										
▽	1				ALV	NA	M to W		D E		2.5	PID	<1

BACKFILL: Concrete; Backfill; Bentonite
WELL PIPE: 50 mm Diameter Class 18 PVC; 2/5mm Gravel/Sand; 50 mm Diameter Class 18 PVC Machine Slotted

▽ Free groundwater observed at 2.8m

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

PLANT: Geoprobe 7822DT
OPERATOR: Stratacore
LOGGED: Helbig

METHOD: Solid flight auger to 7.5m, then hollow flight auger to 7.5m for well installation
CASING: None

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 3.9 AHD
COORDINATE E:383944.2 **N:** 6355579.0
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 404
PROJECT No: 213618.02
DATE: 13/03/23
SHEET: 2 of 3

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS		
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
		SAND; yellow brown; fine to medium *(continued)*						D E PFAS		3.0	PID	<1		
	4			ALV	NA	M to W		D E PFAS		4.0	PID	<1	2/5mm Gravel/Sand	50 mm Diameter Class 18 PVC Machine Slotted
	5							D E PFAS		5.0	PID	<1		

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

EXPORTED 20/04/23 11:35. TEMPLATE ID: DP_101.02.00_SOILLOG

PLANT: Geoprobe 7822DT
OPERATOR: Stratacore
LOGGED: Helbig

METHOD: Solid flight auger to 7.5m, then hollow flight auger to 7.5m for well installation
CASING: None

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 3.9 AHD
COORDINATE E:383944.2 **N:** 6355579.0
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 404
PROJECT No: 213618.02
DATE: 13/03/23
SHEET: 3 of 3

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS			
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
	-3	7	SAND; yellow brown; fine to medium *(continued)*		ALV	NA	M to W		D E PFAS		6.0 7.0	PID PID	<1 1	2/5mm Gravel/Sand	50 mm Diameter Class 18 PVC Machine Slotted
		7.4	Sandy CLAY; grey; clay fraction medium plasticity; sand fraction fine to medium		ALV	ST	>PL								
	-4	7.5 8	Borehole discontinued at 7.50m depth Limit of investigation						D E PFAS		7.5 8	PPI	110-130		
	-5														

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

PLANT: Geoprobe 7822DT
OPERATOR: Stratacore
LOGGED: Helbig

METHOD: Solid flight auger to 7.5m, then hollow flight auger to 7.5m for well installation
CASING: None

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 11:35. TEMPLATE ID: DP_101.02.00_SOILLOG

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 4.0 AHD
COORDINATE E:383885.8 **N:** 6355638.0
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 405
PROJECT No: 213618.02
DATE: 10/03/23
SHEET: 1 of 2

Depth (m)	Description of Strata	Origin	Consis./Density	Moisture
0.0	CONCRETE; brown		NA	M
0.12	FILL/ Silty SAND; dark brown; fine to medium; trace rootlets	FILL	NA	M
0.3	FILL/ Silty SAND, trace gravel; pale brown; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded; trace brick, trace tiles	FILL	NA	M
0.75	FILL/ SAND, trace silt; pale grey	FILL	NA	M
1.3	SAND; pale grey; fine to medium	ALV	NA	M (to 2.0 m); W (below 2.0 m)

Sample Type	Depth (m)	Test Type	Results and Remarks
ASS, D, E, PFAS	0.2	PID	<1
ASS, D, E, PFAS	0.5	PID	<1
ASS, D, E, PFAS	0.9	PID	<1
ASS, D, E, PFAS	1.5	PID	<1
ASS, D, E, PFAS	2.5	PID	3
ASS, D, E, PFAS	3.5	PID	<1
ASS, D, E, PFAS	4.0	PID	1
		PID	<1

Groundwater: Free groundwater observed at 2.0m

Backfill: Bentonite; Backfill/Concrete; 2/5mm Gravel/Sand

Well pipe: 50 mm Diameter Class 18 PVC; 50 mm Diameter Class 18 PVC Machine Slotted

RL (m): 3 (at 1 m), 2 (at 2 m), 1 (at 3 m), 0 (at 4 m)

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

PLANT: Geoprobe 7822DT
OPERATOR: Stratacore
LOGGED: Krebs

METHOD: Concrete core to 0.115m, hand auger to 1.0m, push tube to 5.0m, solid flight auger to 9.0m, then hollow flight auger to 9.0m for well installation
CASING: None

REMARKS: D2/400 at 3.5m. Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 11:35. TEMPLATE ID: DP_101.02.00_SOILLOG

Refer to explanatory notes for symbol and abbreviation definitions

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 4.0 AHD
COORDINATE E:383885.8 **N:** 6355638.0
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 405
PROJECT No: 213618.02
DATE: 10/03/23
SHEET: 2 of 2

CONDITIONS ENCOUNTERED								SAMPLE			TESTING AND REMARKS		
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL / WELL PIPE
	-2 / 6	SAND; pale grey; fine to medium *(continued)*		ALV	NA	W		ASS D E PFAS		5.0	PID	<1	2/5mm Gravel/Sand; 50 mm Diameter Class 18 PVC Machine Slotted
											PID	<1	
								ASS D E PFAS		6.0	PID	<1	
	-3 / 7							ASS D E PFAS		7.0	PID	<1	
	-4 / 8							ASS D E PFAS		8.0	PID	<1	
	8.1	CLAY, trace silt; brown; low to medium plasticity		ALV		>PL							
	-5 / 9.0	Borehole discontinued at 9.00m depth Limit of investigation						ASS D E PFAS		9.0	PID	<1	

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

EXPORTED 20/04/23 11:35. TEMPLATE ID: DP_101.02.00_SOILLOG

PLANT: Geoprobe 7822DT
OPERATOR: Stratacore
LOGGED: Krebs

METHOD: Concrete core to 0.115m, hand auger to 1.0m, push tube to 5.0m, solid flight auger to 9.0m, then hollow flight auger to 9.0m for well installation
CASING: None

REMARKS: D2/400 at 3.5m. Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 4.0 AHD
COORDINATE E:383777.0 **N:** 6355597.0
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 406
PROJECT No: 213618.02
DATE: 10/03/23
SHEET: 1 of 3

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	SAMPLE TYPE	SAMPLE INTERVAL	DEPTH (m)	TESTING AND REMARKS: TEST TYPE	TESTING AND REMARKS: RESULTS AND REMARKS
		0.0	CONCRETE; grey			NA	NA						
		0.05	FILL/ Gravelly SAND; pale brown; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded; trace rootlets		FILL	NA	M						
		0.2	FILL/ SAND, trace gravel; grey; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded		FILL	NA	M		ASS D E PFAS		0.2	PID	<1
									ASS D E PFAS		0.5	PID	<1
		0.6	FILL/ SAND, trace silt; brown; fine to medium		FILL	NA	M						
		0.9	SAND, trace silt; pale brown; fine to medium						ASS D E PFAS		1.0	PID	<1
	3	1							ASS D E PFAS		1.5	PID	<1
Free groundwater observed at 2.0m ▼	2	2			ALV	NA	M		ASS D E PFAS		2.0	PID	1
									ASS D E PFAS		2.5	PID	<1

BACKFILL: Concrete; Backfill; Bentonite
WELL PIPE: 50 mm Diameter Class 18 PVC; 2/5mm Gravel/Sand; 50 mm Diameter Class 18 PVC Machine Slotted

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

EXPORTED 20/04/23 11:35. TEMPLATE ID: DP_101.02.00_SOILLOG

PLANT: Geoprobe 7822DT
OPERATOR: Stratacore
LOGGED: Vallely

METHOD: Concrete core to 0.05m, hand auger to 0.9, solid flight auger to 8.0m, then hollow flight auger to 8.0m for well installation
CASING:

REMARKS: D3/400 at 7.0m. Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 4.0 AHD
COORDINATE E:383777.0 **N:** 6355597.0
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 406
PROJECT No: 213618.02
DATE: 10/03/23
SHEET: 2 of 3

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	SAMPLE TYPE	SAMPLE INTERVAL	DEPTH (m)	TESTING AND REMARKS: TEST TYPE	TESTING AND REMARKS: RESULTS AND REMARKS	BACKFILL / WELL PIPE
			SAND, trace silt; pale brown; fine to medium *(continued)*						ASS D E PFAS		3.0	PID	<1	
									ASS D E PFAS		3.5	PID	<1	
	0	4									4			
					ALV	NA	M		ASS D E PFAS		4.5	PID	<1	
	-1	5							ASS D E PFAS		5.0	PID	2	
									ASS D E PFAS		5.5	PID	<1	

BACKFILL: 2/5mm Gravel/Sand
WELL PIPE: 50 mm Diameter Class 18 PVC Machine Slotted

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

EXPORTED 20/04/23 11:35. TEMPLATE ID: DP_101.02.00_SOILLOG

PLANT: Geoprobe 7822DT
METHOD: Concrete core to 0.05m, hand auger to 0.9, solid flight auger to 8.0m, then hollow flight auger to 8.0m for well installation

OPERATOR: Stratacore
CASING:

LOGGED: Vallely

REMARKS: D3/400 at 7.0m. Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 4.0 AHD
COORDINATE E:383777.0 **N:** 6355597.0
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 406
PROJECT No: 213618.02
DATE: 10/03/23
SHEET: 3 of 3

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS		
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL WELL PIPE
			SAND, trace silt; pale brown; fine to medium *(continued)*						ASS D E PFAS		6.0	PID	<1	≤2/5mm Gravel/Sand
	-3	7			ALV	NA	M		ASS D E PFAS		7.0	PID	<1	
		7.8	CLAY; dark grey		ALV		>PL							
	-4	8.0	Borehole discontinued at 8.00m depth Limit of investigation						ASS D E PFAS		8.0	PID	<1	

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

EXPORTED 20/04/23 11:35. TEMPLATE ID: DP_101.02.00_SOILLOG

PLANT: Geoprobe 7822DT
METHOD: Concrete core to 0.05m, hand auger to 0.9, solid flight auger to 8.0m, then hollow flight auger to 8.0m for well installation

OPERATOR: Stratacore
CASING:

LOGGED: Vallely

REMARKS: D3/400 at 7.0m. Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 2.3 AHD
COORDINATE E:383998.4 **N:** 6355647.8
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 501
PROJECT No: 213618.02
DATE: 18/03/23
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
	0.0	FILL/ (SP) Silty SAND; brown; fine to medium; trace rootlets, ceramic		FILL	NA	M		D, E, PFAS		0.05	PID	<1
	0.2	FILL/ (SP) Silty SAND; dark grey brown; fine to medium; trace brick, ceramic, glass, slag, ash, metal wire		FILL	NA	M		D, E, PFAS, B		0.2 0.25	PID	<1
	0.45	FILL/ (SP) SAND; intermixed brown orange grey; fine to medium; trace ceramic, steel, ash		FILL	NA	M		D, E, PFAS		0.45 0.5	PID	<1
	1.05	FILL/ (SP) Clayey SAND, with silt; intermixed grey brown; fine to medium; trace glass, ceramic, metal, slag		FILL	NA	M		D, E, PFAS, B		1.0 1.05 1.09	PID	<1
▽ Seepage at 1.5m, free groundwater observed at 1.55m		1.5m: from 1.5m, wet		FILL	NA	M		D, E, PFAS		1.5	PID	<1
	1.9	Test pit discontinued at 1.90m depth Pit collapse								2		

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

PLANT: 5.5T Excavator with 300mm Bucket
OPERATOR: Foster
LOGGED: Kramer
METHOD: 300mm bucket to 1.9m
REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 11:36. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 2.2 AHD
COORDINATE E:384018.4 **N:** 6355632.0
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 502
PROJECT No: 213618.02
DATE: 18/03/23
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
	0.0	FILL/ (SP) Silty SAND; brown; fine to medium; trace rootlets, ceramics		FILL	NA	M		D, E, PFAS, B		0.0 / 0.05	PID	<1
	0.2	FILL/ (SP) Silty SAND; brown; fine to medium; trace bricks, slag, ceramic, glass		FILL	NA	M		D, E, PFAS, B, D, E, PFAS		0.25 / 0.5	PID	<1
	0.6	FILL/ (SP) Silty SAND; dark grey brown; fine to medium; trace brick, ceramic, glass, slag, ash, metal wire		FILL	NA	M		B, D, E, PFAS		0.6 / 0.7	PID	<1
	0.75	FILL/ (SP) SAND; intermixed brown grey dark brown; fine to medium; trace ash, slag, metal, plastic, glass		FILL	NA	M		D, E, PFAS, B		0.75 / 1.0	PID	<1
Free groundwater observed at 1.35m	1.3	FILL/ (SP) Clayey SAND, with silt, trace gravel; grey; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded 1.4m: from 1.4m, wet		FILL	NA	M		B, D, E, PFAS		1.3 / 1.5	PID	<1
	1.6	Test pit discontinued at 1.60m depth Pit collapse								1.6		

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

PLANT: 5.5T Excavator with 500mm Bucket
OPERATOR: Foster
LOGGED: Kramer
METHOD: 500mm bucket to 1.6m
REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 11:36. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 2.1 AHD
COORDINATE E:384048.8 **N:** 6355605.4
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 503
PROJECT No: 213618.02
DATE: 18/03/23
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
	2 / 0.0	FILL/ (SP) Silty SAND; brown; fine to medium; trace rootlets, ceramic, glass		FILL	NA	D to M		D, E, PFAS, B		0.0 / 0.05	PID	<1
	0.2	FILL/ (SP) Silty SAND; dark grey brown; fine to medium; trace brick, ceramic, glass, slag ash, metal wire		FILL	NA	M		D, E, PFAS, B		0.2 / 0.25	PID	<1
	0.55	FILL/ (SP) SAND; intermixed brown grey orange; fine to medium; trace ceramic, timber, brick, ash, metal		FILL	NA	M		D, E, PFAS		0.5 / 0.55	PID	<1
▽ Seepage at 1.5m, free groundwater observed at 1.5m	1 / 1	1.4m: from 1.4m, wet, brown grey						D, E, PFAS, B		1.0	PID	<1
	1.7 / 0	Test pit discontinued at 1.70m depth Pit collapse						D, E, PFAS		1.5 / 1.7	PID	<1
	2									2		

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

PLANT: 5.5T Excavator with 500mm Bucket
OPERATOR: Foster
LOGGED: Kramer

METHOD: 500mm bucket to 1.7m

REMARKS: D1/JRK/TP. Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 11:36. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 2.4 AHD
COORDINATE **E:**384039.4 **N:** 6355593.0
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 504
PROJECT No: 213618.02
DATE: 18/03/23
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	FILL/ (SP) SAND, with silt; brown grey; fine to medium; trace ceramic, brick, glass		FILL	NA	D		D, E, PFAS		0.0		
										0.05	PID	<1
								B, D, E, PFAS		0.25	PID	<1
	0.45	(SP) SAND; pale grey; fine to medium; trace rootlets		ALV	NA	M				0.45		
								D, E, PFAS		0.5	PID	<1
	1.1	Test pit discontinued at 1.10m depth Limit of investigation						D, E, PFAS		1.0	PID	<1

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

PLANT: 5.5T Excavator with 500mm Bucket
OPERATOR: Foster
LOGGED: Kramer

METHOD: 500mm bucket to 1.1m

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 11:36. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 2.3 AHD
COORDINATE E:384007.5 **N:** 6355616.0
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 505
PROJECT No: 213618.02
DATE: 18/03/23
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
	0.0	FILL/ (SP) SAND, with silt; brown; fine to medium; trace ceramic		FILL	NA	M		D, E, PFAS, B		0.0 / 0.05	PID	<1
	0.25	FILL/ (SP) Silty SAND; dark grey, grey; fine to medium; trace slag, ceramic, brick, metal wire		FILL	NA	M		B, D, E, PFAS		0.25 / 0.4	PID	<1
	0.5	FILL/ (SP) SAND, with silt, trace gravel; intermixed grey pale grey brown; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded; trace brick, metal, ceramic, glass, terracotta, shells		FILL	NA	M		D, E, PFAS		0.5 / 0.6	PID	<1
	1							B, D, E, PFAS		1.0	PID	<1
	2							D, E, PFAS		1.5	PID	<1
								B, D, E, PFAS		2.0	PID	<1
Seepage at 2.3m	2.4	(SP) SAND; pale grey; fine to medium; trace rootlets		ALV	NA	W		D, E, PFAS		2.4 / 2.5	PID	<1
	2.8	Test pit discontinued at 2.80m depth Pit collapse										

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

PLANT: 5.5T Excavator with 500mm Bucket
OPERATOR: Foster
LOGGED: Kramer
METHOD: 500mm bucket to 2.8m
REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 11:37. TEMPLATE ID: DP_101.02.00_SOILLOG

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 2.6 AHD
COORDINATE **E:**384008.5 **N:** 6355601.3
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 506
PROJECT No: 213618.02
DATE: 18/03/23
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE			TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	FILL/ (SP) Silty SAND; brown; fine to medium; trace rootlets, brick, plastic		FILL	NA	D		D E PFAS		0.0 0.05	PID	<1
								B D E PFAS		0.25	PID	<1
	0.4	(SP) SAND; pale grey; fine to medium; trace rootlets		ALV	NA	M		D E PFAS		0.4 0.5	PID	<1
	1.0	Borehole discontinued at 1.00m depth Limit of investigation						D E PFAS		1.0	PID	<1

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

PLANT: 5T Excavator with 450mm Auger
METHOD: 450mm solid flight auger to 1.0m
REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

OPERATOR: Foster
CASING:

LOGGED: Kramer

EXPORTED 20/04/23 11:37. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 3.4 AHD
COORDINATE **E:**383983.4 **N:** 6355584.7
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 507
PROJECT No: 213618.02
DATE: 18/03/23
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	FILL/ (SP) Silty SAND, with gravel; brown; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded; (crushed natural rock), trace rootlets		FILL	NA	D		D E PFAS B		0.0 0.05	PID	<1
	0.25	FILL/ (GP) GRAVEL, with sand; grey; gravel fraction fine to medium; sand fraction fine to medium; slag gravels		FILL	NA	D		D E PFAS		0.3 0.35	PID	<1
	0.35	(SP) SAND; pale grey; fine to medium; trace rootlets		ALV	NA	D		D E PFAS		0.5	PID	<1
	0.8	Test pit discontinued at 0.80m depth Limit of investigation										

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

PLANT: 5T Excavator with 500mm Bucket
OPERATOR: Foster
LOGGED: Kramer

METHOD: 500mm bucket to 0.8m

REMARKS: D2/JRK/TP at 0.05m. Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 11:37. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 3.5 AHD
COORDINATE E:383978.9 **N:** 6355605.5
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 508
PROJECT No: 213618.02
DATE: 18/03/23
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	FILL/ (SP) Silty SAND, with gravel; brown; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded; (crushed natural rock), trace rootlets		FILL	NA	D		D, E, PFAS		0.05	PID	<1
	0.25	FILL/ (GP) GRAVEL, with sand; grey; fine to medium; slag gravels		FILL	NA	D		D, E, PFAS		0.3	PID	<1
	0.4	FILL/ (SP) SAND, with silt; brown; fine to medium		FILL	NA	M		D, E, PFAS		0.5	PID	<1
	0.7	(SP) SAND; pale grey; fine to medium; trace rootlets		ALV	NA	M						
	1.0	Test pit discontinued at 1.00m depth Limit of investigation						D, E, PFAS		1.0	PID	<1

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

PLANT: 5T Excavator with 500mm Bucket
OPERATOR: Foster
LOGGED: Kramer

METHOD: 500mm bucket to 0.4m, shovel to 1.0m

REMARKS: Service hit at 0.4m (redundant network cable). Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 11:37. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 3.5 AHD
COORDINATE E:383963.3 **N:** 6355633.8
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 509
PROJECT No: 213618.02
DATE: 19/03/23
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	FILL/ (SP) Silty SAND, with gravel; dark brown; sand fraction fine to medium; gravel fraction fine to coarse sub-rounded; trace rootlets, concrete chunks, ceramic shards, coal reject		FILL	NA	M		D E PFAS		0.0	PID	<1
	0.45	FILL/ (SP) SAND, with silt, with gravel; brown; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded; trace concrete chunks, tiles, coal reject		FILL	NA	M		D E PFAS		0.2		
	0.75	FILL/ (SP) SAND; brown; fine to medium		FILL	NA	M				0.5	PID	<1
	0.8									0.7	PID	<1
	0.85	FILL/ (CH) CLAY; grey; high plasticity; trace coal reject		FILL	NA	<PL =PL		D E PFAS		0.8	PID	<1
	1	(SP) SAND; grey pale grey; fine to medium		ALV	NA	M		D E PFAS		0.85		
										1.0	PID	<1
								D E PFAS		1.2		
										1.5	PID	<1
	1.7	Test pit discontinued at 1.70m depth Limit of investigation						D E PFAS		1.7		

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

PLANT: Hand Auger
OPERATOR: Helbig
LOGGED: Helbig
METHOD: 100mm hand auger to 1.7m
REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

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TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 3.5 AHD
COORDINATE E:383947.5 **N:** 6355604.6
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 510
PROJECT No: 213618.02
DATE: 18/03/23
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	FILL/ (SP) Silty SAND, with gravel; brown; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded; (crushed natural rock), trace rootlets		FILL	NA	D		D E PFAS B		0.0 0.05	PID	<1
	0.2	FILL/ (GP) GRAVEL, with sand; grey; fine to medium; slag gravels		FILL	NA	D		D E PFAS		0.25 0.3	PID	<1
	0.3	(SP) SAND; pale grey; fine to medium; trace rootlets		ALV	NA	D		D E PFAS		0.5	PID	<1
	0.8	Test pit discontinued at 0.80m depth Limit of investigation										

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

PLANT: 5T Excavator with 500mm Bucket
OPERATOR: Foster
LOGGED: Kramer

METHOD: 500mm bucket to 0.8m

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 11:38. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 3.8 AHD
COORDINATE E:383929.7 **N:** 6355629.8
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 511
PROJECT No: 213618.02
DATE: 18/03/23
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	TOPSOIL/FILL/ Silty SAND; brown dark brown; fine to medium; abundant organics		TOP and FILL	NA	M		D, E, PFAS		0.0	PID	<1
	0.1	SAND; grey; fine to medium		ALV	NA	M				0.05		
								D, E, PFAS		0.5	PID	<1
	0.6	Test pit discontinued at 0.60m depth Limit of investigation										

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

PLANT: Kobelco SK175R 1.7T Excavator with 300mm Auger
OPERATOR: Foreman
LOGGED: Helbig

METHOD: 300mm solid flight auger to 0.6m

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 11:38. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 3.9 AHD
COORDINATE **E:**383924.8 **N:** 6355661.7
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 512
PROJECT No: 213618.02
DATE: 18/03/23
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	TOPSOIL/FILL/ Silty SAND; brown dark brown; fine to medium; abundant organics		TOP and FILL	NA	M		D E PFAS		0.0 0.05	PID	<1
	0.1	FILL/ (SP) Gravelly SAND; grey; sand fraction fine to, medium plasticity; gravel fraction fine to coarse sub-angular to angular; trace ash gravels and coal reject		FILL	NA	M		D E PFAS		0.15	PID	<1
	0.2	(SP) SAND, with silt; brown; fine to medium		ALV	NA	M		D E PFAS		0.4	PID	3
	0.6	(SP) SAND; grey; fine to medium		ALV	NA	M		D E PFAS		0.8	PID	<1
	1.0	Test pit discontinued at 1.00m depth Limit of investigation								1		
	2									2		

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

PLANT: Kobelco SK175R 1.7T Excavator with 300mm Auger
OPERATOR: Foreman
LOGGED: Helbig

METHOD: 300mm solid flight auger to 1.0m

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 11:38. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 3.7 AHD
COORDINATE E:383913.6 **N:** 6355650.4
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 513
PROJECT No: 213618.02
DATE: 18/03/23
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	TOPSOIL/FILL/ (SP) Silty SAND; brown dark brown; fine to medium; abundant organics		TOP and FILL	NA	M		D, E, PFAS		0.0	PID	<1
	0.1	FILL/ (SP) SAND, with gravel; grey; sand fraction fine to medium; gravel fraction fine to coarse sub-angular to angular; trace ash gravel and coal reject		FILL	NA	M		B, D, E, PFAS		0.05 0.1 0.15	PID	2
	0.2	(SP) SAND; grey; fine to medium		ALV	NA	M		D, E, PFAS		0.2 0.5	PID	<1
	0.7	Test pit discontinued at 0.70m depth Limit of investigation										

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

PLANT: Kobelco SK175R 1.7T Excavator with 300mm Auger
OPERATOR: Foreman
LOGGED: Helbig
METHOD: 300mm solid flight auger to 0.7m
REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 11:38. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 3.9 AHD
COORDINATE E:383869.9 **N:** 6355635.8
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 514
PROJECT No: 213618.02
DATE: 18/03/23
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	FILL/ (SP) SAND, with silt; brown; fine to medium; trace ash gravels, coal reject, concrete pieces, brick fragments, imported fine to coarse sub-angular to angular gravels		FILL	NA	M		D, E, PFAS, B		0.0	PID	<1
	0.3	(SP) SAND, trace gravel; brown dark brown; sand fraction fine to medium; gravel fraction fine sub-rounded		ALV	NA	M		D, E, PFAS		0.1 0.3 0.4	PID	<1
	0.5	(SP) SAND, trace gravel; yellow brown; sand fraction fine to medium; gravel fraction fine to medium rounded		ALV	NA	M		D, E, PFAS		0.8	PID	<1
	1.0	Test pit discontinued at 1.00m depth Limit of investigation								1 2		

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

PLANT: Kobelco SK175R 1.7T Excavator with 300mm Auger
OPERATOR: Foreman
LOGGED: Helbig
METHOD: 300mm solid flight auger to 1.0m
REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 11:39. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 3.9 AHD
COORDINATE E:383863.9 **N:** 6355645.3
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 515
PROJECT No: 213618.02
DATE: 18/03/23
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	FILL/ (SP) SAND; brown; fine to medium; trace rootlets to 0.1m, trace ash gravel, coal reject, concrete pieces, brick fragments, imported fine to coarse sub-angular to angular gravel, with trace ceramic tile fragments and asphalt		FILL	NA	M		D E PFAS		0.0	PID	<1
								B		0.1		
		0.57m: 30mm asphalt layer						D E PFAS		0.5	PID	1
	0.6	(SP) SAND, trace gravel; yellow brown; sand fraction fine to medium; gravel fraction fine to medium rounded		ALV	NA	M		D E PFAS		0.9	PID	<1
	1.1	Test pit discontinued at 1.10m depth Limit of investigation										

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

PLANT: Kobelco SK175R 1.7T Excavator with 300mm Auger
OPERATOR: Foreman
LOGGED: Helbig
METHOD: 300mm solid flight auger to 1.1m
REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 11:39. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 4.1 AHD
COORDINATE E:383855.8 **N:** 6355644.1
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 516
PROJECT No: 213618.02
DATE: 18/03/23
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	4	0.0	FILL/ (SP) SAND, with silt; brown; fine to medium; trace rootlets to 0.1m, trace ash gravel, coal reject, concrete pieces, brick fragments, imported fine to coarse sub-angular to angular gravel, with trace asphalt and roof tile fragments		FILL	NA	M		D E PFAS		0.0	PID	<1
											0.1		
									B				
			0.6m: 20mm asphalt layer						D E PFAS		0.5	PID	<1
		0.65	FILL/ (SP) Gravelly SAND; brown; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded; trace asphalt		FILL	NA	M		D E PFAS B		0.7	PID	<1
		0.9	(SP) SAND; pale yellow pale brown; fine to medium		ALV	NA	M				0.9		
	3	1							D E PFAS		1.2	PID	<1
		1.4	Test pit discontinued at 1.40m depth Limit of investigation										
	2	2									2		

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

PLANT: Kobelco SK175R 1.7T Excavator with 300mm Auger
OPERATOR: Foreman
LOGGED: Helbig
METHOD: 300mm solid flight auger to 1.4m
REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 11:39. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 4.7 AHD
COORDINATE E:383851.6 **N:** 6355653.3
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 517
PROJECT No: 213618.02
DATE: 18/03/23
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	FILL/ (SP) SAND, with silt, trace gravel; brown; sand fraction fine to medium; gravel fraction fine to coarse sub-angular to sub-rounded		FILL	NA	M		D, E, PFAS, B		0.0	PID	2
	0.2	FILL/ (SP) SAND, trace gravel; yellow pale brown; sand fraction fine to medium; gravel fraction fine to coarse angular to sub-angular; one fibro sheeting fragment at approximately 0.4m		FILL	NA	M		B, D, E, PFAS		0.1 0.2 0.4	PID	<1
	0.6	FILL/ (SP) SAND, with gravel; brown dark brown; sand fraction fine to medium; gravel fraction fine to coarse sub-angular to sub-rounded; trace brick fragments and whole bricks, roof tiles, steel plates, concrete fragments, metal reinforcing bars, ceramic fragments, asphalt, ash		FILL	NA	M		B, D, E, PFAS		0.6 0.8	PID	<1
	1.0	FILL/ (SP) SAND, with gravel; brown; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded; trace asphalt		FILL	NA	M		B, D, E, PFAS		1.0 1.2	PID	<1
	1.4	Test pit discontinued at 1.40m depth Pit collapse								1.4		

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

PLANT: Kobelco SK175R 1.7T Excavator with 300mm GP Bucket
OPERATOR: Foreman
LOGGED: Helbig
METHOD: 300mm GP Bucket to 1.4m
REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 4.9 AHD
COORDINATE E:383841.2 **N:** 6355653.1
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 518
PROJECT No: 213618.02
DATE: 18/03/23
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0 / 4.9	FILL/ (SP) SAND; brown; fine to medium; with rootlets		FILL	NA	M		D, E, PFAS		0.0 / 0.01	PID	<1
	0.1	FILL/ (SP) SAND, trace gravel; yellow pale brown; sand fraction fine to medium; gravel fraction fine to coarse angular to sub-angular		FILL	NA	M		D, E, PFAS		0.3	PID	1
	0.4	FILL/ (SP) SAND, with gravel; brown; sand fraction fine to medium; gravel fraction fine to coarse sub-angular to sub-rounded; whole bricks, trace concrete slabs and pieces, tiles, ceramic, fibro sheeting, metal sheeting, asphalt, slag, ash gravels		FILL	NA	M		D, E, PFAS		0.5	PID	1
	4									0.6		
								B		0.8		
	1							B				
								D, E, PFAS		1.0	PID	<1
								B				
	1.3	(SP) SAND, trace; brown; sand fraction fine to medium; fraction fine to medium sub-rounded gravels; silt		ALV	NA	M		D, E, PFAS		1.3	PID	<1
	1.5	Test pit discontinued at 1.50m depth Pit collapse										
	3											
	2									2		

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

PLANT: Kobelco SK175R 1.7T Excavator with 300mm GP Bucket **OPERATOR:** Foreman **LOGGED:** Helbig

METHOD: 300mm GP Bucket to 1.5m

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 11:40. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 4.6 AHD
COORDINATE E:383835.1 **N:** 6355642.4
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 519
PROJECT No: 213618.02
DATE: 18/03/23
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	FILL/ (SP) Gravelly SAND, with silt; brown; fine to medium; trace brick pieces, asphalt, concrete pieces, tiles, ash gravels		FILL	NA	M		D, E, PFAS, B	0.0–0.1, 0.1–0.3	0.0	PID	<1
	4							D, E, PFAS, B	0.3–0.5, 0.5–0.8	0.5	PID	1
	1							D, E, PFAS	0.8–1.0	1.0	PID	1
	1.3	(SP) SAND, trace gravel; yellow brown; sand fraction fine to medium; gravel fraction fine to medium rounded		ALV	NA	M		D, E, PFAS	1.0–1.4	1.4	PID	<1
	1.4	Test pit discontinued at 1.40m depth Pit collapse										
	3											
	2									2		

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

PLANT: Kobelco SK175R 1.7T Excavator with 300mm GP Bucket **OPERATOR:** Foreman **LOGGED:** Helbig
METHOD: 300mm GP Bucket to 1.4m
REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 11:41. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 4.8 AHD
COORDINATE **E:**383835.2 **N:** 6355628.6
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 520
PROJECT No: 213618.02
DATE: 18/03/23
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	TOPSOIL/FILL/ (SP) Silty SAND; brown; fine to medium; trace rootlets		TOP and FILL	NA	M		D E PFAS		0.0 0.1	PID	<1
	0.15	(SP) SAND; pale yellow brown; fine to medium		ALV	NA	M		D E PFAS		0.4	PID	<1
	0.9	Test pit discontinued at 0.90m depth Limit of investigation						D E PFAS		0.8	PID	<1

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

PLANT: Kobelco SK175R 1.7T Excavator with 300mm GP Bucket **OPERATOR:** Foreman **LOGGED:** Helbig

METHOD: 300mm GP Bucket to 0.9m

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 11:41. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 6.0 AHD
COORDINATE E:383846.8 **N:** 6355620.7
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 521
PROJECT No: 213618.02
DATE: 18/03/23
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	TOPSOIL/FILL/ (SP) Silty SAND; brown; fine to medium; trace rootlets		TOP and FILL	NA	M		D, E, PFAS		0.0	PID	<1
	0.1	FILL/ (SP) SAND; pale brown; fine to medium; trace concrete blocks		FILL	NA	M		D, E, PFAS		0.1		
								D, E, PFAS		0.5	PID	<1
	0.8	Test pit discontinued at 0.80m depth Refusal on concrete						D, E, PFAS		0.8	PID	<1
	5 1									1		
	4 2									2		

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

PLANT: Kobelco SK175R 1.7T Excavator with 300mm GP Bucket **OPERATOR:** Foreman **LOGGED:** Helbig

METHOD: 300mm GP Bucket to 0.8m

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 11:42. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 3.9 AHD
COORDINATE E:383856.3 **N:** 6355625.1
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 522
PROJECT No: 213618.02
DATE: 18/03/23
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	FILL/ (SP) Gravelly SAND; brown; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded; trace rootlets		FILL	NA	M		D, E, PFAS, B		0.0, 0.05, 0.1	PID	2
	0.1	(SP) SAND, trace gravel; pale brown pale orange; sand fraction fine to medium; gravel fraction fine to medium sub-rounded			NA	M		D, E, PFAS		0.15, 0.2	PID	1
	0.18	FILL/ (SP) SAND, with gravel; brown coffee brown; sand fraction fine to medium; gravel fraction fine to medium sub-rounded; possibly with indurated sand		FILL	NA	M		B, D, E, PFAS		0.5	PID	<1
	0.6	(SP) SAND, trace gravel; yellow brown; sand fraction fine to medium; gravel fraction fine to medium rounded		ALV	NA	M		D, E, PFAS		0.6, 1.0	PID	<1
	1.2	Test pit discontinued at 1.20m depth Limit of investigation										

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

PLANT: Kobelco SK175R 1.7T Excavator with 300mm Auger
OPERATOR: Foreman
LOGGED: Helbig
METHOD: 300mm solid flight auger to 1.2m
REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 11:42. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 2.9 AHD
COORDINATE E:383845.7 **N:** 6355688.5
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 523
PROJECT No: 213618.02
DATE: 18/03/23
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	FILL/ (SP) SAND, with silt, with gravel; brown; sand fraction fine to medium; gravel fraction fine to coarse sub-angular to sub-rounded; trace roots and rootlets		FILL	NA	M		D, E, PFAS		0.0 – 0.2	PID	<1
	0.38	FILL/ (SP) Gravelly SAND; brown orange; sand fraction fine to medium; gravel fraction fine to coarse sub-angular to sub-rounded		FILL	NA	M		D, E, PFAS		0.4 – 0.6	PID	<1
	0.6	(SP) SAND; pale yellow; fine to medium		ALV	NA	M		D, E, PFAS		0.8 – 1.0	PID	<1
	1.25	Test pit discontinued at 1.25m depth Limit of investigation								2		

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

PLANT: Hand Auger
OPERATOR: Helbig
LOGGED: Helbig

METHOD: 100mm hand auger to 1.25m

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 11:43. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 7.3 AHD
COORDINATE E:383879.9 **N:** 6355732.8
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 524
PROJECT No: 213618.02
DATE: 18/03/23
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	7.3 / 0.0	FILL/ (SP) Silty SAND, trace gravel; brown dark brown; sand fraction fine to medium; gravel fraction fine to coarse sub-angular; trace soft plastics, trace roots and rootlets		FILL	NA	M		D, E, PFAS		0.0, 0.05	PID	<1
	7.2 / 0.1	FILL/ (SP) SAND, with gravel; brown grey; sand fraction fine to medium; gravel fraction fine to coarse angular to sub-angular; trace coal reject		FILL	NA	M		B		0.2		
	6.7 / 0.6	(SP) SAND; pale brown; fine to medium		ALV	NA	M		D, E, PFAS		0.5, 0.6	PID	<1
	6.2 / 1.1	Test pit discontinued at 1.10m depth Limit of investigation						D, E, PFAS		1.0	PID	<1

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

PLANT: Kobelco SK175R 1.7T Excavator with 300mm Auger
OPERATOR: Foreman
LOGGED: Helbig
METHOD: 300mm solid flight auger to 1.1m
REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 11:43. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 6.9 AHD
COORDINATE E:383886.1 **N:** 6355741.2
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 525
PROJECT No: 213618.02
DATE: 18/03/23
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed		0.0	FILL/ (SP) Silty SAND, trace gravel; brown dark brown; sand fraction fine to medium; gravel fraction fine to coarse sub-angular; trace soft plastics, trace roots and rootlets		FILL	NA	M		D E PFAS B		0.0 0.1 0.3	PID	<1
		0.4	0.35m: with fine to medium grained sub-angular gravels, possibly bedding layer FILL/ (SP) SAND; brown; fine to medium		FILL	NA	M		D E PFAS		0.45	PID	<1
		0.5	FILL/ (SP) SAND, with gravel; brown coffee brown; sand fraction fine to medium; gravel fraction fine to medium sub-rounded; possibly with indurated sand		FILL	NA	M		B D E PFAS		0.6 0.8	PID	<1
	6	0.9	(SP) SAND; pale brown; fine to medium		ALV	NA	M		D E PFAS		1.2	PID	<1
		1.4	Test pit discontinued at 1.40m depth Limit of investigation										

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

PLANT: Kobelco SK175R 1.7T Excavator with 300mm Auger
OPERATOR: Foreman
LOGGED: Helbig
METHOD: 300mm solid flight auger to 1.4m
REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 11:44. TEMPLATE ID: DP_101.02.00_SOILLOG

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 3.9 AHD
COORDINATE **E:**383920.1 **N:** 6355546.7
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 601
PROJECT No: 213618.02
DATE: 18/03/23
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.04	ASPHALTIC CONCRETE; black			NA	NA						
	0.15	FILL/ (SP) Gravelly SAND; pale brown; sand fraction fine to medium; gravel fraction fine to coarse sub-angular to sub-rounded; (pavement gravels)		FILL	NA	D		D E PFAS		0.15	PID	<1
	0.35	FILL/ (SP) SAND, with gravel; grey; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded; (crushed natural rock)		FILL	NA	M		D E PFAS		0.3	PID	<1
		(SP) SAND; pale grey; fine to medium; trace rootlets		ALV	NA	M		D E PFAS		0.5	PID	<1
	0.9	Borehole discontinued at 0.90m depth Limit of investigation										

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

PLANT: 5T Excavator with 500mm Bucket
METHOD: 500mm bucket to 0.9m
OPERATOR: Foster
CASING:
LOGGED: Kramer

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 28/04/23 09:18. TEMPLATE ID: DP_101.02.00_SOILLOG

BOREHOLE LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 3.9 AHD
COORDINATE E:383925.6 **N:** 6355567.7
DATUM/GRID: MGA94 Zone 56
DIP/AZIMUTH: 90°/---

LOCATION ID: 602
PROJECT No: 213618.02
DATE: 18/03/23
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE			TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.04	ASPHALTIC CONCRETE; black			NA	NA		D		0.01		
	0.15	FILL/ (SP) Gravelly SAND; pale brown; sand fraction fine to medium; gravel fraction fine to coarse sub-angular to sub-rounded; (pavement gravels)		FILL	NA	D		D E		0.1	PID	<1
		(SP) SAND; pale grey; fine to medium						D E		0.25	PID	<1
				ALV	NA	D						
								D E		0.5	PID	<1
	0.6	Borehole discontinued at 0.60m depth Limit of investigation										

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

PLANT: 5T Excavator with 450mm Auger
METHOD: 450mm solid flight auger to 0.6m
REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

OPERATOR: Foster
CASING:

LOGGED: Kramer

EXPORTED 20/04/23 11:45. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 4.0 AHD
COORDINATE E:383912.2 **N:** 6355599.3
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 603
PROJECT No: 213618.02
DATE: 18/03/23
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	FILL/ (SP) SAND, with silt; brown; fine to medium; trace brick		FILL	NA	D		D, E, PFAS, B		0.0		
										0.05	PID	<1
	0.3	FILL/ (SP) Gravelly SAND; pale brown; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded; (crushed natural rock), (pavement gravels)		FILL	NA	M		D, E, PFAS		0.25	PID	<1
										0.3		
	0.5	FILL/ (SP) SAND, with silt, trace gravel; pale brown; sand fraction fine to medium; gravel fraction fine to medium sub-angular to sub-rounded; (crushed natural rock)		FILL	NA	M		B, D, E, PFAS		0.4	PID	<1
										0.5		
								D, E, PFAS, B		0.6	PID	<1
	0.8	(SP) SAND; pale brown; fine to medium								0.8		
	3 1	1.0-1.2m: intermixed coffee rock		ALV	NA	D to M		D, E, PFAS		1.0	PID	<1
	1.8	Test pit discontinued at 1.80m depth Limit of investigation						D, E, PFAS		1.5	PID	<1
	2 2									2		

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

PLANT: 5T Excavator with 500mm Bucket
OPERATOR: Foster
LOGGED: Kramer
METHOD: 500mm bucket to 1.8m
REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 11:45. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 3.8 AHD
COORDINATE E:383908.3 **N:** 6355606.3
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 604
PROJECT No: 213618.02
DATE: 18/03/23
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	FILL/ (SP) SAND, trace gravel; brown grey; sand fraction fine to medium; gravel fraction fine to coarse sub-angular to sub-rounded; (crushed natural rock), rootlets, sandstone boulders, roots		FILL	NA	D		D E PFAS B		0.0 0.05	PID	<1
	0.35	(SP) SAND; pale grey; fine to medium; trace rootlets 0.65m: brown, trace fine rounded gravels		ALV	NA	M		D E PFAS		0.25 0.35 0.5	PID PID	<1 <1
	0.9	Test pit discontinued at 0.90m depth Limit of investigation										

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

PLANT: 5T Excavator with 500mm Bucket
OPERATOR: Foster
LOGGED: Kramer

METHOD: 500mm bucket to 0.9m

REMARKS: D3/JRK/TP at 0.05m. Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 11:46. TEMPLATE ID: DP_101.02.00_SOILLOG

TEST PIT LOG

CLIENT: School Infrastructure NSW
PROJECT: Newcastle High School Upgrade
LOCATION: Parkway Avenue, Hamilton South

SURFACE LEVEL: 4.3 AHD
COORDINATE E:383871.5 **N:** 6355691.9
DATUM/GRID: MGA94 Zone 56

LOCATION ID: 605
PROJECT No: 213618.02
DATE: 19/03/23
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	0.0	FILL/ (SP) SAND, with silt, with gravel; brown; sand fraction fine to medium; gravel fraction fine to coarse sub-angular to sub-rounded; trace roots and rootlets		FILL	NA	M		D E PFAS		0.0 0.2	PID	<1
	0.4	FILL/ (SP) SAND, trace gravel; brown; sand fraction fine to medium; gravel fraction fine to medium sub-angular; gravels comprise ash and imported igneous gravels		FILL	NA	M		D E PFAS		0.4 0.6	PID	<1
	0.6	(SP) SAND; pale grey pale brown; fine to medium		ALV	NA	M		D E PFAS		0.9 1 1.1	PID	<1
	1.2	Test pit discontinued at 1.20m depth Limit of investigation								2		

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

PLANT: Hand Auger **OPERATOR:** Helbig **LOGGED:** Helbig

METHOD: 100mm hand auger to 1.2m

REMARKS: Location coordinates are in MGA94 Zone 56. Coordinates obtained using differential GPS, typical accuracy ±0.1m.

EXPORTED 20/04/23 11:46. TEMPLATE ID: DP_101.02.00_SOILLOG

CONE PENETRATION TEST

CLIENT: SCHOOL INFRASTRUCTURE NSW

PROJECT: NEWCASTLE HIGH SCHOOL UPGRADE

LOCATION: 160-200 PARKWAY AVENUE, HAMILTON SOUTH

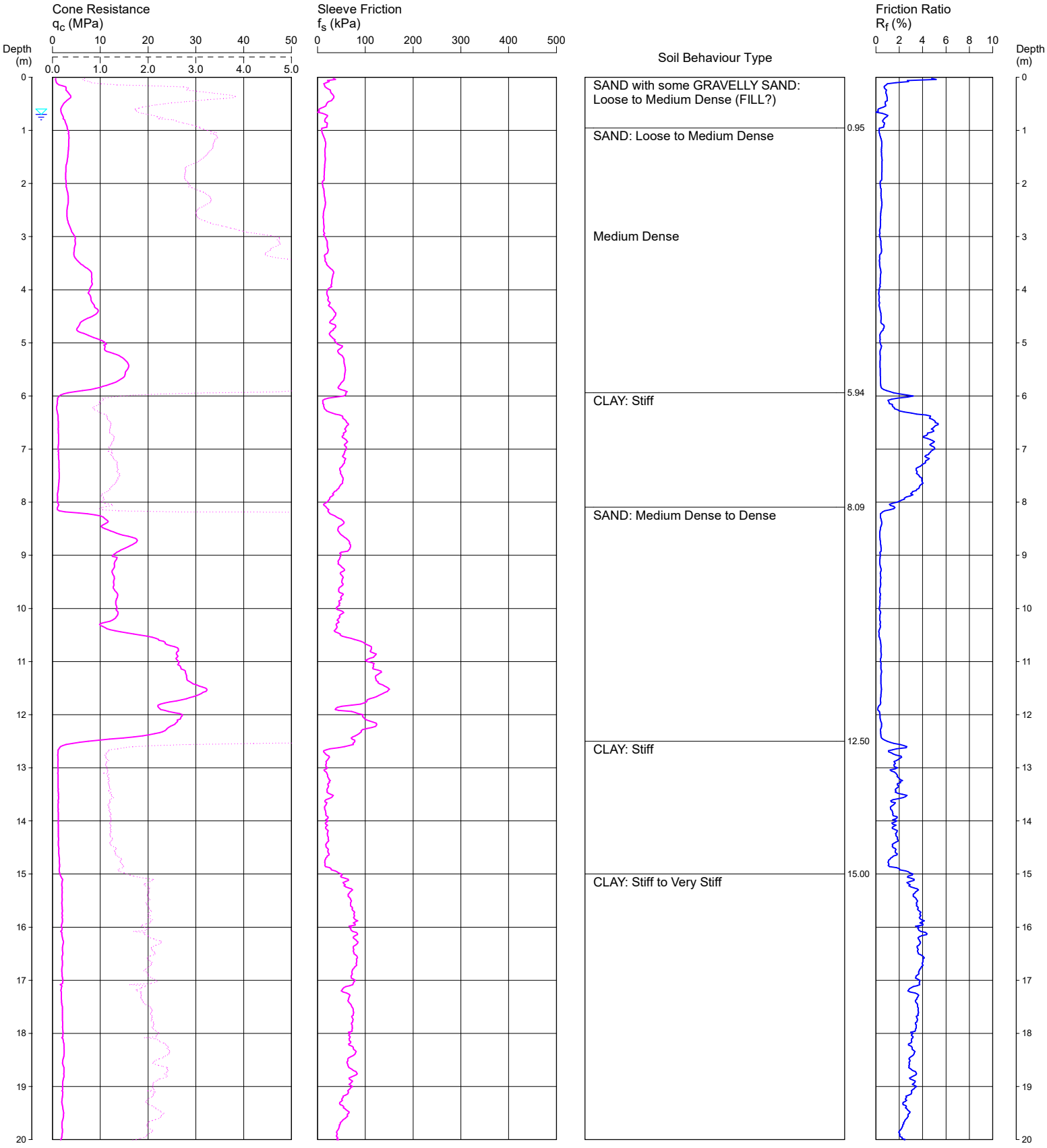
REDUCED LEVEL: 2.6

COORDINATES: 384035.8E 6355583.4N AHD

CPT101

DATE 13/07/2022

PROJECT No: 213618.01



REMARKS: TEST DISCONTINUED DUE TO SUDDEN BEND ON HARD MATERIAL
GROUNDWATER LEVEL OBSERVED AT 0.7M AFTER WITHDRAWAL OF RODS

Water depth after test: 0.70m depth (measured)

File: P:\213618.01 - HAMILTON SOUTH, Newcastle High Drilling\4.0 Field Work\CPT Logs\CPT101.CP5

Cone ID: 170705 **Type:** I-CFXY-10

ConePlot Version 5.9.2

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CONE PENETRATION TEST

CLIENT: SCHOOL INFRASTRUCTURE NSW

PROJECT: NEWCASTLE HIGH SCHOOL UPGRADE

LOCATION: 160-200 PARKWAY AVENUE, HAMILTON SOUTH

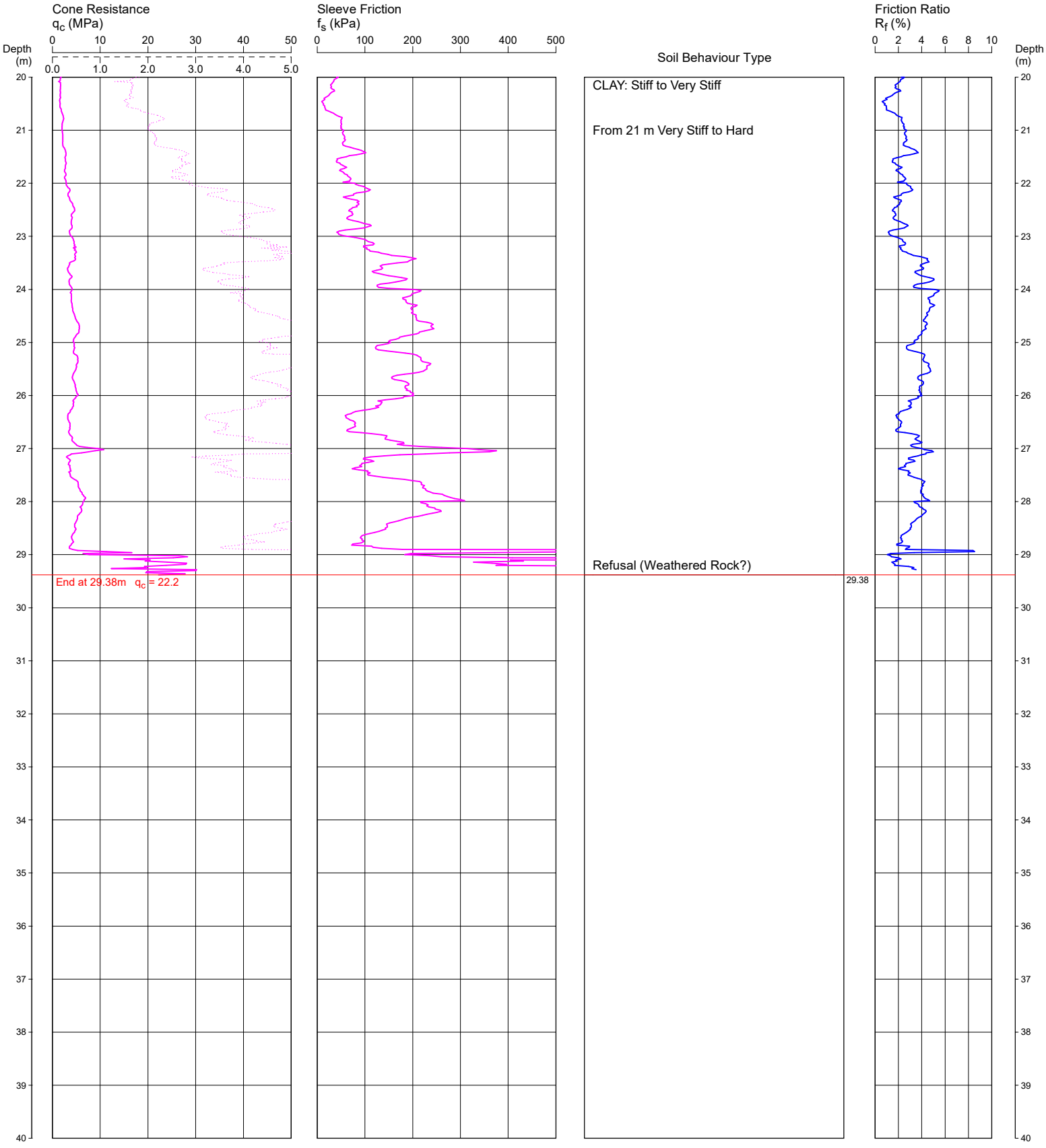
REDUCED LEVEL: 2.6

COORDINATES: 384035.8E 6355583.4N AHD

CPT101

DATE 13/07/2022

PROJECT No: 213618.01



REMARKS: TEST DISCONTINUED DUE TO SUDDEN BEND ON HARD MATERIAL
GROUNDWATER LEVEL OBSERVED AT 0.7M AFTER WITHDRAWAL OF RODS

Water depth after test: 0.70m depth (measured)

File: P:\213618.01 - HAMILTON SOUTH, Newcastle High Drilling\4.0 Field Work\CPT Logs\CPT101.CP5

Cone ID: 170705 **Type:** I-CFXY-10

ConePlot Version 5.9.2

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CONE PENETRATION TEST

CLIENT: SCHOOL INFRASTRUCTURE NSW

PROJECT: NEWCASTLE HIGHSCHOOL UPGRADE

LOCATION: 160-200 PARKWAY AVENUE, HAMILTON SOUTH

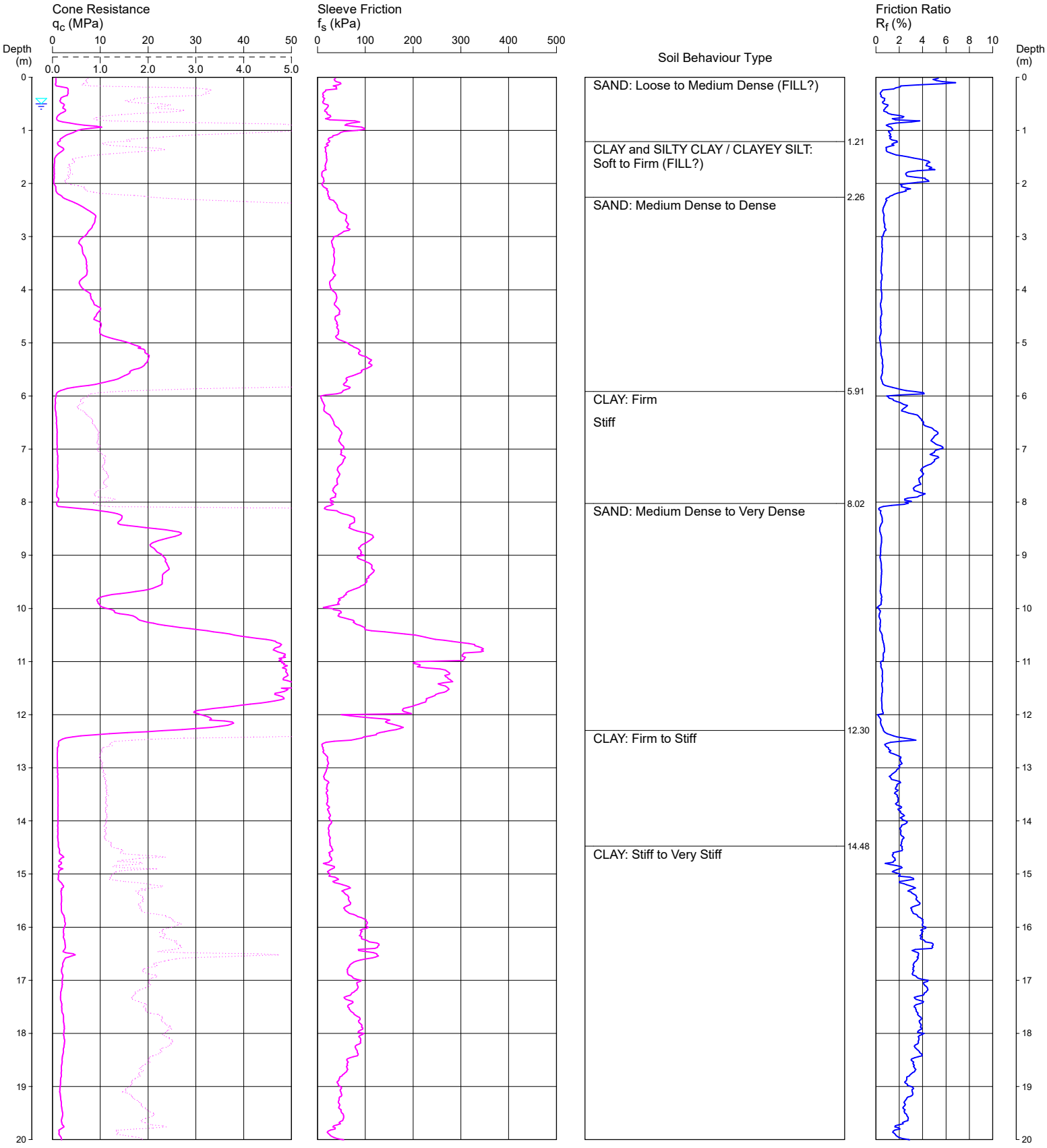
REDUCED LEVEL: 2.3

COORDINATES: 384014.1E 6355610.4N AHD

CPT102

DATE 14/07/2022

PROJECT No: 213618.01



REMARKS: TEST DISCONTINUED DUE TO EXCESSIVE ROD BOWING IN INFERRED WEATHERED ROCK
GROUNDWATER LEVEL OBSERVED AT 0.5M AFTER WITHDRAWAL OF RODS

Water depth after test: 0.50m depth (measured)

File: P:\213618.01 - HAMILTON SOUTH, Newcastle High Drilling\4.0 Field Work\CPT Logs\CPT102.CP5
Cone ID: 170705 **Type:** I-CFXY-10

ConePlot Version 5.9.2

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CONE PENETRATION TEST

CLIENT: SCHOOL INFRASTRUCTURE NSW

PROJECT: NEWCASTLE HIGHSCHOOL UPGRADE

LOCATION: 160-200 PARKWAY AVENUE, HAMILTON SOUTH

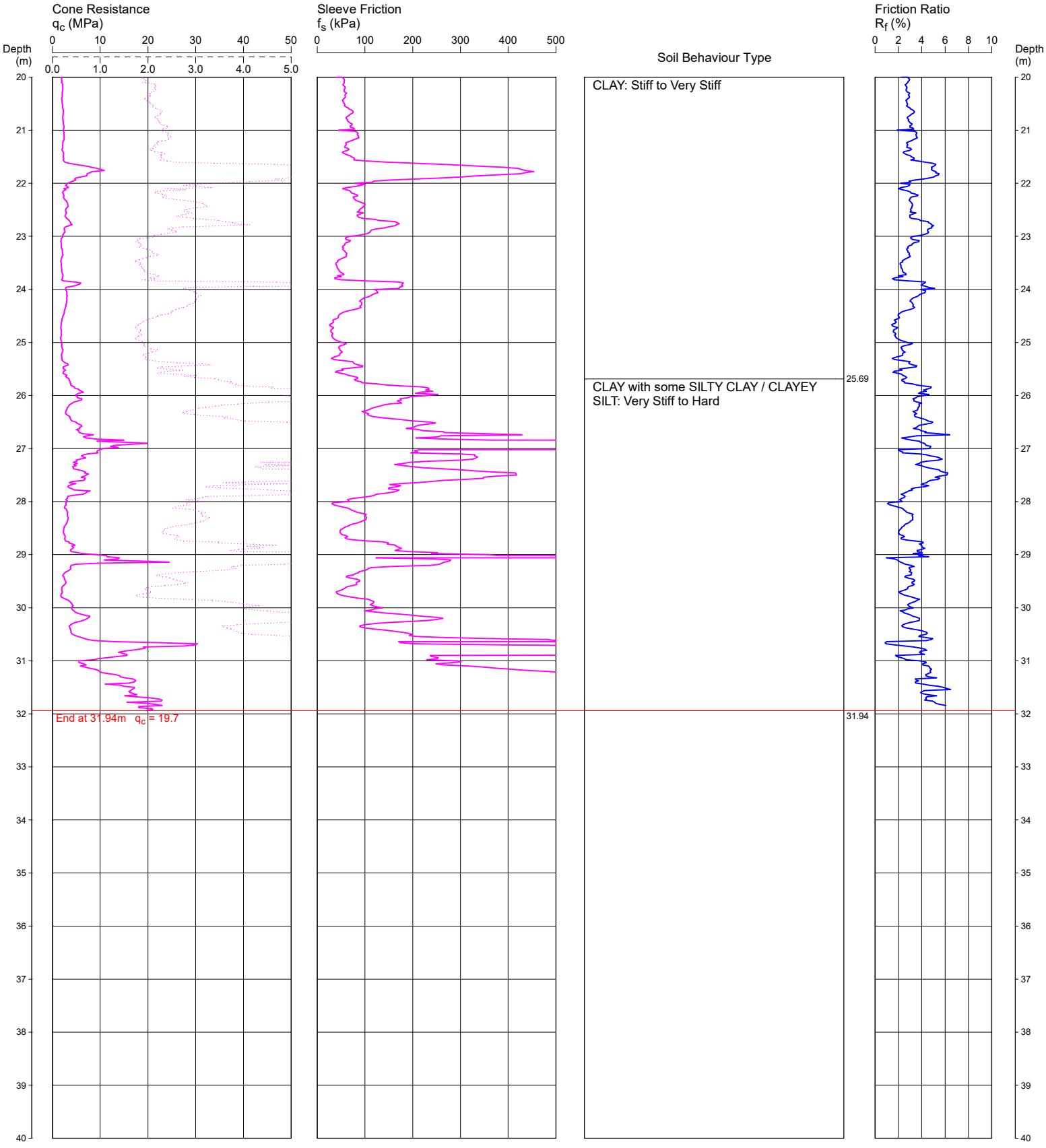
REDUCED LEVEL: 2.3

COORDINATES: 384014.1E 6355610.4N AHD

CPT102

DATE 14/07/2022

PROJECT No: 213618.01



REMARKS: TEST DISCONTINUED DUE TO EXCESSIVE ROD BOWING IN INFERRED WEATHERED ROCK
GROUNDWATER LEVEL OBSERVED AT 0.5M AFTER WITHDRAWAL OF RODS

Water depth after test: 0.50m depth (measured)

File: P:\213618.01 - HAMILTON SOUTH, Newcastle High Drilling\4.0 Field Work\CPT Logs\CPT102.CP5

Cone ID: 170705 **Type:** I-CFXY-10

ConePlot Version 5.9.2

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CONE PENETRATION TEST

CLIENT: SCHOOL INFRASTRUCTURE NSW

PROJECT: NEWCASTLE HIGHSCHOOL UPGRADE

LOCATION: 160-200 PARKWAY AVENUE, HAMILTON SOUTH

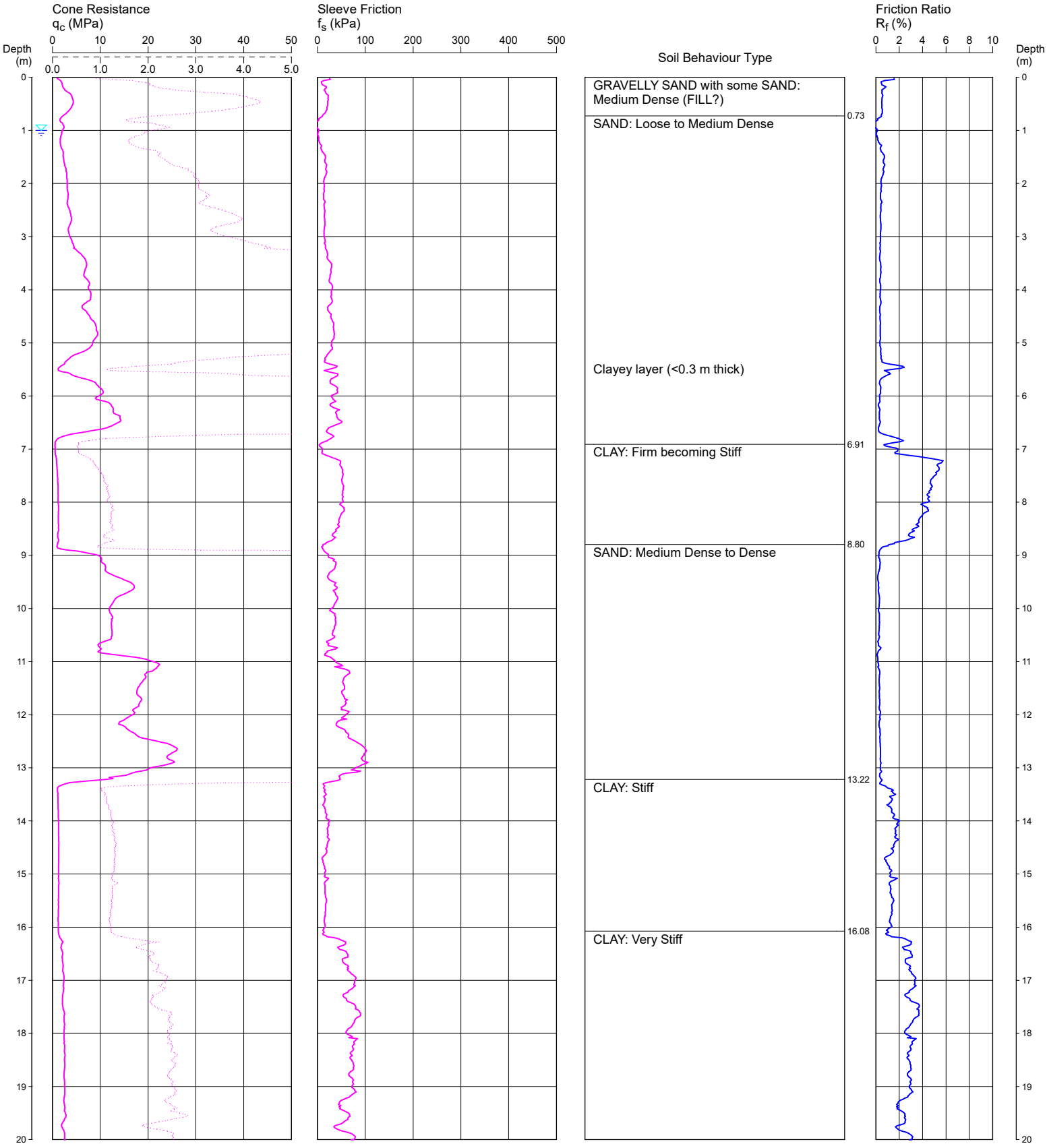
REDUCED LEVEL: 3.3

COORDINATES: 383991.2E 6355578.0N AHD

CPT103

DATE 13/07/2022

PROJECT No: 213618.01



REMARKS: TEST DISCONTINUED DUE TO SUDDEN BEND ON HARD MATERIAL
GROUNDWATER LEVEL OBSERVED AT 1.0M AFTER WITHDRAWAL OF RODS

Water depth after test: 1.00m depth (measured)

File: P:\213618.01 - HAMILTON SOUTH, Newcastle High Drilling\4.0 Field Work\CPT Logs\CPT103.CP5

Cone ID: 170705 **Type:** I-CFXY-10

ConePlot Version 5.9.2

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CONE PENETRATION TEST

CLIENT: SCHOOL INFRASTRUCTURE NSW

PROJECT: NEWCASTLE HIGHSCHOOL UPGRADE

LOCATION: 160-200 PARKWAY AVENUE, HAMILTON SOUTH

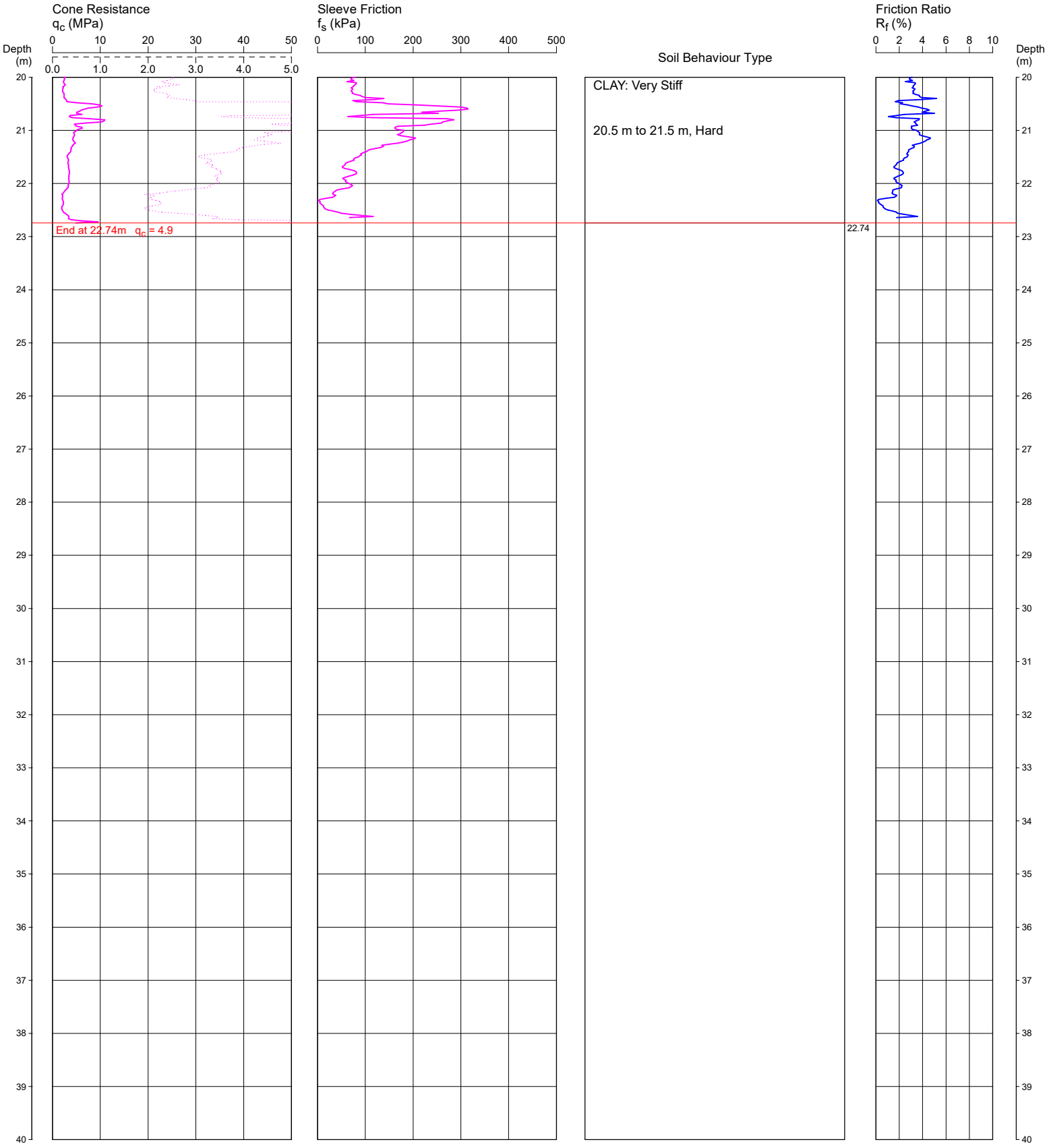
REDUCED LEVEL: 3.3

COORDINATES: 383991.2E 6355578.0N AHD

CPT103

DATE 13/07/2022

PROJECT No: 213618.01



REMARKS: TEST DISCONTINUED DUE TO SUDDEN BEND ON HARD MATERIAL
GROUNDWATER LEVEL OBSERVED AT 1.0M AFTER WITHDRAWAL OF RODS

Water depth after test: 1.00m depth (measured)

File: P:\213618.01 - HAMILTON SOUTH, Newcastle High Drilling\4.0 Field Work\CPT Logs\CPT103.CP5

Cone ID: 170705 **Type:** I-CFXY-10

ConePlot Version 5.9.2

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CONE PENETRATION TEST

CLIENT: SCHOOL INFRASTRUCTURE NSW

PROJECT: NEWCASTLE HIGH SCHOOL UPGRADE

LOCATION: 160-200 PARKWAY AVENUE, HAMILTON SOUTH

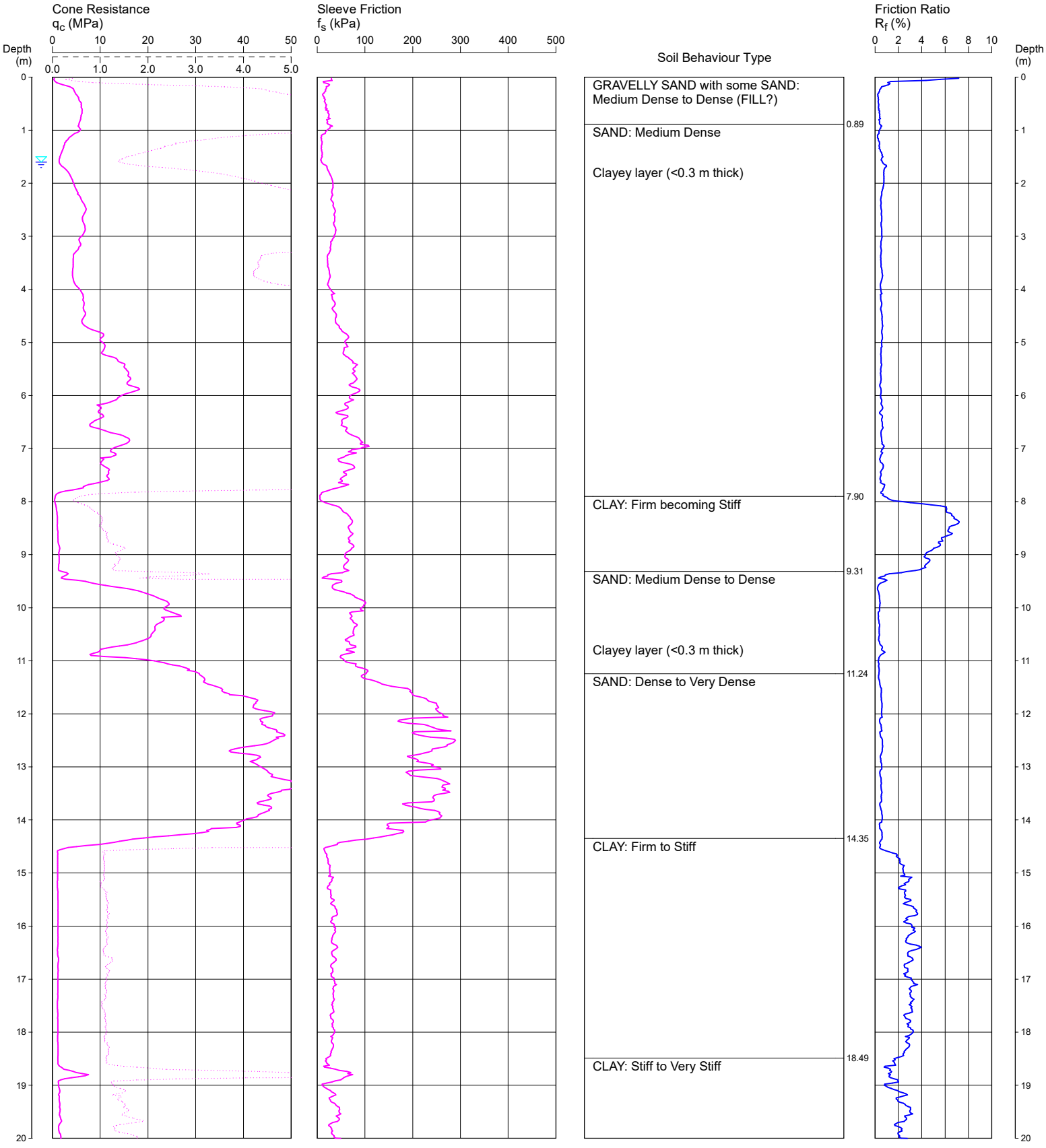
REDUCED LEVEL: 4.1

COORDINATES: 383825.6E 6355634.9N AHD

CPT104

DATE 13/07/2022

PROJECT No: 213618.01



REMARKS: TEST DISCONTINUED DUE TO EXCESSIVE ROD BOWING IN INFERRED WEATHERED ROCK
GROUNDWATER LEVEL OBSERVED AT 1.6M AFTER WITHDRAWAL OF RODS

Water depth after test: 1.60m depth (measured)

File: P:\213618.01 - HAMILTON SOUTH, Newcastle High Drilling\4.0 Field Work\CPT Logs\CPT104.CP5

Cone ID: 170705 **Type:** I-CFXY-10

ConePlot Version 5.9.2

Douglas Partners
Geotechnics | Environment | Groundwater

CONE PENETRATION TEST

CLIENT: SCHOOL INFRASTRUCTURE NSW

PROJECT: NEWCASTLE HIGH SCHOOL UPGRADE

LOCATION: 160-200 PARKWAY AVENUE, HAMILTON SOUTH

REDUCED LEVEL: 4.1

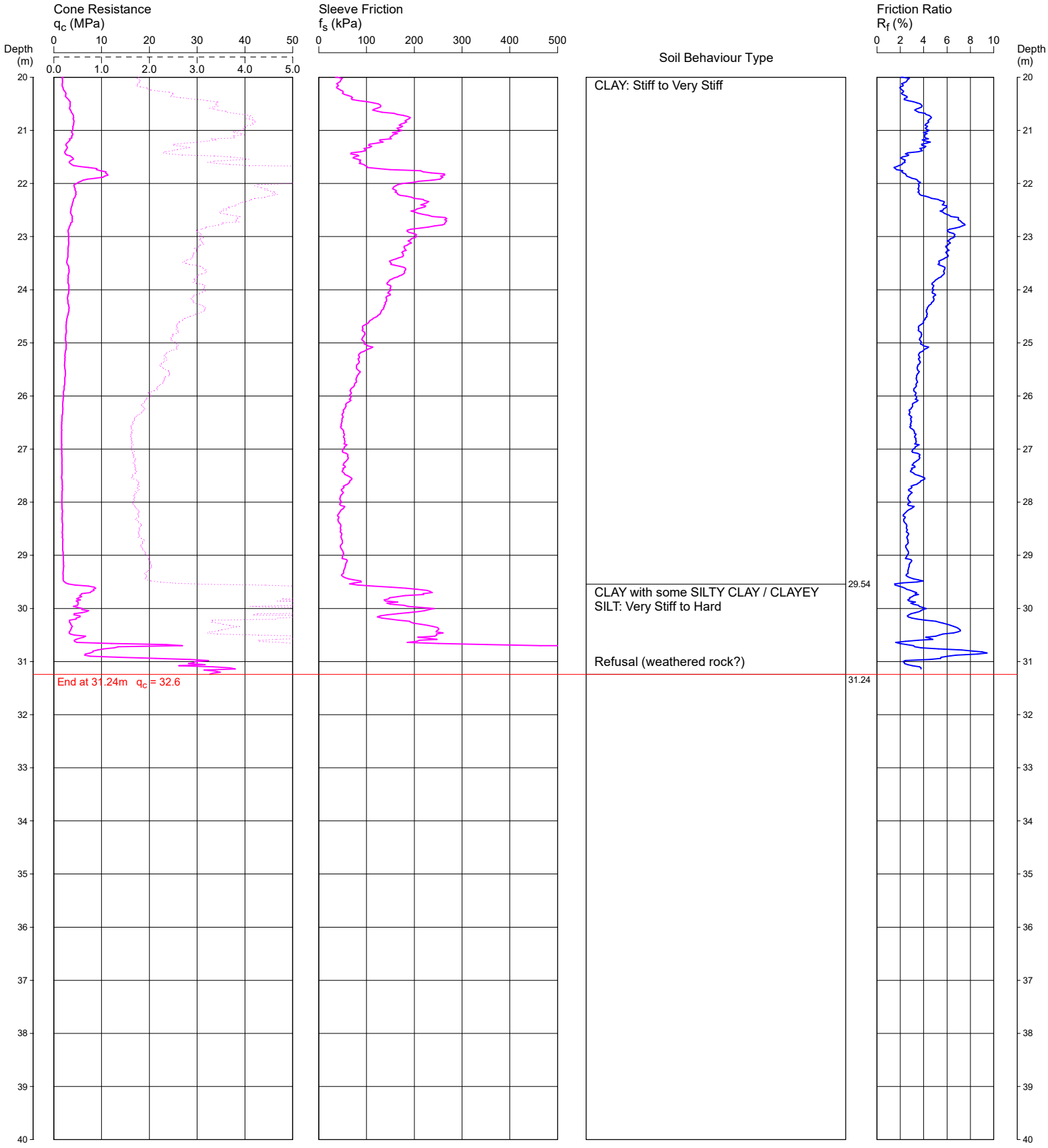
COORDINATES: 383825.6E 6355634.9N AHD

CPT104

Page 2 of 2

DATE 13/07/2022

PROJECT No: 213618.01



REMARKS: TEST DISCONTINUED DUE TO EXCESSIVE ROD BOWING IN INFERRED WEATHERED ROCK
GROUNDWATER LEVEL OBSERVED AT 1.6M AFTER WITHDRAWAL OF RODS

Water depth after test: 1.60m depth (measured)

File: P:\213618.01 - HAMILTON SOUTH, Newcastle High Drilling\4.0 Field Work\CPT Logs\CPT104.CP5
Cone ID: 170705 **Type:** I-CFXY-10

ConePlot Version 5.9.2

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CONE PENETRATION TEST

CLIENT: SCHOOL INFRASTRUCTURE NSW

PROJECT: NEWCASTLE HIGH SCHOOL UPGRADE

LOCATION: 160-200 PARKWAY AVENUE, HAMILTON SOUTH

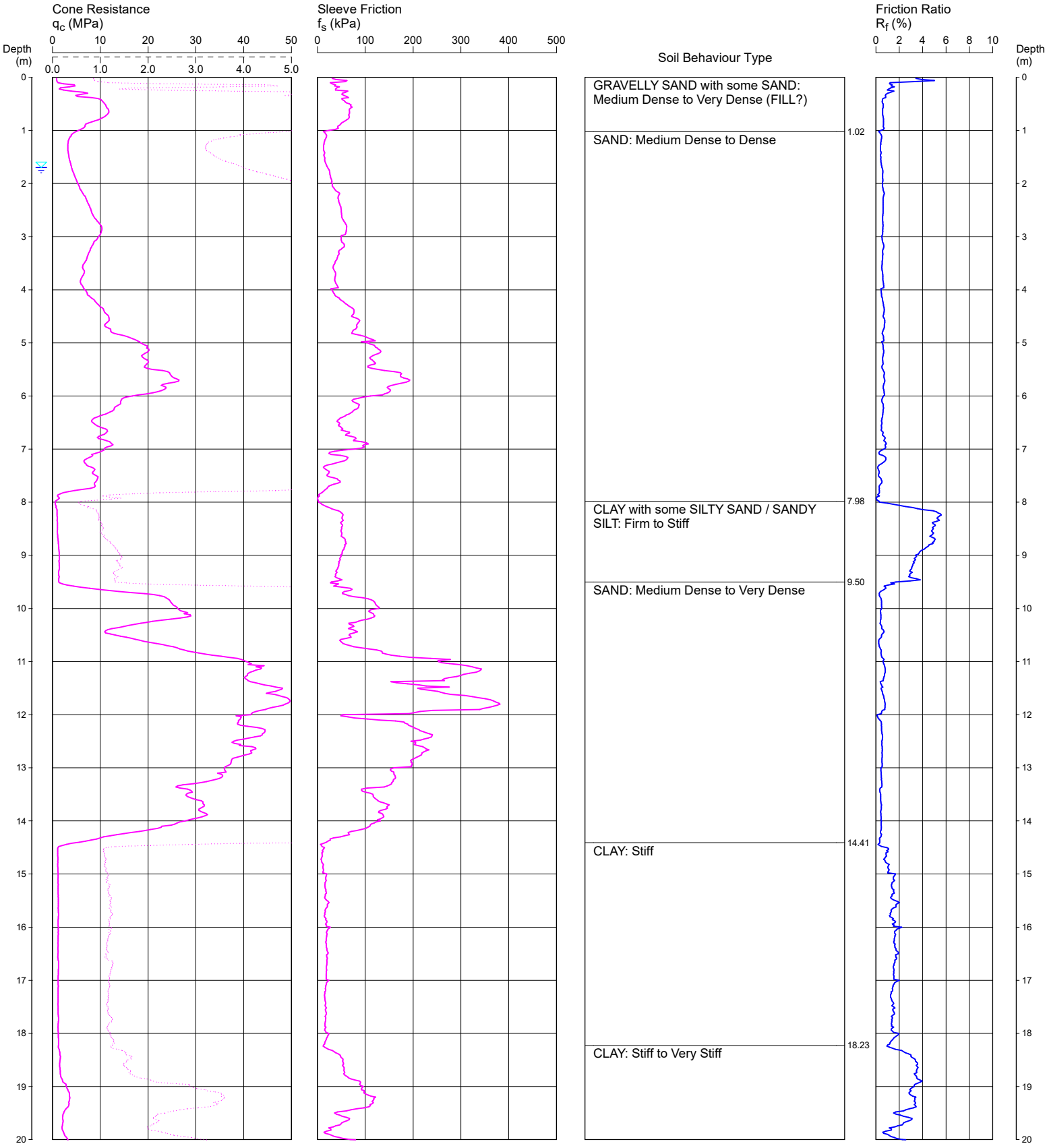
REDUCED LEVEL: 4.1

COORDINATES: 383849.0E 6355627.1N AHD

CPT105

DATE 14/07/2022

PROJECT No: 213618.01



REMARKS: TEST DISCONTINUED DUE TO EXCESSIVE ROD BOWING IN INFERRED WEATHERED ROCK
GROUNDWATER LEVEL OBSERVED AT 1.7M AFTER WITHDRAWAL OF RODS

Water depth after test: 1.70m depth (measured)

File: P:\213618.01 - HAMILTON SOUTH, Newcastle High Drilling\4.0 Field Work\CPT Logs\CPT105.CP5

Cone ID: 170705 **Type:** I-CFXY-10

ConePlot Version 5.9.2

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CONE PENETRATION TEST

CLIENT: SCHOOL INFRASTRUCTURE NSW

PROJECT: NEWCASTLE HIGH SCHOOL UPGRADE

LOCATION: 160-200 PARKWAY AVENUE, HAMILTON SOUTH

REDUCED LEVEL: 4.1

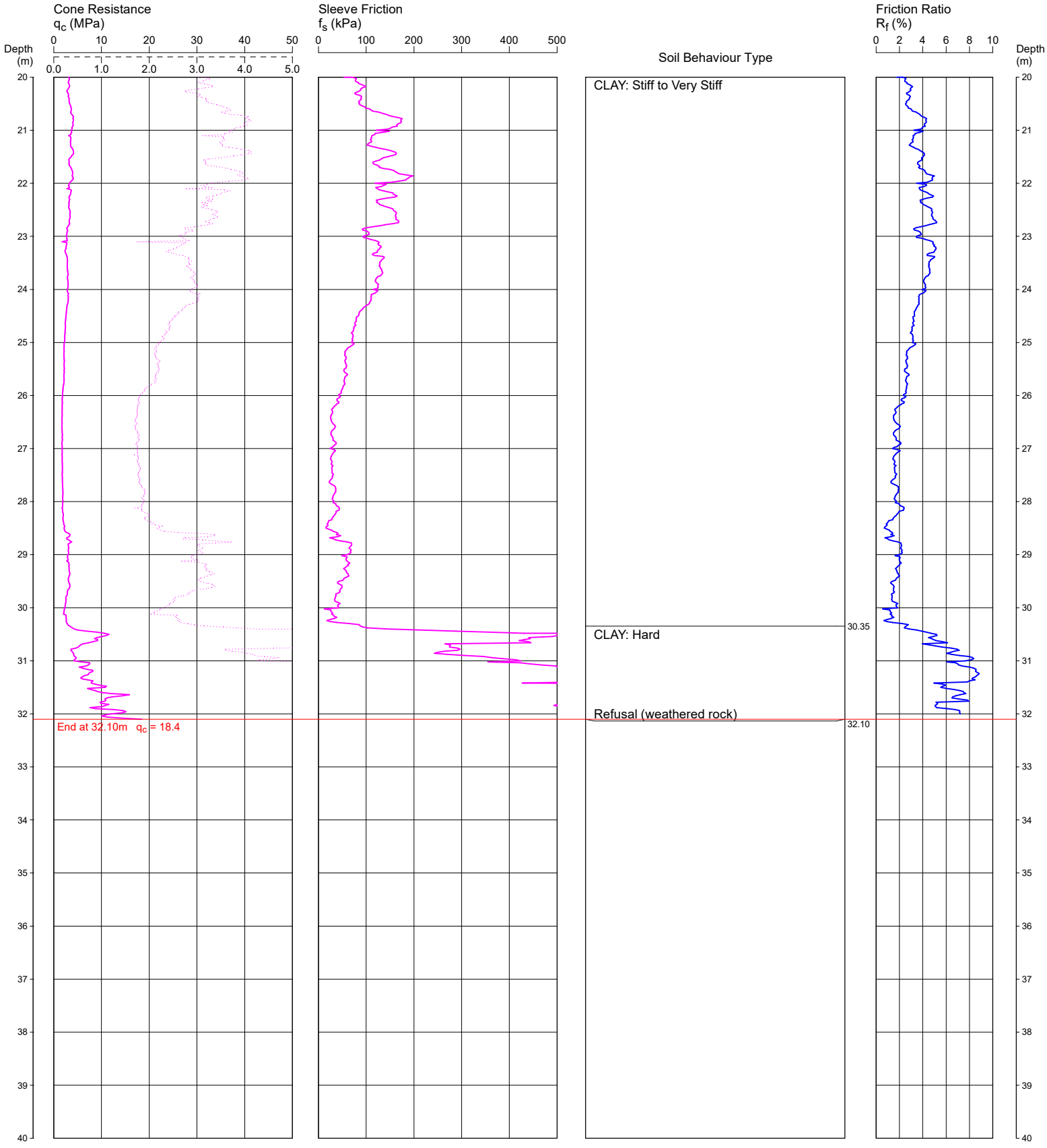
COORDINATES: 383849.0E 6355627.1N AHD

CPT105

Page 2 of 2

DATE 14/07/2022

PROJECT No: 213618.01



REMARKS: TEST DISCONTINUED DUE TO EXCESSIVE ROD BOWING IN INFERRED WEATHERED ROCK
GROUNDWATER LEVEL OBSERVED AT 1.7M AFTER WITHDRAWAL OF RODS

Water depth after test: 1.70m depth (measured)

File: P:\213618.01 - HAMILTON SOUTH, Newcastle High Drilling\4.0 Field Work\CPT Logs\CPT105.CP5

Cone ID: 170705 **Type:** I-CFXY-10

ConePlot Version 5.9.2

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CONE PENETRATION TEST

CLIENT: SCHOOL INFRASTRUCTURE NSW

PROJECT: NEWCASTLE HIGHSCHOOL UPGRADE

LOCATION: 160-200 PARKWAY AVENUE, HAMILTON SOUTH

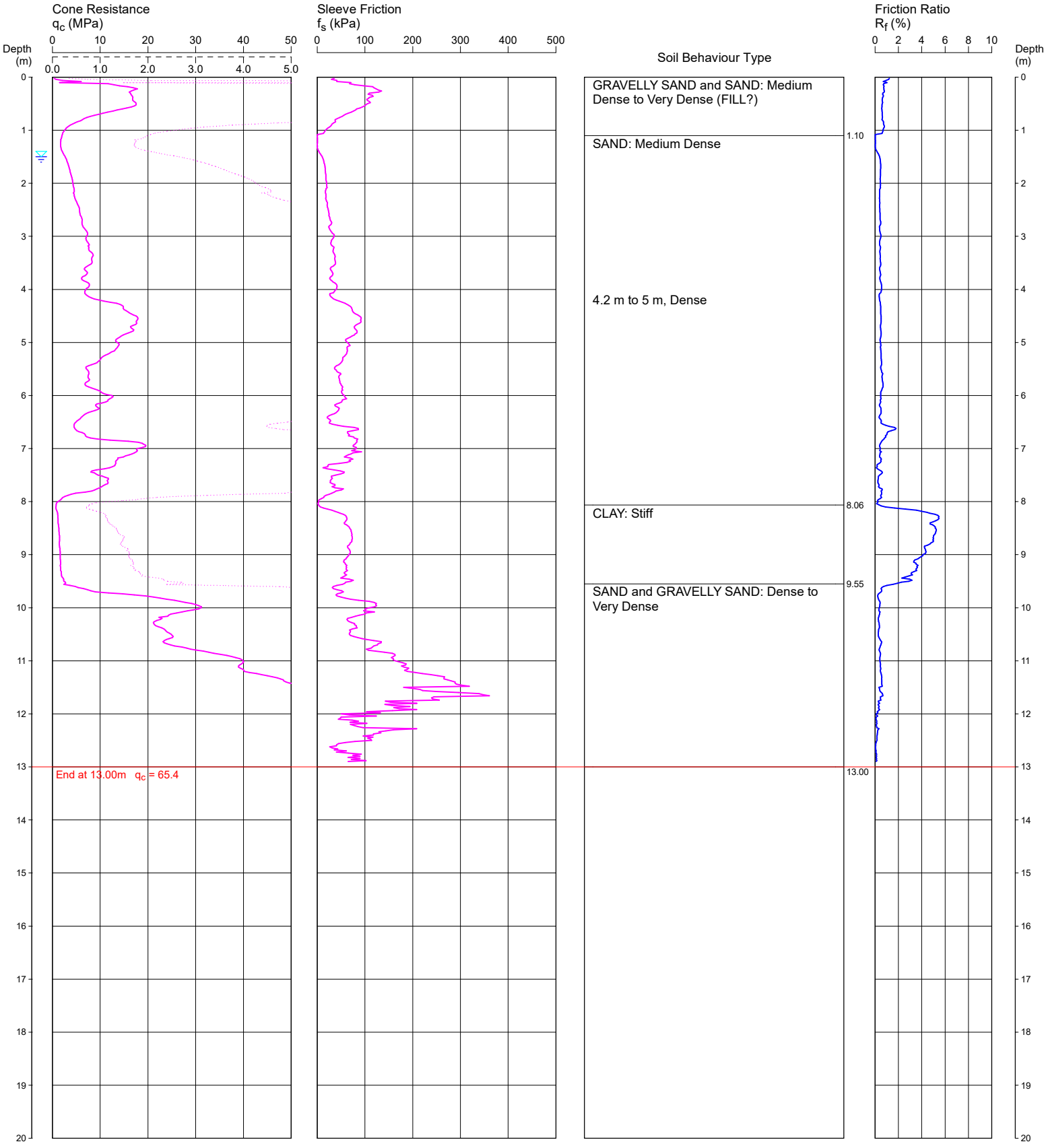
REDUCED LEVEL: 4.0

COORDINATES: 383803.1E 6355604.1N AHD

CPT106

DATE 13/07/2022

PROJECT No: 213618.01



REMARKS: TEST DISCONTINUED DUE TO EXCESSIVE BENDING IN VERY DENSE SANDS. ASPHALT 30MM THICK. GROUNDWATER LEVEL OBSERVED AT 1.5M AFTER WITHDRAWAL OF RODS

Water depth after test: 1.50m depth (measured)

File: P:\213618.01 - HAMILTON SOUTH, Newcastle High Drilling\4.0 Field Work\CPT Logs\CPT106.CP5

Cone ID: 170705 **Type:** I-CFXY-10

ConePlot Version 5.9.2

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CONE PENETRATION TEST

CLIENT: SCHOOL INFRASTRUCTURE NSW

PROJECT: NEWCASTLE HIGH SCHOOL UPGRADE

LOCATION: 160-200 PARKWAY AVENUE, HAMILTON SOUTH

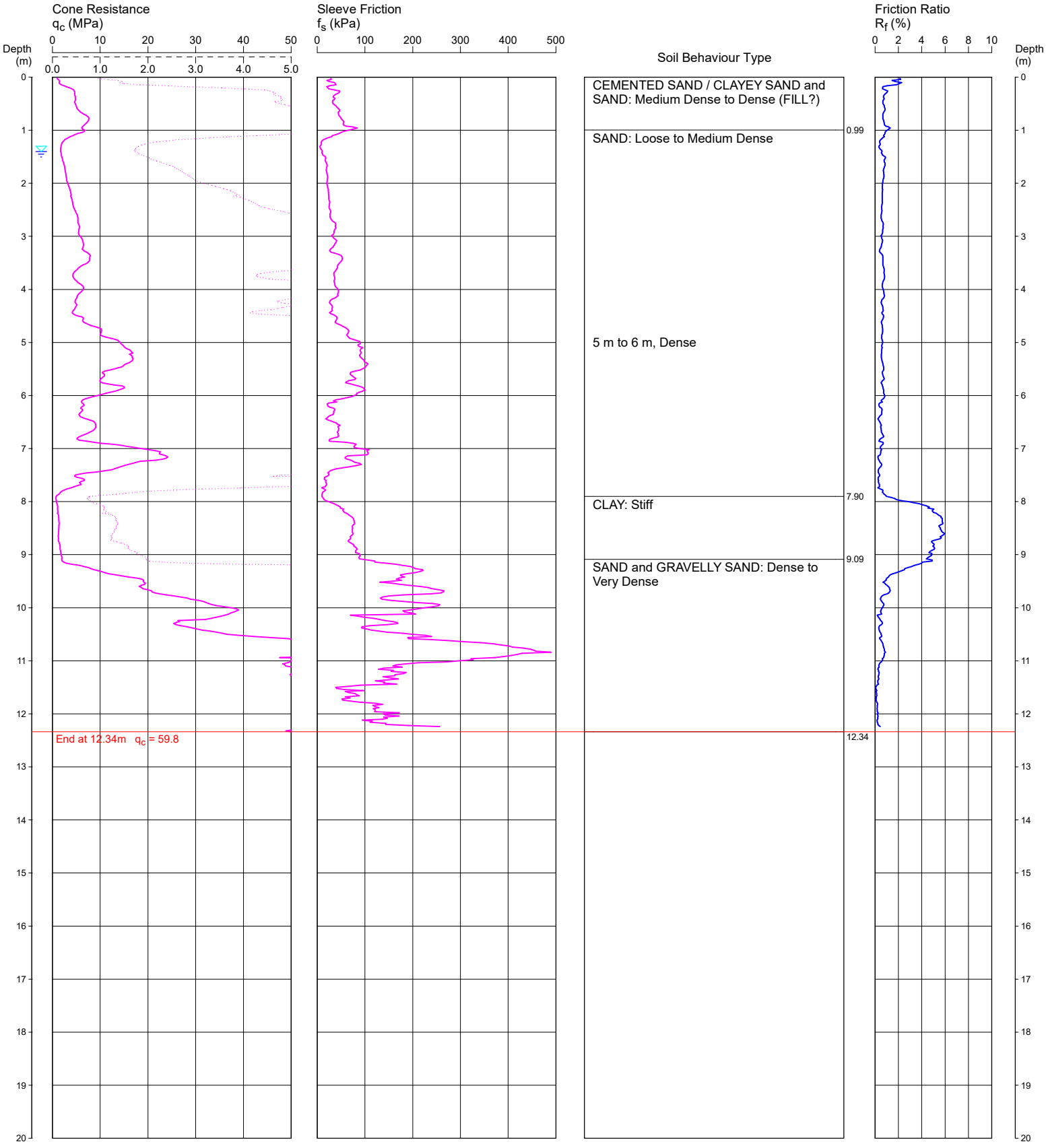
REDUCED LEVEL: 3.9

COORDINATES: 383822.5E 6355565.9N AHD

CPT107

DATE 13/07/2022

PROJECT No: 213618.01



REMARKS: TEST DISCONTINUED DUE TO EXCESSIVE BENDING IN VERY DENSE SANDS
GROUNDWATER LEVEL OBSERVED AT 1.4M AFTER WITHDRAWAL OF RODS

Water depth after test: 1.40m depth (measured)

File: P:\213618.01 - HAMILTON SOUTH, Newcastle High Drilling\4.0 Field Work\CPT Logs\CPT107.CP5

Cone ID: 170705 **Type:** I-CFXY-10

ConePlot Version 5.9.2

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Appendix B

Table B1: Results of Groundwater and Surface Water Analysis (Douglas, 2023b)

Table B2: Summary of Groundwater Levels and Field Parameters during Purging and Sampling (Douglas, 2023b)

Douglas Partners
Geotechnics / Environment / Groundwater

Table B1: Results of Groundwater and Surface Water Analysis (DP, 2023b)

						Groundwater								Surface water			
				Sample ID		401	402	403	D1/400GW	T1/400GW	404	405	406	D/SW	SW1	D/SW	SW2
				Sample Location		401	402	403	403	403	404	405	406	SW1	SW1	SW1	SW2
				Sample Date		23/03/2023	23/03/2023	23/03/2023	23/03/2023	23/03/2023	23/03/2023	23/03/2023	23/03/2023	30/03/2023	30/03/2023	30/03/2023	30/03/2023
Group	**Analyte**	**Units**	**PQL**	ANZG (2018) Freshwater Slightly to Moderately Disturbed Systems DGVs	PFAS NEMP 2020 Freshwater 99%												
Metals (Dissolved)	Aluminium (Filtered)	mg/L	0.01	0.055		-	-	-	-	-	-	-	-	-	-	-	-
	Arsenic (Filtered)	mg/L	0.001	0.013		0.008	0.032	0.002	0.002	0.001	0.001	0.006	0.016	<0.001	<0.001	<0.001	<0.001
	Beryllium (Filtered)	mg/L	0.0005			<0.0005	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	Boron (Filtered)	mg/L	0.02	0.37		0.2	0.1	0.05	0.05	-	0.02	0.04	0.06	0.03	0.03	0.03	0.05
	Cadmium (Filtered)	mg/L	0.0001	0.0002		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	Chromium (III+VI) (Filtered)	mg/L	0.001	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Cobalt (Filtered)	mg/L	0.001			<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Copper (Filtered)	mg/L	0.001	0.0014		0.002	0.002	<0.001	<0.001	<0.001	0.004	0.003	0.002	0.002	0.001	0.002	0.003
	Lead (Filtered)	mg/L	0.001	0.0034		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001
	Manganese (Filtered)	mg/L	0.005	1.9		0.3	0.12	0.039	0.037	-	0.082	0.047	0.056	0.017	0.018	0.017	0.058
	Mercury (Filtered)	mg/L	0.00005 / 0.0001	0.00006		<0.00005	<0.00005	<0.00005	<0.00005	<0.0001	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
	Nickel (Filtered)	mg/L	0.001	0.011		0.001	0.001	0.014	0.012	0.010	0.011	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Selenium (Filtered)	mg/L	0.001	0.005		<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Silver (Filtered)	mg/L	0.001	0.00005		-	-	-	-	-	-	-	-	-	-	-	-
	Zinc (Filtered)	mg/L	0.001 / 0.005	0.008		0.01	0.044	0.016	0.017	0.015	0.044	0.064	0.034	0.035	0.036	0.035	0.03
Metals (Total)	Arsenic	mg/L	0.001	0.013		-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	0.001
	Beryllium	mg/L	0.0005			-	-	-	-	-	-	-	-	<0.0005	<0.0005	<0.0005	<0.0005
	Boron	mg/L	0.02	0.37		-	-	-	-	-	-	-	-	0.04	0.04	0.04	0.06
	Cadmium	mg/L	0.0001	0.0002		-	-	-	-	-	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001
	Chromium (III+VI)	mg/L	0.001			-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001
	Cobalt	mg/L	0.001			-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001
	Copper	mg/L	0.001	0.0014		-	-	-	-	-	-	-	-	0.002	0.002	0.002	0.004
	Lead	mg/L	0.001	0.0034		-	-	-	-	-	-	-	-	0.002	0.002	0.002	0.001
	Manganese	mg/L	0.005	1.9		-	-	-	-	-	-	-	-	0.02	0.023	0.02	0.057
	Mercury	mg/L	0.00005	0.00006		-	-	-	-	-	-	-	-	<0.00005	<0.00005	<0.00005	<0.00005
	Nickel	mg/L	0.001	0.011		-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001
	Selenium	mg/L	0.001	0.005		-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001
	Zinc	mg/L	0.001	0.008		-	-	-	-	-	-	-	-	0.042	0.039	0.042	0.03
PAHs	Benzo(b+j+k)fluoranthene	mg/L	0.0002			0.0003	0.001	<0.0002	<0.0002	-	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	Acenaphthene	µg/L	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Acenaphthylene	µg/L	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Anthracene	µg/L	0.1	0.01		<0.1	0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Benz(a)anthracene	µg/L	0.1			0.1	0.6	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Benzo(a) pyrene	µg/L	0.1 / 0.05	0.1		0.1	0.7	<0.1	<0.1	<0.05	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Benzo(g,h,i)perylene	µg/L	0.1			<0.1	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Chrysene	µg/L	0.1			0.1	0.5	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	0.1	<0.1	<0.1
	Dibenz(a,h)anthracene	µg/L	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Fluoranthene	µg/L	0.1	1		0.3	0.9	<0.1	0.1	<0.1	0.6	<0.1	<0.1	<0.1	0.2	<0.1	<0.1
	Fluorene	µg/L	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Indeno(1,2,3-c,d)pyrene	µg/L	0.1			<0.1	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Naphthalene	µg/L	0.2	16		<0.2	<0.2	<0.2	<0.2	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Phenanthrene	µg/L	0.1	0.6		0.1	0.4	<0.1	<0.1	<0.1	0.8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Benzo(a)pyrene TEQ	mg/L	0.0005			<0.0005	0.0009	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	Pyrene	µg/L	0.1			0.3	0.8	<0.1	0.1	<0.1	0.5	<0.1	<0.1	<0.1	0.2	<0.1	<0.1
	PAHs (Sum of positives)	mg/L	0.0001			0.0013	0.0059	<0.0001	0.00022	-	0.0033	<0.0001	<0.0001	<0.0001	0.0005	<0.0001	<0.0001
PFAS	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.002 / 0.005			<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.002 / 0.005			<0.001	<0.001	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	N-ethyl-perfluorooctanesulfonamidoacetic acid	µg/L	0.002 / 0.005			<0.02	<0.004	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
	N-methylperfluorooctane sulfonamidoacetic acid	µg/L	0.002 / 0.005			<0.02	<0.02	<0.002	<0.002	<0.005	<0.002	<0.002	<0.004	<0.002	<0.002	<0.002	<0.002
	N-Methylperfluorooctanesulfonamidoethanol	µg/L	0.05 / 0.005			<0.05	<0.05	<0.05	<0.05	<0.005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Perfluorobutanoic acid (PFBA)	µg/L	0.002 / 0.01			<0.01	<0.004	<0.01	<0.01	<0.05	0.006	0.02	0.004	0.007	0.007	0.007	0.007
	Perfluorodecanesulfonic acid (PFDS)	µg/L	0.002			<0.002	<0.002	<0.002	<0.002	<0.010	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.001 / 0.002			<0.001	<0.001	0.001	0.001	<0.010	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.001 / 0.002			<0.001	<0.001	0.001	0.001	<0.010	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Perfluoropentanoic acid (PFPeA)	µg/L	0.002			<0.002	<0.002	0.002	0.002	<0.010	0.008	0.025	<0.002	0.01	0.01	0.01	0.01
	Sum of PFAS	µg/L	0.0002 / 0.002			0.015	0.002	0.11	0.11	0.112	0.056	0.18	0.066	0.11	0.11	0.11	0.093
	Sum of PFHxS and PFOS	µg/L	0.0002 / 0.002			0.012	0.002	0.087	0.088	0.099	0.023	0.065	0.05	0.035	0.037	0.035	0.035
	Sum of US EPA PFAS (PFOS + PFOA)*	µg/L	0.0002 / 0.002			0.0095	0.002	0.073	0.074	<0.002	0.028	0.067	0.048	0.051	0.051	0.051	0.044
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	mg/L	0.0000004 / 0.000005			<0.0000008	<0.0000004	<0.0000004	<0.0000004	<0.005	<0.0000004	<0.0000004	<0.0000004	<0.0000004	<0.0000004	<0.0000004	<0.0000004
	Perfluorodecanoic acid (PFDA)	µg/L	0.002			<0.02	<0.002	<0.002	<0.002	<0.010	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
	Perfluorohexanoic acid (PFHxA)	µg/L	0.0004 / 0.002			<0.0004	<0.0004	0.004	0.004	<0.010	0.0068	0.043	0.002	0.014	0.015	0.014	0.011
	N-Ethyl perfluorooctane sulfonamide (NEtFOSA)	µg/L	0.1 / 0.005			<0.1	<0.1	<0.1	<0.1	<0.025	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	µg/L	0.5 / 0.005			<0.5	<0.5	<0.5	<0.5	<0.025	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	N-Methyl perfluorooctane sulfonamide (NMeFOSA)	µg/L	0.05 / 0.002			<0.05	<0.05	<0.05	<0.05	<0.010	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.0004 / 0.002			0.001	<0.0004	0.002	0.002	<0.010	0.001	0.003	0.002	0.003	0.003	0.003	0.002
	Perfluorooctanesulfonic acid (PFOS)	mg/L	0.0000002		0.00000023	0.0000083	0.000002	0.000064	0.000065	0.000072	0.00002	0.00005	0.000041	0.000025	0.000026	0.000025	0.000024
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.005 / 0.002			<0.05	<0.01	<0.005	<0.005	<0.010	<0.005	<0.005	<0.02	<0.005	<0.005	<0.005	<0.005
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.0004 / 0.002			<0.0004	<0.0004	0.002	0.002	<0.010	0.0046	0.012	0.001	0.0074	0.0074	0.0074	0.0063
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.0002 / 0.002			0.0039	<0.0002	0.022	0.023	0.027	0.0027	0.015	0.0089	0.01	0.011	0.01	0.011
	Perfluorononanoic acid (PFNA)	µg/L	0.001 / 0.002			<0.002	<0.001	<0.001	<0.001	<0.010	<0.001	<0.001	<0.001	0.001	0.001	0.001	0.001
	Perfluorooctane sulfonamide (PFOSA)	µg/L	0.01 / 0.002			<0.1	<0.1	<0.01	<0.01	<0.010	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05			<0.05	<0.05	<0.05	<0.05	<0.025	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.01 / 0.002			<0.01	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.002			<0.02	<0.002	<0.002	<0.002	<0.010	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	mg/L	0.0000004 / 0.005			<0.0000004	<0.0000004	<0.0000004	<0.0000004	<0.000010	<0.0000004	<0.0000004	<0.0000004	<0.0000004	<0.0000004	<0.0000004	<0.0000004
	Perfluorooctanoic acid (PFOA)	mg/L	0.0000002		0.019	0.000001	<0.0000002	0.0000088	0.0000089	0.000013	0.0000073	0.000017	0.0000069	0.000026	0.000025	0.000026	0.000021
TRH	C10-C14	µg/L	50			<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
	C15-C28	µg/L	100			<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
	C29-C36	µg/L	100 / 50			<100	<100	<100	<100	<50	<100	<100	<100	<100	<100	<100	<100
	C10-C16	µg/L	50 / 100			<50	<50	<50	<50	<100	<50	<50	<50	<50	<50	<50	<50
	C10-C16 (F2 minus Naphthalene)	µg/L	50 / 100			<50	<50	<50	<50	<100	<50	<50	<50	<50	<50	<50	<50
	C16-C34	µg/L	100			<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
	C34-C40	µg/L	100			<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
	C10-C40 (Sum of total)	µg/L	50 / 100			<50	<50	<50	<50	<100	<50	<50	<50	<50	<50	<50	<50
	C10-C36	µg/L	50			<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
VOC	1,1,1,2-tetrachloroethane	µg/L	1 / 5			<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	1,1,1-trichloroethane	µg/L	1 / 5	270		<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	1,1,2,2-tetrachloroethane	µg/L	1 / 5	400		<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	1,1,2-trichloroethane	µg/L	1 / 5	6500		<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	1,1-dichloroethane	µg/L	1 / 5			<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	1,1-dichloroethene	µg/L	1 / 5	700		<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	1,1-dichloropropene	µg/L	1 / 5			<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	1,2,3-trichlorobenzene	µg/L	1 / 5	3		<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	1,2,3-trichloropropane	µg/L	1 / 5			<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	1,2,4-trichlorobenzene	µg/L	1 / 5	85		<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	1,2,4-trimethylbenzene	µg/L	1 / 5			<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	1,2-dibromo-3-chloropropane	µg/L	1 / 5			<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	1,2-dibromoethane	µg/L	1 / 5			<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	1,2-dichlorobenzene	µg/L	1 / 5	160		<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	1,2-dichloroethane	µg/L	1 / 5	1900		<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	1,2-dichloropropane	µg/L	1 / 5	900		<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	1,3,5-trimethylbenzene	µg/L	1 / 5			<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	1,3-dichlorobenzene	µg/L	1 / 5	260		<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	1,3-dichloropropane	µg/L	1 / 5	1100		<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	1,4-dichlorobenzene	µg/L	1 / 5	60		<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	2,2-dichloropropane	µg/L	1 / 5			<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	2-chlorotoluene	µg/L	1 / 5			<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	4-chlorotoluene	µg/L	1 / 5			<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	Benzene	µg/L	1 / 5	600		<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	Bromobenzene	µg/L	1 / 5			<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	Bromochloromethane	µg/L	1 / 5			<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	Bromodichloromethane	µg/L	1 / 5			<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	Bromoform	µg/L	1 / 5			<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	Bromomethane	µg/L	10/ 50			<10	<10	<10	<10	<50	<10	<10	<10	<10	<10	<10	<10
	Carbon tetrachloride	µg/L	1 / 5	240		<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	Chlorobenzene	µg/L	1 / 5	55		<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	Chlorodibromomethane	µg/L	1 / 5			<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	Chloroethane	µg/L	10/ 50			<10	<10	<10	<10	<50	<10	<10	<10	<10	<10	<10	<10
	Chloroform	µg/L	1 / 5	370		<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	Chloromethane	µg/L	10/ 50			<10	<10	<10	<10	<50	<10	<10	<10	<10	<10	<10	<10
	cis-1,2-dichloroethene	µg/L	1 / 5			<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	cis-1,3-dichloropropene	µg/L	1 / 5			<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	Cyclohexane	mg/L	0.001			<0.001	<0.001	<0.001	<0.001	<5	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Dibromomethane	µg/L	1 / 5			<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	Dichlorodifluoromethane	µg/L	10/ 50			<10	<10	<10	<10	<50	<10	<10	<10	<10	<10	<10	<10
	Hexachlorobutadiene	µg/L	1 / 5			<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	Isopropylbenzene	µg/L	1 / 5	30		<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	n-butylbenzene	µg/L	1 / 5			<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	n-propylbenzene	µg/L	1 / 5			<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	p-isopropyltoluene	µg/L	1 / 5			<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	sec-butylbenzene	µg/L	1 / 5			<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	Styrene	µg/L	1 / 5			<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	Trichloroethene	µg/L	1 / 5	330		<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	tert-butylbenzene	µg/L	1 / 5			<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	Tetrachloroethene	µg/L	1 / 5	70		<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	Ethylbenzene	µg/L	1 / 5	80		<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	Toluene	µg/L	1 / 5	180		<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	trans-1,2-dichloroethene	µg/L	1 / 5			<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	trans-1,3-dichloropropene	µg/L	1 / 5			<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	Trichlorofluoromethane	µg/L	10/ 50			<10	<10	<10	<10	<50	<10	<10	<10	<10	<10	<10	<10
	Vinyl chloride	µg/L	10/ 50	100		<10	<10	<10	<10	<50	<10	<10	<10	<10	<10	<10	<10
	Xylene (m & p)	µg/L	2			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Xylene (o)	µg/L	1	350		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
vTRH(C6-C10)/BTEXN in Water	C6-C9	µg/L	10/ 20			<10	<10	<10	<10	<20	<10	<10	<10	<10	<10	<10	<10
	C6-C10	µg/L	10/ 20			<10	<10	<10	<10	<20	<10	<10	<10	<10	<10	<10	<10
	C6-C10 (F1 minus BTEX)	µg/L	10/ 20			<10	<10	<10	<10	<20	<10	<10	<10	<10	<10	<10	<10
	Naphthalene	µg/L	1 / 5	16		<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1
	Benzene	µg/L	1	600		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Ethylbenzene	µg/L	1 / 2	80		<1	<1	<1	<1	<2	<1	<1	<1	<1	<1	<1	<1
	Toluene	µg/L	1 / 2	180		<1	<1	<1	<1	<2	<1	<1	<1	<1	<1	<1	<1
	Xylene (m & p)	µg/L	2			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Xylene (o)	µg/L	1 / 2	350		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

T1/400GW - triplicate of 403
D/SW- replicate of SW1

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Table B2: Summary of Groundwater Levels and Field Parameters during Purging and Sampling (DP, 2023b)

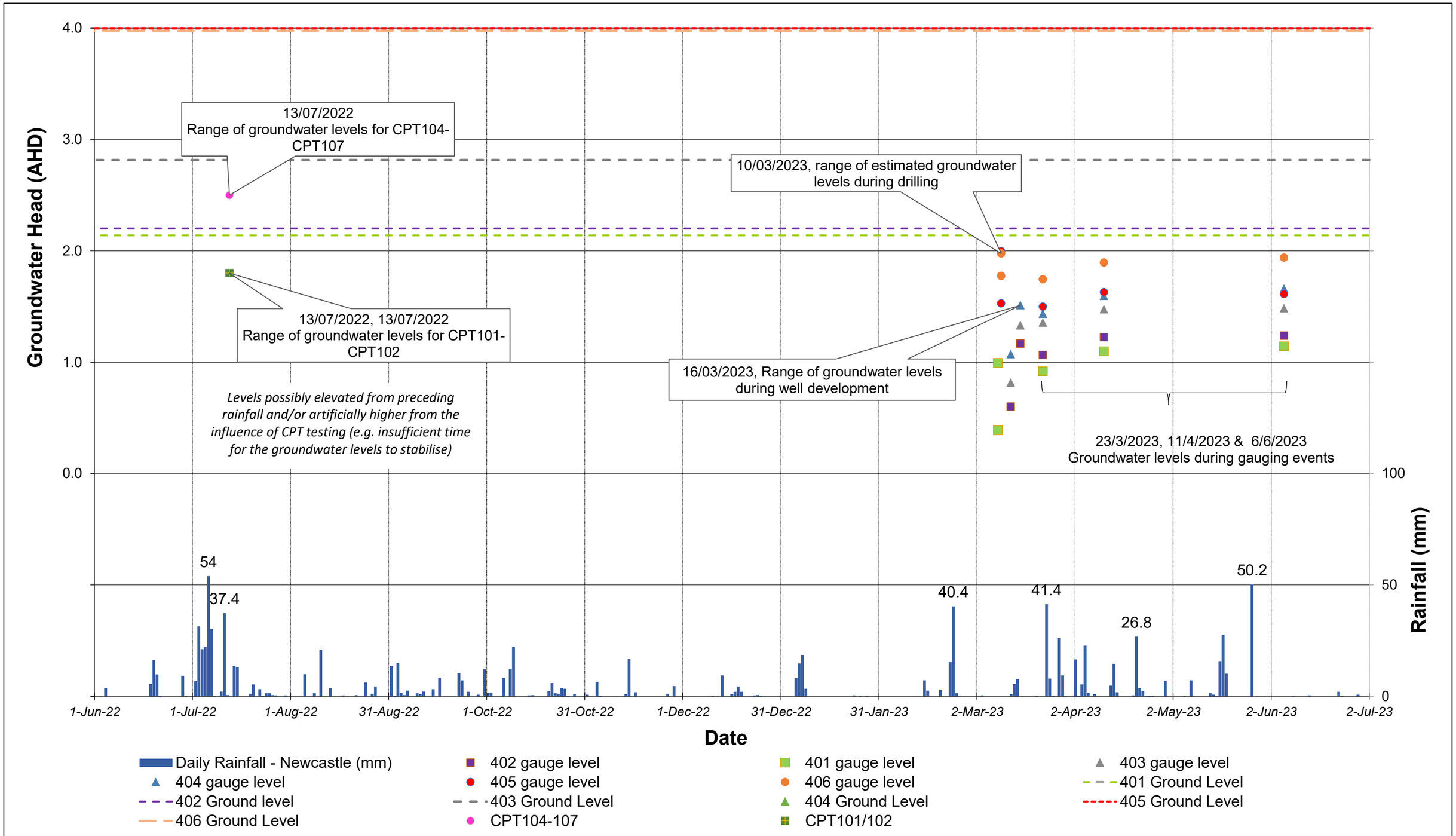
Well ID	Date	Easting	Northing	Ground Level (AHD)	TOC Level (AHD)	Depth to GW (m TOC) [3]	Depth to GW (m bgl) [3]	Reduced Water Level (AHD) [3]	PID Well Headspace (ppm) [1]	PID GW/SW Headspace (ppm) [1]	Depth of Floating Product (mm) [2]	pH	EC (µS/cm)	ORP (mV)	Turbidity (NTU)	Temp (°C)	DO (mg/L)	Volume Purged (L)	Comments	Sampling Method
Groundwater Irrigation Bore																				
GW1	20/12/2022	384024	6355584	-	N/A	N/A	-	-	N/A	<1	-	7.0	243	172	3	19.4	8.08	10	Clear, grey	Sample from bore tap
Groundwater Monitoring Wells																				
401	23/03/2023	384063.5	6355615.8	2.14	2.06	1.14	1.22	0.92	<1	<1	<1	6.8	642	-109	>1000	24.4	0.06	10	Very turbid, brown, no odour, no obvious contamination.	MicroPurge
	11/04/2023					0.96	1.04	1.10	<1	NT	<1	NT	NT	NT	NT	NT	NT	NT	Not sampled	Not sampled
402	23/03/2023	384012.3	6355646.5	2.20	2.26	1.19	1.24	1.07	<1	<1	<1	6.6	606	-6	>1000	21.5	0.79	10	Very turbid, pale brown, no odour, no obvious contamination.	MicroPurge
	11/04/2023					1.03	0.98	1.23	<1	NT	<1	NT	NT	NT	NT	NT	NT	NT	Not sampled	Not sampled
403	23/03/2023	383945.0	6355704.4	2.82	2.74	1.38	1.46	1.36	<1	1	<1	5.7	387	4	>1000	22.1	0.05	24	Very turbid, grey, slight sulfur odour, no obvious contamination.	MicroPurge
	11/04/2023					1.26	1.34	1.48	<1	NT	<1	NT	NT	NT	NT	NT	NT	NT	Not sampled	Not sampled
404	23/03/2023	383944.2	6355578.7	3.87	3.86	2.42	2.44	1.44	3	<1	<1	4.8	264	202	>1000	23.8	0.66	12	Very turbid, brown, no odour, no obvious contamination.	MicroPurge
	11/04/2023					2.26	2.28	1.60	<1	NT	<1	NT	NT	NT	NT	NT	NT	NT	Not sampled	Not sampled
405	23/03/2023	383885.8	6355637.9	4.00	3.97	2.47	2.50	1.50	<1	<1	<1	6.0	383	66	>1000	25.5	0.23	16	Very turbid, brown, no odour, no obvious contamination.	MicroPurge
	11/04/2023					2.34	2.37	1.63	<1	NT	<1	NT	NT	NT	NT	NT	NT	NT	Not sampled	Not sampled
406	23/03/2023	383777.0	6355597.0	3.98	4.05	2.30	2.37	1.75	<1	<1	<1	5.3	267	131	>1000	24.1	0.11	14	Very turbid, pale brown, no odour, no obvious contamination. Sand present in well.	MicroPurge
	11/04/2023					2.15	2.08	1.90	<1	NT	<1	NT	NT	NT	NT	NT	NT	NT	Not sampled	Not sampled
Surface Water																				
SW1	30/03/2023	383892	6355753	-	-	-	-	-	-	<1	-	7.1	314	-25	1	22.9	6.92	-	Clear, grey, slight sulfur odour, no obvious contamination. Algae present, water flowing easterly.	Swing Sampler
SW2	30/03/2023	384074	6355650	-	-	-	-	-	-	<1	-	7.4	352	-43	6	25.4	9.60	-	Clear, pale yellow/straw, decomposing / organic odour, no obvious contamination. Algae present, water flowing easterly.	Swing Sampler

Appendix C

Figure C1: Summary of Groundwater Levels (2022-2023) (DP, 2023h)

Table C1: Summary of groundwater levels from all assessments

Figure F1 – Groundwater Level vs Rainfall (22 Nov 2023 to 16 Jan 2024) (Douglas, 2024a)

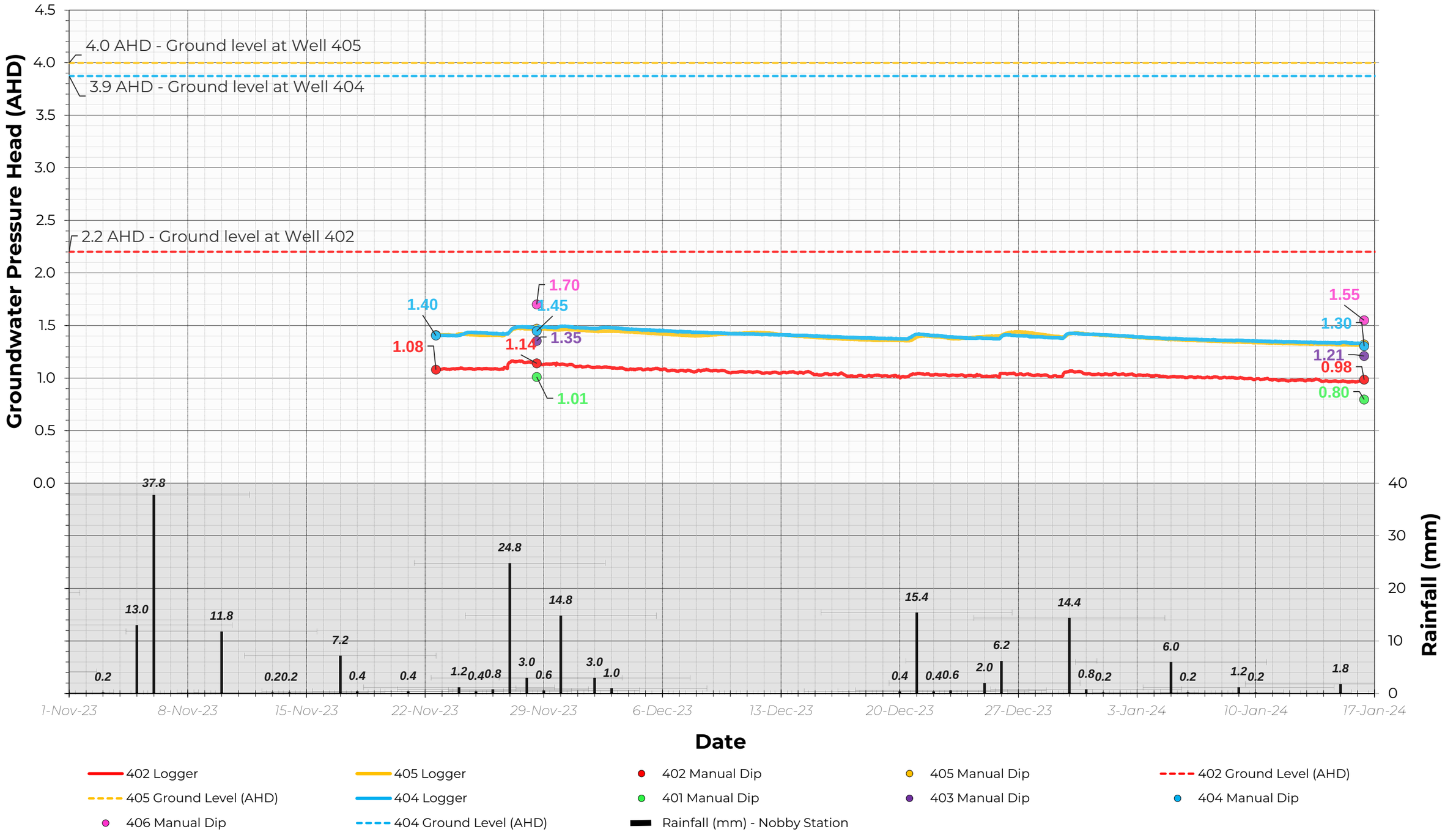


Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: School Infrastructure NSW	**Summary of Groundwater Levels (2022-2023)** **Newcastle High School Upgrade** **25a National Park Street, Newcastle West**	PROJECT NO: 213618.02
	OFFICE: Newcastle DRAWN BY: DEW		FIGURE NO: C1
	SCALE: N/A DATE: 18 September 2023		REVISION: 0

Table C1: Summary of groundwater levels from all assessments (2021-2024)

Well ID / Bore	Date	Ground Level	TOC Level (AHD)	Depth to GW (m TOC)	Depth to GW (m bgl)	Reduced Water Level (AHD)	Event Type
Boreholes							
BH101	20/01/2021	3	-	-	3	0	During drilling
BH102	20/01/2021	3	-	-	5.6	-2.6	
BH103	20/01/2021	4	-	-	3.5	0.5	
BH104	20/01/2021	4	-	-	4	0	
BH105	20/01/2021	3	-	-	2.4	0.6	
BH106	20/01/2021	4	-	-	2	2	
BH107	20/01/2021	4	-	-	2.5	1.5	
BH108	20/01/2021	4	-	-	2.5	1.5	
BH109	20/01/2021	3	-	-	NE	<1	
BH110	20/01/2021	3	-	-	NE	<1	
BH111	20/01/2021	4	-	-	NE	<2	
DP Bores and CPTs							
Bore 1a	8/07/2022	3.2	-	-	NE	<2.1	During drilling.
Bore 5a	8/07/2022	4.1	-	-	NE	<1.9	
CPT 101	13/07/2022	2.6	-	-	0.7	1.9	Groundwater level after rods removed
CPT 102	14/07/2022	2.3	-	-	0.5	1.8	
CPT 103	13/07/2022	3.3	-	-	1.0	2.3	
CPT 104	13/07/2022	4.1	-	-	1.6	2.5	
CPT 105	14/07/2022	4.1	-	-	1.7	2.4	
CPT 106	13/07/2022	4.0	-	-	1.5	2.5	
CPT 107	13/07/2022	3.9	-	-	1.4	2.5	
Groundwater monitoring wells (401-406)							
Well 401	9/03/2023	2.14	2.06	-	1.75	0.39	During drilling
	9/03/2023			1.07	1.15	0.99	Well development
	23/03/2023			1.14	1.22	0.92	Groundwater gauging, groundwater sampling
	11/04/2023			0.96	1.04	1.10	Groundwater gauging
	6/06/2023			0.92	0.92	1.14	Groundwater gauging, gas monitoring
	28/11/2023			1.05	1.13	1.01	Groundwater gauging
	16/1/2024			1.26	1.34	0.80	Groundwater gauging
Well 402	13/03/2023	2.20	2.26	-	1.60	0.60	During drilling
	16/03/2023			1.09	1.04	1.17	Well development
	23/03/2023			1.19	1.24	1.07	Groundwater gauging, groundwater sampling
	11/04/2023			1.03	0.98	1.23	Groundwater gauging
	6/06/2023			1.02	1.02	1.24	Groundwater gauging, gas monitoring
	22/11/2023			1.18	1.23	1.08	Groundwater gauging, logger installation
	28/11/2023			1.12	1.17	1.14	Groundwater gauging, logger download
	16/1/2024			1.27	1.32	0.98	Groundwater gauging, logger download
Well 403	13/03/2023	2.82	2.74	-	2.00	0.82	During drilling
	16/03/2023			1.41	1.49	1.33	Well development
	23/03/2023			1.38	1.46	1.36	Groundwater gauging, groundwater sampling
	11/04/2023			1.26	1.34	1.48	Groundwater gauging
	6/06/2023			1.25	1.25	1.48	Groundwater gauging, gas monitoring
	28/11/2023			1.38	1.46	1.35	Groundwater gauging
	16/1/2024			1.53	1.61	1.21	Groundwater gauging
Well 404	13/03/2023	3.87	3.86	-	2.80	1.07	During drilling
	16/03/2023			2.34	2.36	1.51	Well development
	23/03/2023			2.42	2.44	1.44	Groundwater gauging, groundwater sampling
	11/04/2023			2.26	2.28	1.60	Groundwater gauging
	6/06/2023			2.20	2.20	1.66	Groundwater gauging, gas monitoring
	22/11/2023			2.45	2.47	1.40	Groundwater gauging, logger installation
	28/11/2023			2.41	2.43	1.45	Groundwater gauging, logger download
	16/1/2024			2.55	2.57	1.30	Groundwater gauging, logger download
Well 405	10/03/2023	4.00	3.97	-	2.00	2.00	During drilling
	10/03/2023			2.44	2.47	1.53	Well development
	23/03/2023			2.47	2.50	1.50	Groundwater gauging, groundwater sampling
	11/04/2023			2.34	2.37	1.63	Groundwater gauging
	6/06/2023			2.36	2.36	1.61	Groundwater gauging, gas monitoring
	22/11/2023			2.59	2.56	1.41	Groundwater gauging, logger installation
	28/11/2023			2.53	2.50	1.47	Groundwater gauging, logger download
	16/1/2024			2.65	2.62	1.32	Groundwater gauging, logger download
Well 406	10/03/2023	3.98	4.05	-	2.00	1.98	During drilling
	10/03/2023			2.27	2.20	1.78	Well development
	23/03/2023			2.30	2.37	1.75	Groundwater gauging, groundwater sampling
	11/04/2023			2.15	2.08	1.90	Groundwater gauging
	6/06/2023			2.11	2.18	1.94	Groundwater gauging, gas monitoring
	28/11/2023			2.34	2.41	1.70	Groundwater gauging
	16/1/2024			2.50	2.57	1.55	Groundwater gauging
Minimum						**0.80**	**Development, sampling or gauging event**
Maximum						**1.94**	**Development, sampling or gauging event**

Note to Table:
AHD – Australian Height Datum
m bgl – metres below ground level
GW – groundwater
TOC – top of PVC casing



Douglas PARTNERS | GROUNDED EXPERTISE

CLIENT: Hansen Yuncken Pty Ltd		PROJECT NO: 213618.04
OFFICE: Newcastle	DRAWN BY: DEW/TLG	FIGURE NO: F1
SCALE: N/A	DATE: 17 January 2024	REVISION: 1

Groundwater Level vs Rainfall
(22 Nov 2023 to 16 Jan 2024)
Newcastle High School Upgrade
25a National Park Street, Newcastle West

Appendix D

Department of Planning and Environment (Water) – EIS Letter Response dated 9 August 2023

Department of Planning and Environment (Water) – EIS Letter Response dated 15 March 2024

Department of Planning and Environment

Our ref: OUT23/12629

Mr Patrick Andrade
Planning and Assessment Group
NSW Department of Planning and Environment

Email: patrick.andrade@dpie.nsw.gov.au

9 August 2023

Subject: **Newcastle Education Campus (Newcastle City) (SSD-41814831) – Environmental Impact Statement (EIS)**

Dear Mr Andrade,

I refer to your request for advice sent on 30 June 2023 to the Department of Planning and Environment (DPE) Water about the above matter.

The NSW Department of Education is seeking approval to upgrade the Newcastle Education Campus to provide improved facilities to meet the educational needs of students. The site is located at 25a National Park Street, Newcastle West.

DPE Water has reviewed the Environmental Impact Statement (EIS) and has recommendations regarding water take and licensing and ground water impacts. Please see Attachment A for more detail.

Should you have any further queries in relation to this submission please do not hesitate to contact DPE Water Assessments water.assessments@dpie.nsw.gov.au.

Yours sincerely

Simon Francis
Senior Project Officer, Assessments, Knowledge Division
Department of Planning and Environment: Water

Attachment A

Detailed advice to DPE Planning & Assessment regarding the Newcastle Education Campus (Newcastle City) (SSD-41814831)

1.0 Water Take and Licencing

1.1 Recommendation – Prior to Approval

The applicant should provide a dewatering management plan that details the maximum depth of excavation for construction and the maximum annual volume of water take due to aquifer interference activities required for the project.

Explanation

The EIS reports groundwater depths ranging between 2 m and 5.5 m below ground level, however the Desktop Review Soil and Water report (Appendix R) indicates groundwater was encountered at depths ranging between 0.5 m and 2.5 m.

Infrastructure works may require excavations >2m and intercept groundwater, and there is uncertainty as to the potential groundwater take. The proponent has committed to providing a dewatering management plan post determination. However, this should be provided prior to approval and should identify the maximum depth of excavations for construction and estimate the maximum annual volume of water take due to aquifer interference activities required for the project. It should also specifically nominate a drained method for the proposed development.

In preparing the dewatering management plan, the applicant should consider the *Guidelines for Groundwater Documentation for SSD/SSI Projects (2022)* and the *Minimum Requirements for Building Site Groundwater Investigations and Reporting (2022)* to ensure documentation is fit for purpose. These documents are available at:

- Guidelines for Groundwater Documentation for SSD/SSI Projects (2022)
  - https://water.nsw.gov.au/__data/assets/pdf_file/0020/507611/Guidelines-for-Groundwater-Documentation-for-SSD-SSI-Projects.pdf
- Minimum Requirements for Building Site Groundwater Investigations and Reporting (2022)
  - https://water.dpie.nsw.gov.au/__data/assets/pdf_file/0003/541605/minimum-requirements-for-building-site-groundwater-investigations-and-reporting.pdf

1.2 Recommendation – Post Approval

The proponent must ensure sufficient water entitlement is held in a Water Access Licence (WAL)to account for the maximum predicted take for each water source prior to take occurring, unless an exemption applies.

Explanation

Under the *Water Management Act 2000,* a Water Access Licence (WAL) is required for water take above 3 ML/year. If the water take is less than or equal to 3 ML /year for any aquifer interference activities listed in Clause 7 of Schedule 4 of the *Water Management (General) Regulation 2018*, an exemption may apply. It is noted that this project includes excavation activities required for the construction of a building, road or infrastructure, which is item 2(c) in Clause 7 of the Water Management (General) Regulation 2018.

DPE Water notes that there are requirements for an exemption, such as:

1. the water is not taken for consumption or supply;
2. the person claiming the exemption keeps a record of the water taken under the exemption and provides this to the Minister within 28 days of the end of the water year; and
3. the records are kept for 5 years.

Further information on these requirements and other information on exemptions can be found on: https://water.dpie.nsw.gov.au/licensing-and-trade/licensing/groundwater-wal-exemptions. Please note that an exemption application form and a specific FAQ on 'WAL exemptions – 3ML or less of groundwater' is provided at this website as well as a form to report and record water take under an exemption.

End Attachment A

Department of Climate Change, Energy, the Environment and Water

Our ref: OUT24/3818

Dana Wilson
Douglas Partners

Email: Dana.Wilson@douglaspartners.com.au

15/03/2024

Subject: **Newcastle Education Campus (SSD-41814831) - Dewatering Management Plan**

Dear Ms Wilson

I refer to your request for advice sent on 20 February 2024 to the Department of Climate Change, Energy, the Environment and Water (DCCEEW) Water Group about the above matter.

DCCEEW Water has reviewed the DMP and advises that it is adequately fit for purpose. The DMP effectively describes the ground conditions, nature of the excavation activities, and methods and assumptions behind the estimated inflow volumes (predicted to be well below 3 ML/year).

Should you have any further queries in relation to this submission please do not hesitate to contact DCCEEW Water Assessments water.assessments@dpie.nsw.gov.au.

Yours sincerely

Simon Francis,
Senior Project Officer, Water Assessments, Knowledge Division
Department of Climate Change, Energy, the Environment and Water

Appendix E

Drawing 1 – Test Location Plan and Site Features (Douglas, 2023b)

Bulk Earthworks Plan (2023) – Stantec Australasia Pty Ltd

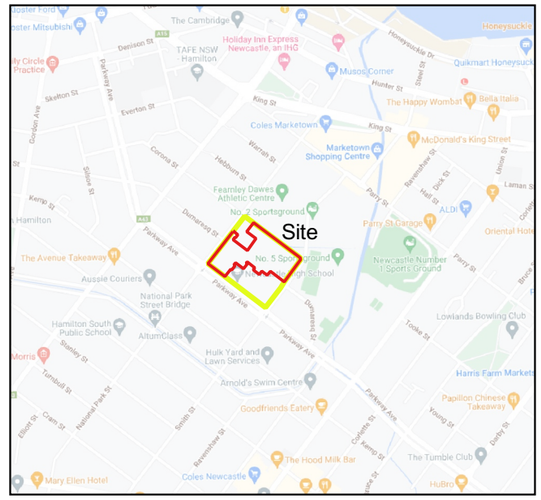
Staging Site Plan – EJE Architecture (Ref 13331, A-0030, Rev 0, Phase T, 21 April 2023)

Stantec (2023) Stormwater Drainage Plan (Sheets 1 to 4)

Hydraulic Services Site Plan (Ref 10344317 NEC-HDR-ZZ-XX-DR-H-0002, Issue P11, 21 April 2023)

0 10 20 30 40 m

Drawing adapted from Metromap image dated 11.06.2022.
Test locations are approximate only and were located using Differential GPS.



Site Location

Legend

Current Investigation Test Locations

- ACM Sample
- Surface Water Sample
- Test Pit
- Hand Auger
- Groundwater Monitoring Well
- Hand Auger
- Test Pit
- Hand Augers / Hand Pits
- Surface Samples

Previous Test Locations

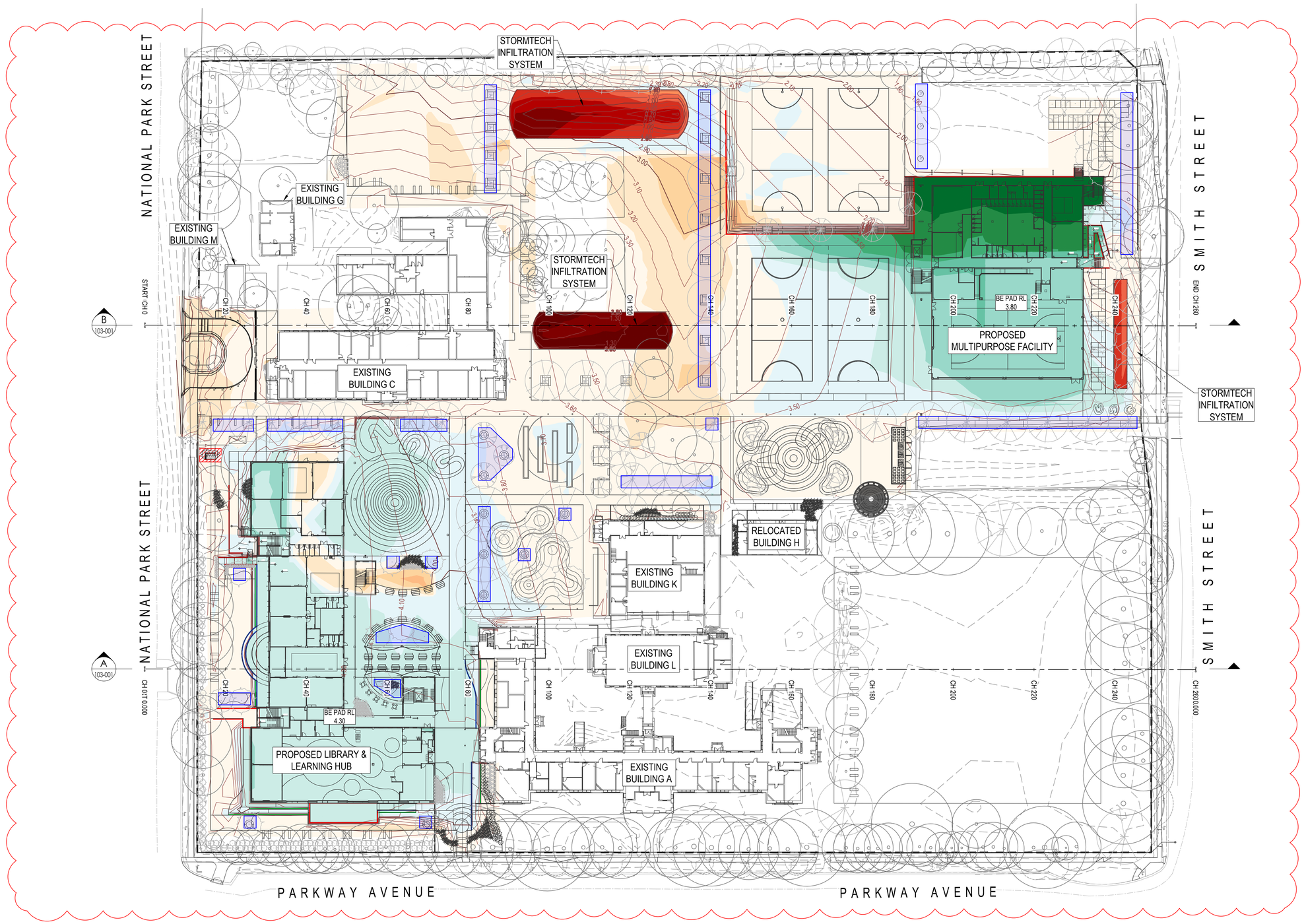
- Geotechnical Bore (DP, 2022b)
- Geotechnical CPT (DP, 2022b)
- Geotechnical Marten (2021)
- Investigation Area
- Site Boundary
- Lot Boundary
- Appoximate Boundary of Mapped Anthropogenic Deposits

Douglas Partners
Geotechnics / Environment / Groundwater

CLIENT: School Infrastructure NSW		TITLE: **Test Location Plan and Site Features** **Newcastle High School Upgrade** **25a National Park Street, Newcastle West**
OFFICE: Newcastle	DRAWN BY: PLH	
SCALE: 1:1,500 @ A3	DATE: 23.May.2023	

N

PROJECT No:	213618.02
DRAWING No:	1
REVISION:	2



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LEGEND

- SITE BOUNDARY
- 14.0 — BULK EARTHWORKS CONTOUR
- 18.0 — EXISTING CONTOURS
- APPROX GARDEN BED FOOTPRINT
- PAD RL — BULK EARTHWORKS LEVEL

NOTES

1. VOLUMES ARE INDICATIVE ONLY AND ARE BASED ON A COMPARISON BETWEEN THE DESIGN SURFACE AND THE SURVEYED SURFACE.
2. NOTE THAT ALL VOLUMES DEPICTED ARE SOLID VOLUMES ONLY AND MAY NOT REFLECT DETAILED EARTHWORKS.
3. NO ALLOWANCE HAS BEEN MADE FOR BULKING FACTORS.
4. NO ALLOWANCE HAS BEEN MADE FOR DETAILED EARTHWORKS; ie RAINWATER TANK, SERVICE TRENCHING, DETAILED EXCAVATION, FOOTINGS, RETAINING WALLS, PAVEMENT BOXING, BUILDING SLABS AND THE LIKE.
5. THE CONTRACTOR SHALL USE FINAL SURFACE LEVELS AND TYPICAL PAVEMENT DETAILS FOR ACTUAL EARTHWORKS LEVELS.
6. BULK EARTHWORKS CUT/FILL VOLUME CONSIDERATIONS:
   - 150mm TOPSOIL HAS BEEN CONSIDERED TO BE REMOVED.
   - 400mm STRUCTURAL SLAB UNDER BUILDING PADS.
   - 300mm THICKNESS FOR PAVEMENTS.
   - 300mm FOR LANDSCAPE AREAS BUILD-UPS.
   - 500mm FOR GARDEN BEDS
   - 1,365mm THICKNESS FOR THE INFILTRATION SYSTEMS
7. THE SURVEY SURFACE AS PROVIDED HAS BEEN UTILISED FOR COMPARISON PURPOSES.
8. STANTEC DOES NOT TAKE RESPONSIBILITY FOR ACCURACY OF EXISTING SURVEY.
9. BULK EARTHWORKS DOES NOT TAKE INTO CONSIDERATION ANY CONTAMINDATED MATERIAL AND ANY REMEDIATION STRATEGY WORKS
10. SHOULD DETAILED EXCAVATION AND TRENCHING SPOIL BE USED FOR BULK EARTHWORKS, WE ANTICIPATE APPROX. ADDITIONAL 3,000 cu.m OF CUT TO BE ACHIEVED

CUT AND FILL VOLUME:

CUT: 4,342 m^3
FILL: 4,607 m^3
NET: 265 m^3 (FILL)

CUT/FILL DEPTH RANGES

COLOUR	LOWER	UPPER
	-2.75	-2.50
	-2.50	-2.25
	-2.25	-2.00
	-2.00	-1.75
	-1.75	-1.50
	-1.50	-1.25
	-1.25	-1.00
	-1.00	-0.75
	-0.75	-0.50
	-0.50	-0.25
	-0.25	0.00
	0.00	0.25
	0.25	0.50
	0.50	0.75
	0.75	1.00
	1.00	1.25
	1.25	1.50
	1.50	1.75

Key Plan: (NTS)

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K	100% DETAILED DESIGN RE-ISSUE	LPT	JMB	2023.04.12
J	100% DETAILED DESIGN RE-ISSUE	LPT	MDR	2023.03.14
I	100% DETAILED DESIGN ISSUE	LPT	MDR	2023.02.27
H	75% DETAILED DESIGN ISSUE	LPT	JMB	2023.02.06
G	50% DETAILED DESIGN ISSUE	LPT	JMB	2023.01.16
F	25% DETAILED DESIGN ISSUE	LPT	JMB	2022.12.12
E	ISSUE FOR SSDA	LPT	JMB	2022.12.09
D	100% SCHEMATIC DESIGN RE-ISSUE	CPO	JMB	2022.10.10
C	100% SCHEMATIC DESIGN ISSUE	LPT	JMB	2022.09.23
B	90% SCHEMATIC DESIGN ISSUE	MDR	JMB	2022.08.23
A	75% SCHEMATIC DESIGN ISSUE	MDR	JMB	2022.08.02
Issued/Revision		By	Appd	YYYY.MM.DD

Issue Status

PRELIMINARY

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Notes

Stantec
Stantec Australia Pty. Ltd.
Level 9, The Forum, 203 Pacific Highway
St Leonards, NSW 2065
Tel: +61 2 8484 7000

Client/Project Logo
NSW Government Education School Infrastructure

Client/Project
SINSW

NEWCASTLE EDUCATION CAMPUS

25A NATIONAL PARK STREET, NEWCASTLE WEST 2302

File Name:NEC-STNC-XX-XX-DR-C-100001.DWG | Dwn. - | Dsgn. - | Chkd. - | 2022.08.02 YYYY.MM.DD

Title
BULK EARTHWORKS PLAN

Project No. 301350909
Scale 1:500
Revision N
Drawing No. **NEC-STNC-XX-XX-DR-C-100001**

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ORIGINAL SHEET - ISO A1 COORD - MGA/YYY-Zone DATUM - mAHD

STAGING SITE PLAN - GROUND FLOOR

1400 STUDENTS (STREAM 9) + SUPPORT (8LS)

GROUND FLOOR

STAGE 1

- Move Building H to new location as shown
- Services Infrastructure Upgrades
- Demolition of Building B and existing Sport Courts
- Remove trees, other planting in Stage 2 area

STAGE 2

- Construct New Learning Hub
- Landscaping walkway and external works associated with New Learning Hub
- New Support drop off zone

STAGE 3

- Construct new Multipurpose Facility
- Landscaping and external works associated with Multipurpose Facility
- Demolish Building P

STAGE 4

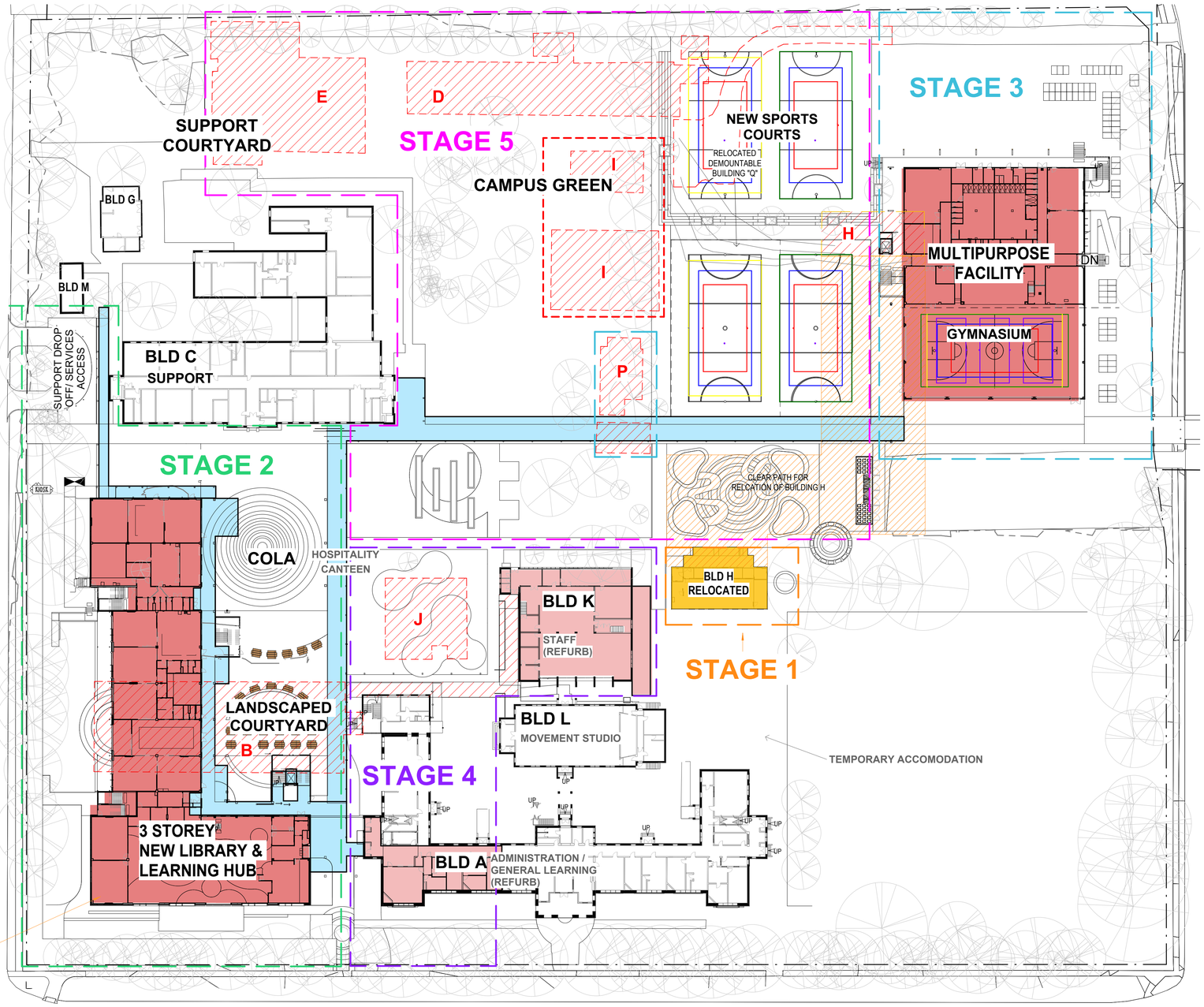
- Refurbish Building A & K
- Demolish Building J & existing walkways to Building K
- Landscaping, site works

STAGE 5

- Demolish Buildings D, E & I
- Construct new Sports Courts
- Campus Green & remaining landscapes, walkways

STAGE 1

Demolition of Buildings, Sports Court & other items within Stage 2 Build Area



STAGING PLAN LEGEND

STAGE 1 STAGE NUMBER FOR WORKS

- DEMOLISH BUILDINGS / DEMOLISH STRUCTURES
- RELOCATE BUILDINGS
- REFURBISH BUILDINGS
- NEW BUILDINGS
- RELOCATED BUILDING
- COVERED WALKWAY/COLA
- STAGE 1
- STAGE 2
- STAGE 3
- STAGE 4
- STAGE 5

EJE ARCHITECTURE

ACN 002 912 843| **ABN** 82 644 649 849 NSW Architects Registration No: 4438
Nominated Architect - Bernard Collins
P +61 2 4929 2353 | **F** +61 2 4926 3069 | **E** mail@eje.com.au | **W** www.eje.com.au
A 412 KING STREET, NEWCASTLE, NSW 2300

Quality Management ISO 9001 Global-Mark.com.au® | Environmental Management ISO 14001 Global-Mark.com.au® | OHS Management System ISO 45001 Global-Mark.com.au®

0 25mm 100mm 150mm ON ORIGINAL A1

NSW GOVERNMENT

REV	DATE	COMMENTS	DRN	CHKD	VRFD
F	12/07/2022	50% SCHEMATIC	MM	KG	
G	02/08/2022	SCHEMATIC 75% ISSUE	MG	KG	
H	23/08/2022	SCHEMATIC 90% ISSUE	MG	KG	
J	05/09/2022	STAGING PLAN REVISED	CM	GCS	
K	27/09/2022	PRELIMINARY SCHEMATIC 100% ISSUE	LD	KG	
L	12/12/2022	25 % DETAILED DESIGN	MM	KG	
M	16/01/2023	50 % DETAILED DESIGN	LD	KG	
N	28/02/2023	100% DETAILED DESIGN	MM	KG	
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Q	13/04/2023	TENDER ISSUE	MM	GCS	KG
0	21/04/2023	TENDER ISSUE	LD	GCS	KG

PROJECT : **NEWCASTLE EDUCATION CAMPUS**

CLIENT : **SCHOOL INFRASTRUCTURE NSW**

SITE : **160/200 PARKWAY AVE HAMILTON SOUTH NSW 2303**

DRAWING : **STAGING SITE PLAN**

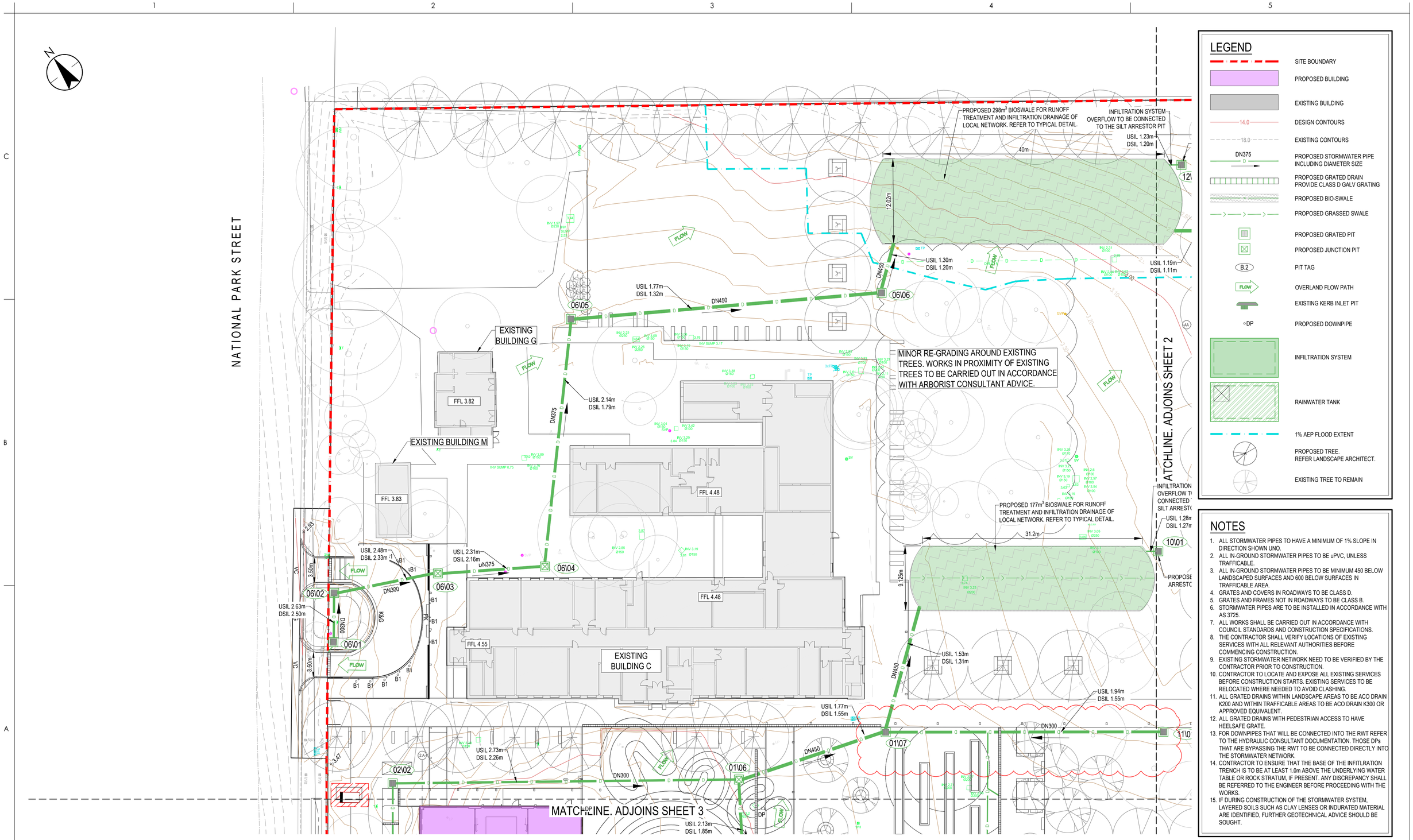
WORK IN FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS.

Autodesk Docs://Newcastle High School/NEC-EJE-ZZ-ZZ-M3-A-0001.rvt

PROJECT No :	DRAWN :	DATE :	SCALES :
13331	LD	21/04/2023	1 : 500 @ A1 @ A3

PHASE :	BUILDING ID:	Level No:	DRAWING No :	REV :
T	ZZ	GF	A-0030	0

EJE architecture



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LEGEND

- SITE BOUNDARY
- PROPOSED BUILDING
- EXISTING BUILDING
- 14.0 DESIGN CONTOURS
- 18.0 EXISTING CONTOURS
- DN375 PROPOSED STORMWATER PIPE INCLUDING DIAMETER SIZE
- PROPOSED GRATED DRAIN PROVIDE CLASS D GALV GRATING
- PROPOSED BIO-SWALE
- PROPOSED GRASSED SWALE
- PROPOSED GRATED PIT
- PROPOSED JUNCTION PIT
- B.2 PIT TAG
- FLOW OVERLAND FLOW PATH
- EXISTING KERB INLET PIT
- DP PROPOSED DOWNPIPE
- INFILTRATION SYSTEM
- RAINWATER TANK
- 1% AEP FLOOD EXTENT
- PROPOSED TREE. REFER LANDSCAPE ARCHITECT.
- EXISTING TREE TO REMAIN

NOTES

1. ALL STORMWATER PIPES TO HAVE A MINIMUM OF 1% SLOPE IN DIRECTION SHOWN UNO.
2. ALL IN-GROUND STORMWATER PIPES TO BE uPVC, UNLESS TRAFFICABLE.
3. ALL IN-GROUND STORMWATER PIPES TO BE MINIMUM 450 BELOW LANDSCAPED SURFACES AND 600 BELOW SURFACES IN TRAFFICABLE AREA.
4. GRATES AND COVERS IN ROADWAYS TO BE CLASS D.
5. GRATES AND FRAMES NOT IN ROADWAYS TO BE CLASS B.
6. STORMWATER PIPES ARE TO BE INSTALLED IN ACCORDANCE WITH AS 3725.
7. ALL WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH COUNCIL STANDARDS AND CONSTRUCTION SPECIFICATIONS.
8. THE CONTRACTOR SHALL VERIFY LOCATIONS OF EXISTING SERVICES WITH ALL RELEVANT AUTHORITIES BEFORE COMMENCING CONSTRUCTION.
9. EXISTING STORMWATER NETWORK NEED TO BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
10. CONTRACTOR TO LOCATE AND EXPOSE ALL EXISTING SERVICES BEFORE CONSTRUCTION STARTS. EXISTING SERVICES TO BE RELOCATED WHERE NEEDED TO AVOID CLASHING.
11. ALL GRATED DRAINS WITHIN LANDSCAPE AREAS TO BE ACO DRAIN K200 AND WITHIN TRAFFICABLE AREAS TO BE ACO DRAIN K300 OR APPROVED EQUIVALENT.
12. ALL GRATED DRAINS WITH PEDESTRIAN ACCESS TO HAVE HEELSAFE GRATE.
13. FOR DOWNPIPES THAT WILL BE CONNECTED INTO THE RWT REFER TO THE HYDRAULIC CONSULTANT DOCUMENTATION. THOSE DPs THAT ARE BYPASSING THE RWT TO BE CONNECTED DIRECTLY INTO THE STORMWATER NETWORK.
14. CONTRACTOR TO ENSURE THAT THE BASE OF THE INFITLRATION TRENCH IS TO BE AT LEAST 1.0m ABOVE THE UNDERLYING WATER TABLE OR ROCK STRATUM, IF PRESENT. ANY DISCREPANCY SHALL BE REFERRED TO THE ENGINEER BEFORE PROCEEDING WITH THE WORKS.
15. IF DURING CONSTRUCTION OF THE STORMWATER SYSTEM, LAYERED SOILS SUCH AS CLAY LENSES OR INDURATED MATERIAL ARE IDENTIFIED, FURTHER GEOTECHNICAL ADVICE SHOULD BE SOUGHT.

Key Plan: (NTS)

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M	ISSUE FOR TENDER	LPT	MDR	2023.05.10
L	100% DETAILED DESIGN RE-ISSUE	LPT	JMB	2023.04.12
K	100% DETAILED DESIGN RE-ISSUE	LPT	MDR	2023.03.14
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A	50% SCHEMATIC DESIGN ISSUE	MDR	JMB	2022.07.12
Issued/Revision		By	Appd	YYYY.MM.DD

Issue Status

TENDER ISSUE

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Notes

Stantec

Stantec Australia Pty. Ltd.
Level 9, The Forum, 203 Pacific Highway
St Leonards, NSW 2065
Tel: +61 2 8484 7000

Client/Project Logo
NSW Education School Infrastructure

Client/Project
SINSW

NEWCASTLE EDUCATION CAMPUS

25A NATIONAL PARK STREET, NEWCASTLE WEST 2302

File Name:NEC-STNC-XX-XX-DR-C-520001.DWG	Dwn.	Dsgn.	Chkd.	2022.07.12 YYYY.MM.DD

Title
STORMWATER DRAINAGE PLAN - SHEET 1

Project No. 301350909
Scale 1:250
Revision N
Drawing No. **NEC-STNC-XX-XX-DR-C-520001**

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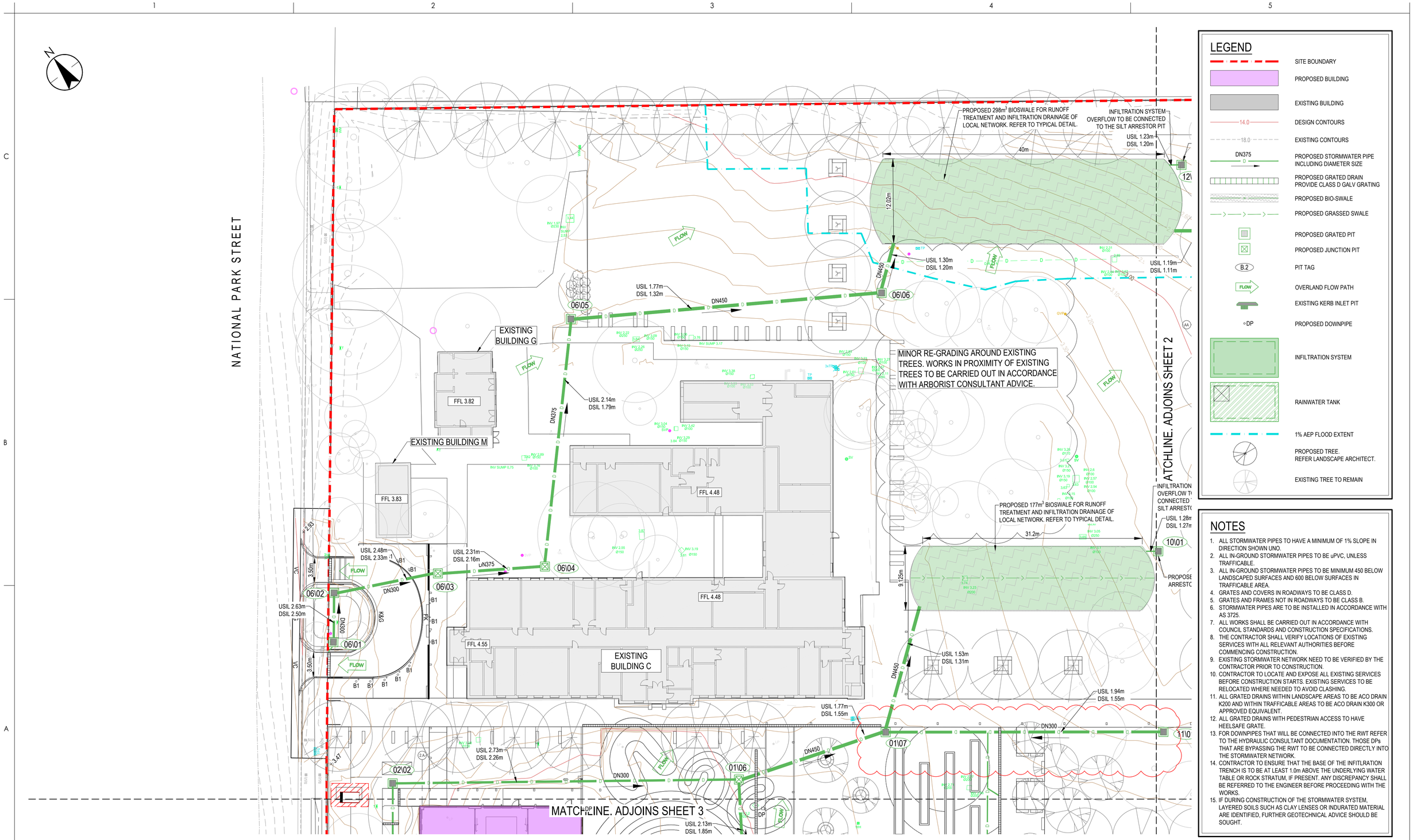

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1:500 A3

LEGEND

- SITE BOUNDARY
- PROPOSED BUILDING
- EXISTING BUILDING
- 14.0 DESIGN CONTOURS
- 18.0 EXISTING CONTOURS
- DN375 PROPOSED STORMWATER PIPE INCLUDING DIAMETER SIZE
- PROPOSED GRATED DRAIN PROVIDE CLASS D GALV GRATING
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- PROPOSED GRASSED SWALE
- PROPOSED GRATED PIT
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- FLOW OVERLAND FLOW PATH
- EXISTING KERB INLET PIT
- DP PROPOSED DOWNPIPE
- INFILTRATION SYSTEM
- RAINWATER TANK
- 1% AEP FLOOD EXTENT
- PROPOSED TREE. REFER LANDSCAPE ARCHITECT.
- EXISTING TREE TO REMAIN

NOTES

1. ALL STORMWATER PIPES TO HAVE A MINIMUM OF 1% SLOPE IN DIRECTION SHOWN UNO.
2. ALL IN-GROUND STORMWATER PIPES TO BE uPVC, UNLESS TRAFFICABLE.
3. ALL IN-GROUND STORMWATER PIPES TO BE MINIMUM 450 BELOW LANDSCAPED SURFACES AND 600 BELOW SURFACES IN TRAFFICABLE AREA.
4. GRATES AND COVERS IN ROADWAYS TO BE CLASS D.
5. GRATES AND FRAMES NOT IN ROADWAYS TO BE CLASS B.
6. STORMWATER PIPES ARE TO BE INSTALLED IN ACCORDANCE WITH AS 3725.
7. ALL WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH COUNCIL STANDARDS AND CONSTRUCTION SPECIFICATIONS.
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Key Plan: (NTS)

N	ISSUE FOR TENDER	LPT	MDR	2023.06.23
M	ISSUE FOR TENDER	LPT	MDR	2023.05.10
L	100% DETAILED DESIGN RE-ISSUE	LPT	JMB	2023.04.12
K	100% DETAILED DESIGN RE-ISSUE	LPT	MDR	2023.03.14
J	100% DETAILED DESIGN ISSUE	LPT	MDR	2023.02.27
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H	50% DETAILED DESIGN ISSUE	LPT	JMB	2023.01.16
G	25% DETAILED DESIGN ISSUE	LPT	JMB	2022.12.12
F	ISSUE FOR SSDA	LPT	JMB	2022.12.09
E	100% SCHEMATIC DESIGN RE-ISSUE	CPO	JMB	2022.10.10
D	100% SCHEMATIC DESIGN ISSUE	LPT	JMB	2022.09.23
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A	50% SCHEMATIC DESIGN ISSUE	MDR	JMB	2022.07.12
Issued/Revision		By	Appd	YYYY.MM.DD

Issue Status

TENDER ISSUE

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St Leonards, NSW 2065
Tel: +61 2 8484 7000

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NSW Education School Infrastructure

Client/Project
SINSW

NEWCASTLE EDUCATION CAMPUS

25A NATIONAL PARK STREET, NEWCASTLE WEST 2302

File Name:NEC-STNC-XX-XX-DR-C-520001.DWG	Dwn.	Dsgn.	Chkd.	2022.07.12 YYYY.MM.DD

Title
STORMWATER DRAINAGE PLAN - SHEET 1

Project No. 301350909
Scale 1:250
Revision N
Drawing No. **NEC-STNC-XX-XX-DR-C-520001**

Plotted: 26-Jun-23 4:50:02 PM By: TODD, LAUREN
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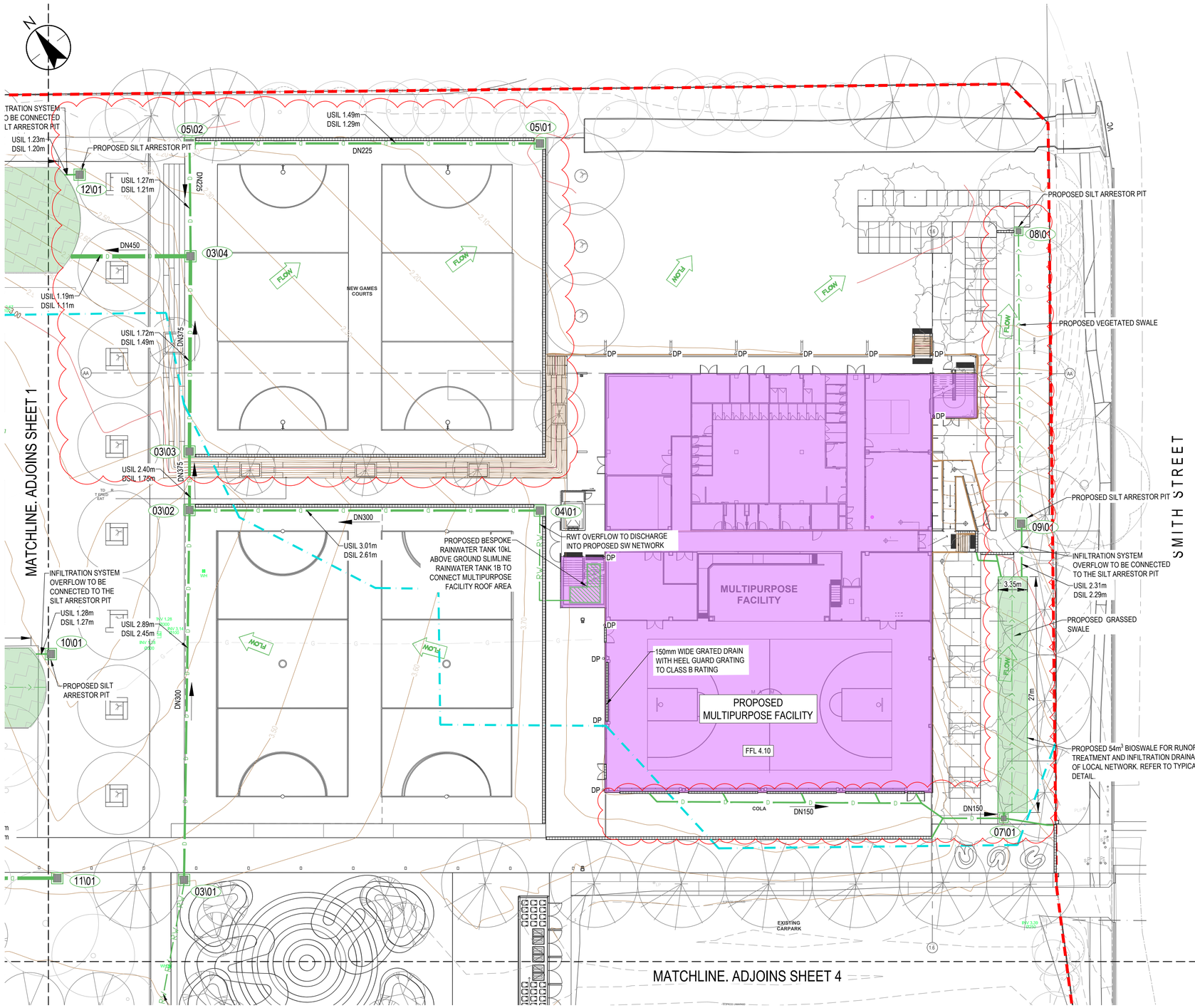

LEGEND

- SITE BOUNDARY
- PROPOSED BUILDING
- EXISTING BUILDING
- 14.0 — DESIGN CONTOURS
- 18.0 — EXISTING CONTOURS
- DN375 — PROPOSED STORMWATER PIPE INCLUDING DIAMETER SIZE
- PROPOSED GRATED DRAIN PROVIDE CLASS D GALV GRATING
- PROPOSED BIO-SWALE
- PROPOSED GRASSED SWALE
- PROPOSED GRATED PIT
- PROPOSED JUNCTION PIT
- B.2 — PIT TAG
- FLOW — OVERLAND FLOW PATH
- EXISTING KERB INLET PIT
- DP — PROPOSED DOWNPIPE
- INFILTRATION SYSTEM
- RAINWATER TANK
- 1% AEP FLOOD EXTENT
- PROPOSED TREE. REFER LANDSCAPE ARCHITECT.
- EXISTING TREE TO REMAIN

NOTES

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Key Plan: (NTS)

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Issued/Revision		By	Appd	YYYY.MM.DD

Issue Status

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SINSW

NEWCASTLE EDUCATION CAMPUS

25A NATIONAL PARK STREET, NEWCASTLE WEST 2302

File Name:NEC-STNC-XX-XX-DR-C-520001.DWG | Dwn. - | Dsgn. - | Chkd. - | 2022.07.12 YYYY.MM.DD

Title

STORMWATER DRAINAGE PLAN - SHEET 2

Project No. 301350909

Scale 1:250

Revision N

Drawing No. **NEC-STNC-XX-XX-DR-C-520002**

Plotted: 28-Jun-23 7:40:28 PM, By: CODI, LAUREN
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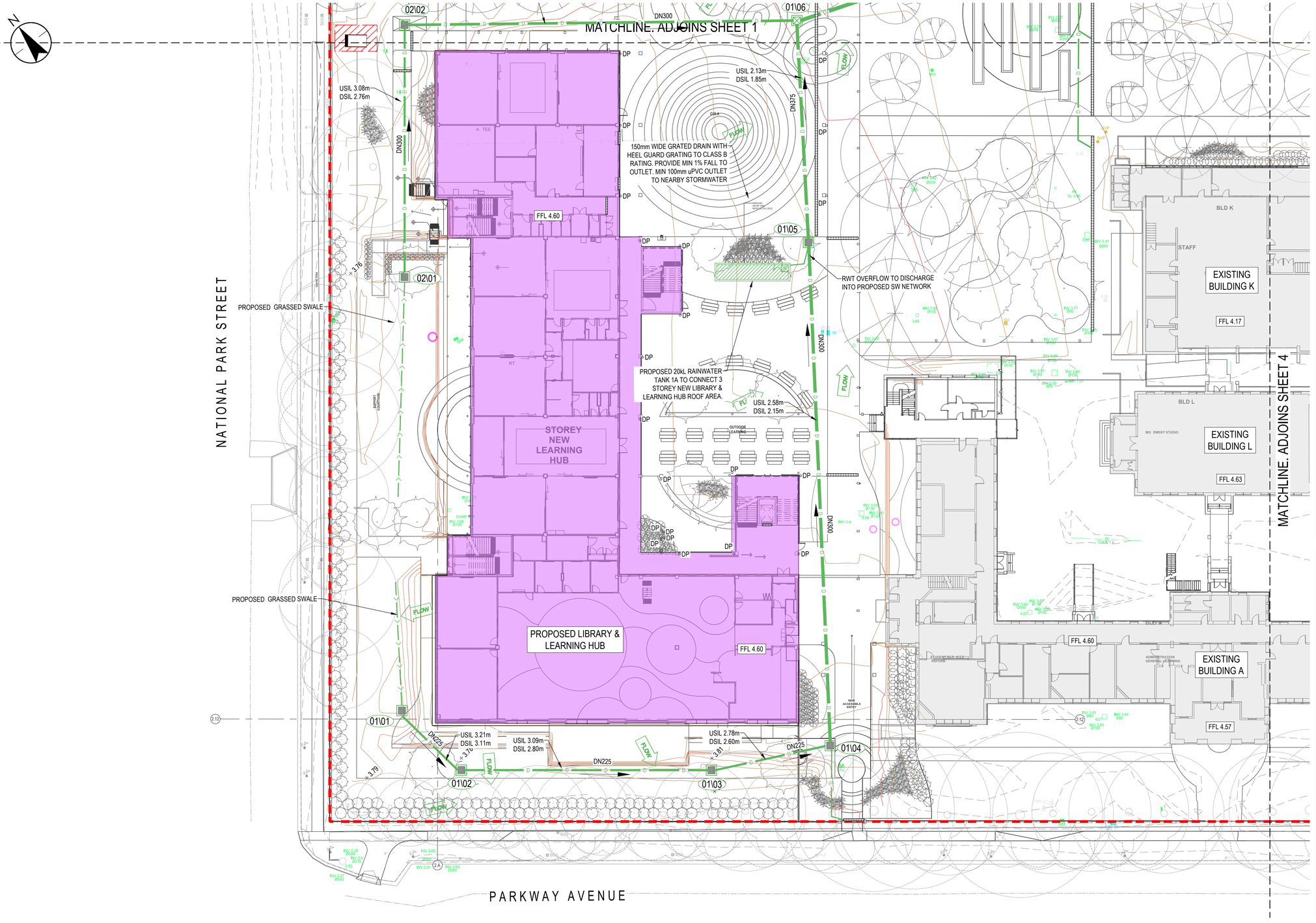
ORIGINAL SHEET - ISO A1 COORD - MGA/YY-Zone DATUM - mAHD



1:250 2.5 0 2.5 5 7.5 10 12.5 A1
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LEGEND

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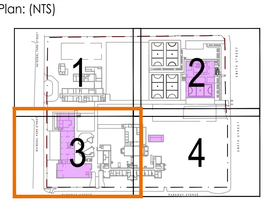
Key Plan: (NTS)



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Issued/Revision		By	Appd	YYYY.MM.DD

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NSW GOVERNMENT Education School Infrastructure

Client/Project

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NEWCASTLE EDUCATION CAMPUS

25A NATIONAL PARK STREET, NEWCASTLE WEST 2302

Title

STORMWATER DRAINAGE PLAN - SHEET 3

File Name:NEC-STNC-XX-XX-DR-C-520001.DWG	- Dwn.	- Dsgn.	- Chkd.	2022.07.12 YYYY.MM.DD

Project No. 301350909

Scale 1:250

Revision N

Drawing No. **NEC-STNC-XX-XX-DR-C-520003**

Plotted: 26-Jun-23 2:41:33 PM, By: TODD, LAUREN
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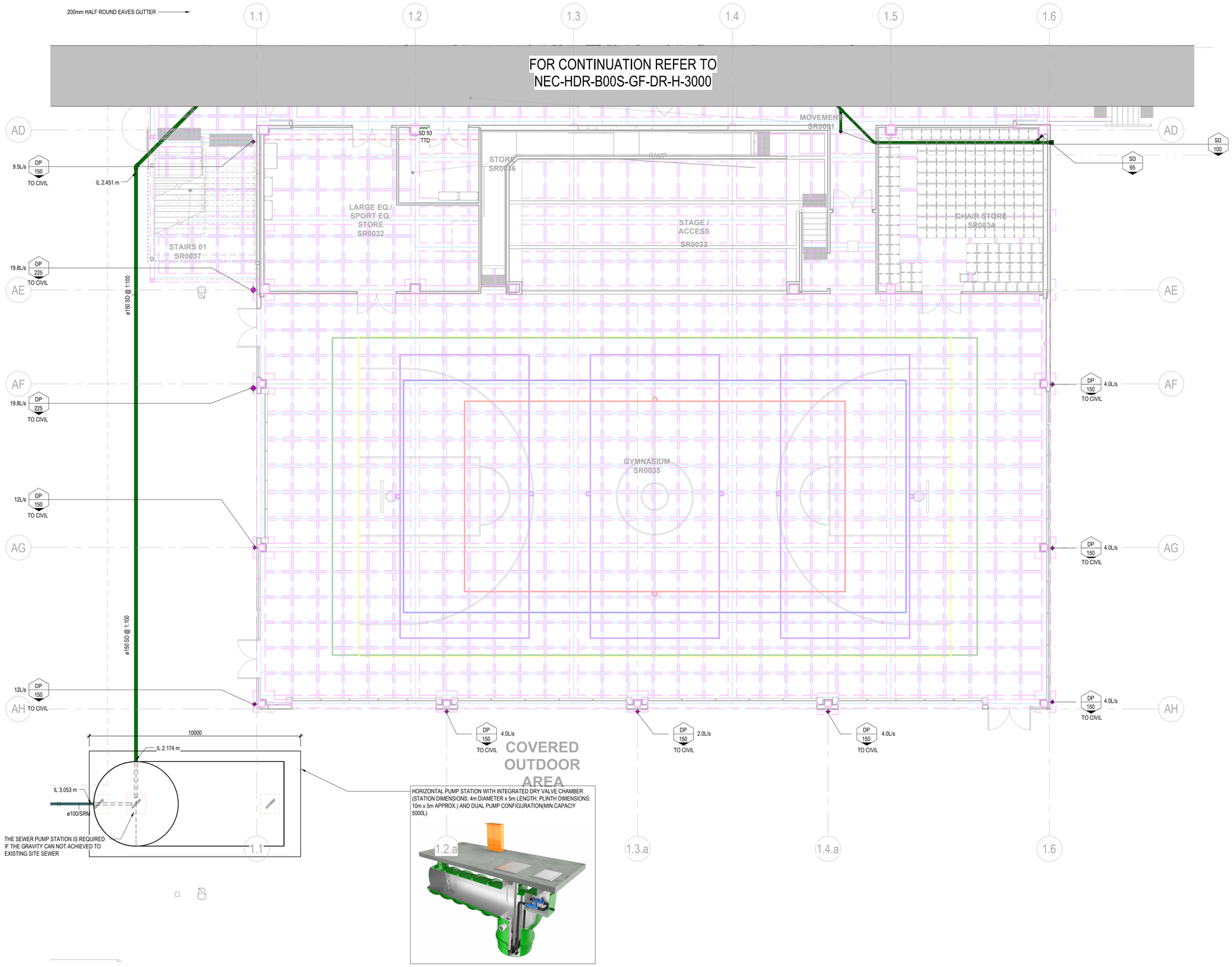

NORTH POINT

A1

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P1	90% ISSUE	JG	JG	23.08.22
P2	DRAFT SCHEMATIC DESIGN	JG	JG	16.09.22
P3	SCHEMATIC DESIGN	JG	JG	23.09.22
P4	SCHEMATIC DESIGN	JG	JG	14.10.22
P5	SCHEMATIC DESIGN	JG	JG	31.10.22
P6	25% DETAILED DESIGN	JG	JG	14.12.22
P7	50% DETAILED DESIGN	JG	JG	16.01.23
P8	75% DETAILED DESIGN	JG	JG	06.02.23
P9	100% DETAILED DESIGN	JG	JG	30.02.23
P10	DETAILED DESIGN	JG	JG	12.04.23
P11	TENDER ISSUE	JG	JG	21.04.23

NOTES:

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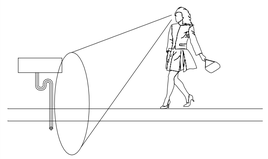
3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL AND STRUCTURAL ENGINEER'S DRAWINGS AND ASSOCIATED HDR DRAWINGS.

ALL DOWNPIPE FLOW RATE
UNDER DESIGN REVIEW

OUT OF STRATA

A4



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DRAWING ARE BELOW
SLAB

CLIENT

NSW GOVERNMENT Education School Infrastructure

ARCHITECT

EJE architecture

CONSULTANTS

HDR

Level 24, 25 Martin Place, Sydney NSW 2000 Australia
+61 (2) 9956 2666 | hdrinc.com
HDR Pty. Limited ABN 76 158 075 220 trading as HDR

PROJECT

NEWCASTLE EDUCATION CAMPUS
25A NATIONAL PARK STREET,
NEWCASTLE WEST NSW 2302

DRAWING TITLE

HYDRAULIC SERVICES
MULTIPURPOSE FACILITY
GROUND FLOOR
DRAINAGE SERVICES SHEET 2 (ZONE B)

STATUS

DETAILED DESIGN

SCALE	DATE
1 : 100 @ A1	21.04.23

PROJECT NUMBER	DRAWING NUMBER	ISSUE
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21/04/2023 4:22:03 PM

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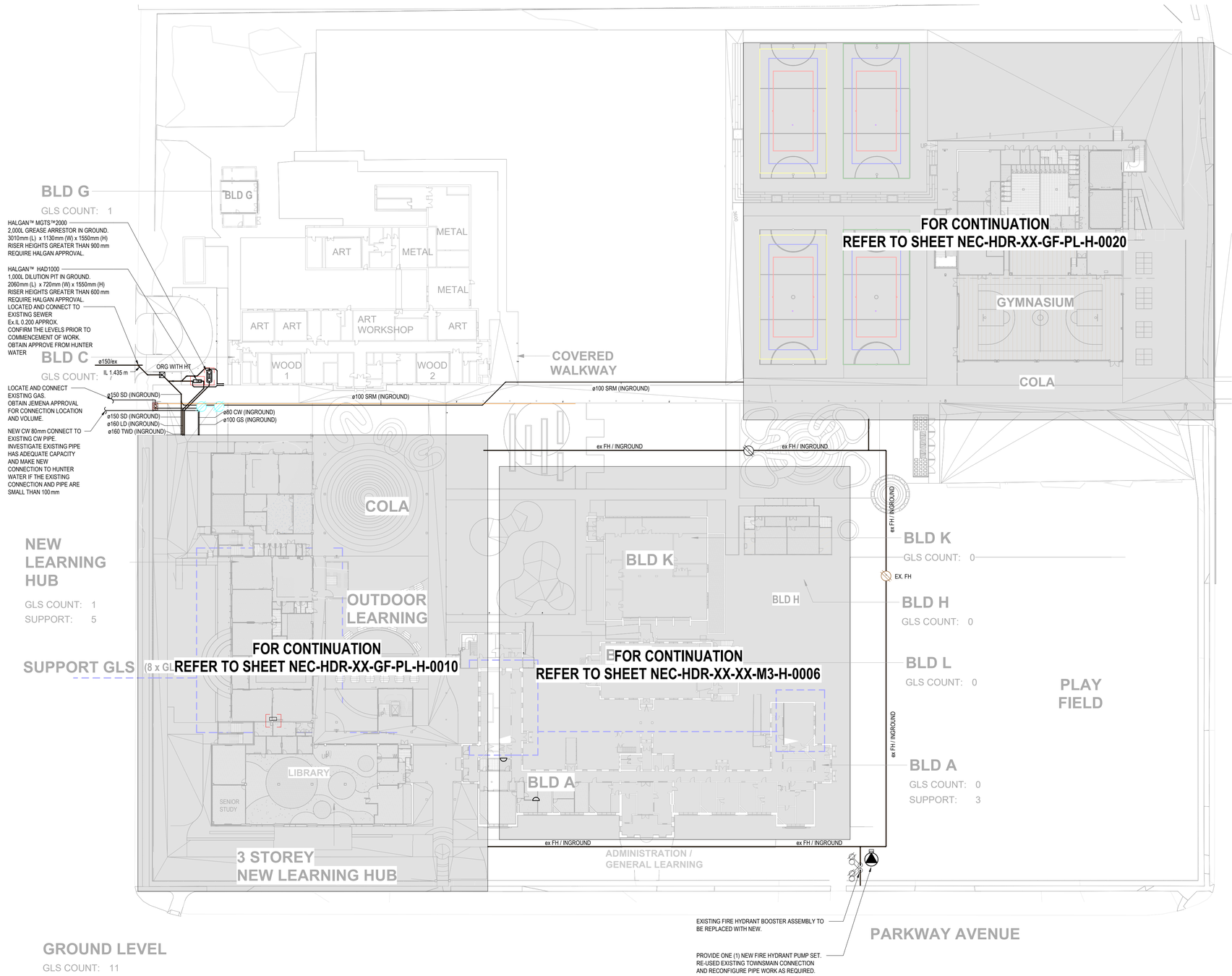

NORTH POINT

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NSW GOVERNMENT Education School Infrastructure

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PROJECT
NEWCASTLE EDUCATION CAMPUS
25A NATIONAL PARK STREET,
NEWCASTLE WEST NSW 2302

DRAWING TITLE
HYDRAULIC SERVICES
SITE PLAN

STATUS
DETAILED DESIGN

SCALE	DATE
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PROJECT NUMBER	DRAWING NUMBER	ISSUE
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PRINT IN COLOUR

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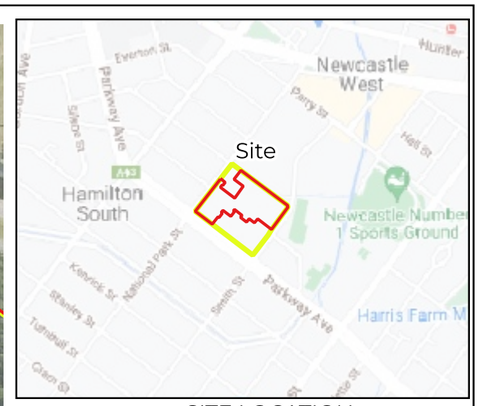
Appendix F

Drawing 1 – Test Location Plan (Douglas, 2024a)

Drawing 2 – Groundwater Monitoring Well Location Plan (Douglas, 2024a)



SITE LOCATION

LEGEND

- Test Pits (current investigation for borrow pit feasibility)

Previous Test Locations

- Geotechnical Bore (DP, 2022b)
- Geotechnical CPT (DP,2022b)
- Geotechnical Marten (2021)
- Test Pit
- Hand Auger
- Groundwater Monitoring Well
- Hand Auger
- Test Pit
- Hand Augers / Hand Pits
- Surface Water Sample
- Borrow Pit
- Investigation Area

(x) Estimated Depth of Fill (m)

0 10 20 30 40 50 m

NOTE:
1. Drawing from Metromap Image dated 15.10.2023.
2. Test locations are approximate only and were located using differential GPS

Douglas PARTNERS

CLIENT:	Hansen Yuncken Pty Ltd		
OFFICE:	Newcastle	DRAWN BY:	PLH
SCALE:	1:500@A3	DATE:	06.December.2023

TITLE: **Test Location Plan**
Newcastle High School Upgrade
25a National Park Street, Newcastle West, NSW

N

PROJECT:	213618.04
DRAWING No:	1
REVISION:	0

SITE LOCATION

LEGEND

- Groundwater Monitoring Well
- Site Boundary
- Lot Boundary

0 10 20 30 40 50 m

NOTE:
1. Drawing projection in GDA94 / MGA zone 56, adapted from Metromap Image dated 11.06.2022.
2. Test locations are approximate only and were located using differential GPS typically accurate to ± 0.1 m depending on satellite coverage

Douglas PARTNERS

CLIENT: Hansen Yuncken Pty Ltd		
OFFICE: Newcastle	DRAWN BY: PLH	
SCALE: 1:1500 @A3	DATE: 18.January.2024	

TITLE: **Groundwater Monitoring Well Location Plan**
Newcastle High School Upgrade
25a National Park Street, Newcastle West, NSW

N

PROJECT:	213618.04
DRAWING No:	2
REVISION:	0

DP.QGIS.A3LandscapeDrawingLayout.Rev3 - P:\213618.04 - HAMILTON SOUTH Newcastle High Borrow Pit\7.0 Drawings\7.2 Out\213618.04.D.001.Rev0.qgz