VINCENTIA HIGH SCHOOL UPDATE INTRUSIVE GEOTECHNICAL INVESTIGATION REPORT

31 March 2025

Prepared for:
NSW Department of Education (DoE)

Prepared by:
Stantec Australia Pty ltd

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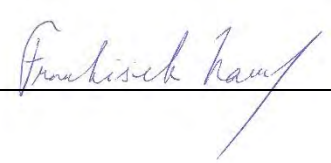
Prepared by 

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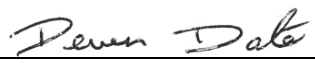
Reviewed/Approved by 

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1 Introduction

Stantec Australia was engaged by NSW Department of Education (DoE) to complete Geotechnical Investigation Report (GIR) for the proposed facilities upgrade of the existing Vincentia High School (the site) located at 142 The Wool Road, Vincentia NSW 2540.

This Geotechnical Investigation Report has been prepared to support a Review of Environmental Factors (REF) for the NSW Department of Education (DoE) for Vincentia High School update (the activity).

The purpose of the REF is to assess the potential environmental impacts of the activity prescribed by *State Environmental Planning Policy (Transport and Infrastructure) 2021* (T&I SEPP) as "development permitted without consent" on land carried out by or on behalf of a public authority under *Part 5 of the Environmental Planning and Assessment Act 1979* (EP&A Act). The activity is to be undertaken pursuant to Chapter 3, Part 3.4, Section 3.37 of the T&I SEPP.

This document has been prepared in accordance with the *Guidelines for Division 5.1* assessments (the Guidelines) by the Department of Planning, Housing and Infrastructure (DPHI) as well as the *Addendum Division 5.1 guidelines for schools*. The purpose of this report is to summarise potential geohazards presented on the site and present geotechnical recommendations.

1.1 Proposed Activity Description

The proposed activity relates to upgrades to Vincentia High School. Specifically, the proposed activity comprises the following:

- Construction of a new two-storey home base building.
- Installation of solar panels.
- Construction of new stairs and covered walkways.
- Internal road upgrade which involves providing a new drop off zone, parking spaces and pedestrian pathway.
- Relocation of existing shade structure.
- External landscape works.
- Tree removal.

Any works relating to the existing demountables will be undertaken via a separate planning pathway. Figure 1-1 provides an extract of the proposed site plan.

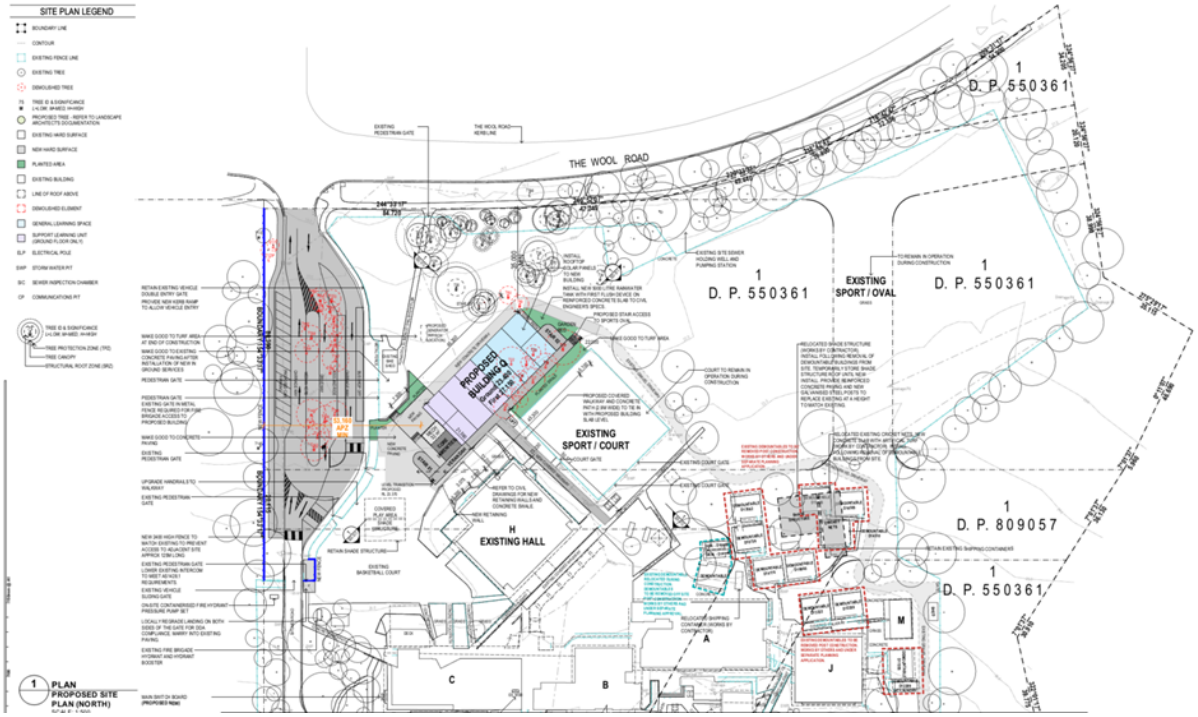


Figure 1-1 – Site Plan, Fulton Trotter, 2025

1.2 Scope of Work

The scope of the works as presented as part of this investigation are detailed below:

- Undertake a total of five (5) BHs to auger refusal.
- All five (5) BHs will be utilised for environmental waste classification and also be utilised for geotechnical purposes.
- Undertake five (5) Dynamic Cone Penetration Test (DCP) to a depth of 3.0m bsl or prior to refusal for soil strength/density characterisation;
- Logging of encountered subsurface conditions for all BHs in accordance with AS1726 – Geotechnical Site Investigation.
- Collect geotechnical soil samples for Particle Size Distribution (PSD) test, Atterberg Limit and Moisture Content for soil classification purposes.
- Collect geotechnical soil samples for Emerson class for material dispersibility.
- Collect geotechnical sample for California Bearing Ratio testing.
- Preparation of geotechnical report summarising investigation methodology and findings, including engineering borehole log, and provided comment and recommendation for the proposed construction works.

2 Site Details and Geology

2.1 Site Description

The site is located at 142 The Wool Road, Vincentia, NSW, 2540 and has an approximate site area of 8.09ha. The site is comprised of two lots, legally referred to as Lot 1 Deposited Plan P809057 and Lot 1 Deposited Plan 550361 and is located within the Shoalhaven City Local Government Area (LGA). An aerial photograph of the site is provided at Figure 1.

The site is zoned SP2 Educational Establishment and existing development comprises various buildings, a car park, landscaping, a sports field and sports courts associated with Vincentia High School. Vincentia High School currently comprises 49 permanent teaching spaces (PTS) and 17 demountable teaching spaces (DTS). The eastern portion of the site contains natural bushland.

The site is an irregularly shaped lot. Vehicle access is provided to The Wool Road via a driveway that connects to a signalised intersection. There is a footpath and cycleway along The Wool Road. The surrounding land consists of extensive natural bushland (Jervis Bay National Park).

The site is shown in the following Figure 2-1, The detailed site layout plan and its surrounds are attached in Appendix A.

Figure 2-1 – Aerial Photograph of the Site, Urbis, January 2024

2.2 Surrounding Land Use

The land usage immediately surrounding the site were identified using aerial imagery and land zoning information from the local council, as summarized below in Table 2-. Details of the site and surrounding land uses are shown in Appendix A.

Table 2-1 Surrounding Land Use

Direction	Land Zoning	Land Use or Activity
North	SP2	Community Facility - Rural Fire Service facility and the 'Bay and Basin Leisure Centre'.
East	C1	National Parks and Natural Reserves - Jervis Bay National Park.
South	C1 R5	National Parks and Natural Reserves - Jervis Bay National Park. Large Lot Residential
West	C1	National Parks and Natural Reserves - Jervis Bay National Park.

2.3 Regional and Site Settings

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

Table 2-2 Site Setting Information

ITEMS	DETAILS
Regional Soil Landscape	A review of The Atlas of Australian Soils Database identifies the site-specific soils are Kandosol (Mb5). These soils are described as sandstone plateau ridges with flat-to-hill crests and steep side slopes, canyons, rock walls, and slabs of sandstone. Chief soils are the primary soils located on-site and are described as acidic yellow-leached earths; flat to undulating areas of the original plateau surface--yellow-leached earths and yellow earth, containing large amounts of ironstone gravels and/or boulders.
Regional Geology	The site geology is described as underlain with fine to medium-grained sandstone, pebbly sandstone and polymictic pebble conglomerate (down sequence), medium to coarse-grained sandstone with lithic pebbles and fragments, minor siltstone (up sequence), brachiopod, bivalve and bryozoan fossils common. Refer to **Appendix C** Geological Map.
Regional Groundwater	No regional groundwater data available for this site.
Surface Water Bodies	The closest water body to the site is a small unnamed creek flowing into Moona Moona Creek. The unnamed creek is approximately >200m East of the site, whereas Moona Moona Creek is approximately 2.75 km north.
Acid Sulphate Soils	The site is classified as Class 5 ASS in accordance with Shoalhaven Local Environmental Plan 2014, described as, - Class 5: Acid sulphate soils are not typically found in Class 5 areas. Areas classified as Class 5 are located within 500 meters on adjacent Class 1,2,3 or 4 land. Based on soils encountered and analysed as part of the contamination investigation (Stantec, 2024), soils assessed as part of the investigation are not considered to be potential or actual acid sulfate soils based on laboratory analysis and desktop review of available data.
Salinity	No Dryland Salinity – National Assessment data on-site available.

2.4 Geology

Reference to the Seamless Geology from Minview website (NSW Department of Planning, Industry and Environment, 2023) indicates that the site is underlain by the following geological units as shown in Figure 2-2**Error! Reference source not found.** below.

- Pshs – Snapper Point Formation – fine to medium grained sandstone, pebbly sandstone and polymictic pebble conglomerate, medium to coarse grained sandstone with lithic pebbles and fragments, minor siltstone.

Figure 2-2 Site Geological Condition

3 Investigation Findings

3.1 Borehole Locations

The ground coordinates of the test locations were picked up by authorized surveyor nominated by the client. The coordinates of the location are reference to GDA2020 MGA, Zone 56.

Table 3-1 Borehole Locations

ID	Easting	Northing (m)
BH01	286978.8000	6115906.1485
BH02	287010.8003	6115961.7516
BH03	287001.8070	6115945.5058
BH04	287016.9891	6115943.4751
BH05	287007.9960	6115923.8448

3.2 Fieldwork Activities

Fieldwork for the geotechnical investigation was carried out on the 27th November 2023 and comprised the following:

- Drilling of five (5) boreholes (BH01 to BH05) at depths ranging from 2.00m to 3.50m below ground level (mbgl). Drilling was carried out using a track mounted drill rig using solid flight augers with Tungsten Carbide (TC) bit.
- Standard Penetration Test (SPT) conducted at nominal 1.50m depth increments within the borehole to target depth or until refusal was achieved to assess the in-situ strength characteristics of the encountered materials.
- Dynamic Cone Penetrometer (DCP) testing also conducted from surface at borehole locations to a maximum 1.6m depth bsl, to assist with the assessment of the in-situ soil strength conditions.
- Logging of encountered subsurface conditions for all BHs was carried out in accordance with AS1726 – Geotechnical Site Investigation (Standards Australia Limited, 2017) by a geotechnical engineer from Stantec.
- Sampling of soil samples for material classification purposes.
- Backfilling of boreholes using with auger cuttings. The soils were compacted with back auger rotation and crowbar and returned to original surface level.

A site plan with borehole locations is provided in Appendix A. Engineering logs of the boreholes are presented in Appendix B together with explanatory notes.

3.3 Sub-Surface Conditions

Based on the observations from the geotechnical investigation, the sub surface profile within the footprint of the proposed development can be generalised in the following soil units shown in Table 3-2.

Table 3-2 Summary of Sub-Surface Units

Unit	Material Type	Description of Layer
1	TOPSOIL	**Clayey SAND**: fine to coarse grained, grey-brown, low plasticity clay, trace roots.
2	FILL	**Clayey SAND:** fine to coarse grained, grey, low plasticity clay, trace fine, sub-angular to angular gravel.
3a	RESIDUAL	**Clayey SAND / Sandy CLAY:** fine to coarse grained sands, white to red-brown, low to medium plasticity clays, with fine to coarse, angular gravels.
3b	RESIDUAL	**Sandy CLAY:** low to high plasticity clay, red-grey to red-brown, fine to coarse grained sand.
4	EXTREMELY WEATHERED	**Extremely Weathered Sandstone in the form of Clayey SAND and SAND:** fine to coarse grained sand, white to orange-brown, low plasticity clay, trace fine ironstone gravel, sub-angular.

Figure 3-3 Summary of Sub-Surface material encountered m below ground level

BH ID	Topsoil	Fill	Residual Sand	Residual Clay	XW	GW Seepage	TD
BH01	-	-	0.50	1.40	-	NE	2.00
BH02	0.00	0.30	0.50, 1.90	1.10, 2.10	2.70	NE	3.50
BH03	0.00	0.40	-	1.40	3.40	1.40	3.50
BH04	0.00	0.20	0.50	1.10	3.20	1.90	3.50
BH05	0.00	-	0.40	1.00	3.30	NE	3.50

Notes:
i) TD = Termination Depth
ii) NE = Not Encountered
iii) XW = Extremely Weathered
iv) GW = Groundwater

Subsurface conditions encountered are summarised in Figure 3-3 and detailed in engineering borehole logs attached in Appendix B together with explanatory notes.

3.4 Groundwater

Groundwater seepage was encountered in BH03 and BH04 at depths of 1.40mbgl and 1.90mbgl, respectively. Groundwater standing level or seepage was not encountered in any of the other boreholes at the time of investigation. It should be noted however, that variations in groundwater seepage flows may occur due to variations in rainfall duration and intensity. It is anticipated the proposed bulk earthworks will not intersect with the groundwater table.

3.5 Lab Test Results

Laboratory testing conducted on strategically selected samples recovered during the fieldwork comprised the following:

- Three (3) Moisture Content tests.
- Three (3) Atterberg & Linear Shrinkage tests.
- Three (3) Particle Size Distribution tests.
- Two (2) Emerson Classification tests.
- One (1) California Bearing Ratio test.

Testing was performed by NATA-accredited laboratories Australian Soil and Concrete Testing (ASCT) Illawarra laboratory and Eurofins Environmental Testing Australia. Laboratory test report sheets and certificates are included in Appendix C.

3.5.1 FIELD MOISTURE CONTENT

Moisture content tests were scheduled on selected samples. The results are summarised in Table 3-4 below.

Table 3-4 Field Moisture Content Test Results

Borehole No	Depth (m)	Material Description	Field Moisture Content (%)
BH01	0.50 – 1.00	Clayey SAND: fine to coarse grained, yellow-brown, low plasticity clay, trace fine, angular gravel.	10.3
BH03	0.50 – 1.00	Clayey SAND: fine to coarse grained, yellow-brown, low plasticity clay, trace fine to medium, angular gravel.	13.7
BH05	0.50 – 1.00	SAND: fine to coarse grained, yellow-brown, with low plasticity clay, trace fine to medium, angular gravel.	13.8

3.5.2 ATTERBERG LIMIT TEST RESULTS

Atterberg Limits tests were scheduled on selected samples. The results are summarised in Table 3-5 below.

Table 3-5 Atterberg Limit Test Results

Borehole No	Depth (m)	Material Description	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)
BH01	0.50 – 1.00	Clayey SAND: fine to coarse grained, yellow-brown, low plasticity clay, trace fine, angular gravel.	24	15	9
BH03	0.50 – 1.00	Clayey SAND: fine to coarse grained, yellow-brown, low plasticity clay, trace fine to medium, angular gravel.	25	14	11
BH05	0.50 – 1.00	SAND: fine to coarse grained, yellow brown, with low plasticity clay, trace fine to medium, angular gravel.	NO	-	NP

3.5.3 PARTICLE SIZE DISTRIBUTION TEST AND EMERSON CRUMB TEST RESULTS

The Particle Size Distribution (PSD) and Emerson Class tests were performed on a selection of disturbed and SPT soil samples. The results are summarized in Table 3-6 below.

Table 3-6 Particle Size Distribution and Emerson Crumb Test Results

Borehole No	Depth (m)	Material Description	Gravels (%)	Sand (%)	Fines (Silt & Clay (%)	Emerson Class
BH01	0.50 – 1.00	Clayey SAND	1	72	27	-
BH02	0.50 – 1.00	Clayey SAND	-	-	-	Class 6

Borehole No	Depth (m)	Material Description	Gravels (%)	Sand (%)	Fines (Silt & Clay (%)	Emerson Class
BH03	0.50 – 1.00	Clayey SAND	2	62	36	-
BH04	0.50 – 1.00	Clayey SAND	-	-	-	Class 6
BH05	0.50 – 1.00	SAND	6	85	9	-

3.5.4 CALIFORNIA BEARING RATIO (CBR) TEST

The laboratory soaked California Bearing Ratio (CBR) test result is summarised below in Table 3-7.

Table 3-7 California Bearing Ratio Test Results

Test ID	Depths (m)	Material	FMC %	OMC %	MDD t/m^3	Swell (%)	CBR %
BH01	0.50 – 1.00	Clayey SAND	10.3	11.3	1.903	0.0	20

4 Geotechnical Comments

4.1 Excavation and Earthwork

Following available information, It was understood that excavations will be limited to the construction of new pavements and general levelling for proposed relocation of demountables, new school buildings and landscaping. It is expected that mainly soil will be encountered during all earthworks. Very low to low strength rock can be expected to be present underlying the residual soils , however, it unlikely to be encountered during earthworks.

Prior to bulk earthworks, the site shall be cleared of any foreign matter or unsuitable material which includes but may not be limited to the following:

- Vegetation or organic matter including root balls of any larger trees onsite;
- Topsoil or soil significantly affected by roots or root fibres;
- Any scattered waste or dumped materials;
- Uncontrolled filling which may be subject to further assessment;
- Loose or low strength (soft to firm) soils or otherwise ‘unsuitable’ soils; or
- Expansive soils.

Excavation of soil can be readily achieved using conventional earthmoving equipment. Ripping or hammering may not be required for the proposed earthwork. However, considering the condition of the structures within the school, the induced vibration level control will be required to avoid impacting the adjacent properties.

Induced vibrations in structures adjacent to the excavation should not exceed a Peak Particle Velocity (PPV) of 10mm/sec for brick or unreinforced structures.

If vibrations in adjacent structures exceed the values recommended above or appear excessive during construction, excavation should cease and the project Geotechnical Engineer should be contacted immediately for appropriate reviews so that counter- measures/actions can be taken.

Earthwork should be carried out in compliance with AS3798-2007 “Guidelines on earthworks for commercial and residential developments”.

4.2 Subgrade Preparation

The following site preparation measures are recommended:

- Remove all topsoil, fill and deleterious materials (including roots/vegetation);
- Proof roll testing to be carried out using a minimum 12 tonne roller and compact the exposed subgrade to at least 98% Standard Maximum Dry Density (SMDD) at +/- 2% Optimum Moisture Content (OMC).
- Should isolated soft/loose areas be encountered during this process, this material should be removed and replaced with suitable granular structural fill. Structural fill could comprise a select well graded granular material such as processed sandstone and road-base (DGB20).
- Backfill excavation with approved structural fill in 150mm layers to a standard compaction of at least 98%.
- Surface drainage should be maintained at all times by adopting appropriate cross-falls across the site. Surface drainage should be installed as soon as is practicable in order to capture and remove surface flows to prevent erosion and softening of the exposed surface.

Filling delivered to site must be approved by the geotechnical consultant prior to delivery to site. Highly reactive clay filling should be avoided.

Conventional sediment and erosion control measures should be implemented during the construction phase, with exposed surfaces to be topsoiled and vegetated as soon as practicable following the completion of earthworks.

4.3 Site Classification and Subgrade Preparation

It is considered that the subsurface conditions comprise topsoil overlying fill, residual clay/sand. Based on the geotechnical sub-surface logs and laboratory testing, it is expected the site classification of “Class P” be adopted (if applicable) for footings constructed in accordance with AS2870-2011. Class P site classification is provided due to the presence of greater than 0.4m depth of uncontrolled filling on the site. However, if the site is prepared in accordance with **Section 4.1** of this report, the site can be re-classified based on shrink swell index (Iss) results. For this project, Atterberg limits results were used to estimate the Iss based on published data.

As shown in Table 3-5, liquid limits resulted in the range of 24% to 25%, which was estimated to be 0.4 to 0.5% Iss. Taking into consideration of these Iss values, the site can be classified as slightly reactive clay site (Class ‘S’), which may experience only slight ground movement from moisture changes with a characteristic surface movement up to 20mm.

4.4 Temporary Cuts

Careful consideration must be given to the planning and design of excavation and excavation retention system (if required) to reduce the risks of destabilising and causing damage to the adjacent school structures and surrounding public footpaths/roads. As with any excavation (if any) some movement of the surrounding ground should be expected, the extent of which will depend on the encountered ground profile, support type and other factors such as stress relief in medium strength rock.

Where open cuts are required as part of temporary works during ground support. Recommendations for temporary unsupported cuts and batters (if required) are presented below in

Table 4-1.

Table 4-1 Cut / Batter Recommendations

Geotechnical profile	Temporary Batter (Horizontal to Vertical Ratio)
Fill	2.5H:1V
Residual Soil	1.5H:1V

Notes:

i) Table 4-1 applies to temporary unsupported cut batters only, for a period of no greater than 3 months once constructed
ii) Temporary batters apply to cuts no greater than 1.50m in vertical height. Where deeper cuts are proposed for each stratum, further geotechnical designed support or retention systems may be required.
iii) Excavations in soil have assumed no groundwater table has been encountered;
iv) The ground surface at the crest of the excavation is horizontal;
v) There is no surcharge at the crest of the excavation for a distance equal to the depth of the excavation;
vi) All cuts are protected from erosion.

4.5 Geotechnical Parameters

Geotechnical soil parameters and rock mass classifications are provided below and are based on a combination of the subsurface data and laboratory tests conducted. The geotechnical parameters provided are inferred and presented to assist with geotechnical design.

4.5.1.1 Geotechnical Soil Parameters

Geotechnical soil parameters for both cohesive and non-cohesive soils encountered on site have been provided below in Table 4-2 and Table 4-3, respectively. No geotechnical parameters have been assigned to topsoil and manmade fill layers due to the potential variability. All topsoil and manmade fill layers are recommended to be considered soft for cohesive soils, and loose for granular soils.

Table 4-2 Cohesive Soil Parameters

Unit	Material	Cu (kPa)	Unit Weight (kN/ m³)	C' (kPa)	ϕ' (°)	Poisson's Ratio	E' (MPa)
3b	RS – Soft CLAY	12	17	1	20	0.30	1
3b	RS – Firm CLAY	25	18	2	22	0.30	2

Unit	Material	Cu (kPa)	Unit Weight (kN/ m³)	C' (kPa)	ϕ' (°)	Poisson's Ratio	E' (MPa)
3b	RS – Stiff CLAY	50	19	5	24	0.30	4
3b	RS – Very Stiff CLAY	100	20	10	26	0.30	8
3b	RS – Hard CLAY	200	21	20	27	0.30	15

Notes:
i) Cu = undrained shear strength in kPa
ii) c' = cohesion of soil in kPa
iii) ϕ' = friction angle of soil in degrees
iv) E = elastic modulus of soil in MPa

Table 4-3 Non-Cohesive Soil Parameters

Unit	Material	Unit Weight ((kN/ m³)	C' (kPa)	ϕ' (°)	Poisson's Ratio	E' (MPa)
1	Topsoil/Fill - SAND	-	-	-	-	-
3a	RS – Loose SAND	16	-	27	0.30	5
3a	RS – Medium Dense SAND	17	-	30	0.30	10
3a	RS – Dense SAND	18	-	34	0.30	40
4	XW – Very Dense SAND	20	-	37	0.30	80

Notes:
i) T = Topsoil
ii) F = Fill
iii) RS = Residual Soil
iv) XW = Extremely Weathered

4.6 Expected Structural Foundations

Foundation options for the proposed development can be both shallow and or deep foundations, depending on the subsurface materials encountered and structural loads. Parameters for both shallow and deep footing system options are provided below.

4.6.1.1 Shallow / Pad Footings

Due to the unknown loads and footing systems, no specified allowable bearing capacities can be determined at this time and all values presented below are just preliminary. Once specific loadings have been ascertained, Stantec can assist to optimise the footing size and depth to suit the loading on the founding material. Bearing capacity of footings in soil needs to be subjected to geotechnical checking considering footing size, depth, slope (ground surface and/or footing base) and loadings (i.e. bearing capacity is not a soil property but is dependent of footing size, depth, slope and loadings). A footing subjected to pull out forces should be further geotechnical assessment in addition to bearing capacity, overturning and sliding.

Conventional shallow footings designed in accordance with engineering principles and nominally embedded 0.5m into the design founding material, may be proportioned on the following allowable end-bearing pressures, summarised in Table 4-4 and Table 4-5 below.

Table 4-4 Allowable End Bearing Pressures – Cohesive Soils

Founding Material	Area (m^2)	Allowable Bearing Capacity (kPa)
CLAY – Soft	1 x 1	35
CLAY – Firm	1 x 1	75
CLAY – Stiff	1 x 1	150
CLAY – Very Stiff to Hard or better	1 x 1	250

Note:

1. Ultimate bearing capacity tabulated above assuming eccentricity of 1/6 x footing width.
2. Horizontal ground is assumed
3. The settlement for shallow footings depends upon the loading conditions, footing size and foundation material, but it should be less than 1% of the footing width if proportioned on the basis of above parameters.
4. A minimum geotechnical strength reduction factor Øg of 0.4 can be applied for the allowable design values.

Table 4-5 Allowable End Bearing Pressures - Non-Cohesive Soils

Founding Material	Area (m^2)	Allowable Bearing Capacity (kPa)
SAND – Loose	1 x 1	75
SAND – Medium Dense	1 x 1	125
SAND – Dense	1 x 1	250
SAND – Very Dense	1 x 1	400

4.7 Pavement Design Evaluation

As presented in Table 3-7, laboratory soaked CBR tests indicates a subgrade swell of 0.0%, indicating a low expansive soil nature. Test result for the soil specimen indicates a CBR value of 20.0%. A review of SPT testing indicates that the residual subgrade material, generally consisted of medium-dense sand, and firm to stiff clay.

Taking into consideration the CBR test result, a preliminary design CBR 15% can be adopted for the pavement upgrade at Vincentia High School, however additional testing should be carried out to confirm the presence of similar subgrade strength.

4.8 Groundwater

It is anticipated that groundwater will be associated with seepage flows along the interface of the residual formations and bedrock, and also minor seepage through fractures and joints in the rock above the permanent regional groundwater table. Considering the proposed earthwork will be limited to general levelling only, it is anticipated the proposed development earthwork will not intersect with the groundwater table.

5 Mitigation Measures

The following mitigation measure are proposed on the site, subject to detail geotechnical design.

Table 5-1 Mitigation Measures

Project Stage*	Mitigation Measures	Reason for Mitigation Measures	Section of Report
C	Prior to bulk earthworks, the site shall be cleared of any foreign matter or unsuitable material.	To reduce the risks differential settlement and/or failures.	Section 4.1
C	Induced vibrations in structures adjacent to the excavation should not exceed a Peak Particle Velocity (PPV) of 10mm/sec for brick or unreinforced structures. If vibrations in adjacent structures exceed the values recommended above or appear excessive during construction, excavation should cease and the project Geotechnical Engineer should be contacted immediately for appropriate reviews so that counter-measures/actions can be taken.	To ensure structures are not damaged during earthworks.	Section 4.1
C	Earthworks should be carried out in compliance with AS3798-2007 “Guidelines on earthworks for commercial and residential developments”	To ensure structures and infrastructure is not damaged during earthworks	Section 4.1
C	Proof roll testing to be carried out using a minimum 12 tonne roller and compact the exposed subgrade to at least 98% Standard Maximum Dry Density (SMDD) at +/- 2% Optimum Moisture Content (OMC).	To reduce the risks differential settlement and/or failures.	Section 4.2
C	Filling delivered to site must be approved by the geotechnical consultant prior to delivery to site. Highly reactive clay filling should be avoided.	To reduce the risks differential settlement and/or failures.	Section 4.2
C	Conventional sediment and erosion control measures should be implemented during the construction phase, with exposed surfaces to be topsoiled and vegetated as soon as practicable following the completion of earthworks.	To reduce the risks differential settlement and/or failures.	Section 4.2
C	Should isolated soft/loose areas be encountered during this process, this material is required to be removed and replaced with suitable granular structural fill. Structural fill may comprise a select well graded granular material such as processed sandstone and road-base (DGB20)	To reduce the risks differential settlement and/or failures.	Section 4.2
C	Backfill excavation with approved structural fill in 150mm layers to a standard compaction of at least 98%.	To reduce the risks differential settlement and/or failures.	Section 4.2

Project Stage*	Mitigation Measures	Reason for Mitigation Measures	Section of Report
C	Surface drainage must be maintained at all times by adopting appropriate cross-falls across the site. Surface drainage must be installed as soon as is practicable in order to capture and remove surface flows to prevent erosion and softening of the exposed surface	To reduce the risks differential settlement and/or failures.	Section 4.2
D, C	Design and construction of temporary and batter cuts should follow recommendations presented in Table 9.	To prevent stability of the batter cuts.	Section 4.4
D	Foundation options for the proposed development can be both shallow and or deep foundations, depending on the subsurface materials encountered and structural loads, subject to detail design.	To reduce the risks differential settlement and/or failures.	Section 4.6

**Note: Project stages include:*

- *(D) Design*
- *(C) Construction*
- *(O) Operation*

6 Conclusions

Based on our Intrusive Geotechnical Investigation we conclude with the following:

- The extent and nature of potential impacts are low and will not have significant impact on the locality, community and/or the environment, subject to mitigation measures presented above in Error! Reference source not found. and detail geotechnical design.

Potential impacts can be appropriately mitigated or managed to ensure that there is minimal impact on the locality, community and/or the environment

7 Limitations

Vincentia High School update - Intrusive Geotechnical Investigation Report for the purpose and objectives and scope identified in this report.

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

This Document has been provided by Stantec subject to the following limitations:

- This Document has been prepared for the particular purpose outlined in Stantec's proposal and no responsibility is accepted for the use of this Document, in whole or in part, in other contexts or for any other purpose.
- The scope and the period of Stantec's services are as described in Stantec's proposal and are subject to restrictions and limitations. Stantec did not perform a complete assessment of all possible conditions or circumstances that may exist at the site referenced in the Document. If a service is not expressly indicated, do not assume it has been provided. If a matter is not addressed, do not assume that any determination has been made by Stantec in regard to it.
- Conditions may exist which were undetectable given the limited nature of the enquiry Stantec was retained to undertake with respect to the site. Variations in conditions may occur between investigatory locations, and there may be special conditions pertaining to the site which have not been revealed by the investigation and which have not therefore been taken into account in the Document. Accordingly, additional studies and actions may be required.
- In addition, it is recognised that the passage of time affects the information and assessment provided in this Document. Stantec's opinions are based upon information that existed at the time of the production of the Document. It is understood that the services provided allowed Stantec to form no more than an opinion of the actual conditions of the site at the time this Document was prepared and cannot be used to assess the effect of any subsequent changes in the quality of the site, or its surroundings, or any laws or regulations.
- Any assessments made in this Document are based on the conditions indicated from published sources and the investigation described. No warranty is included, either express or

implied, that the actual conditions will conform exactly to the assessments contained in this Document.

- Where data supplied by the client or other external sources, including previous site investigation data, have been used, it has been assumed that the information is correct unless otherwise stated. No responsibility is accepted by Stantec for incomplete or inaccurate data supplied by others.
- Stantec may have retained sub consultants affiliated with Stantec to provide services for the benefit of Stantec. To the maximum extent allowed by law, the Client acknowledges and agrees it will not have any direct legal recourse to, and waives any claim, demand, or cause of action against, Stantec's affiliated companies, and their employees, officers and directors.

Appendix A Site Plans

Site Plan

Vincentia High School
Vincentia, NSW

Project name: Preliminary Site Investigation

Client: NSW Department of Education | Schools Infrastructure NSW
Project Code: 304100928-GS-045
Drawn By: TB, Checked By: AC
Rev: 01
Date: 2023-12-13

Stantec

Legend

- Borehole
- Cadastre
- 2m Contour

Notes:
1. Map displayed in GDA2020 MGA Zone 56

References:
1. Basemap (Nearmap - October, 2023)
2. 2m Contour (NSW SS, 2019)
3. Cadastre (NSW SS, 2023)

0 5 10 15 20 25 Metres

Scale at A3: 1:800

Geology Plan

Vincentia High School
Vincentia, NSW

Project name: Preliminary Site Investigation

Client: NSW Department of Education | Schools Infrastructure NSW
Project Code: 304100928-GS-045
Drawn By: TB, Checked By: --
Rev: 01
Date: 2023-12-13

Stantec

Legend

- Borehole
- 2m Contour
- Cadastre

NSW Seamless Geology

Snapper Point Formation (Pshs) - Fine- to medium-grained sandstone, pebbly sandstone and polymictic pebble conglomerate (down sequence), medium- to coarse-grained sandstone with lithic pebbles and fragments, minor siltstone (up sequence); brachiopod, bivalve and bryozoan fossils common.

Notes:
1. Map displayed in GDA2020 MGA Zone 56

References:
1. Basemap (Nearmap - October, 2023)
2. 2m Contour (NSW SS, 2019)
3. Cadastre (NSW SS, 2023)
4. NSW Seamless Geology (GSNSW, 2021)

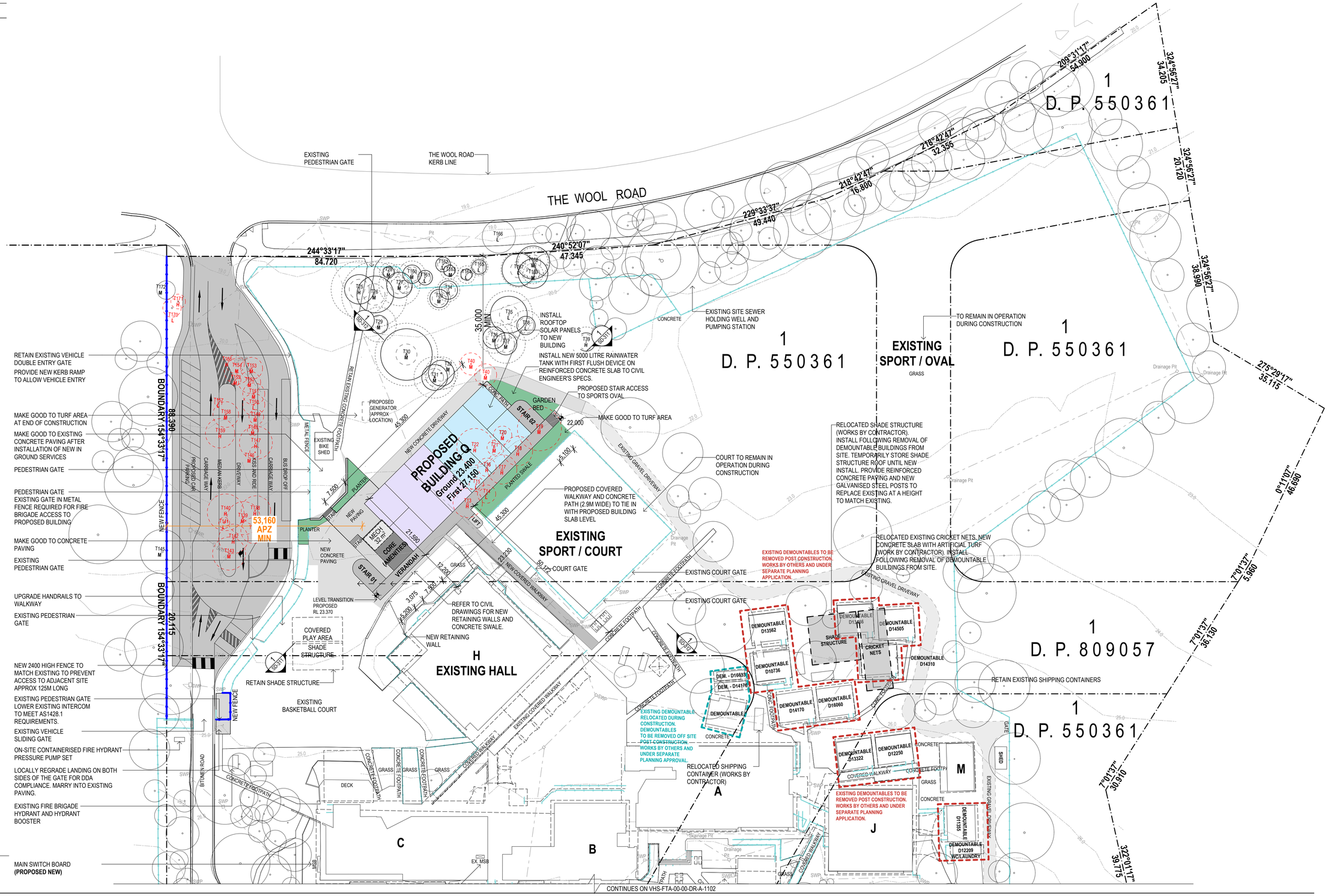
0 5 10 15 20 25 Metres

Scale at A3: 1:800

SITE PLAN LEGEND

- BOUNDARY LINE
- CONTOUR
- EXISTING FENCE LINE
- EXISTING TREE
- DEMOLISHED TREE
- 75 M — TREE ID & SIGNIFICANCE *L=LOW, M=MED, H=HIGH*
- PROPOSED TREE - REFER TO LANDSCAPE ARCHITECT'S DOCUMENTATION
- EXISTING HARD SURFACE
- NEW HARD SURFACE
- PLANTED AREA
- EXISTING BUILDING
- LINE OF ROOF ABOVE
- DEMOLISHED ELEMENT
- GENERAL LEARNING SPACE
- SUPPORT LEARNING UNIT (GROUND FLOOR ONLY)
- ELP — ELECTRICAL POLE
- SWP — STORM WATER PIT
- SIC — SEWER INSPECTION CHAMBER
- CP — COMMUNICATIONS PIT

75 M — TREE ID & SIGNIFICANCE *L=LOW, M=MED, H=HIGH*
- TREE PROTECTION ZONE (TPZ)
- TREE CANOPY
- STRUCTURAL ROOT ZONE (SRZ)



1 **PLAN**
PROPOSED SITE PLAN (NORTH)
SCALE: 1:500

NOTES

DEMOUNTABLE RELOCATIONS AND REMOVALS ARE TO BE INCLUDED IN A SEPARATE PLANNING PATHWAY.

PROVIDE 20 NEW STEEL LOCKERS FOR STAFF END OF TRIP FACILITIES. TO BE SPREAD ACROSS THE SCHOOL NOMINALLY TO BUILDINGS B, C, H AND J. FIX IN POSITION OUTSIDE EXISTING STAFF SHOWER LOCATIONS. PROVIDE VINYL WRAP TO LOCKERS EXTERIOR SURFACES. REFER TO ARCHITECTURAL SPECIFICATIONS.

50 | 100 | 150mm @ A1

plot date: Monday, 31 March 2025 4:08 PM file location: BIMcloud: FTA-SYD-BIM26 - BIMcloud Basic for Archicad 26/7068VI01 Vincentia High School

REV.	DESCRIPTION	DATE	INIT.
12	REF ISSUE	31/03/2025	JH
11	REF ISSUE	25/03/2025	JH
10	DRAFT TENDER ISSUE	27/02/2025	JH
09	100% SCHEMATIC DESIGN ISSUE	07/02/2025	JH
08	DRAFT 100% SCHEMATIC DESIGN ISSUE	10/01/2025	JH
07	80% SCHEMATIC DESIGN ISSUE	12/12/2024	JH
06	SCHOOL WORKSHOP	11/12/2024	JH
05	50% SCHEMATIC DESIGN ISSUE	28/11/2024	JH
04	DRAFT 50% SCHEMATIC DESIGN ISSUE	22/11/2024	JH
03	100% CONCEPT DESIGN ISSUE	10/11/2024	JH
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PHASE **SCHEMATIC DESIGN**
CLIENT SCHOOL INFRASTRUCTURE NSW
PROJECT VINCENTIA HIGH SCHOOL
ADDRESS 142 THE WOOL ROAD, VINCENTIA, NSW

DRAWING **PROPOSED SITE PLAN 01**

Figured dimensions take precedence over scale dimensions. Contractors must verify all dimensions on site before commencing any work or making shop drawings.

PROJECT NUMBER	DIRECTOR	CHECKED
7068VI01	GI	

DRAWING NUMBER **VHS-FTA-00-00-DR-A-1101** REVISION **12**

SITE PLAN LEGEND

- BOUNDARY LINE
- CONTOUR
- EXISTING FENCE LINE
- EXISTING TREE
- DEMOLISHED TREE
- 75 M — TREE ID & SIGNIFICANCE *L=LOW, M=MED, H=HIGH*
- PROPOSED TREE - REFER TO LANDSCAPE ARCHITECT'S DOCUMENTATION
- EXISTING HARD SURFACE
- NEW HARD SURFACE
- PLANTED AREA
- EXISTING BUILDING
- LINE OF ROOF ABOVE
- DEMOLISHED ELEMENT
- GENERAL LEARNING SPACE
- SUPPORT LEARNING UNIT (GROUND FLOOR ONLY)
- ELP — ELECTRICAL POLE
- SWP — STORM WATER PIT
- SIC — SEWER INSPECTION CHAMBER
- CP — COMMUNICATIONS PIT

75 M — TREE ID & SIGNIFICANCE *L=LOW, M=MED, H=HIGH*
- TREE PROTECTION ZONE (TPZ)
- TREE CANOPY
- STRUCTURAL ROOT ZONE (SRZ)

PEDESTRIAN GATE
EXISTING GATE IN METAL FENCE REQUIRED FOR FIRE BRIGADE ACCESS TO PROPOSED BUILDING

MAKE GOOD TO CONCRETE PAVING

EXISTING PEDESTRIAN GATE

UPGRADE HANDRAILS TO WALKWAY

EXISTING PEDESTRIAN GATE

NEW 2400 HIGH FENCE TO MATCH EXISTING TO PREVENT ACCESS TO ADJACENT SITE APPROX 125M LONG

EXISTING PEDESTRIAN GATE LOWER EXISTING INTERCOM TO MEET AS1428.1 REQUIREMENTS.

EXISTING VEHICLE SLIDING GATE

ON-SITE CONTAINERISED FIRE HYDRANT PRESSURE PUMP SET

LOCALLY REGRADE LANDING ON BOTH SIDES OF THE GATE FOR DDA COMPLIANCE. MARRY INTO EXISTING PAVING.

EXISTING FIRE BRIGADE HYDRANT AND HYDRANT BOOSTER

MAIN SWITCH BOARD **(PROPOSED NEW)**
A NEW EXTERNAL MSB IS TO BE INSTALLED IN THE INDICATED LOCATION AND NEW CONSUMER MAINS INSTALLED FROM THE NEW SUBSTATION, A CLEAR SPACE NO LESS THATN 1400 IS TO BE PROVIDED IN FRONT OF THE NEW MSB.

PROPOSED SUBSTATION 1MVA TO BE BUILT IN THE LOCATION INDICATED UNDER SEPARATE PLANNING APPLICATION. REFER TO ELECTRICAL ENGINEER'S DETAILS

MAIN SWITCH BOARD
(TO BE MODIFIED)
EXISTING MSB TO REMAIN AND BE BACK FED FROM NEW MAIN SWITCHBOARD

CONTINUES ON VHS-FTA-00-00-DR-A-1101

PROPOSED COVERED WALKWAY AND CONCRETE PATH (2.9M WIDE) TO TIE IN WITH PROPOSED BUILDING SLAB LEVEL

EXISTING SPORT / COURT

COURT GATE

EXISTING COURT GATE

EXISTING COURT GATE

EXISTING DEMOUNTABLES TO BE REMOVED POST CONSTRUCTION. WORKS BY OTHERS AND UNDER SEPARATE PLANNING APPLICATION.

REPLACE EXISTING AT A HEIGHT TO MATCH EXISTING.

RELOCATED EXISTING CRICKET NETS. NEW CONCRETE SLAB WITH ARTIFICIAL TURF (WORK BY CONTRACTOR). INSTALL FOLLOWING REMOVAL OF DEMOUNTABLE BUILDINGS FROM SITE.

EXISTING GRAVEL DRIVEWAY

LEVEL TRANSITION PROPOSED RL 23.370

REFER TO CIVIL DRAWINGS FOR NEW RETAINING WALLS AND CONCRETE SWALE.

NEW RETAINING WALL

RETAIN SHADE STRUCTURE

RETAIN EXISTING SHIPPING CONTAINERS

EXISTING BASKETBALL COURT

EXISTING DEMOUNTABLES RELOCATED DURING CONSTRUCTION. DEMOUNTABLES TO BE REMOVED OFF SITE POST CONSTRUCTION. WORKS BY OTHERS AND UNDER SEPARATE PLANNING APPROVAL.

RELOCATED SHIPPING CONTAINER (WORKS BY CONTRACTOR)

EXISTING DEMOUNTABLES TO BE REMOVED POST CONSTRUCTION. WORKS BY OTHERS AND UNDER SEPARATE PLANNING APPLICATION.

EXISTING PARKING AREA TO REMAIN ACCESSIBLE DURING CONSTRUCTION

PARKING AREA TO REMAIN ACCESSIBLE DURING CONSTRUCTION OF ROADWORKS

D16064 AND SHED TO BE RETAINED

EXISTING DEMOUNTABLES TO BE REMOVED POST CONSTRUCTION. WORKS BY OTHERS AND UNDER SEPARATE PLANNING APPLICATION.

D18139 TO BE RETAINED

BOUNDARY 154°33'17" 20.115
BOUNDARY 64°33'17" 172.920
BOUNDARY 64°33'17" BOUNDARY 66.970
BOUNDARY 64°33'17" BOUNDARY 35.155
BOUNDARY 244°33'17" BOUNDARY 139.225
BOUNDARY 7°01'37" 5.960
BOUNDARY 7°01'37" 36.130
BOUNDARY 7°01'37" 30.910
BOUNDARY 322°01'17" 39.775
BOUNDARY 197°32'17" BOUNDARY 100.200

1 D. P. 809057
1 D. P. 550361
1 D. P. 809057
1 D. P. 550361

1 PLAN
PROPOSED SITE PLAN (SOUTH)
SCALE: 1:500

NOTES

DEMOUNTABLE RELOCATIONS AND REMOVALS ARE TO BE INCLUDED IN A SEPARATE PLANNING PATHWAY.

PROVIDE 20 NEW STEEL LOCKERS FOR STAFF END OF TRIP FACILITIES. TO BE SPREAD ACROSS THE SCHOOL NOMINALLY TO BUILDINGS B, C, H AND J. FIX IN POSITION OUTSIDE EXISTING STAFF SHOWER LOCATIONS. PROVIDE VINYL WRAP TO LOCKERS EXTERIOR SURFACES. REFER TO ARCHITECTURAL SPECIFICATIONS.

50 100 150mm @ A1

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06	80% SCHEMATIC DESIGN ISSUE	12/12/2024	JH
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04	DRAFT 50% SCHEMATIC DESIGN ISSUE	22/11/2024	JH
03	100% CONCEPT DESIGN ISSUE	10/11/2024	JH
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REV.	DESCRIPTION	DATE	INIT.

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PHASE **SCHEMATIC DESIGN**
CLIENT SCHOOL INFRASTRUCTURE NSW
PROJECT VINCENTIA HIGH SCHOOL
ADDRESS 142 THE WOOL ROAD, VINCENTIA, NSW

DRAWING **PROPOSED SITE PLAN 02**

Figured dimensions take precedence over scale dimensions. Contractors must verify all dimensions on site before commencing any work or making shop drawings.

PROJECT NUMBER **7068VI01** | DIRECTOR **GI** | CHECKED

DRAWING NUMBER **VHS-FTA-00-00-DR-A-1102** | REVISION **11**

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Appendix B Boreholes

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BOREHOLE LOG SHEET

Client: Schools Infrastructure NSW
Project: Vencentia High School
Location: 142 The Wool Rd, Vincentia

Hole No: BH01

Job No: 304100928 **Sheet:** 1 of 1

Position: E286978.792 N6115906.149 56 MGA20 **Angle from Horizontal:** 90° **Surface Elevation:** 21.800 m AHD

Rig Type: Track Mounted Drill Rig **Mounting:** Track **Driller:** MATT

Casing Diameter: NA **Contractor:** Stratacore

Data Started: 27/11/23 **Date Completed:** 27/11/23 **Logged By:** SA **Checked By:** BD

Drilling				Sampling & Testing				Material Description					
Method	Resistance	Casing	Water	Sample or Field Test	DCP (blows per 100 mm) 1 3 6 12	RL (m AHD)	Depth (m)	Graphic Log	Classification	SOIL TYPE, plasticity or particle characteristic, colour, secondary and minor components ROCK TYPE, grain size and type, colour, fabric & texture, strength, weathering, defects and structure	Moisture Condition	Consistency Relative Density	STRUCTURE & Other Observations
AD/T	E	NA	Not Encountered	B 0.50 - 1.00 m		21.5	0.5			FILL: Clayey SAND: fine to coarse grained, grey, low plasticity clay, trace fine, sub-angular to angular gravel	M		FILL
										@ 0.40m becomes yellow-brown			
										0.50m			
						21.0	1.0		SC	Clayey SAND: fine to coarse grained, yellow-brown, low plasticity clay, trace fine, sub-angular gravel	M	MD	RESIDUAL SOIL
										1.40m			
				D 1.50 - 2.00 m		20.5	1.5			Sandy CLAY: medium plasticity, red-grey, fine to coarse grained sand, trace fine, sub-angular gravel	M (≈PL) to M (>PL)		
						20.0	2.0		CI	2.00m		VSt	
										TERMINATED AT 2.00 m			
						19.5	2.5						
						19.0	3.0						
						18.5	3.5						
						18.0							

METHOD
EX Excavator bucket
R Ripper
HA Hand auger
PT Push tube
SON Sonic drilling
AH Air hammer
PS Percussion sampler
AS Short spiral auger
AD/V Solid flight auger: V-Bit
AD/T Solid flight auger: TC-Bit
HFA Hollow flight auger
WB Washbore drilling
RR Rock roller

PENETRATION
VE Very Easy (No Resistance)
E Easy
F Firm
H Hard
VH Very Hard (Refusal)

WATER
Water Level on Date shown
water inflow
water outflow

FIELD TESTS
SPT - Standard Penetration Test
HP - Hand/Pocket Penetrometer
DCP - Dynamic Cone Penetrometer
PSP - Perth Sand Penetrometer
MC - Moisture Content
PBT - Plate Bearing Test
IMP - Borehole Impression Test
PID - Photoionisation Detector
VS - Vane Shear; P=Peak, R=Resdual (uncorrected kPa)

SAMPLES
B - Bulk disturbed sample
D - Disturbed sample
ES - Environmental sample
U - Thin wall tube 'undisturbed'

MOISTURE
D - Dry
M - Moist
W - Wet
PL - Plastic limit
LL - Liquid limit
w - Moisture content

SOIL CONSISTENCY
VS - Very Soft
S - Soft
F - Firm
St - Stiff
VSt - Very Stiff
H - Hard

RELATIVE DENSITY
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Refer to explanatory notes for details of abbreviations and basis of descriptions

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BOREHOLE LOG SHEET

Client: Schools Infrastructure NSW
Project: Vencentia High School
Location: 142 The Wool Rd, Vincentia

Hole No: BH02

Job No: 304100928 **Sheet:** 1 of 1

Position: E287010.800 N6115961.752 56 MGA20 **Angle from Horizontal:** 90° **Surface Elevation:** 20.500 m AHD

Rig Type: Track Mounted Drill Rig **Mounting:** Track **Driller:** MATT

Casing Diameter: NA **Contractor:** Stratacore

Data Started: 27/11/23 **Date Completed:** 27/11/23 **Logged By:** SA **Checked By:** BD

Drilling				Sampling & Testing				Material Description					
Method	Resistance	Casing	Water	Sample or Field Test	DCP (blows per 100 mm) 1 3 6 12	RL (m AHD)	Depth (m)	Graphic Log	Classification	SOIL TYPE, plasticity or particle characteristic, colour, secondary and minor components ROCK TYPE, grain size and type, colour, fabric & texture, strength, weathering, defects and structure	Moisture Condition	Consistency Relative Density	STRUCTURE & Other Observations
AD/T		NA	Not Encountered			20.5	0.0			Clayey SAND: fine to coarse grained, grey-brown, trace roots	M		TOPSOIL
										0.30m			
										FILL: Clayey SAND: fine to coarse grained, yellow-brown, low plasticity clay	M		FILL
						20.0	0.5			0.50m			
				B 0.50 - 1.00 m					SC	Clayey SAND: fine to coarse grained, red-brown, low plasticity clay, with fine to coarse, angular gravel	M	MD	RESIDUAL SOIL
						19.5	1.0			1.10m			
	E									Sandy CLAY: low to medium plasticity, red-grey, fine to coarse grained sand, trace fine to coarse, angular gravel		F	
				SPT 1.50 - 1.95 m 4, 5, 6 N=11		19.0	1.5		CL-CI		M (>PL)	St	
										1.90m			
						18.5	2.0		SC	Clayey SAND: fine to coarse grained, pale yellow, low plasticity clay	M	MD	
										2.10m			
										Sandy CLAY: medium to high plasticity, red-brown, fine to coarse grained sand			
									CI-CH		M (<PL)	St	
				SPT 2.50 - 2.95 m 4, 6, 9 N=15		18.0	2.5			2.70m			
										Clayey SAND: fine to coarse grained, white, low plasticity clay			EXTREMELY WEATHERED
	H					17.5	3.0		SC		D	VD	
										3.50m			
				SPT 3.50 - 3.52 m 25/20mm N=R		17.0	3.5			TERMINATED AT 3.50 m Refusal			

METHOD
EX Excavator bucket
R Ripper
HA Hand auger
PT Push tube
SON Sonic drilling
AH Air hammer
PS Percussion sampler
AS Short spiral auger
AD/V Solid flight auger: V-Bit
AD/T Solid flight auger: TC-Bit
HFA Hollow flight auger
WB Washbore drilling
RR Rock roller

PENETRATION
VE Very Easy (No Resistance)
E Easy
F Firm
H Hard
VH Very Hard (Refusal)

WATER
Water Level on Date shown
water inflow
water outflow

FIELD TESTS
SPT - Standard Penetration Test
HP - Hand/Pocket Penetrometer
DCP - Dynamic Cone Penetrometer
PSP - Perth Sand Penetrometer
MC - Moisture Content
PBT - Plate Bearing Test
IMP - Borehole Impression Test
PID - Photoionisation Detector
VS - Vane Shear; P=Peak, R=Resdual (uncorrected kPa)

SAMPLES
B - Bulk disturbed sample
D - Disturbed sample
ES - Environmental sample
U - Thin wall tube 'undisturbed'

MOISTURE
D - Dry
M - Moist
W - Wet
PL - Plastic limit
LL - Liquid limit
w - Moisture content

SOIL CONSISTENCY
VS - Very Soft
S - Soft
F - Firm
St - Stiff
VSt - Very Stiff
H - Hard

RELATIVE DENSITY
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Refer to explanatory notes for details of abbreviations and basis of descriptions

Stantec Australia PTY LTD

Stantec

BOREHOLE LOG SHEET

Client: Schools Infrastructure NSW
Project: Vencentia High School
Location: 142 The Wool Rd, Vincentia

Hole No: BH03

Job No: 304100928 **Sheet:** 1 of 1

Position: E287001.807 N6115945.506 56 MGA20 **Angle from Horizontal:** 90° **Surface Elevation:** 20.600 m AHD
Rig Type: Track Mounted Drill Rig **Mounting:** Track **Driller:** MATT
Casing Diameter: NA **Contractor:** Stratacore
Data Started: 27/11/23 **Date Completed:** 27/11/23 **Logged By:** SA **Checked By:** BD

Drilling				Sampling & Testing		RL (m AHD)	Depth (m)	Material Description					
Method	Resistance	Casing	Water	Sample or Field Test	DCP (blows per 100 mm) 1 3 6 12			Graphic Log	Classification	SOIL TYPE, plasticity or particle characteristic, colour, secondary and minor components ROCK TYPE, grain size and type, colour, fabric & texture, strength, weathering, defects and structure	Moisture Condition	Consistency Relative Density	STRUCTURE & Other Observations
AD/T	E	NA	@ 1.40m seepage			20.5	0			Clayey SAND: fine to coarse grained, brown, low plasticity clay, trace roots	M		TOPSOIL
										0.40m			
				B 0.50 - 1.00 m		20.0	0.5			FILL: Clayey SAND: fine to coarse grained, yellow-brown, low plasticity clay, trace fine to medium, sub-angular to angular gravel	M		FILL
							1.0						
						19.5				1.10m			
										Sandy CLAY: medium plasticity, red-grey, fine to coarse grained sand			RESIDUAL SOIL
				SPT 1.50 - 1.95 m 2, 2, 3 N=5		19.0	1.5		CI		M (>PL)		
										1.80m			
										Sandy CLAY: low to medium plasticity, red-grey, fine to coarse grained sand		F	
						18.5	2.0		CL-CI				
										2.50m			
				SPT 2.50 - 2.95 m 2, 4, 5 N=9		18.0	2.5			Sandy CLAY: low to medium plasticity, white, fine to coarse grained sand	M (≈PL) to M (>PL)		
									CL-CI			St	
	H					17.5	3.0						
				SPT 3.40 - 3.47 m 25/70mm N=R						3.40m			
							3.5		SC	Clayey SAND: fine to coarse grained, orange-brown, low plasticity clay, trace fine ironstone gravel, sub-angular 3.50m	M	VD	EXTREMELY WEATHERED
						17.0				TERMINATED AT 3.50 m Refusal			

METHOD
EX Excavator bucket
R Ripper
HA Hand auger
PT Push tube
SON Sonic drilling
AH Air hammer
PS Percussion sampler
AS Short spiral auger
AD/V Solid flight auger: V-Bit
AD/T Solid flight auger: TC-Bit
HFA Hollow flight auger
WB Washbore drilling
RR Rock roller

PENETRATION
VE Very Easy (No Resistance)
E Easy
F Firm
H Hard
VH Very Hard (Refusal)

WATER
Water Level on Date shown
water inflow
water outflow

FIELD TESTS
SPT - Standard Penetration Test
HP - Hand/Pocket Penetrometer
DCP - Dynamic Cone Penetrometer
PSP - Perth Sand Penetrometer
MC - Moisture Content
PBT - Plate Bearing Test
IMP - Borehole Impression Test
PID - Photoionisation Detector
VS - Vane Shear; P=Peak, R=Resdual (uncorrected kPa)

SAMPLES
B - Bulk disturbed sample
D - Disturbed sample
ES - Environmental sample
U - Thin wall tube 'undisturbed'

MOISTURE
D - Dry
M - Moist
W - Wet
PL - Plastic limit
LL - Liquid limit
w - Moisture content

SOIL CONSISTENCY
VS - Very Soft
S - Soft
F - Firm
St - Stiff
VSt - Very Stiff
H - Hard

RELATIVE DENSITY
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Refer to explanatory notes for details of abbreviations and basis of descriptions

Stantec Australia PTY LTD

Stantec

BOREHOLE LOG SHEET

Client: Schools Infrastructure NSW
Project: Vencentia High School
Location: 142 The Wool Rd, Vincentia

Hole No: BH04

Job No: 304100928 **Sheet:** 1 of 1

Position: E287016.989 N6115943.475 56 MGA20 **Angle from Horizontal:** 90° **Surface Elevation:** 21.100 m AHD
Rig Type: Track Mounted Drill Rig **Mounting:** Track **Driller:** MATT
Casing Diameter: NA **Contractor:** Stratacore
Data Started: 27/11/23 **Date Completed:** 27/11/23 **Logged By:** SA **Checked By:** BD

Drilling				Sampling & Testing		RL (m AHD)	Depth (m)	Material Description					
Method	Resistance	Casing	Water	Sample or Field Test	DCP (blows per 100 mm) 1 3 6 12			Graphic Log	Classification	SOIL TYPE, plasticity or particle characteristic, colour, secondary and minor components ROCK TYPE, grain size and type, colour, fabric & texture, strength, weathering, defects and structure	Moisture Condition	Consistency Relative Density	STRUCTURE & Other Observations
AD/T	E	NA	@ 1.90m seepage			21.0	0			Clayey SAND: fine to coarse grained, brown, low plasticity clay, with roots			TOPSOIL
										0.20m FILL: Clayey SAND: fine to coarse grained, brown, low plasticity clay	M		FILL
				B 0.50 - 1.00 m		20.5	0.5		SC	0.50m Clayey SAND: fine to coarse grained, yellow-brown, low plasticity clay	M	MD	RESIDUAL SOIL
						20.0	1.0			1.10m Sandy CLAY: medium plasticity, red-grey, white, fine to coarse grained sand, with fine to coarse, angular gravel			
				SPT 1.50 - 1.95 m 2, 3, 2 N=5		19.5	1.5		Cl		M (>PL)	F	
						19.0	2.0						
				SPT 2.50 - 2.95 m 2, 6, 7 N=13		18.5	2.5			2.50m Sandy CLAY: medium plasticity, white, fine to coarse grained sand			
	F								Cl			St	
						18.0	3.0						
	H									3.20m Clayey SAND: fine to coarse grained, orange-brown, low plasticity clay	D	VD	EXTREMELY WEATHERED
				SPT 3.50 - 3.51 m 25/10mm N=R		17.5	3.5		SC	3.50m TERMINATED AT 3.50 m Refusal			

METHOD
EX Excavator bucket
R Ripper
HA Hand auger
PT Push tube
SON Sonic drilling
AH Air hammer
PS Percussion sampler
AS Short spiral auger
AD/V Solid flight auger: V-Bit
AD/T Solid flight auger: TC-Bit
HFA Hollow flight auger
WB Washbore drilling
RR Rock roller

PENETRATION
VE Very Easy (No Resistance)
E Easy
F Firm
H Hard
VH Very Hard (Refusal)

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Water Level on Date shown
water inflow
water outflow

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HP - Hand/Pocket Penetrometer
DCP - Dynamic Cone Penetrometer
PSP - Perth Sand Penetrometer
MC - Moisture Content
PBT - Plate Bearing Test
IMP - Borehole Impression Test
PID - Photoionisation Detector
VS - Vane Shear; P=Peak, R=Resdual (uncorrected kPa)

SAMPLES
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D - Disturbed sample
ES - Environmental sample
U - Thin wall tube 'undisturbed'

MOISTURE
D - Dry
M - Moist
W - Wet
PL - Plastic limit
LL - Liquid limit
w - Moisture content

SOIL CONSISTENCY
VS - Very Soft
S - Soft
F - Firm
St - Stiff
VSt - Very Stiff
H - Hard

RELATIVE DENSITY
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Refer to explanatory notes for details of abbreviations and basis of descriptions

Stantec Australia PTY LTD

Stantec

BOREHOLE LOG SHEET

Client: Schools Infrastructure NSW
Project: Vencentia High School
Location: 142 The Wool Rd, Vincentia

Hole No: BH05

Job No: 304100928 **Sheet:** 1 of 1

Position: E287007.996 N6115923.845 56 MGA20 **Angle from Horizontal:** 90° **Surface Elevation:** 21.800 m AHD
Rig Type: Track Mounted Drill Rig **Mounting:** Track **Driller:** MATT
Casing Diameter: NA **Contractor:** Stratacore
Data Started: 27/11/23 **Date Completed:** 27/11/23 **Logged By:** SA **Checked By:** BD

Drilling				Sampling & Testing		RL (m AHD)	Depth (m)	Material Description					
Method	Resistance	Casing	Water	Sample or Field Test	DCP (blows per 100 mm) 1 3 6 12			Graphic Log	Classification	SOIL TYPE, plasticity or particle characteristic, colour, secondary and minor components ROCK TYPE, grain size and type, colour, fabric & texture, strength, weathering, defects and structure	Moisture Condition	Consistency Relative Density	STRUCTURE & Other Observations
AD/T	E	NA	Not Encountered	B 0.50 - 1.00 m		21.5	0.5			Clayey SAND: fine to coarse grained, brown, low plasticity clay	M		TOPSOIL
						21.0	1.0		SW	0.40m SAND: fine to coarse grained, yellow-brown, with low plasticity clay, trace fine to medium, angular gravel	M	MD	RESIDUAL SOIL
				SPT 1.50 - 1.95 m 6, 5, 4 N=9		20.5	1.5		CI	1.00m Sandy CLAY: medium plasticity, red-grey to pale brown, fine to coarse grained sand, trace fine to coarse grained, sub-angular sandstone gravel	M (>PL)	S - F St	
	F			SPT 2.50 - 2.95 m 3, 2, 4 N=6		20.0 19.5 19.0	2.0 2.5					F	
	H			SPT 3.50 - 3.55 m 25/50mm N=R		18.5 18.0	3.0 3.5		SC	3.30m Clayey SAND: fine to coarse grained, orange-brown, low plasticity clay 3.50m TERMINATED AT 3.50 m Refusal	M	VD	EXTREMELY WEATHERED

METHOD
EX Excavator bucket
R Ripper
HA Hand auger
PT Push tube
SON Sonic drilling
AH Air hammer
PS Percussion sampler
AS Short spiral auger
AD/V Solid flight auger: V-Bit
AD/T Solid flight auger: TC-Bit
HFA Hollow flight auger
WB Washbore drilling
RR Rock roller

PENETRATION
VE Very Easy (No Resistance)
E Easy
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water inflow
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PSP - Perth Sand Penetrometer
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IMP - Borehole Impression Test
PID - Photoionisation Detector
VS - Vane Shear; P=Peak, R=Resdual (uncorrected kPa)

SAMPLES
B - Bulk disturbed sample
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MD - Medium Dense
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Refer to explanatory notes for details of abbreviations and basis of descriptions

Stantec Australia PTY LTD

Appendix C Test Results

ASCT Illawarra
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WB080 - Rev 32, 28/11/2023

Report on Material Quality

Client:	Stantec Australia Pty Ltd	Report No:	**26-1286-MQ**
Client Address:	16 Burelli St, Wollongong NSW 2500	Report Date:	5/12/2023
Project:	Geotechnical Testing	Report Page:	Page 1 of 2
Works Component:	Vicentia High School	Project No:	26
Material Used:	Insitu	Request/Order:	304100928
Material Description:	-	Lot Number:	-
Lot Comments:	-	ITP/PCP Number:	-
Lab Test Date/s:	Laboratory testing 30/11/2023 to 01/12/2023	Control Line:	BH01

Sample Number	Sample Date	Chainage/Location	Offset	Level of Test	Test Depth
18218	**28/11/2023**	**-**	**-**	**BH01**	**0.5-1.0m**

Sampling & Test Methods (Results relate only to the items sampled/tested) **(** NATA accreditation does not cover the performance of this service)**

Sampled by Customer: Results apply to the sample/s as received. **
AS 1289.3.6.1 Coarse: (2009)Particle size distribution of a soil
AS 1289.3.1.2: (2009)Determination of Liquid Limit (1 point Casagrande)
AS 1289.3.3.1: (2009)Calculation of the Plastic Index of a soil
AS 1289.1.1: (2001)Preparation of disturbed soil samples
AS 1289.3.6.1 Fine: (2009)Particle size distribution of a soil
AS 1289.3.2.1: (2009) Determination of the Plastic Limit
PSD: Ratios, Co-efficients & Weighted Indices

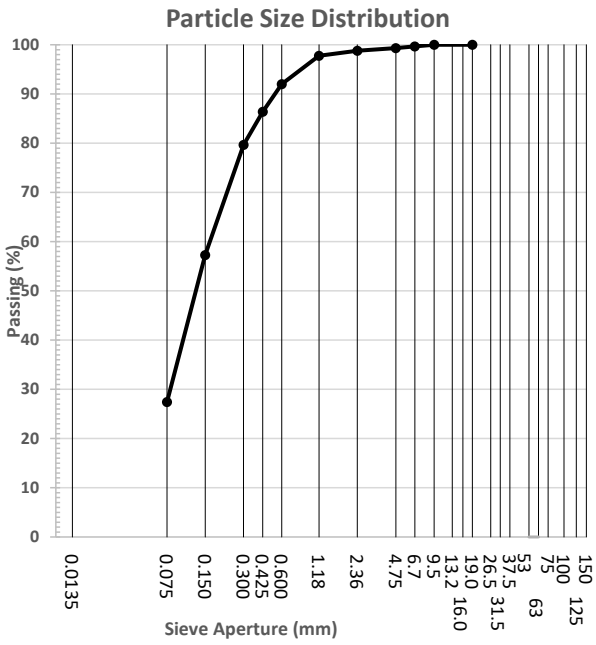
Report Remarks & Endorsement

NATA

Accredited for compliance with ISO/IEC 17025 - Testing.
NATA Accreditation number: 20656

Issued By: P.Baltoski
Approved Signatory

Specification Name				
Particle Size Distribution (WASHED)	Units	**Result**	**Specification Limits**	**Graphical Representation**
Passing 150mm Sieve	%			
Passing 125mm Sieve	%			
Passing 100mm Sieve	%			
Passing 75.0mm Sieve	%			
Passing 63.0mm Sieve	%			
Passing 53.0mm Sieve	%			
Passing 37.5mm Sieve	%			
Passing 31.5mm Sieve	%			
Passing 26.5mm Sieve	%			
Passing 19.0mm Sieve	%	**100**		
Passing 16.0mm Sieve	%			
Passing 13.2mm Sieve	%			
Passing 9.5mm Sieve	%	**100**		
Passing 6.7mm Sieve	%	**100**		
Passing 4.75mm Sieve	%	**99**		
Passing 2.36mm Sieve	%	**99**		
Passing 1.18mm Sieve	%	**98**		
Passing 0.600mm Sieve	%	**92**		
Passing 0.425mm Sieve	%	**86**		
Passing 0.300mm Sieve	%	**80**		
Passing 0.150mm Sieve	%	**57**		
Passing 0.075mm Sieve	%	**27**		
Passing 0.0135mm Sieve	%			
Moisture, Ratios, Coefficients & Indices	Units	**Result**	**Specification Limits**	**Remarks**
Moisture Content (AS1289.2.1.1-2005)	%	**10.3**		Field Condition Total sample



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WB080 - Rev 32, 28/11/2023

Report on Material Quality

Client:	Stantec Australia Pty Ltd	Report No:	**26-1288-MQ**
Client Address:	16 Burelli St, Wollongong NSW 2500	Report Date:	5/12/2023
Project:	Geotechnical Testing	Report Page:	Page 1 of 2
Works Component:	Vicentia High School	Project No:	26
Material Used:	Insitu	Request/Order:	304100928
Material Description:	-	Lot Number:	-
Lot Comments:	-	ITP/PCP Number:	-
Lab Test Date/s:	Laboratory testing 30/11/2023 to 04/12/2023	Control Line:	BH03

Sample Number	Sample Date	Chainage/Location	Offset	Level of Test	Test Depth
18220	**28/11/2023**	**-**	**-**	**BH03**	**0.5-1.0m**

Sampling & Test Methods (Results relate only to the items sampled/tested) **(** NATA accreditation does not cover the performance of this service)**

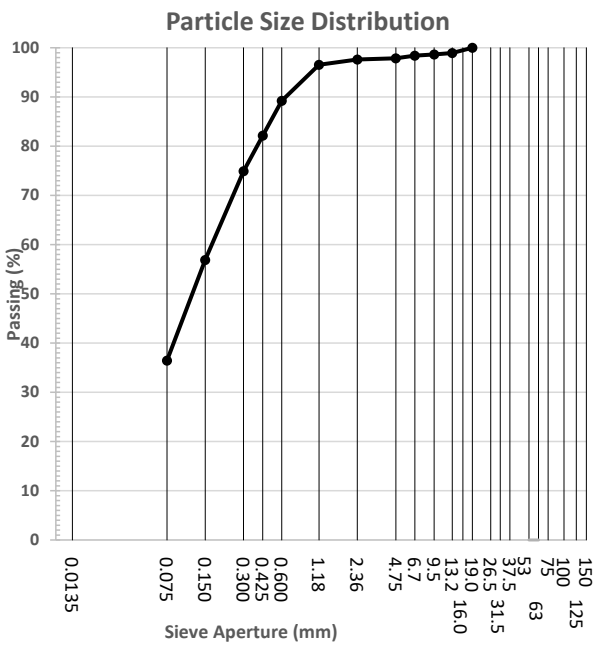
Sampled by Customer: Results apply to the sample/s as received. **
AS 1289.3.6.1 Coarse: (2009)Particle size distribution of a soil
AS 1289.3.1.2: (2009)Determination of Liquid Limit (1 point Casagrande)
AS 1289.3.3.1: (2009)Calculation of the Plastic Index of a soil
AS 1289.1.1: (2001)Preparation of disturbed soil samples
AS 1289.3.6.1 Fine: (2009)Particle size distribution of a soil
AS 1289.3.2.1: (2009) Determination of the Plastic Limit
PSD: Ratios, Co-efficients & Weighted Indices

Report Remarks & Endorsement

NATA
Accredited for compliance with ISO/IEC 17025 - Testing.
NATA Accreditation number: 20656

Issued By: P.Baltoski
Approved Signatory

Specification Name				
Particle Size Distribution (WASHED)	Units	**Result**	**Specification Limits**	**Graphical Representation**
Passing 150mm Sieve	%			
Passing 125mm Sieve	%			
Passing 100mm Sieve	%			
Passing 75.0mm Sieve	%			
Passing 63.0mm Sieve	%			
Passing 53.0mm Sieve	%			
Passing 37.5mm Sieve	%			
Passing 31.5mm Sieve	%			
Passing 26.5mm Sieve	%			
Passing 19.0mm Sieve	%	**100**		
Passing 16.0mm Sieve	%			
Passing 13.2mm Sieve	%	**99**		
Passing 9.5mm Sieve	%	**99**		
Passing 6.7mm Sieve	%	**98**		
Passing 4.75mm Sieve	%	**98**		
Passing 2.36mm Sieve	%	**98**		
Passing 1.18mm Sieve	%	**97**		
Passing 0.600mm Sieve	%	**89**		
Passing 0.425mm Sieve	%	**82**		
Passing 0.300mm Sieve	%	**75**		
Passing 0.150mm Sieve	%	**57**		
Passing 0.075mm Sieve	%	**36**		
Passing 0.0135mm Sieve	%			



Moisture, Ratios, Coefficients & Indices	Units	**Result**	**Specification Limits**	**Remarks**
Moisture Content (AS1289.2.1.1-2005)	%	**13.7**		Field Condition Total sample

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WB080 - Rev 32, 28/11/2023

Report on Material Quality

Client:	Stantec Australia Pty Ltd	Report No:	**26-1288-MQ**
Client Address:	16 Burelli St, Wollongong NSW 2500	Report Date:	5/12/2023
Project:	Geotechnical Testing	Report Page:	Page 2 of 2
Works Component:	Vicentia High School	Project No:	26
Material Used:	Insitu	Request/Order:	304100928
Material Description:	-	Lot Number:	-
Lot Comments:	-	ITP/PCP Number:	-
Lab Test Date/s:	Laboratory testing 30/11/2023 to 04/12/2023	Control Line:	BH03

Sample Number	Sample Date	Chainage/Location	Offset	Level of Test	Test Depth
18220	**28/11/2023**	**-**	**-**	**BH03**	**0.5-1.0m**

Plasticity	Units	Result	Specification Limits	Remarks
Liquid Limit	%	**25**		Oven Dried & Dry Sieved
Plastic Limit	%	**14**		Oven Dried & Dry Sieved
Plastic Index	%	**11**		Oven Dried & Dry Sieved

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WB080 - Rev 32, 28/11/2023

Report on Material Quality

Client:	Stantec Australia Pty Ltd	Report No:	**26-1290-MQ**
Client Address:	16 Burelli St, Wollongong NSW 2500	Report Date:	5/12/2023
Project:	Geotechnical Testing	Report Page:	Page 1 of 2
Works Component:	Vicentia High School	Project No:	26
Material Used:	Insitu	Request/Order:	304100928
Material Description:	-	Lot Number:	-
Lot Comments:	-	ITP/PCP Number:	-
Lab Test Date/s:	Laboratory testing 30/11/2023 to 04/12/2023	Control Line:	BH05

Sample Number	Sample Date	Chainage/Location	Offset	Level of Test	Test Depth
18222	**28/11/2023**	**-**	**-**	**BH05**	**0.5-1.0m**

Sampling & Test Methods (Results relate only to the items sampled/tested) **(** NATA accreditation does not cover the performance of this service)**

Sampled by Customer: Results apply to the sample/s as received. **
AS 1289.3.6.1 Coarse: (2009)Particle size distribution of a soil
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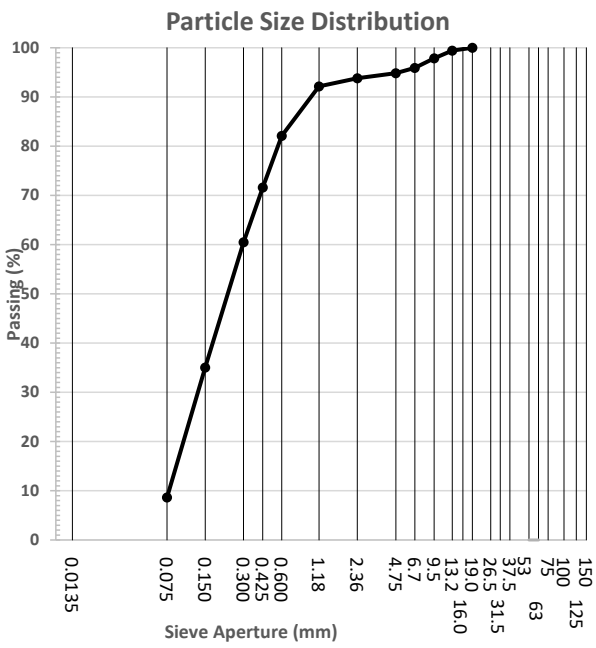
AS 1289.3.6.1 Fine: (2009)Particle size distribution of a soil
AS 1289.3.2.1: (2009) Determination of the Plastic Limit
PSD: Ratios, Co-efficients & Weighted Indices

Report Remarks & Endorsement

NATA
Accredited for compliance with ISO/IEC 17025 - Testing.
NATA Accreditation number: 20656

Issued By: P.Baltoski
Approved Signatory

Specification Name				
Particle Size Distribution (WASHED)	Units	**Result**	**Specification Limits**	**Graphical Representation**
Passing 150mm Sieve	%			
Passing 125mm Sieve	%			
Passing 100mm Sieve	%			
Passing 75.0mm Sieve	%			
Passing 63.0mm Sieve	%			
Passing 53.0mm Sieve	%			
Passing 37.5mm Sieve	%			
Passing 31.5mm Sieve	%			
Passing 26.5mm Sieve	%			
Passing 19.0mm Sieve	%	**100**		
Passing 16.0mm Sieve	%			
Passing 13.2mm Sieve	%	**99**		
Passing 9.5mm Sieve	%	**98**		
Passing 6.7mm Sieve	%	**96**		
Passing 4.75mm Sieve	%	**95**		
Passing 2.36mm Sieve	%	**94**		
Passing 1.18mm Sieve	%	**92**		
Passing 0.600mm Sieve	%	**82**		
Passing 0.425mm Sieve	%	**72**		
Passing 0.300mm Sieve	%	**60**		
Passing 0.150mm Sieve	%	**35**		
Passing 0.075mm Sieve	%	**9**		
Passing 0.0135mm Sieve	%			



Moisture, Ratios, Coefficients & Indices	Units	**Result**	**Specification Limits**	**Remarks**
Moisture Content (AS1289.2.1.1-2005)	%	**13.8**		Field Condition Total sample

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WB080 - Rev 32, 28/11/2023

Report on Material Quality

Client:	Stantec Australia Pty Ltd	Report No:	**26-1290-MQ**
Client Address:	16 Burelli St, Wollongong NSW 2500	Report Date:	5/12/2023
Project:	Geotechnical Testing	Report Page:	Page 2 of 2
Works Component:	Vicentia High School	Project No:	26
Material Used:	Insitu	Request/Order:	304100928
Material Description:	-	Lot Number:	-
Lot Comments:	-	ITP/PCP Number:	-
Lab Test Date/s:	Laboratory testing 30/11/2023 to 04/12/2023	Control Line:	BH05

Sample Number	Sample Date	Chainage/Location	Offset	Level of Test	Test Depth
18222	**28/11/2023**	**-**	**-**	**BH05**	**0.5-1.0m**

Plasticity	Units	Result	Specification Limits	Remarks
Liquid Limit	%	**NO**		Not Obtainable - Oven Dried & Dry Sieved
Plastic Limit	%	**-**		
Plastic Index	%	**NP**		Non Plastic - Oven Dried & Dry Sieved

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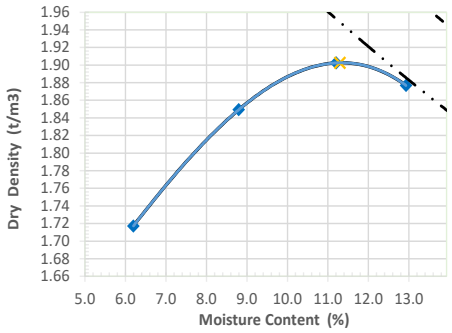
Report on AS CBR and MDD

Client:	Stantec Australia Pty Ltd	Report No:	**26-1286-CBR**
Client Address:	16 Burelli St, Wollongong NSW 2500	Report Date:	6/12/2023
Project:	Geotechnical Testing	Report Page:	Page 1 of 1
Works Component:	Vicentia High School	Project No:	26
Material Used(Source):	Insitu	Test Request/Order:	**304100928**
Material Description:	-	Lot Number:	-
Lot Boundaries:	-	ITP/PCP Number:	-
Lab Test Date/s:	Laboratory testing 30/11/2023 to 06/12/2023	Control Line:	BH01

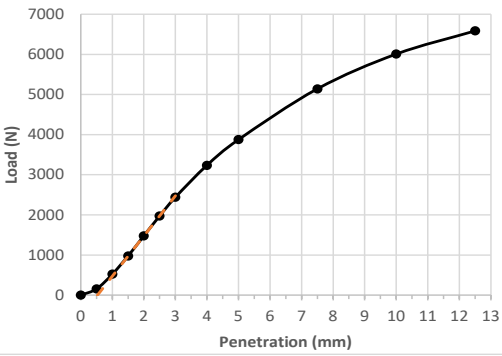
Sample Number	Sample Date	Chainage/Location	Offset	Level of Test	Test Depth
18218	**28/11/2023**	**-**	**-**	**BH01**	**0.5-1.0m**

Parameters	Units	Test Results		Information
Pretreatment Regime	--	No Pretreatment		
Portion Retained on AS Sieve	%	0% on 19mm		Retained material excluded from CBR
Material Plasticity (Liquid Limit)	--	Sand / Granular		By Technician's Assessment
Sample Curing Time	hrs	MDD = 2 hrs	CBR = 24 hrs	
Soil Particle Density	t/m3	2.67		Estimated value only**
Maximum Dry Density (MDD)	t/m3	1.903		Standard compactive effort
Optimum Moisture Content (OMC)	%	11.3		
Field/Prep Moisture Content	%	Field 10.3 %	Prep 10.3 %	Passing 19.0mm portion
Compaction Moisture Content	%	Achieved 11.4 %	LMR = 101.0%	Specified LMR = 100%
Compaction Dry Density	t/m3	Achieved 1.87 t/m3	LDR = 98.0%	Specified LDR = 98%
Surcharge Load	kg	4.5		
Period of Soaking	Days	Soaked - 4 Days		Dry Density (after soaking) = 1.86 t/m3.
Specimen Swell	%	0.0		
Moisture Content - Top 30mm	%	13.1		After Penetration
Moisture Content - Remaining	%	12.6		After Penetration

Dry Density Vs Moisture Content



Load-Penetration Curve



Material CBR Value (%)

20

California Bearing Ratios

CBR $_{2.5}$ = 19

CBR $_{5.0}$ = 20

Including an Applied Correction of 0.5 mm

Sampling & Test Methods (Results relate only to the items sampled/tested)

Sampled by 3rd Party: Results apply to the sample/s as received. **
AS 1289.1.1: (2001)Preparation of disturbed soil samples
AS1289.2.1.1: (2005) Moisture Content of a Soil (Oven Drying)
AS1289.5.1.1: (2017)Dry Density/Moisture content relation of a soil (Standard)
AS1289.6.1.1: (2014)California Bearing Ratio of a soil (remoulded specimen)

Report Remarks & Endorsement

NATA

Accredited for compliance with ISO/IEC 17025 - Testing.
NATA Accreditation number: 20656

Issued By:

P.Baltoski
Approved Signatory

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

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Report on Moisture Content, Emerson Class, Soil pH, EC, PASS/AASS and Foreign Material

Client:	Stantec Australia Pty Ltd	Report No:	**1287-EC**
Client Address:	16 Burelli St, Wollongong NSW 2500	Report Date:	7/12/2023
Project:	Geotechnical Testing	Report Page:	Page 1 of 1
Works Component:	Vicentia High School	Project No:	26
Material Used:	Insitu	Test Request/Order:	304100928
Material Description:	-	Lot Number:	-
Lot Boundaries:	Chainage - to -. Offsets - to -.	ITP/PCP Number:	-
Lab Test Date/s:	Laboratory testing 06/12/2023	Control Line:	BH02

Sample Number:		**18219**	**18221**	**-**	**-**	**-**
Field Sample/Test Date:		28/11/2023	28/11/2023	-	-	-
Chainage / Location:	(m)	-	-	-	-	-
Offset from control line:	(m)	-	-	-	-	-
Level of Test:	(m)	BH02	BH04	-	-	-
Test Depth:	(mm)	0.5-1.0m	0.5-1.0m	-	-	-
Lab Test Date (Moisture):		-	-	-	-	-
Moisture Content:	**(%)**	**-**	**-**	**-**	**-**	**-**
Test Water Used:		Distilled	Distilled	-	-	-
Temperature of Water:	(°C)	22	22	-	-	-
Soil Description:		-	-	-	-	-
Emerson Class Number:		**CLASS 6**	**CLASS 6**	**-**	**-**	**-**
Soil Moisture Condition:		-	-	-	-	-
Distilled Water:	**(pH)**	-	-	-	-	-
Soil Suspension Ratio (Soil:Water)		-	-	-	-	-
Test Temperature:	(°C)	-	-	-	-	-
pH Value of Soil-suspension:	**(pH)**	**-**	**-**	**-**	**-**	**-**
Electrical Conductivity:	**0**	**-**	**-**	**-**	**-**	**-**
Field pH:	**(pH_F)**	**-**	**-**	**-**	**-**	**-**
Field pH Oxidised:	**(pH_{FOX})**	**-**	**-**	**-**	**-**	**-**
Acid Sulfate Soil Indication:		**-**	**-**	**-**	**-**	**-**
Foreign Material - Type III	**(%)**	**-**	**-**	**-**	**-**	**-**

Sampling & Test Methods (Results relate only to the items sampled/tested)	**Report Remarks & Endorsement**
Sampled by Customer: Results apply to the sample/s as received. ** AS 1289.1.1: (2001)Preparation of disturbed soil samples AS 1289.3.8.1: (2017)Emerson Class number of a soil	
	Accredited for compliance with ISO/IEC 17025 - Testing. NATA Accreditation number: 20656 Issued By: P.Baltoski *Approved Signatory*
(NATA accreditation does not cover the performance of this service)**	*WB054 - Rev 4, 06/02/2023*

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WB080 - Rev 32, 28/11/2023

Report on Material Quality

Client:	Stantec Australia Pty Ltd	Report No:	**26-1286-MQ**
Client Address:	16 Burelli St, Wollongong NSW 2500	Report Date:	5/12/2023
Project:	Geotechnical Testing	Report Page:	Page 2 of 2
Works Component:	Vicentia High School	Project No:	26
Material Used:	Insitu	Request/Order:	304100928
Material Description:	-	Lot Number:	-
Lot Comments:	-	ITP/PCP Number:	-
Lab Test Date/s:	Laboratory testing 30/11/2023 to 01/12/2023	Control Line:	BH01

Sample Number	Sample Date	Chainage/Location	Offset	Level of Test	Test Depth
18218	**28/11/2023**	**-**	**-**	**BH01**	**0.5-1.0m**

Plasticity	Units	Result	Specification Limits	Remarks
Liquid Limit	%	**24**		Oven Dried & Dry Sieved
Plastic Limit	%	**15**		Oven Dried & Dry Sieved
Plastic Index	%	**9**		Oven Dried & Dry Sieved

Important Information about this Geotechnical Report

Scope of Work

The purpose of this report and any associated documentation is expressly stated in the document. This document does not form a complete assessment of the site, and no implicit determinations about Stantec's scope can be taken if not specifically referenced. Whilst this report is intended to reduce geotechnical risk, no level of detail or scope of work can entirely eliminate risk.

The nature of geotechnical data typically precludes auxiliary environmental assessment without undertaking specific methods in the investigation. Therefore, unless it is explicitly stated in the scope of work, this report does not provide any contamination or environmental assessment of the site or adjacent sites, nor can it be inferred or implied from any component of the document.

The scope of work, geotechnical information, and assessments made by Stantec may be summarised in the report; however, all aspects of the document, including associated data and limitations should be reviewed in its entirety.

Standard of care

Stantec have undertaken investigations, performed consulting services, and prepared this report based on the Client's specific requirements, data that was available or was collected, and previous experience.

Stantec's findings and assessment represent its reasonable judgment, diligence, skill, with sound professional standards, within the time and budget constraints of its commission. No warranty, expressed or implied, is made as to the professional advice included in this report.

Data sources

In preparing this document, or providing any consulting services during the commission, Stantec may have relied on information from third parties including, but not limited to; sub-consultants, published data, and the Client including its employees or representatives. This data may not be verified and Stantec assumes no responsibility for the adequacy, incompleteness, inaccuracies, or reliability of this information.

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Variability in conditions and limitations of data

Subsurface conditions are complex and can be highly variable; they cannot be accurately defined by discrete investigations. Geotechnical data is based on investigation locations which are explicitly representative of the specific sample or test points. Interpretation of conditions between such points cannot be assumed to represent actual subsurface information and there are unknowns or variations in ground conditions between test locations that cannot be inferred or predicted.

The precision and reliability of interpretive assessment between discrete points is dependent on the uniformity of the subsurface strata, as well as the frequency, detail, and method of sampling or testing.

Subsurface conditions are formed by various natural and anthropogenic processes and therefore are subject to change over time. This is particularly relevant with changes to the site ownership or usage, site boundary or layout, and design or planning modifications. Aspects of the site may also not be able to be determined due to physical or project related constraints and any information provided by Stantecca cannot apply following modification to the site, regulations, standards, or the development itself.

It is important to appreciate that no level of detail in investigation, or diligence in assessment, can eliminate uncertainty related to subsurface conditions and thus, geotechnical risk. Stantec cannot and does not provide unqualified warranties nor does it assume any liability for site conditions not observed or accessible during the investigations.

Verification of opinions and recommendations

Geotechnical information, by nature, represents an opinion and is based extensively on judgement of both data and interpretive assessments or observation. This report and its associated documentation are provided explicitly based on Stantec's opinion of the site at the time of inspection, and cannot be extended beyond this.

Any recommendations or design are provided as preliminary until verified on site during project implementation or construction. Inspection and verification on site shall be conducted by a suitably qualified geotechnical consultant or engineer, and where subsurface conditions or interpretations differ from those provided in this document or otherwise anticipated, Stantec must be notified and be provided with an opportunity to review the recommendations.

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