GROUNDWATER, SURFACE WATER AND SALINITY IMPACT ASSESSMENT

24 January 2025

Prepared for:
Department of Education

Prepared by:
Stantec

Project Number:
304501632

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School ID:	1982
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School Region:	Hunter and Central Coast NSW
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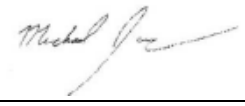
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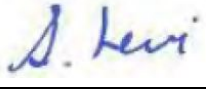
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Executive Summary

Stantec Australia Pty Ltd (Stantec) was engaged by Department of Educations (herein referred to as 'the client') to complete a Groundwater, Surface Water and Salinity Impact Assessment for the Gillieston Public School redevelopment and new public preschool project, located at 100 Ryans Road and 19 Northview Street, Gillieston Heights NSW.

The site locality and layout are shown in Figure 1 in **Appendix A** and comprised of a primary school, with established demountable and buildings, in the west and a unnamed drainage line in the east.

The study objectives were to evaluate the risk and impact on surface water and groundwater resources, including development of a salinity management plan (if required):

The site conceptual hydrogeological model is defined by a relatively steep topographic gradient, that radially slopes from the southwest in all directions, and prominently toward the east, where a natural unnamed first order ephemeral stream , with an artificial dam is located. The drainage line connects with several water bodies and eventually flows to Swamp Creek, a sixth order stream, approximately 1.2 km to the northwest. Overall the site is considered to have sufficient runoff and drainage.

The hydrogeological landscape comprises shallow fill material comprising mostly silty sands, overlying interbedded alluvial clay atop a residual sandstone layer. The residual material overlays variably weathered and fractured siltstone, sandstone and shale (Branxton Formation). Soil profiles have been regionally described as Bolwarra Heights, which are characterised by shallow to moderately deep podzolic soils and well drained lithosols on crests, into moderately deep soloths on the lower slopes. The soil types are typically moderate to slow permeability, which can restrict the downward movement of water and salts within the upper profile. Soil samples collected from discrete locations and variable depths were defined as Sandy Loam for the purpose of characterising the salinity ECe and were considered non-saline soils.

The primary aquifer at the site is likely to be a semi-confined to confined and variably weathered and fractured rock Branxton Formation. Groundwater was not observed at the site, and is anticipated to be at depths greater than 5 m.

Stantec's review and assessment of potentially sensitive groundwater receptors did not identify any environmental or culturally significant groundwater receptors at the proposed activity or within 1 km of the project boundaries, except for potential sensitive vegetation groups 60 m southwest and potential groundwater dependent ecosystems to the northwest (from 450 m). No registered groundwater supply bores were identified at the proposed activity or within 1 km of the project boundaries.

The proposed activity design includes cutting (up to 3.5 m deep) and significant filling across the site, mostly in the eastern portion, for levelling the building pads and construction of underground services. Most buildings are to be removed, and new buildings and paved areas constructed mostly in the east. Many new trees are proposed for planting and several irrigation areas are designated across the site utilising collected rainwater. Extensive stormwater drainage systems, including quality and volume control are proposed, including a filtration gross pollutant trap and detention tank designed to manage stormwater flows and quality discharge. Potential hazardous material storage of diesel fuel may be

required for a pump housed in the southwest and are assumed to be adequately designed to mitigate accidental spills and loss of containment.

The project construction and operational groundwater and surface water impact assessment considered the following:

- Groundwater was not intercepted by Stantec during soil bore and test pit investigations and is anticipated to be greater than 5 m depth.
- The anticipated depth of the proposed excavations is 3.5 m. However, the activity is not anticipated to intercept groundwater. Therefore, no dewatering is required, or water take licence.
- The current Site is considered to pose a low risk to groundwater and surface water environmental values.
- The proposed activity is considered to pose a low risk of impact to groundwater and surface water environmental values.
- Potential impact of groundwater on the proposed activity is considered low risk
- Surface water quantity and quality is not anticipated to be impacted by the proposed activity (during construction and operation).
- No groundwater dewatering and monitoring management plan is required.

Note that this groundwater and surface water impact assessment assumed that there would be no future pumping or interference of Site groundwater for Site use. Additional assessments would be required if Site groundwater is extracted for use.

The project construction and operational salinity risk assessment considered the following:

- Soil at select locations and depth profiles was classified as non-saline.
- Groundwater was not intercepted by Stantec during soil bore and test pit investigations and is anticipated to be greater than 5 m depth.
- Minimal alterations to the recharge and discharge regime (water balance) are anticipated and therefore would be unlikely to promote saline conditions from developing.
- Alterations to the existing surface topography and runoff regime is not anticipated to promote saline conditions from developing.
- The proposed irrigation water quality is likely to have minimal impact on developing saline conditions.
- The proposed development is anticipated to pose a very low risk of developing salinity.
- No salinity management plan is required based on current limited data.
- No mitigation measures are anticipated for the construction and operational phase.

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1 Activity

The Gillieston Public School has been identified by the NSW Department of Education (DoE) as requiring redevelopment. The proposed Gillieston Public School redevelopment and new public preschool is driven by service need including increase in expected student enrolments and the and removing demountable structure and replacement with permanent teaching spaces.

The Gillieston Public School redevelopment and new public preschool comprises the following activity:

- Demolition and removal of existing temporary structures.
- Site preparation activity, including demolition, earthworks, tree removal.
- Construction of new:
  - 32 permanent general learning spaces and 3 support teaching spaces
  - Administration and staff hubs
  - Hall, canteen and library
  - Out of school hours care
  - Public preschool (standalone building for 60 places)
  - Covered Outdoor Learning Areas (COLAs)
  - Outdoor play areas, including games courts and yarning circle
  - New at-grade car parking
  - Extension of the existing drop-off / pick-up area and new bus bay
  - Realignment of the existing fencing
  - Associated stormwater infrastructure upgrades
  - Associated landscaping
  - Associated pedestrian and road upgrade activity

2 Background

2.1 Introduction

Stantec Australia Pty Ltd (Stantec) was engaged by Department of Education (herein referred to as 'the client') to complete a Groundwater, Surface Water and Salinity Impact Assessment for the Gillieston Public School redevelopment and new public preschool project (herein referred to as 'the site'), in observance of the requirement of this investigation as part of a Review of Environmental Factors (REF).

The site is located at 100 Ryans Road and 19 Northview Street, Gillieston Heights NSW, and is legally identified as Lot 51 Deposited Plan (DP) 1162489 and Lot 2 DP 1308605. The site location and layout are depicted in **Figure 1**, respectively, of **Appendix A**.

The scope of work for this investigation was completed in accordance with work order Contract Variation 12 – DDWO04011/22.

2.2 Significance of Environmental Impacts

Based on the identification of potential impacts and an assessment of the nature and extent of the impacts of the proposed activity, it is determined that all potential impacts can be appropriately mitigated to ensure that there is minimal impact on the locality, community and/or the environment.

Further details on mitigation measures are outlined in **Section 12**.

2.3 Site Description

The site is identified as 100 Ryans Road, Gillieston Heights, legally described as Lot 51 DP 1162489 and Lot 2 DP 1308605.

The site is located within the Maitland Local Government Area (LGA) and is zoned RU2 Rural Landscape and R1 General Residential zone under the provisions of the Maitland Local Environmental Plan 2011 (MLEP, 2011).

Existing attributes of the subject site are noted as follows:

- The subject site exhibits an area of approximately 23,385 m^2 and is located in the suburb of Gillieston Heights;
- The subject site has a frontage to Ryans Road to the east, Gillieston Road to the north, and Northview Street to the south;
- In its existing state, the subject site comprises the existing Gillieston Public School. Existing school buildings are primarily located in the western portion of the subject site with a large area of open space situated in the eastern portion. There are limited permanent structures located on the subject site with 13 existing demountable classrooms currently occupying the subject site. Permanent buildings consist of the Main Administration Building, Original Brick Cottage, Library and GLS building located in the centre of the subject site; and
- Carparking is provided from Gillieston Road for staff. Pedestrian access is available via this main entrance from Gillieston Road and via a separate pedestrian-only access gates on Northview Street and Ryans Road.

The existing site context is shown in **Figure 2-1** and **Figure 2-2** below.

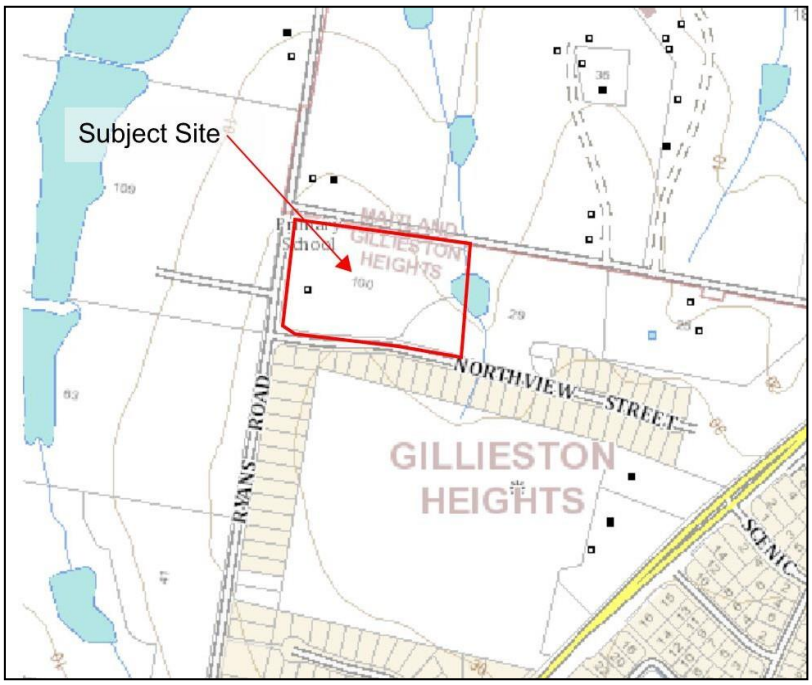


Figure 2-1: Cadastral Map (Source: NSW Spatial Viewer, 2024).



Figure 2-2: Site Aerial Map (Source: Nearmap, 2024)

2.4 Purpose & Objectives

The purpose of this report is to evaluate the environmental risk for the proposed activity with regards to surface water, groundwater, and salinity:

- *Provide an assessment of the potential impacts on surface and groundwater resources (quality and quantity), including related infrastructure, hydrology, aquatic and groundwater dependent ecosystems, drainage lines, downstream assets and watercourses.*
- *Prepare the assessments in accordance with the DCCEEW BCS, and DCCEEW Water Group Requirements.*

The objectives of this assessment and report are to:

- Evaluate the risk and impact on surface water and groundwater resources, including development of a salinity management plan (if required).

The table below outlines the individual matters relevant to surface water, groundwater, and salinity as per requirements for the REF and where each of these requirements has been addressed in this report.

Table 2-1: Ground and Water Conditions Issues and Requirements Report Section

Ground and Water Conditions	Report Reference
Assess potential impacts on soil resources and related infrastructure and riparian lands on and near the site.	Soil Type: Section 5.1 Soil Salinity: Section 5.1 Soil Erosion: Section 5.1 Salinity Risk Assessment: Section 3, Section 5.110 Acid Sulfate Soil: Section 3, Section 5.1
Provide a Surface and Groundwater Impact Assessment that assess potential impacts on: - Surface water resources (quantity and quality), including related infrastructure, hydrology, dependent ecosystems, drainage lines, downstream assets, and watercourses. - Groundwater resources in accordance with the Groundwater Guidelines including groundwater dependent ecosystems.	Surface Water Resources: Section 5.1 Groundwater Resources: Section 5.20 Receptors: Section 5.35.3 Groundwater Impact Assessment: Section 90 Groundwater Resources: Section 9.27.1 Surface Water Quantity: Section 8.1 Surface Water Quality: Section 8.2

2.5 Scope of Activity

Stantec completed the following tasks to satisfy the purpose and objectives of this assessment:

- Conducted a desktop review of the site, features, and surrounds, including regional and site hydrogeology, hydrology, groundwater resource use, and land salinity (see approximate site boundary, **Appendix A**).
- Assessed potential impacts on soil resources, including related infrastructure and riparian lands on and near the site, including soil erosion, and salinity.
- Prepared a surface water and groundwater impact assessment and salinity management plan (to be evaluated following risk assessment) that assesses potential impacts on:
  - Groundwater resources (quality and quantity) including related infrastructure, hydrology, and potential sensitive receptors.
  - Surface water resources (quality and quantity) including related infrastructure, hydrology, dependent ecosystems, drainage lines, downstream assets and watercourses.
  - Salinity risk.

- Preparation of this report to provide findings, conclusions, and recommendations relevant to the objectives of the assessment.

2.6 Legislation and Guidelines

The assessment has been developed in accordance with the following legislation and guidelines:

- NSW (2000) Water Management Act 2000.
- NSW (2000) Salinity Strategy.
- NSW (2012) Aquifer Interference Policy.
- NSW (2022) DPE Guidelines for groundwater documentation for SSI Projects.
- NSW (2022) Groundwater Impact Assessment Toolbox for Major Projects in NSW – Overview Document.
- NEPC National Environment Protection (Assessment of Site Contamination) Measure 1999. National Environmental Protection Council (NEPC 2013).
- NSW Department of Environment and Conversation (2007) Guidelines for the Assessment and Management of Groundwater Contamination.
- NSW EPA (2020) Consultants Reporting on Contaminated Land: Contaminated Land Guidelines. New South Wales Environment Protection Authority, April 2020, Updated May 2020.

2.7 Groundwater Assessment Framework

The assessment framework has been developed in general accordance with the NSW groundwater assessment and reporting workflow of a project through preapproval and impact assessment, as presented in **Figure 2-3** below.

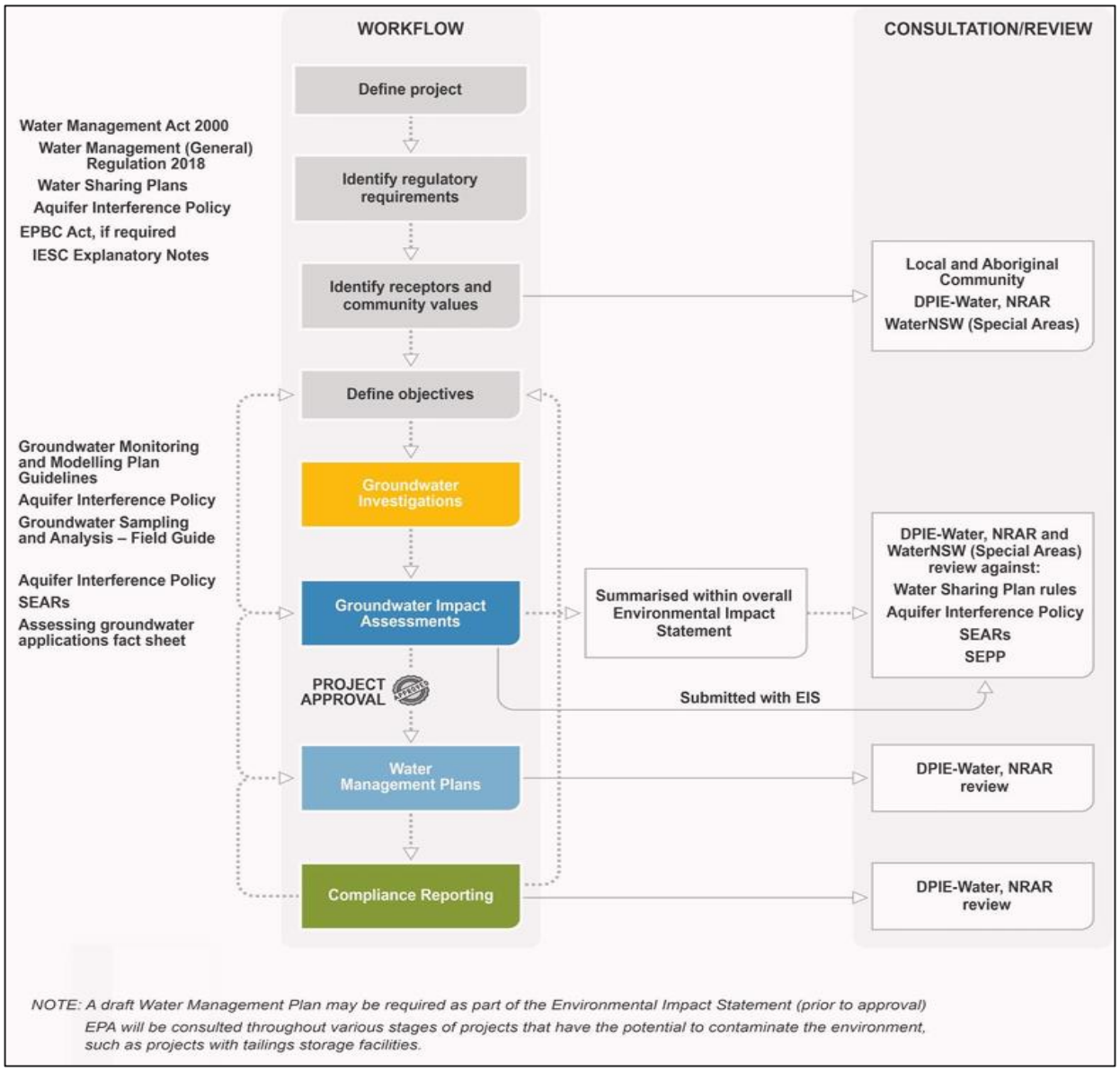


Figure 2-3. Overarching groundwater assessment and reporting workflow of a project through preapproval, impact assessment, monitoring and management, and compliance reporting (DPE 2022[1]).

[1] Groundwater-assessment-toolbox-for-major-projects-in-NSW.pdf

3 Previous Assessments

3.1 Geotechnical Assessments

The following previous geotechnical reports have been reviewed as part of this assessment:

- Stantec Australia Pty Ltd (2023a), *Geotechnical DD – Preliminary Desktop Review*, Gillieston Public School, Prepared for School Infrastructure NSW, Issued 8 February 2023.
- Stantec Australia Pty Ltd (2023b), *Intrusive Geotechnical Report, Gillieston Public School*, Prepared for School Infrastructure NSW, Issued 10 February 2023.

2023 Stantec Preliminary Geotechnical Desktop Investigation (2023a)

Pertinent information has been categorised and summarised below.

- **Geology**: The site is underlain by the Branxton Formation (Pmtb), which consists of conglomerate, sandstone, and siltstone from the Maitland Group.
- **Soil Composition**: The site is predominantly situated on the Bolwarra Heights Landscape. Soils in the area include moderately deep (<150 cm) well-drained yellow and brown Podzolic soils, with moderately deep (<100 cm) well-drained Lithosols on crests, and imperfectly drained yellow Soloths (<140 cm) on lower slopes.
- **Subsurface Conditions**: Previous site investigations suggest that the subsurface consists of topsoil and residual clay overlying shallow sandstone. Deeper residual soils or alluvial deposits may be encountered at the northwestern portion of the site due to its proximity to an alluvial river area.
- **Salinity and Acid Sulfate Risk:** The site is classified as having a high salinity potential and is designated as Acid Sulfate Class B, indicating a low probability of occurrence (6-70%).

2023 Stantec Intrusive Geotechnical Investigation (2023b)

Pertinent information has been categorised and summarised below.

- **Drilling and Testing:** A total of 28 auger boreholes (BH1 to BH28) were drilled, with three (3) of these boreholes (BH8, BH14, and BH25) extended to perform rock coring. DCP (Dynamic Cone Penetrometer) and SPT (Standard Penetration Test) tests were conducted at regular intervals to assess soil consistency. Refer to **Figure 2** - **Appendix A** for borehole location plan.
- **Subsurface Profile:** The site's subsurface profile is summarised in **Table 3-1** on the following page and was described as:
  - Topsoil Fill – Silty Sand: Brown to dark brown, fine to medium-grained, with variable thickness across the site.
  - Alluvial Deposits – Clay and Silty Clay: Brown-red, brown-yellow, and grey, medium to high plasticity, containing sand and gravel, extending to depths of up to 1.5 meters.
  - Residual - Silty Sand: Orange-brown, fine to medium-grained, with ironstone gravel.
  - Bedrock - Weathered Sandstone: Pale grey and pale brown, fine to coarse-grained, with very low to medium strength.

Table 3-1. Inferred Subsurface Profile

Subsurface Layer	Minimum & Maximum Depth Range (mBGL)	Dominant Material Type
Fill	0.0 to 1.2	Silty Sand, Gravelly Sand
Alluvial	0.3 to 1.5	Clay
Residual	0.3 to 2.1	Silty Sand, Silty Clay
Bedrock	0.5 to 5.0	Sandstone

- **Groundwater Conditions:** Groundwater seepage was not observed during drilling (utilising solid flight augers) to depths of approximately 3.1 m below the surface.
- **Particle Size:** Seven (7) select soil samples were submitted for either Particle Size Distribution (PSD) and/or Emerson Crumb testing, with the results summarised below in **Table 3-2-2**.

Table 3-2-2. PSD and Emerson Crumb Tests (Stantec, 2023b)

Borehole No	Depth (m)	Material Description	Gravels (%)	Sand (%)	Fines (Silt & Clay) (%)	Emerson Class
BH01	0.5 - 1	Sand, brown, with silt/clay/gravel	14.7	37.9	47.4	3
BH03	0.5 - 1	Sand, brown, with silt/clay/gravel	7.2	45.7	47.1	-
BH05	0.5 – 1	Sand, brown, with silt/clay/gravel	7.2	15.7	77.1	5
BH09	0.5 - 1	Silty Clay				3
BH13	0 – 0.5	Silty Clay, brown				3
BH19	1 – 1.5	Silty Clay, brown				3
BH26	0.5 - 1	Silty Clay, brown				5

Soil Aggressivity: Five (5) select soil samples were analysed for of pH, chloride, sulfate, resistivity and conductivity. The results are summarised below in **Table 3-3** and laboratory certificates are provided in **Appendix D**. The exposure classifications of the subject alluvial and residual materials were evaluated as non-aggressive for concrete piles in soil and non-aggressive for steel piles in soil.

Table 3-3: Soil Aggressivity & Salinity Tests (Stantec, 2023b)

Borehole No	Dominant Material	Depth (m)	Chloride (mg/kg)	Electrical Conductivity[1] (µS/cm)	pH	Resistivity (ohm.m)	Sulfate (mg/kg)	Moisture Content (%)
BH7	Sand	1 – 1.5	20	39	6	25,600	40	7.5
BH12	Sand (fill)	0.2 – 0.5	<10	28	6	35,700	<10	4.7
BH18	Silty Sand	0.5 – 1	10	34	5.8	29,400	30	8.0
BH25	Clay/Sand	0.9 – 1.3	20	32	5.9	31,200	30	7.2
BH26	Sand	1 – 1.5	<50	30	5.9	33,300	30	6.8

Notes: 1.EC 1:5 @25°C

3.2 Contamination Assessment

The following previous contamination reports have been reviewed as part of this assessment:

- Stantec Australia Pty Ltd (2023c), *Preliminary Desktop Site Investigation – Contamination, Gillieston Public School*, Prepared for School Infrastructure NSW, Issued as Draft 10 March 2023.
- Stantec Australia Pty Ltd (2023d), *Remediation Action Plan, Gillieston Public School*, Prepared for School Infrastructure NSW, Issued as Draft 21 March 2023.
  - As no information relating to this report was noted during review of the Remediation Action Plan, a summary has not been provided below.
- Stantec Australia Pty Ltd (2024), *Detailed Site Investigation, Gillieston Public School*, Prepared for School Infrastructure NSW, Issued 25 July 2024.

2023 Stantec Preliminary Contamination Desktop Site Investigation (2023c)

Pertinent information has been categorised and summarised below:

- **Site Condition:** The following relevant details were reported during several site inspections:
  - **Slope and drainage features:** Site buildings were reported as being concentrated in the western half of the site, adjacent to a north-south ridge located 50 m from the western boundary. The ridge slopes gently to the north and west, with a more pronounced decline to the east. The low-lying area to the east of the site was observed to be waterlogged, indicating that the area was potentially at risk of flooding during prolonged rain events. Surface water is likely accumulating within the eastern portion of the site and is likely to flow northwards towards the culvert extending beneath Gillieston Road.
  - **Nearby surface water bodies:** A series of dams were observed to the north, east, and west of the site boundary, the largest of which was positioned to the northwest. These dams were observed to be connected by ephemeral creek lines that appeared to flow northwards from the site, flowing in Wentworth Swamp before discharging into Swamp Creek to the northwest.
  - **Surface coverings:** The eastern half of the site was reported to be covered with healthy grass, while the western half was noted to have grass, sporadic weeds, mature trees, and garden beds. Concrete hardstands were observed near and between the school buildings, generally described as being in good condition with minor discoloration and cracking. A section of mulch and woodchips was recorded between some of the central buildings, and well-maintained grass was observed around most of the structures. Minor areas of exposed soil were identified in the central and northern portions of the site.
- **Site History:** The desktop review indicated that the site and its surroundings had been used for educational purposes and agriculture since at least the 1890s. The site underwent progressive activity over time, with the staged construction of school infrastructure, much of which consisted of temporary demountable buildings. The surrounding land remained largely unchanged, apart from low-density residential activity in the southeast. Activities on-site that could be relevant to potential contamination included demolition and filling.
- **Intrusive Investigation:** A total of 79 boreholes were advanced across the site over the course of the intrusive investigations, reaching a maximum depth of 3.1 mBGL. Samples were collected from both fill and natural soil horizons. The subsurface profile was consistent with Stantec (2023b) geotechnical assessment and comprised fill, alluvial, residual and bedrock horizons. Groundwater was not encountered during these investigations.

2024 Stantec Detailed Site Investigation (2024)

Pertinent information has been categorised and summarised below:

- Remedial activities were conducted at the site between April and May 2023 to manage lead impacted soils beneath site structures.
- Installation and sampling from an additional 35 soil locations, comprising 21 test-pits and 14 boreholes, including surface water and sediment sampling from the onsite water body situated adjacent to the eastern site boundary.
- The sub surface profiles were consistent with previous Stantec investigations. The ephemeral drainage line and dam were reported to contain only a minimal volume of stagnant, cloudy, and turbid water, which was likely to be a drainage feature of the surrounding catchment, which is fed by an ephemeral stream and engineered stormwater infrastructure to the south. The water quality parameters, as measured during the sampling event, are provided below in **Table 3-4** below

Table 3-4. Surface water quality parameters (Stantec, 2024)

Sample ID	Sampling Date	pH	Electrical Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Temp °C	Measured ORP (mV)
SW1	29/04/2024	6.51	263.4	-13.58	14.1	40

- One water sample collected from the ephemeral drainage line reported all potential contaminants below the adopted residential or urban recreation/ public open space human health screening criteria. However, exceedances were detected above the adopted criteria for freshwater 95% toxicant DGV for dissolved metals (copper and zinc), and above the adopted criteria for freshwater 99% toxicant DGV for dissolved lead, total nickel and zinc. Furthermore, PFOS was detected above the adopted NEMP 2.0 Table 5 Freshwater 99% criteria.
- One sediment sample collected from the centre of the drainage line, reported all potential contaminants of concern below the adopted screening criteria.
- Groundwater was not encountered during Stantec's intrusive investigations.

4 Site Identification

4.1 Site Details

Site information including current land use is provided in **Section 2.3**. Proposed activity details are provided in **Section 1** with the site continuing to be utilised as a school. The site resides within the Sydney Basin North Coast Groundwater Source and Hunter Region Unregulated Alluvial Water Sources water sharing plans.

The site has been predominantly cleared of native vegetation since at least 1953, with the ground layer dominated by exotic species and bare earth. The trees observed on site were mostly planted exotic or non-local native species. The only vegetation on site that may possibly be remnant is six trees that have been present at the site since 1953 and are concentrated in the western portion of the site. (Biodiversity Constraints Preliminary Review (BDAR)), GHD 2023). The management strategies for the open space and vegetated areas of the site are unknown and it is assumed the open space is managed by natural rainfall with minimal management.

4.2 Surrounding Land Use

The surrounding land use were evaluated based on site observations (Stantec 2023c, Stantec 2024) and review of satellite imagery (Nearmap, 2024) and is summarised in **Table 4-1.**

Table 4-1: Surrounding Land Use

Item	Detail
North	Gillieston Road with one residence and agricultural land further north.
South	Agricultural land with some residential properties further east.
East	Northview Street with residences and open space surrounding further east.
West	Ryans Road followed by agricultural land with sparse residences.

4.3 Potential Surrounding Contaminated Land

Potential contaminating activities on the surrounding land were evaluated within 1 km, based on the Lotsearch report LS038890 (2022), and a summary is provided in **Table 4-2**. Data provided by Lotsearch (2022) identifying potentially contaminated or contaminating facilities and properties are presented in **Figure 4-1** and **Figure 4-2** below.

Table 4-2: Potential surrounding contaminating activities

Item	Detail
North	Agricultural land, Poultry farm, Farley Wastewater Treatment Works, EPA PFAS investigation program within Swamp Creek, South Maitland Collieries Pty Ltd
South	Agricultural land
East	Agricultural land
West	Agricultural land

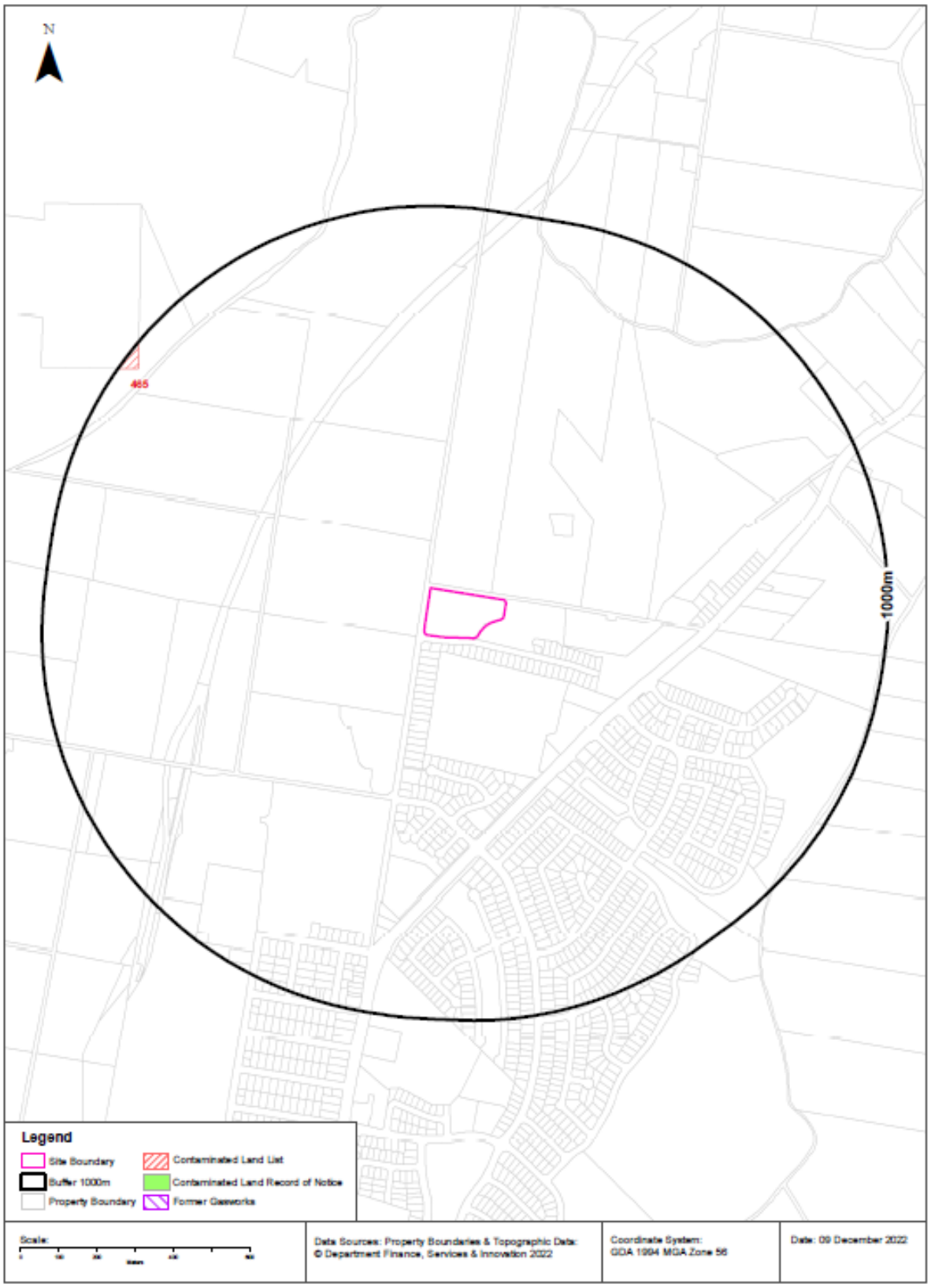


Figure 4-1. EPA Notices and Contaminated Land Records

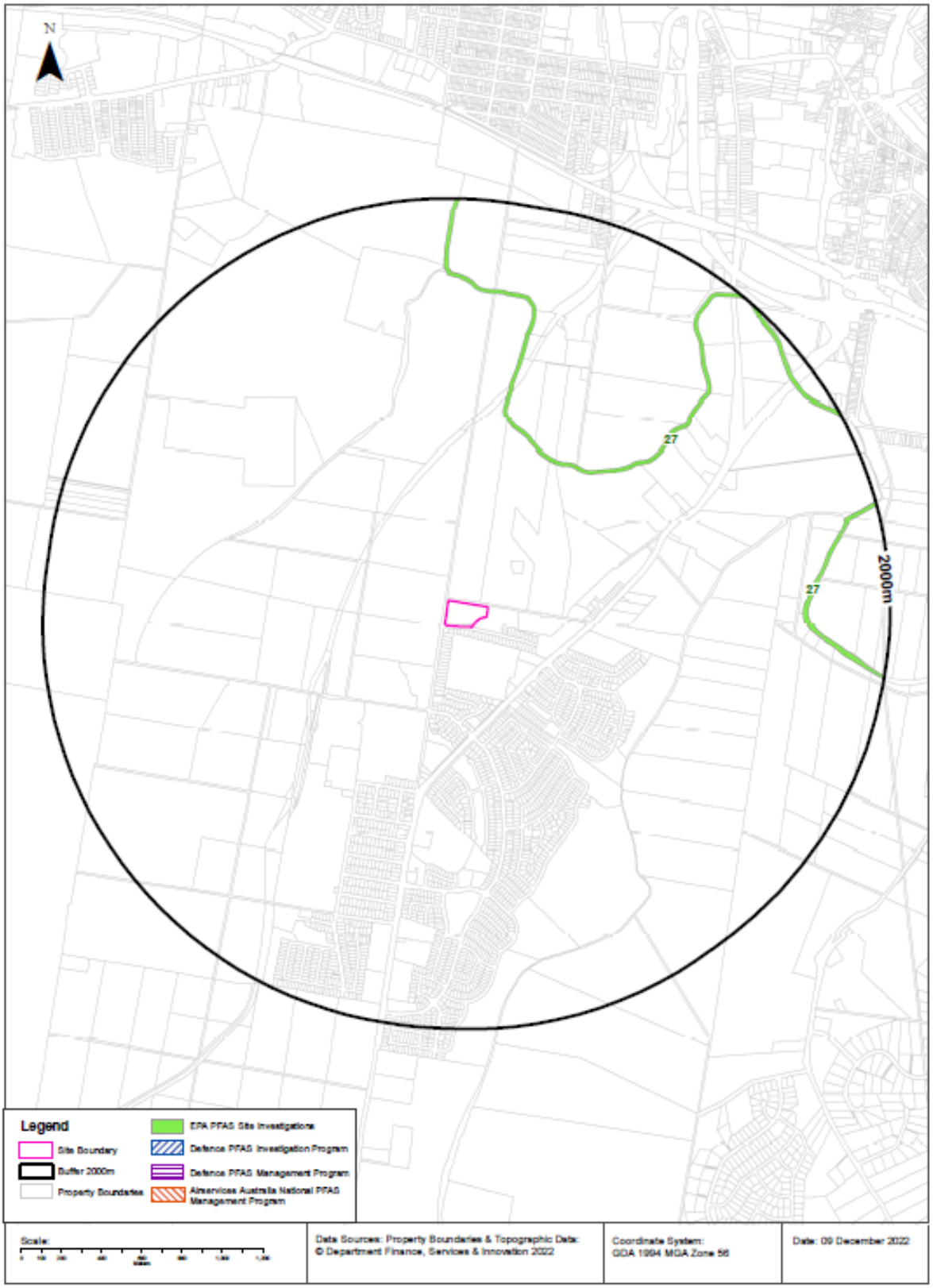


Figure 4-2: PFAS Investigation & Management Programs

5 Conceptual Hydrogeological Model

A conceptual hydrogeological model of the site and regional area is summarised in the subsections below.

5.1 Geographic Setting

The geographic setting was evaluated based on-site observations (Stantec, 2024) and review of publicly available data as well as data within the Lotsearch Report (LS038890, dated 9 December 2022). A summary of the geographic setting is provided in **Table 5-1:**

Table 5-1: Geographic Setting

Item	Details
Climate	Based on nearby BOM stations, the average annual rainfall (1967-2024) is 943 mm, with March recording the highest (124 mm) and August the lowest (38 mm) rainfall, respectively (BOM 2024, Paterson 061250). December and January are the hottest months on average, while July and August are the coolest. See **Figure 5-1** for annual mean rainfall from 1967 to 2024.
Topography	A review of elevation data in Nearmap shows the site elevation ranging from 30 mAHD on the southern boundary to 18 mAHD in the north-east corner and 22 mAHD in the north-west corner showing that the site generally slopes down to the north with a ridge running north-south through approximately the western third of the site and down to the east and west from that point. The NSW DPIE eSPADE v2.2 website shows the regional topography is rolling low hills with slopes ranging from 5–20%. Local relief is generally 50 m but ranging to 80 m. Elevation is 40–100 m. Rock outcrop is localised, often occurring where Muree Sandstone is present (<2%).
Acid Sulfate Soil	The NSW Government Planning Industry and Environment online mapping tool, eSPADE Version 2.2, indicates that the site is located within a soil class 5 ASS risk area, where acid sulfate soils are typically not found. Works within 500 m of adjacent Class 1, 2, 3, or 4 land that is below 5 m AHD and by which the watertable is likely to be lowered below 1 metre AHD on adjacent Class 1, 2, 3 or 4 land, present an environmental risk. The nearest ASS risk is a class 2 area located approximately 250 m west of the site in the vicinity of some of the nearby private dams. The Atlas of Australian Acid Sulfate Soils indicates the site is within a Class B area, with a low probability of occurrence (6-70%). Indicators of acid sulfate soils were not observed on the site (Stantec 2024); however, potential acid sulfate soils were encountered on the site (Stantec 2023b).
Surface Soils	Soil types are defined within the Bolwarra Heights (bh) residual soil landscape as provided by the NSW DPIE online mapping tool eSPADE Version 2.2. These soils are characterised by shallow to moderately deep (<150 cm) yellow, red and brown podzolic soils and some moderately deep (<100 cm) well-drained Lithosols on crests, whilst moderately deep (<140 cm) yellow soloths are evident on lower slopes. This landscape is described as rolling hills on Permian sediments in the centre-west of the sheet in the East Maitland Hills region and provide limitations including moderate foundation hazard, water erosion hazard, high run-on, seasonal waterlogging and localised steep slopes with mass movement hazard. Soil classifications are provided on borehole logs for the site completed during the Detailed Site Investigation (Stantec 2024) (see **Appendix B**). Fill soils encountered on site were described as brown to grey sandy silt to silty sand. Natural soils encountered on site

Item	Details
	were described as alluvial grey-brown clayey sand and residual brown silty sand or brown-red and grey silty clay to clay.
Salinity	The Dryland Salinity National Assessment data, indicates that the site is mapped as a high hazard or risk, defined for all years: 2000, 2020, 2050. Soils within the Bolwarra Heights (bh) residual soil landscape describe the dark brown or brownish black gravelly sandy clay loam within the A2 horizon to have moderate permeability. Reddish brown pedal mottled clay within the B horizons are indicated to have moderate to slow permeability. Both of these soil types were observed on site (Stantec 2024). Low permeability sub-soils (B Horizons) often restrict the downward movement of water and salts present within the upper soil materials can become mobilised and concentrated at the surface, if present. The site is within a higher elevation compared to its surrounding areas to the north, west and east, indicative of likely good lateral drainage. Soil testing (Stantec 2023b) conducted at the site yielded non-aggressive classifications, which suggests minimal risk posed by salinity on proposed site building footprint. The ECse (dS/m) was calculated (based on Table 6.1, Site Investigations for Urban Salinity 2002) using the data from **Table 3-3** and material defined as predominantly Sandy Loams (conversion factor of 14). The range of ECse calculated within the top 1.5m from the soil surface were as follows: • BH7: 0.55 dS/m • BH12: 0.39 dS/m • BH18: 0.48 dS/m • BH25: 0.45 dS/m • BH26: 0.42 dS/m Based on the maximum ECse value, 0.55 dS/m, the salinity class for the samples collected were <2 dS/m and considered non-saline soil. It is noted that additional samples collected throughout the soil profile would provide better context for site salinity as the current data set was limited in the number of depths sampled and topography extent. Nevertheless, the range of soil salinities calculated is narrow over a range of depths from 0.2-0.5m to 1-1.5m indicating no soil salinity development across the current site.
Surface Water Drainage	There is a ridge running north-south through the site, approximately 50 m east of the western site boundary. The ridge slopes gently down in a northerly direction with a gentle slope down to the west and a steep slope down to the east to the site boundaries. Overland run-off is likely to follow the site topography with surface run-off likely to infiltrate into unsealed surfaces. An existing drainage surface drainage plan (page 4, RevJ-13.09.2024, Terras 2024), indicates that surface run off is semi-radial from the southwest and flows in all directions, with the most significant flow paths toward the low-lying area directly to the east comprising an ephemeral drainage line. This line acts as a catchment for the surrounding area to the south, which likely consolidates into and over the artificial dam. The system then feeds into a culvert draining north underneath Gillieston Road.
Hydrology	There is an unnamed first-order stream ephemeral drainage line in the north-eastern corner of site which flows north-west towards a small unnamed, likely private dam or pond before continuing via a second-order unnamed creek into Wentworth Swamp, before discharging into the sixth-order perennial Swamp Creek in the north-west. The unnamed private dam/pond is approximately 300 m north-west of the site boundary and Swamp Creek is approximately 1.2 km north-west of the site boundary. Swamp Creek flows into Wallis Creek before entering the Hunter River.
Vegetation	Well-maintained grass school grounds. Mature trees were found across the western half of the site with some smaller shrubs and vegetated garden beds. No signs of stressed vegetation were observed at the site.

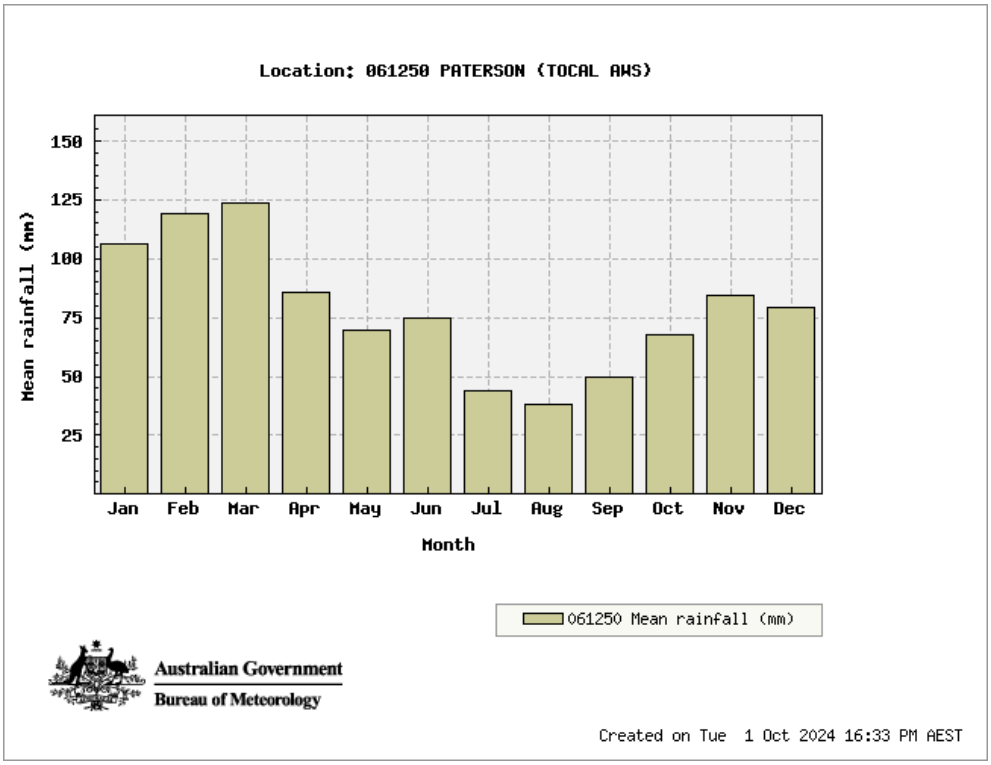


Figure 5-1. Annual rainfall BOM 1967-2024

5.2 Hydrogeological Setting

Site-specific hydrogeological information has been sourced from Stantec (2023b; 2023c; 2024), while relevant regional data has been obtained from publicly available resources. A tabulated summary has been provided below in **Table 5-2**.

Table 5-2: Hydrogeological Setting

Item	Details
Geology	A review of the 1:100,000 geological map of Newcastle (accessed via Minview v. 2024.08.21, 2024) indicates that the site is underlain by the Branxton Formation, comprising conglomerate, sandstone, and siltstone lithology of the Maitland Group. Findings from the intrusive investigations (Stantec, 2023b; 2024) completed at the site indicated that the subsurface profile consisted of varying depths (0.0 – 2.0 mBGL) of fill overlying natural alluvium, stratified above an upper residual soil layer and then an underlying weathered Siltstone bedrock horizon. Rock coring was completed at one (1) geotechnical borehole location (Stantec, 2023b) at the north-central end of the site, which showed that a low- to medium-strength sandstone layer featuring narrow to wide fracturing extended beneath the site. Lithological bore logs completed by Stantec (2023b; 2024) are provided in **Appendix B**.
Hydro-stratigraphy	A review of the 1:5,000,000 Hydrogeology of Australia Map (Jacobsen and Lau, 1987) (map accessed online at portal.ga.gov.au (Geoscience Australia Portal)) indicated that the site sits within an area that typically contains extensive, fractured or fissured aquifers of low to moderate productivity. Intrusive investigations to approximately 5 m below ground level completed by Stantec (2023b; 2024) did not encounter the permanent regional groundwater table within the borehole or test pit locations. As such, the depth and general characteristics of the

Item	Details
	underlying aquifer could not be verified. Further to this, no perched groundwater was identified in the fill or alluvial soil strata overlaying the site's bedrock. It is anticipated that the local aquifer is developed within the variably weathered and fractured sandstone/siltstone (Branxton Formation).
Groundwater Levels	Groundwater levels at the site were not confirmed during the Stantec (2023b; 2024) investigations. Groundwater was not observed in the fill or alluvial sub stratum (extending on average from 0.0 – 1.5 mBGL). Based on a review of the geotechnical borehole logs (Stantec, 2023b), it is likely that the regional aquifer is within deeper sections (>5.0 mBGL) of the variably fractured and weathered siltstone/sandstone bedrock underlying the site. A review of WaterNSW and Bureau of Meteorology databases did not show any groundwater bores located within 1 km of the site, with the closest recorded bore discussed below in Groundwater Budget.
Inferred Groundwater Flow Direction	Groundwater flow is expected to align with the local topographic elevation gradient. As inferred from a review of the 1:25,000 Beresfield Topographic Map (9232-3N) (2022) (accessed via portal.spatial.nsw.gov.au) it is anticipated that groundwater is likely to flow in a north to northwestern direction.
Groundwater-Surface Water Connection	As interpreted from Stantec (2023b; 2024), there appears to be a weak hydraulic linkage between surface water and groundwater at the site. Data collected during previous intrusive investigations indicated that perched groundwater was not present within the fill and natural alluvial horizons overlying the variably weathered and fractured bedrock, which suggests that localised shallow aquifers were unlikely to be present. It is unlikely that the eastern drainage feature is receiving groundwater and may in fact be isolated from the regional aquifer.
Hydraulic Parameters	No hydraulic testing has been completed at the site, and no regional or site-specific Hydrogeological Landscape reports are available for the site.
Groundwater Budget	The regional aquifer is likely recharged via rainfall infiltration and also locally by leakage from existing artificial dams and irrigation through the fill and residual soils. Lateral flow enters the aquifer from adjacent areas with higher groundwater heads. The regional aquifers are locally recharged via vertical leakage through soils. Discharge occurs via evapotranspiration where the aquifer's water-bearing zones are within approximately 2 m of the unsealed land surface or accessed by vegetation or lateral flow that discharges to surface-water features, such as Swamp and Wallis Creek. The regional aquifer discharges to major rivers, the most proximal of which is Hunter River, and creeks or the sea. Groundwater pumping is reported at a registered bore (NGIS ID: GW201877) located approximately 1.2 km northeast of the site, identified as an active 'Stock and Domestic' bore. However, data on extraction rates was unavailable for review.
Groundwater Flow System	Groundwater flow systems in any terrain characterise the occurrence of groundwater and its flow from areas of recharge to areas of discharge, often into surface water bodies. The main influences on groundwater occurrence and flow at the Site are: • Rainfall (providing maximum recharge to groundwater during cooler periods, when rainfall is expected to exceed evaporation); • Artificial drainage systems (on-site and off-site); • High permeability, sandy fill and alluvial soil horizons (which have the potential to increase the percolation of infiltrating water); and • Low permeability, clayey residual soil layers (which have the potential to decrease the percolation rate of infiltrating water). An unnamed ephemeral drainage line intersects the site at the north-eastern corner, directing flow towards Swamp Creek in the northwest through a system of man-made channels and dams, ultimately discharging into Wallis Creek. The surface runoff patterns are expected to align with the site's topography, where water flows northeast across the site with partial retention in the artificial dam, before continuing its course northwest towards Swamp Creek. Localised recharge points may develop in the northeastern portion

Item	Details
	of the site if the underlying bedrock contains fractures that enhance its permeability. These fractures could allow accumulated surface dam water to infiltrate vertically, facilitating recharge of the aquifer beneath. The degree to which this occurs depends on the extent and nature of the fractures within the bedrock stratum, creating potential zones where groundwater-surface water interaction is more pronounced.
Groundwater Chemistry	Stantec has not been made aware of any prior groundwater sampling and analysis at the site. A review of WaterNSW and Bureau of Meteorology databases indicated that there was no publicly available hydrochemistry data for groundwater sampled from registered bores located within a 4 km radius of the site.

5.3 Potential Sensitive Receptors

Potential sensitive receptors were qualitatively evaluated from publicly available data sets to within 1,000 m of the site and are summarised in **Table 5-3**.

Table 5-3: Potential Sensitive Receptors

Item	Detail
Groundwater Bore Supply Users	Data sourced from WaterNSW and Bureau of Meteorology shows one groundwater bore within a 2000 m radius of the site: • GW201877 – located approximately 1260 m to the north-east of the site. Installed as a stock and domestic bore in 1990 with a final depth of 26 meters. The bore is listed as functioning. No sensitive groundwater bore users (water supply and irrigators) were located nearby (Lotsearch 2022,**Figure 5-2.** below).
Surface Water	A first-order ephemeral drainage line is located on site. Another unnamed first-order ephemeral tributary is located approximately 270 m north-east of the site and runs into the sixth-order Swamp Creek approximately 800 m north-east of site. The second-order unnamed creek and private dam/pond is located approximately 300 m north-west. The private dam/pond is potentially used for livestock watering. The sixth-order Swamp Creek is also located approximately 1.2 km north-west. An unnamed tributary located approximately 670 m east of the site flows into Wallis Creek (fifth-order), 1 km east of the site.
Culturally Sensitive Areas	Culturally significant sites include springs and waterholes that have cultural or spiritual importance. Culturally sensitive areas were not publicly mapped at or near the site.
Endangered Species	Areas of national environmental significance or protected by the *Environment Protection and Biodiversity Act 1999* (EPBC Act) were not publicly mapped at the site. Potentially sensitive vegetation of the Hunter Lowland Redgum Forest is the closest community, 70 m southwest of the site. Other vegetation communities within 1 km of the site include Lower Hunter Spotted Gum – Ironbark Forest, Alluvial Tall Moist Forest, Freshwater Wetland Complex and Swamp Oak Rushland Forest. Multiple vulnerable, endangered and critically endangered species were identified within 10 km of the site according to NSW BioNet Atlas. These species were not considered groundwater dependent ecosystems (not high potential).

Item	Detail
Groundwater Dependent Ecosystems	Based on the Groundwater Dependent Ecosystem (GDE) map (DPIE, SEED and BOM GDE Atlas), no high priority GDEs were mapped at the site. High ecological value aquatic ecosystems (HEVAE) vegetation GDEs were identified as medium 450 m north and 670 m north-west of the site. A high potential GDE (from regional studies) has been mapped 960 m north-west of the site and related to terrestrial vegetation. Geomorphology was described as undulating to low hilly country on weak rocks, with alluvial and sandy littoral plains (Lotsearch, 2022). Of these GDEs, the potential groundwater inflow dependent ecosystems likelihood was ranked as 8 (moderate) and 10 (high). Lotsearch (2022) figures presenting these mapped data are provided in **Figure 5-2**, **Figure 5-3**, and **Figure 5-4** below.
Other Groundwater Extraction	No current mining and exploration titles were identified near the site (within 1 km). Maitland West Mining Subsidence District was identified 16 m west of the site. Historically, mining titles for petroleum and minerals encompassed the site and coal was identified 835 m north of the site. It is noted that a mine subsidence assessment is being completed by Stantec as a separate engagement.

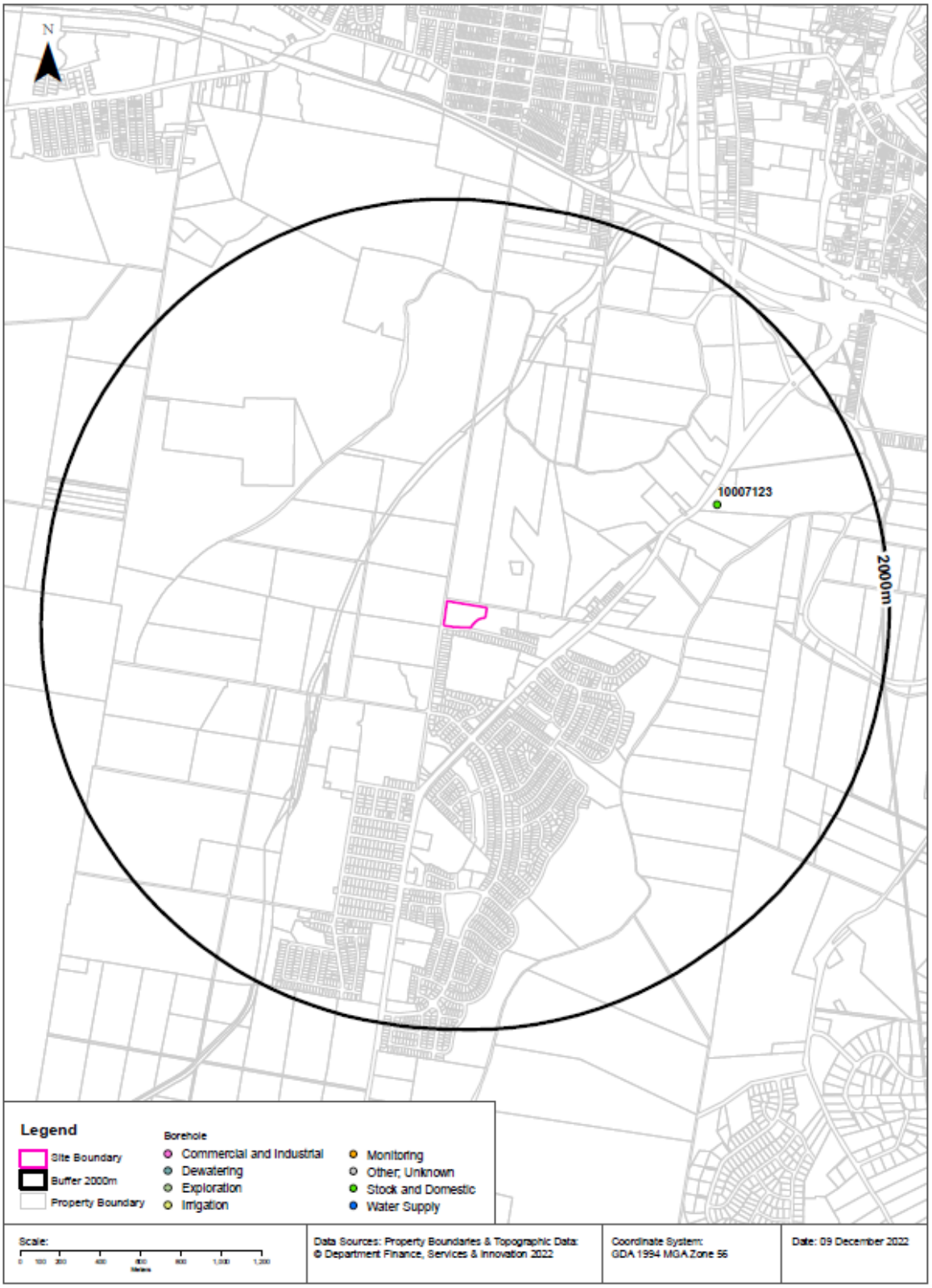


Figure 5-2. Registered groundwater bores within 2 km.

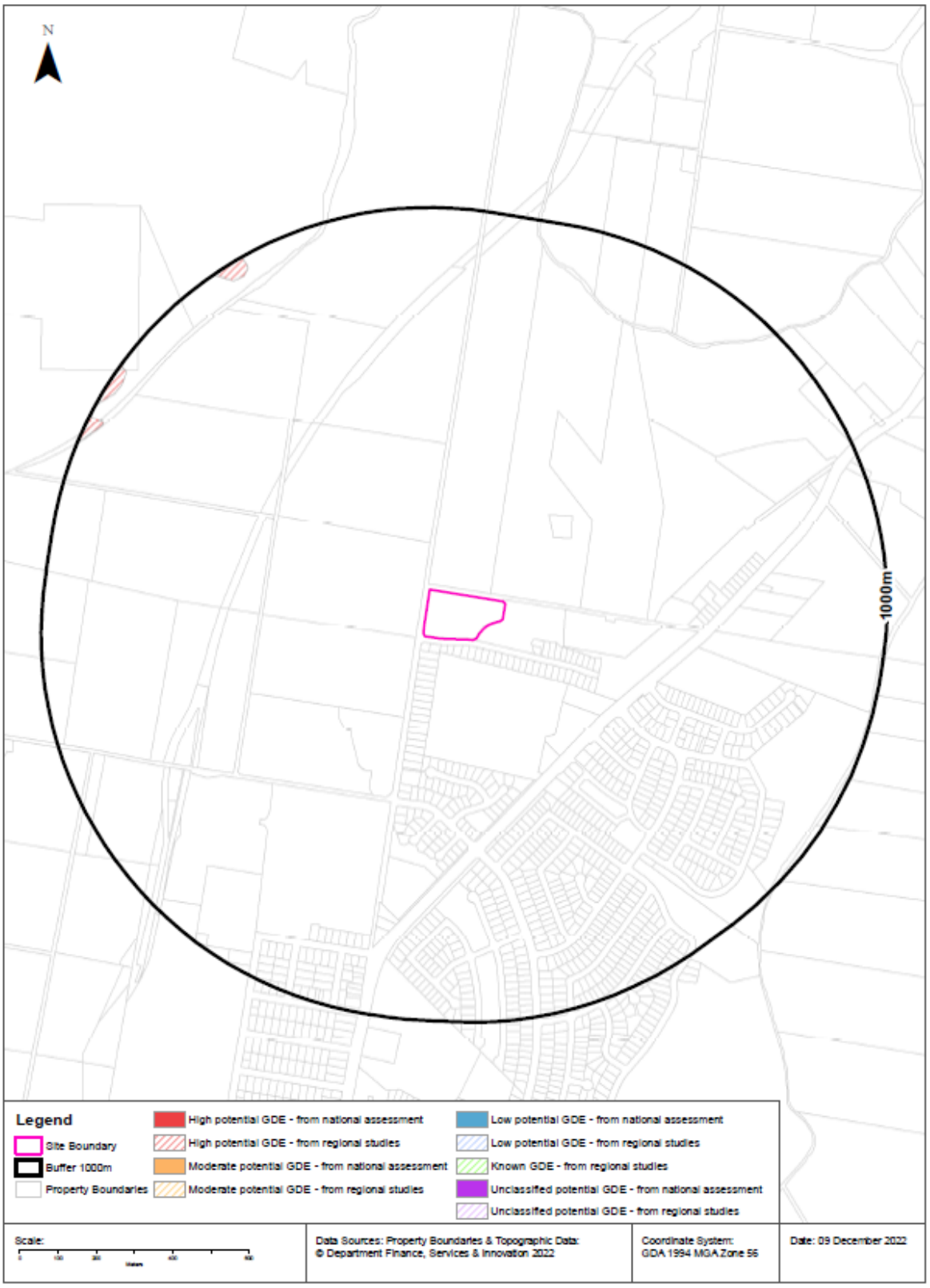


Figure 5-3. Mapped potential groundwater dependent ecosystems within 1 km.

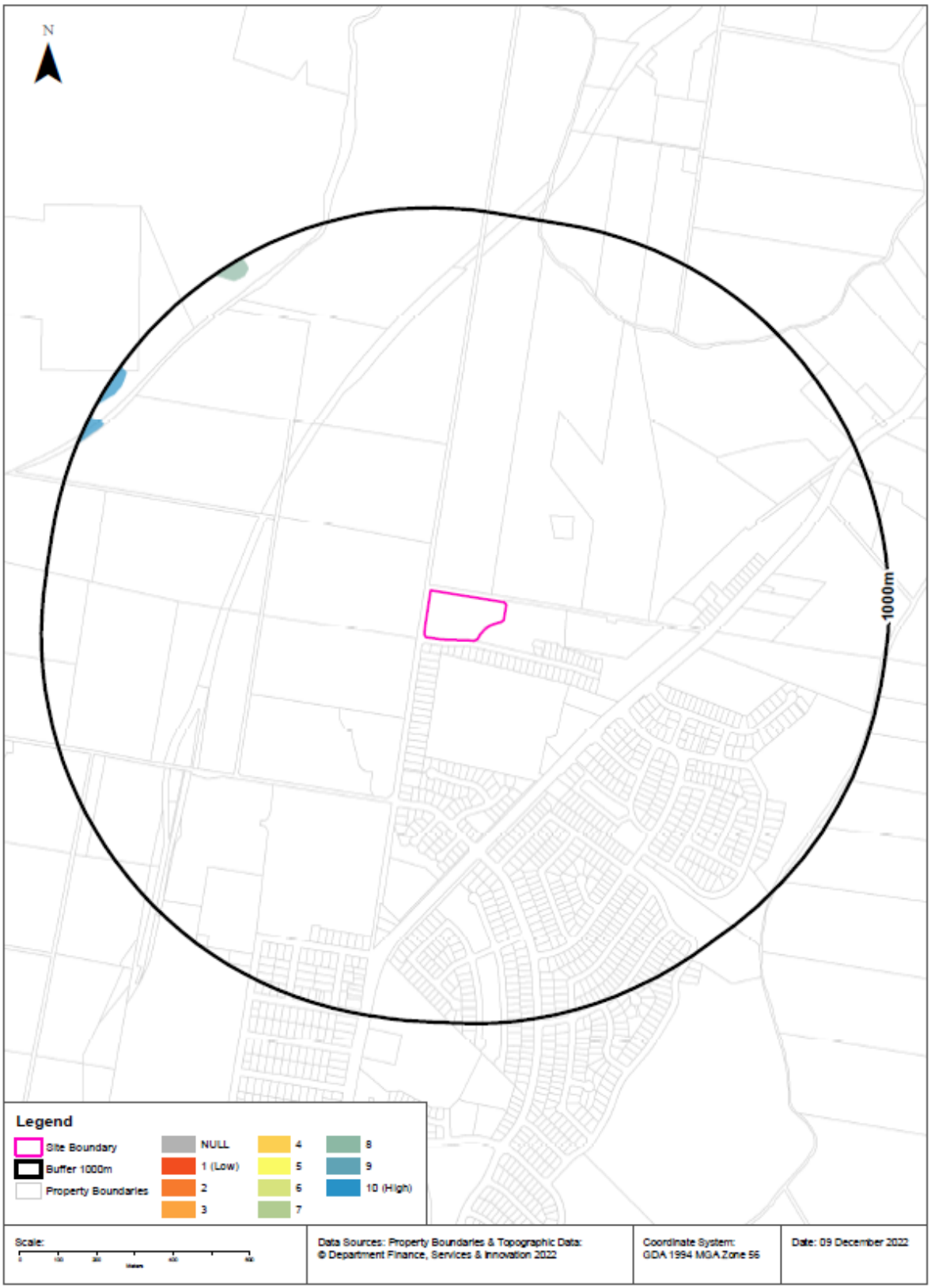


Figure 5-4. Mapped ecological groundwater inflows within 1 km

6 Proposed Project Setting

Proposed project setting is summarised in **Table 6-1**. Plans and documentation related to each item are provided in **Appendix C**.

Table 6-1: Proposed Project Setting

Item	Project Setting Description	Source Plan
Topographic Changes	The proposed cut and fill plan dated 27 September 2024, indicated topographic changes across the site, with proposed infilling concentrated primarily within the eastern portion of the site, while moderate cut areas are planned in the western and north-central portions. Graded cuts extending from existing surface levels to maximum depths of 0.75 mBGL, 0.9 mBGL and 1.2 mBGL are planned within the east-central, far south and south-eastern areas, respectively, of the western portion of the site. The deepest cut area is proposed within the north-central portion of the site, with maximum excavations ranging from 1.2 mBGL at the far north to 1.35 mBGL closer to the centre. The proposed total cut volume is 2,350 m^3. Extensive infilling features across large areas of the eastern portion of eastern portion of site, with a maximum of 5 m of fill proposed to be used in these areas. A concentrated area of fill (maximum 5 m) is also proposed within the north central portion of the site. It also appears that the unnamed drainage line in the north-eastern corner of site will be partly filled. The proposed total fill volume across the site is 16,460 m^3, with the cut and fill plan indicating the majority of the material used for filling will be site won (subject to geotechnical and contamination requirements). A small amount of cut and fill will be used in the western portion of site to level out the proposed sports court.	GPS-ACOR-00-XX-DR-C-040001 (Issue A) - ACOR Consultants Pty Ltd, 2024
Demolition Plan	The proposed demolition plan indicates that all buildings on site will be removed with exception of the learning centre (original school building from 1868) in the north-western corner. Shade awnings over the sandpit, play equipment and paths will be removed. Select trees will be removed where necessary, mainly towards the northern portion of the site.	GPS-SHAC-ZZ-ZZ-M2-A-031003-Demolition Site Rev B – SHAC, 2024
Proposed Building Layout	The proposed building layout plan indicates that three new buildings will be constructed. One along the northern boundary of site and two in the central portion of site. The buildings will surround a playground in the centre of site. Carparks will be constructed along the eastern boundary and a sports court will be located along the western boundary, south of the existing building that will remain on site. The building footprint will cover 5,109 m^2 (approximately 21% coverage) and carpark 2,174 m^2 (approximately 9% coverage)	GPS-SHAC-ZZ-G-M2-A-031102-Proposed Ground Site Plan Rev B – SHAC, 2024
Vegetation	A majority of the site surface will become turfed area with exception to the carpark in the east. New trees will be planted along the western, southern and eastern boundaries as well as throughout the site around buildings and playground areas. The new plant species will predominantly be native species, selected for hardiness and low maintenance. The proposed canopy cover will comprise 30% of the external layout (not including building footprint).	14435.5-GILLIESTON P.S-Landscape Schematic Design_RevJ, terras landscape architects 2024

Item	Project Setting Description	Source Plan
Drainage	Building drainage systems will be installed along the buildings and consolidate towards into two rainwater storage tanks (34 kL each) in the centre and north-eastern corner of site. The landscape will still be altered but to allow runoff away from the buildings and ultimately directed towards the existing runoff area in the northeast. Several swale drains will also redirect runoff to flow towards the stormwater pits. The drainage line directly east of the site will mostly remain undisturbed from site activities, with a retaining wall along the eastern boundary and sediment fences (for during construction) installed along the southern, eastern and northern boundaries of site. The DRAINS model indicated that peak flows post activity (and addition of detention basin) at 1% AEP is at 0.71 m^3/s, compared to peak flows of 0.721 m^3/s pre-activity, with a total decrease of 0.011 m^3/s for peak flows. A stormwater drainage system will be installed around the new buildings and site runoff will be consolidated via a network of pits, connected to pipes that will flow into a gross pollutant trap (10 m^3 capacity with eight ocean protect storm filters), into an underground stormwater detention tank (320 m^3), then outflowing through the existing culvert, under Gillieston Road in the northeast.	GPS-ACOR-00-XX-DR-H-000051[A]-DRAINAGE SITE PLAN, ACOR Consultants Pty Ltd 2023; GPS-ACOR-00-XX-DR-C-030001, Rev A, ACOR Consultants Pty Ltd 2024; GPS-ACOR-00-XX-DR-C-050001, Rev A, ACOR Consultants Pty Ltd 2024 NA221454-GPS-ACOR-00-RP-C Rev Civil Engineering Report Review of Environmental Factors – Gillieston Public School, ACOR Consultants Pty Ltd, 2024
Water Usage	Proposed water storage within rainwater tanks from the three buildings is assumed to approximately be 193 kL. Irrigation water will be sourced from these rainwater tanks only, with assumed required volume per year at 557 kL. This is based on the assumption that 200 mm water will be applied throughout the year or 3.8 mm per week on average. Stantec notes that this assessment is focused on rainfall use only for irrigation and no other water source has been assessed, including when stored rainwater has been depleted. The proposed irrigation plan indicates that irrigation will be applied to a narrow strip around the entire periphery of the site, and includes the western boundary of the eastern parking lot and heritage building situated in the north-west. The proposed battered mass planting areas encircling the northern and southern perimeters of the turfed ball play area situated at the centre of the site have also been identified as irrigation areas. The total irrigated area is approximately 2,785 m^2, which is approximately 12% of the total site area.	14435.5-Gillieston P.S – Landscape Irrigated Areas-Rev L, terras landscape architects, 2024 04 Landscape Strategies – Irrigation Diagram, terras landscape architects, 2024
Underground Services	Sewer alignment construction during the excavation and construction of manholes and pipes and electrical conduits will occur. The invert depths are anticipated to be less than 2 mBGL across the activity footprint. A pumpstation will be located along the northern eastern corner of site.	240358-SPS-(D), Rev D, ADW Johnson, 2024
Hazardous Material Storage	A diesel fire hydrant pump set will be in a pre-packed enclosure along the southern boundary of site near the south-western corner. Diesel fuel stores may be required and are assumed to be adequately bunded or housed, to minimise mobilisation in the event of a loss of containment or spill.	GPS-ACOR-00-XX-DR-H-000051[A]-DRAINAGE SITE PLAN, ACOR Consultants Pty Ltd 2023

7 Preliminary Risk Identification

The following considerations were made in relation to:

- Groundwater within the variably fractured and weathered siltstone and sandstone regional aquifer (at least greater than 5 mBGL).
- Surface water within the site (first order ephemeral unnamed drainage line) and downstream from the site (second-order unnamed creeks and dams, and sixth-order perennial Swamp Creek).

7.1 Environmental and Cultural Values

The groundwater and surface water environmental values for the site and surrounding area (ecological and human) include:

- Ecological systems: such as groundwater dependent ecosystems (aquatic and terrestrial) and water ways.
- Human uses: visual amenity and aesthetics of surface waters.
- Buildings and structures: this includes protection from groundwater quality and conditions that can degrade building materials through contact; for example, the weakening of building footings resulting from chemically aggressive groundwater.

Cultural and spiritual values that are associated with the environment, including groundwater, should also be protected. Cultural and spiritual values may include spiritual relationships, sacred sites, customary uses, the plants and animals associated with the water, drinking water supplies and recreational activities. In managing groundwater contamination, it is generally considered that cultural and spiritual values will be protected where groundwater quality protects all other relevant environmental values on a site.

The groundwater and surface water environmental values that were evaluated are summarised for both onsite and offsite, and provided in **Table 7-1**.

Table 7-1: Assessment of Groundwater & Surface Water Environmental Values

Environmental Value	Applicable	Comment
Protection of aquatic ecosystems	Yes	The potential receiving water body for the site is an unnamed ephemeral drainage line in the north-eastern corner of the site. It flows north-west into private dams or ponds before continuing into Swamp Creek. Swamp Creek is considered a freshwater system that could be impact by shallow groundwater flow. Protection of freshwater aquatic ecosystems downgradient of the site is considered an applicable environmental value.
Drinking water	No	The site is in an area serviced by reticulated drinking water supply. A bore search did not identify bores downgradient of the site registered for drinking water extraction. This environmental value is not considered relevant for the site.
Irrigation & Stock Watering	Yes	Although no onsite or offsite use of groundwater for irrigation purposes has been identified, a groundwater bore located approximately 1,260 m to the north-east of the site was identified for stock and domestic use. Further, the onsite drainage line flows into private dams and pond, likely used for livestock watering.

Environmental Value	Applicable	Comment
		On-site use of the dam for irrigation purposes is unknown. In the event that the site dam is used for dust suppression or irrigation, this environmental value has conservatively been considered applicable as a preliminary screening value.
Industrial Use	No	No onsite or offsite use of groundwater for industrial purposes has been identified. This environmental value is not considered relevant for the site.
Aquaculture and human consumption of aquatic foods	No	A review of the NSW Department of Primary Industries NSW Aquaculture Industry Directory 2019 did not list an aquaculture producer on or in close proximity to the site. As such, this environmental value is not considered relevant.
Recreational Use	No	There is minimal possibility that whole body primary or incidental secondary contact to surface water (ephemeral drainage line) occurs either for school children or workers during construction. Definitions of water contact are as follows: • Whole body contact (primary contact) — activity in which the whole body or the face and trunk are frequently immersed, or the face is frequently wet by spray, and where it is likely that some water will be swallowed or inhaled, or come into contact with ears, nasal passages, mucous membranes or cuts in the skin (e.g. swimming, diving, surfing or whitewater canoeing). • Incidental contact (secondary contact) — activity in which only the limbs are regularly wet and in which greater contact (including swallowing water) is unusual (e.g. boating, fishing, wading), and including occasional and inadvertent immersion through slipping or being swept into the water by a wave. • No contact (aesthetic uses) — activity in which there is normally no contact with water (e.g. angling from shore), or where water is incidental to the activity (such as sunbathing on a beach). The ephemeral drainage line in the northeastern portion of the site is considered aesthetic in nature with no clear usage for recreation. As such, this environmental value is not considered applicable.
Non-use scenarios (i.e. vapour inhalation and intrusion)	Yes	Groundwater health screening levels for vapour intrusion (HSLs) are published in the NEPC 2013, Schedule B1 for selected petroleum compounds and fractions and are applicable to assessing human health risk via the inhalation and direct contact pathways. Workers and future users/occupiers of the land may be exposed to vapours emanating from contaminated surface water if present. This environmental value was assessed as part of the DSi (Stantec, 2024).
Buildings and Structures	Yes	Potential interception of groundwater by building foundations could occur. Based on the geotechnical soil aggression assessment, the alluvial and residual soils were characterised as non-aggressive. No groundwater aggressivity has been assessed.
Visual amenity and aesthetics	Yes	Surface waters with aesthetic or visual amenity issues may occur within the ephemeral drainage line and as such should be assessed.

7.2 Risk Consideration

Below are several general risk considerations for the construction and operational phase of the activity.

The groundwater and surface water risk evaluations are summarised for both onsite and offsite, and provided in **Table 7-2**.

Table 7-2: Groundwater and Surface Water Risk Evaluations

Preliminary Risk	Consideration	Justification
Is the water source a highly productive aquifer or less productive (as defined in the AIP)?	**Less Productive**	The site sits within an area that typically contains extensive, fractured or fissured aquifers of low to moderate productivity.
What are the project activities that have the potential to interact surface water and groundwater?	**None**	The excavation required for ground leveling is not anticipated to intercept groundwater. No dewatering is required. It is anticipated some piling may be required as a foundation system for proposed structures, however based on current data for the site they are not anticipated to intersect groundwater if they are shallower than 5 m BGL.
What are the project activities that have the potential to affect surface water and groundwater?	**None**	No activities are anticipated to affect (alter the quantity or quality) of groundwater and nearby surface water features.
Does the project have the potential to affect a highly connected alluvial aquifer or surface water source?	**No**	The nearest key surface water source is Swamp Creek, over 1 km north-west of the site. Activity construction and operation is not anticipated to affect the down gradient surface water source.
Does the project have the potential to affect high value GDE or culturally significant sites (defined in the water sharing plan)	**No**	The closest potential high value GDE is almost 1 km north-west. It is unlikely that there is a culturally significant area on or near the site.
Does the project have a basement	**No**	No basements are proposed.
Is the project a large coal mine or coal seam gas project	**No**	The project is not a large coal mine or coal seam gas project.
Does the project have the potential to affect Sydney drinking water supply	**No**	No nearby water supply features are anticipated to be intercepted or interacted with. The area is supplied with a reticulated water supply and the groundwater is unlikely to be potable. Additionally, the site is not mapped within the Sydney Water Catchment area.
Does the project have the potential to affect town water supplies	**No**	No, see above point.
Is the project located near high density water supply works (for example, irrigation areas)	**No**	No irrigators or supply works were identified near the site. It is noted that some irrigation likely takes place in surrounding agricultural lands, however, these areas are considered low risk due to the smaller amounts.

Preliminary Risk	Consideration	Justification
Is the project located in an area with high density of existing data (for example, government monitoring)	**No**	There are no known government monitoring groundwater bores nearby (within 1 km).
Is there a potential for sensitive receptors to be affected by the activity	**No**	There are no identifiable sensitive groundwater receptors within vicinity of the site.

8 Surface Water Impact Assessment

The REF criteria adopted for assessing impact on surface waters is outlined below:

- Surface water resources (quality and quantity) including related infrastructure, hydrology, dependent ecosystems, drainage lines, downstream assets and watercourses.

Potential adverse impacts by the site-derived surface water on the quantity or quality of surface water resources near the site were assessed by evaluating whether significant changes in either discharge rates or stormwater quality were likely to occur compared to current conditions. There are no major downstream receptors (six-order stream, approximately 1.6 km downstream), including GDEs, that are on or immediately downstream of the site (nearest high potential GDE is 950 m northeast)

As noted in **Section 5.1**, a first-order ephemeral drainage line exists along the north-eastern corner of the site, and flows north-west via a culvert underneath Gillieston Road. This drainage line will be partially filled. Instead of surface runoff following existing topography and flowing directly into this drainage line, surface water flow pathways will be directed and consolidated to stormwater drains and filtration systems across the site before entering the same culvert under Gillieston Road. Landscaping in the centre of site will be graded to direct surface runoff away from buildings and towards the playground where stormwater drains will be located. .

8.1 Potential Impact of the Proposed Activity on Surface Water Quantity

Permeable surfaces on site will be reduced following activity, potentially decreasing infiltration and increasing surface runoff, however many new trees are proposed to be planted, which may promote recharge uptake. Based on the SWMP and MUSIC modelling (NA221454-GPS-ACOR-00RP-C, Appendix C), the proposed stormwater systems are likely to improve and better regulate water volume rates, discharged via the culvert underneath Gillieston Road and downstream. Furthermore, the current flow regime within the ephemeral drainage line is likely minimal.

Therefore, adverse impact by site-derived stormwater on the quantity of surface water downstream of the site is not anticipated.

8.2 Potential Impact of the Proposed Activity on Surface Water Quality

Surface water quality will be maintained by the installation of an underground stormwater detention tank and a GPT containing storm filters. Stormwater will flow through this system before discharging the site via the culvert under Gillieston Road. During construction, sediment fences and a retaining wall will be built along the eastern boundary, preventing runoff and sediments flowing into the portion of the drainage line that will remain to the east of the site. The proposed stormwater management system and drainage upgrades are likely to be an improvement to discharge quality within the unnamed drainage channel and ultimately downstream receptors.

No adverse impacts by site-derived stormwater on the quality of water in downstream receiving waters are anticipated.

9 Groundwater Impact Assessment

Based on Stantec investigations (2023b, 2023c, 2024), no groundwater or seepage was encountered in the borehole or test pit locations, with maximum depths reaching 5 mBGL via coring at BH08. Weathered rock was encountered at various depths across the site. Perched groundwater may be located at the residual soil and bedrock interface. The shallowest and deepest depths that rock was encountered was 0.3 mBGL at BH11 and BH24, and 2.1 mBGL at BH08, respectively.

9.1 Aquifer Interference Assessment

As set out in the 2012 NSW Aquifer Interference Policy (AIP), an aquifer is considered a material that is or has the potential to be saturated with water. The AIP defines aquifer interference activities relevant to the proposed activity at the site area includes:

- Penetration of an aquifer.
- Interference with water in an aquifer.
- Obstruction of the flow of water in an aquifer.
- Disposal of water taken from an aquifer in the course of carrying out mining or any other activity prescribed by the regulations.

Other activities set out in the AIP, such as mining activities, are not relevant to the proposed works at the site and are not considered further.

The aquifer interference assessment framework initially considers two questions to determine the level of assessment that is required (Department of Primary Industries 2013). Based on the framework the activity was not defined as an aquifer interference activity and no further assessment against the AIP is required.

9.2 Potential Impact on Current Environmental Values

Given groundwater was not encountered, groundwater at site and downgradient off site were unlikely to be impacted by the current site uses. No sampling of groundwater has been undertaken, however, no potential groundwater contamination sources were identified or known at the site (Stantec 2024). In summary, there is currently a low risk of impact on the current groundwater environmental values.

9.3 Potential Impact of the Proposed Activity on Environmental Values

Considerations of impact of the proposed activity on groundwater quality was:

- Proposed building/structure foundations are unlikely to intercept the underlying aquifer. However, this would unlikely alter or impact groundwater quality and environmental values on- or off-site.
- Two new building footprints are to be constructed that covers less footprint than the existing area, which may result in increased recharge potential across the activity area. This increased recharge

may result in localised alterations to the physicochemical nature of the upper-most water bearing unit.

- Storage and spill or loss of containment mitigation design features of hazardous material (diesel fuel) is assumed to be incorporated into the current design. Therefore, this does not pose a risk to environmental values.

In summary, the proposed dactivity is considered a low risk of impact on groundwater environmental values.

9.4 Potential Impact of the Groundwater on the proposed Activity

Groundwater, in principle, can have deleterious effects on the uses of developed land in the following ways:

- Shallow groundwater can cause waterlogging and/or salinisation of the soil, leading to impacts on landscape and plants.
- Shallow groundwater can cause corrosion of concrete and metal components of infrastructure, particularly when the water is saline or corrosive.
- Shallow water table or mounding conditions can impact road/footpath pavements due to uplift pressures, erosion, differential moisture conditions and corrosive effects.

Considerations of impact of groundwater on the proposed activity was:

- No known groundwater salinity testing or aggressivity testing have been completed to date.
- Groundwater was not encountered during intrusive investigations on site. As such, shallow groundwater is not anticipated to be intercepted.

In summary, the potential impact of groundwater on the activity is considered a low risk, assuming appropriate mitigation and design measures are implemented.

10 Salinity Risk Assessment

The following information was reviewed to assess soil salinity risk associated with site activity:

- Topographic changes (based on cut/fill plan).
- Soil profile characteristics, mainly texture (based on the geotechnical bore logs and PSD data obtained from the Stantec 2023b geotechnical investigation).
- Soil profile chemistry, mainly EC, pH, Cl, SO_2^{-4} (from field sampling and laboratory analysis).
- Any changes in water balance to the site (based on current use and activity plans).
- Depth to regional groundwater and its water quality (based on desktop review only)
- Quality of the water used for irrigation and/or in storages (provided by the client team).

The review of documents (see Appendix C) and the site-specific findings on salinity presented in **Section 3** along with the following assumptions were used to evaluate salinity risk:

- It is assumed that the current landscape is not irrigated based on google historical images. Irrigation of the landscaped area (approximately 12% of the total proposed activity area) of approximately 200 mm per year on average, will be applied to maintain healthy landscape plant growth.
- Irrigation water will be supplied by rainwater that is likely to have a TDS less than 100 mg/L, which is assumed to be less than the regional aquifer.
- The high average rainfall for the site (943 mm annual average rainfall reported for the open BOM station located closest to the Site at Paterson 061250) provides the necessary leaching by rainwater recharge of the additional salts applied through irrigation.
- The light surface soils (predominantly silty sand and gravelly sandy fill up to 1.5 m deep) allow for high vertical and lateral transmission of perched water to the northeast which assists soil profile leaching.
- The expected change in land elevation (cut/fill, with wall retention), will unlikely alter water seepage and drainage flow across the surface and subsurface. There is a low chance of water inundation to occur. However, the retention wall and backfilling to level the new carparks along the eastern area may contribute to some seepage beneath the carparks and up to and along the retention wall face.
- Depth to the water table (free water) was not intercepted (or confirmed) during the soil bore and test pit investigation activity. It is assumed that the variably weathered and fractured siltstone/sandstone water bearing unit is at least 5 m below the site surface. Field parameters collected from the dam water indicated the waters were of very low salinity content (~263 µS/cm), however it was unlikely that these waters were connected to or representative of groundwater.

10.1 Potential Contribution of the Proposed Activity to Salinity Risk

Factors of the proposed activity that will have an impact on the salinity risk within the site are as follows:

- Topographic alterations: Significant filling and leveling across the eastern portion of the site is to occur, which typically could result in increased inundation and restricted runoff. However, the stormwater management plan indicates that sufficient design measures are to be installed that will enable surface runoff to be directed, consolidated and discharged from the site. Therefore, adequate drainage and minimal runoff inundation is likely to occur.
- Vegetation changes: The activity will result in a small net increase in native trees and grassed areas leading to increased evapotranspiration that impacts soil profile leaching. This is offset by the application of irrigation to 12% of the activity area resulting in little change in expected soil profile leaching.
- Shallow groundwater: Building foundations, retaining walls, or underground infrastructure are unlikely to intercept shallow groundwater (anticipated >5 m depth).
- Surface recharge alterations: Three new buildings are to be constructed and paved areas proposed, mostly in the east, that could reduce Site aquifer recharge in these locations. However, the majority of the western area will now be free of buildings, so on balance the alteration to recharge potential is likely minimal. Where reduced recharge may occur, could result in localised alterations to the physicochemical nature of the local aquifer. However, it is unlikely to adversely impact given the anticipated depth to groundwater and the potential for vertical migration through the overlying residual clays which act as a semi-confining barrier.
- Irrigation: Irrigation is applied to 12% of the total activity area. Irrigation water is supplied from collected rainwater. The low salinity of the rainwater along with the low small annual application annually results in a small salt load to the soil profile. This, combined with high annual rainfall of 943mm, results in a low probability of both soil salinity developing and impacts to groundwater.

In summary, the proposed activity is unlikely to affect the interaction between soil moisture and salt stored in the soils across the Site.

10.2 Risk Posed by Salinity on the Proposed Activity

If present or if develops, saline soils could have deleterious effects on the proposed activity. Examples of adverse impact include:

- Perched or shallow groundwater can cause waterlogging and/or salinisation of the soil, leading to impacts on buildings, infrastructure, landscape, and vegetation.
- Saline perched or shallow groundwater can cause corrosion of concrete and metal components of infrastructure.

Soil results reported for shallow soils indicate low soil aggressivity (high resistivity, moderate pH and low salts) and non-saline soils (low ECse). Furthermore, tests conducted on water sampled from the nearby surface water indicated fresh salinity results. Topographic alterations are unlikely to promote or generate water retention, as the proposed design will adequately drain surface runoff, consolidate and filter, then discharge to stormwater. The proposed irrigation water quality is stored rainwater (very fresh), which will be applied to native vegetation garden areas and surrounding the site perimeter. Some localised seepage may occur along the retention wall and carpark area, although not anticipated to promote saline conditions, this may require adequate drainage.

10.3 Risk Assessment Approach

The risk posed by salinity on the proposed activity at the Site reflects the combination of the adverse consequence of salinity (such as salt damage to foundations or stressed/death of vegetation) and the likelihood of this consequence occurring. A matrix can be used to illustrate the interaction between consequence and likelihood, as shown on the following table.

Risk Matrix		**Consequence**			
		Acceptable	*Tolerable*	*Unacceptable*	*Intolerable*
Likelihood	*Improbable*				
	Possible				
	Probable				

Descriptions of the consequence and Likelihood categories are as follows:

Consequence:

- *Acceptable* *No measurable salinity risk impact.*
- *Tolerable* *Salinity impact manageable with minor intervention.*
- *Unacceptable* *Salinity impact requires a significant intervention and cost.*
- *Intolerable* *Salinity impacts cause unavoidable damage to infrastructure and vegetation.*

Likelihood

- *Improbable* *unlikely to occur over the design life.*
- *Possible* *could occur over the design life.*
- *Probable* *Likely to occur over the design life.*

The cells coloured:

- *Green reflects very low risk.*
- *Yellow reflects low risk.*

- *Orange reflects moderate risk.*
- *Red reflects high risk.*

10.4 Evaluation of Salinity Risk

The salinity risk assessment considered the following factors:

- Depth to groundwater.
- Changes in recharge and discharge potential.
- Changes in water quality infiltrated across the Site.
- Spatial variation of potential salinity risk.

These factors are not mutually exclusive and have a high degree of interdependence. Nevertheless, each factor is assessed in independently.

10.4.1 Depth to Groundwater

Groundwater was not encountered during the investigation and is anticipated to be at least 3 m below the deepest proposed cuts (~2 m), and it is not anticipated to be encountered during construction nor have a direct impact on surface soil salinisation.

Consideration should be made for excavations that may intercept potential seasonally perched groundwater near the drainage line (such as for retaining walls) during construction.

10.4.2 Recharge and Discharge

Changes in the recharge regime in response to the proposed activity can alter the depth of the groundwater and the location of a potential salt bulge and discharge points across the Site.

Based on the limited field data the soil profiles showed no salt bulge development withing the top 1.5m of soil suggesting both a low salt influx and sufficient leaching from rainfall. Based on the site activity and landscape management there is expected to be minimal change in sites soil profile water balance as the available area to receive rainfall and the additional irrigation offsets the reduced recharge where buildings and paved area intercept rainfall and the additional native vegetation utilise more water. Further, there is a very load salt load to the activity area, which is essentially only receiving water from rainfall, either naturally or via irrigation.

Therefore, any alterations to the water balance is considered minor and not anticipated to increase the potential of salt accumulating in the subsurface. Similarly, the drainage line along the east will likely see an increase in recharge from stormwater which is unlikely to pose additional risk to increased salinity.

10.4.3 Water Quality

Proposed irrigation water is assumed to be from collected rainwater which has a low salinity level. The amount of irrigation water expected to be applied is 200mm compared to 945mm of rainfall. Hence, the low level of irrigation water salinity combined with rainfall four times greater than irrigation provides sufficient soil profile leaching to maintain salt sensitive plant species within the landscaped areas.

10.4.4 Spatial Variation of Risk

The risk posed by salinity is low across the entire Site based on topography, anticipated depth to the water table, water balance changes and expected water quality used for irrigation.

10.4.5 Risk Evaluation Summary

Observed soil profile conditions along with topography and groundwater conditions do not indicate that saline soil conditions will develop naturally or as a result of this proposed Site activity. Recharge to groundwater will be lower due to the stormwater capture from buildings but higher in the landscaped areas, particularly in the drainage line to the east. The change in net recharge across the proposed activity is not anticipated to increase the risk of saline conditions developing.

The proposed activity is anticipated to pose a very low risk of developing salinity. Hence, no Salinity Management Plan is required. The salinity risk matrix is summarised in **Table 10-1** below.

Table 10-1: Salinity Risk Assessment

Salinity Risk Factor	Likelihood	Consequence	Risk
Changes in Groundwater Depth	Improbable	Acceptable	Very Low
Changes to Recharge and Discharge	Possible	Acceptable	Very Low
Changes in Water Quality	Improbable	Acceptable	Very Low
Spatial Variation of Salinity Risk	Possible	Acceptable	Very Low

11 Conclusion

Stantec was engaged by the client to complete a Groundwater, Surface Water and Salinity Impact Assessment for the Gillieston Public School redevelopment and new public preschool at 100 Ryans Road and 19 Northview Street, Gillieston Heights NSW.

The study objectives were to Evaluate the risk and impact on surface water and groundwater resources, including development of a salinity management plan (if required).

The assessment identified the following:

- No potentially sensitive environmental or culturally significant groundwater receptors were identified at the proposed activity.
- No registered groundwater bore users or streams (Stahler order 3 or higher) were located within 1 km from the site.
- Potentially sensitive vegetation communities were located approximately 60 m southwest and high potential value aquatic and vegetation groundwater dependent ecosystems were located north and north-west of the site (form 450 m).

The project construction and operational groundwater and surface water impact assessment considered the following:

- Groundwater was not intercepted by Stantec during soil bore and test pit investigations and is anticipated to be greater than 5 m depth.
- The anticipated maximum depth of the proposed excavations is 3.5 m. Hence, the activity is not anticipated to intercept groundwater. Therefore, no dewatering is required, or water take licence.
- The current Site is considered to pose a low risk to groundwater and surface water environmental values.
- The proposed activity is considered to pose a low risk of impact to groundwater and surface water environmental values.
- Potential impact of groundwater on the proposed activity is considered low risk.
- Surface water quantity and quality is not anticipated to be impacted by the proposed activity (during construction and operation).
- No groundwater dewatering and monitoring management plan is required.

Note that this groundwater and surface water impact assessment assumed that there would be no future pumping or interference of Site groundwater for Site use. Additional assessments would be required if Site groundwater is extracted for use.

The project construction and operational salinity risk assessment considered the following:

- Soil at select locations and depth profiles was defined as non-saline.
- Groundwater was not intercepted by Stantec during soil bore and test pit investigations and is anticipated to be greater than 5 m depth.
- Minimal alterations to the recharge and discharge regime (water balance) are anticipated and therefore would unlikely promote saline conditions from developing.
- Alterations to the existing surface topography and runoff regime are not anticipated to promote saline conditions from developing.
- The proposed irrigation water quality is likely to have minimal impact on developing saline conditions.
- The proposed activity is anticipated to pose a very low risk of developing salinity.
- No salinity management plan is required based on current limited data.

11.1 Mitigation Measures

Mitigation measures for potential risks associated with groundwater and surface water were not anticipated to be required.

12 References

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Stantec (2023c) Preliminary Desktop Site Investigation – Contamination, Gillieston Public School. Prepared for School Infrastructure NSW.10 March 2023. *Draft*.

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Terras Landscape Architects (2024a) Landscape Schematic Design. 14435.5-GILLIESTON P.S. Landscape Schematic Design Rev J. 13 September 2024.

Terras Landscape Architects (2024b) Landscape Strategies – Irrigation Diagram 14435.5-GILLIESTON P.S-Landscape Irrigated Areas-Rev L.

13 Limitations

This assessment has been undertaken in general accordance with the current “industry standards” for a surface water, groundwater and sailinity impact assessment for the purpose and objectives identified in this report. These standards are set out in:

- NSW (2000) Water Management Act 2000.
- NSW (2022) Guidelines for groundwater documentation for SSI Projects.
- NSW (2012) Aquifer Interference Policy.
- NSW (2022) Groundwater Impact Assessment Toolbox for Major Projects in NSW – Overview Document.
- National Environment Protection (Assessment of Site Contamination) Measure (NEPM) 1999 (NEPC, 1999) as varied May 2013 (the ‘NEPM 2013’).
- NSW Department of Infrastructure, Planning and Natural Resources (2005)
- NSW DEC (2007) Guidelines for the Assessment and Management of Groundwater Contamination. Department of Environment and Conservation NSW. DEC 2007/144. March 2007.

The agreed scope of works has been limited for the current purposes of the Client. The assessment may not identify groundwater occurring in all areas of the Site or occurring after sampling was conducted. 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 of work 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.
- This groundwater impact assessment assumed that there would not be any future pumping of Site groundwater for Site use. Additional assessments will need to be undertaken if Site groundwater is extracted for use.
- Salinity assessments were based solely on available information that included topography changes, soil profile characteristics and chemistry, changes in water balance, groundwater (regional and perched) and its quality, water used for irrigation and knowledge of the regional and local landscape of the Site.

This assessment report is not any of the following:

- A detailed hydrogeological assessment in conformance with NSW DEC (2007) Contaminated Sites: Guidelines for the Assessment and Management of Groundwater Contamination.
- A construction dewatering management plan.
- A groundwater management and monitoring plan.
- A Site Audit Report or Site Audit Statement as defined under the Contaminated Land Management Act, 1997.
- A Detailed ESA or Environmental Site Investigation sufficient for an Environmental Auditor to be able to conclude a Site Audit Report and Site Audit Statement.
- A geotechnical report and the bore logs or test pit logs may not be sufficient as the basis for geotechnical advice.
- An assessment of groundwater contaminants potentially arising from other Sites or sources nearby.
- A total assessment of the Site to determine suitability of the entire parcel of land at the Site for one or more beneficial uses of land.
- An assessment of ASS, which is understood to be under a separate engagement.

APPENDICES

Appendix A Figures



Site and Location Plan

Gillieston Public School,
Gillieston Heights NSW

Project Code: 304100928-GS-048
Drawn By: CC, Checked By: CL
Figure: 01 Rev: 02
Date: 2024-10-04

Stantec

Legend

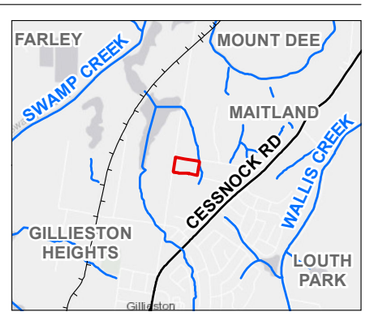
- Site Boundary
- Watercourse
- Major Road
- Railway
- Contour
- Cadastre

Notes:
1. Coordinate System: GDA2020 MGA Zone 56

References:
1. Aerial imagery (Nearmap, June 2024)
2. Cadastre (NSW SS, 2022)
3. Watercourse, Major Road, Railway, Contour (NSW SS)

0 10 20 30 Metres

Scale at A3: 1:1000



This document has been prepared based on information provided by others as cited in the data sources. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.



Previous Sampling Plan - Overview

Gillieston Public School,
Gillieston Heights NSW

Project Code: 304100928-GS-051
Drawn By: CC, Checked By: CL
Figure: 02 Rev: 02
Date: 2024-10-04

Stantec

Legend

- Site Boundary
- Watercourse
- Major Road
- Railway
- Cadastre

DSI Sample Location

- Hand Auger
- Surface Water/ Sediment
- Test Pit

Previous Sample Location

- Previous Sample Location
- Validation Sample - Lead Exceedance
- Validation Sample

Remediation Extent

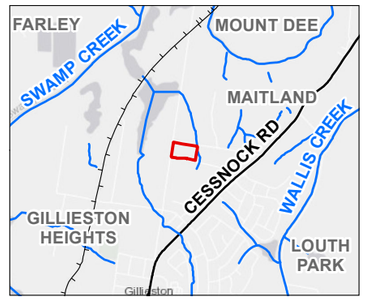
- Approximate Additional Areas Requiring Remediation
- Approximate Initial Remediation Extent

Notes:
1. Coordinate System: GDA2020 MGA Zone 56

References:
1. Aerial imagery (Nearmap, June 2024)
2. Cadastre (NSW SS, 2022)
3. Watercourses, Railway and Major Roads (NSW SS)

0 10 20 30 Metres

Scale at A3: 1:750



This document has been prepared based on information provided by others as cited in the data sources. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.

Appendix B Borehole Logs

EXCAVATION - GEOLOGICAL LOG

PIT NO : BH01
FILE / JOB NO : 304100928
SHEET : 1 OF 1

PROJECT : Proposed School Redevelopment
LOCATION : Gillieston Public School

POSITION : E: 362463.531, N: 6375234.044 (56 MGA2020) | SURFACE ELEVATION : 18.520 (AHD)
EQUIPMENT TYPE : MI2 | METHOD : Auger Drilling
DATE EXCAVATED : 19/12/22 | LOGGED BY : PB | CHECKED BY : TH
EXCAVATION DIMENSIONS : 0.10 m LONG 0.10 m WIDE

DRILLING | MATERIAL

VE / PENETRATION / E / F / H	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	HAND PENETRO-METER kPa 100 200 300 400	DCP TEST (AS 1289.6.3.2-1997) Blows/100 mm 5 10 15 20 25	STRUCTURE & Other Observations
	STABLE	Not Encountered	0.50m B	0.0			FILL: SILTY SAND: brown, fine grained sand, low plasticity silt, trace angular, medium to fine grained gravel, trace of rootlets				2 3 4 3 4 5	TOPSOIL
				0.5								
			1.00m	0.70m			CLAY: brown red, brown yellow and grey, medium to high plasticity, with fine grained sand, trace sub-rounded to rounded, medium to fine grained gravel	D	St		7 4 4 4 7 5	ALLUVIUM
				1.0		CI-CH						
				1.30m		SM	SILTY SAND: orange brown, pale grey, fine grained sand, low plasticity silt, trace angular to sub-angular, medium to fine grained, ironstone gravel		D		7 15	RESIDUAL SOIL
				1.5			1.50m EXCAVATION BH01 TERMINATED AT 1.50 m Target depth				25	
				2.0								
				2.5								
				3.0								
				3.5								
				4.0								
				4.5								
				5.0								

PHOTOGRAPHS NOTES ☐ YES ☒ NO

METHOD
N Natural Exposure
E Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

SUPPORT
T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
U50 - Undisturbed Sample 50 mm diameter
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
HP - Hand Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
D - Dry
M - Moist
W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

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

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File: 304100928 BH01 1 OF 1

RMS LIB 40.3 EXTERNAL M6E REV1.3.GLB Log RTA EXCAVATION 304100928_GILLIESTON.GPJ <<DrawingFile>> 08/Feb/2023 14:16 10.03.00.09 Cardno M6E

EXCAVATION - GEOLOGICAL LOG

PIT NO : BH02
FILE / JOB NO : 304100928
SHEET : 1 OF 1

PROJECT : Proposed School Redevelopment
LOCATION : Gillieston Public School

POSITION : E: 362455.680, N: 6375219.305 (56 MGA2020) | SURFACE ELEVATION : 19.987 (AHD)
EQUIPMENT TYPE : MI2 | METHOD : Auger Drilling
DATE EXCAVATED : 19/12/22 | LOGGED BY : PB | CHECKED BY : TH
EXCAVATION DIMENSIONS : 0.10 m LONG 0.10 m WIDE

DRILLING | MATERIAL

DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	HAND PENETROMETER kPa	DCP TEST (AS 1289.6.3.2-1997) Blows/100 mm	STRUCTURE & Other Observations
0.0			FILL: SILTY SAND: brown, fine grained sand, low plasticity silt, trace angular, medium to fine grained gravel, trace of rootlets				1	TOPSOIL
0.5							2	
							4	
							3	
							3	
							4	
0.70m								
			CLAY: brown red, brown yellow and grey, medium to high plasticity, with fine grained sand, trace sub-rounded to rounded, medium to fine grained gravel	D			3	ALLUVIUM
1.0		CI-CH			St		4	
							10	
							3	
							3	
							2	
							3	
1.50m							3	
1.5			EXCAVATION BH02 TERMINATED AT 1.50 m Target depth				4	
							5	
							8	
							8	
							7	
2.0							25	
2.5								
3.0								
3.5								
4.0								
4.5								
5.0								

SUPPORT: STABLE
GROUND WATER LEVELS: Not Encountered
SAMPLES & FIELD TESTS:
PENETRATION: VE, E, F, H

PHOTOGRAPHS NOTES ☐ YES ☒ NO

METHOD
- N Natural Exposure
- E Existing Excavation
- BH Backhoe Bucket
- B Bulldozer Blade
- R Ripper

SUPPORT
- T Timbering

PENETRATION
VE, E, F, H, VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
- U50 - Undisturbed Sample 50 mm diameter
- D - Disturbed Sample
- B - Bulk Disturbed Sample
- MC - Moisture Content
- HP - Hand Penetrometer (UCS kPa)
- VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
- PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
- D - Dry
- M - Moist
- W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

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

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File: 304100928 BH02 1 OF 1

RMS LIB 40.3 EXTERNAL M6E REV1.3.GLB Log RTA EXCAVATION 304100928_GILLIESTON.GPJ <<DrawingFile>> 08/Feb/2023 14:16 10.03.00.09 Cardno M6E

EXCAVATION - GEOLOGICAL LOG

PIT NO : BH03
FILE / JOB NO : 304100928
SHEET : 1 OF 1

PROJECT : Proposed School Redevelopment
LOCATION : Gillieston Public School

POSITION : E: 362444.504, N: 6375163.375 (56 MGA2020) | SURFACE ELEVATION : 23.701 (AHD)
EQUIPMENT TYPE : MI2 | METHOD : Auger Drilling
DATE EXCAVATED : 19/12/22 | LOGGED BY : PB | CHECKED BY : TH
EXCAVATION DIMENSIONS : 0.10 m LONG 0.10 m WIDE

DRILLING | MATERIAL

DEPTH (m)	SAMPLES & FIELD TESTS	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	HAND PENETRO-METER kPa	DCP TEST (AS 1289.6.3.2-1997) Blows/100 mm	STRUCTURE & Other Observations
0.0									TOPSOIL
	0.50m B			FILL: SILTY SAND: brown, fine grained sand, low plasticity silt, trace angular, medium to fine grained gravel, trace of rootlets				3 10 12 12 13 13	
0.5				0.70m					
			CI-CH	CLAY: brown red, brown yellow and grey, medium to high plasticity, with fine grained sand, trace sub-rounded to rounded, medium to fine grained gravel	D	VSt		15 15 17 16 17	ALLUVIUM
1.0	1.00m			1.20m					
			SM	SILTY SAND: pale grey, fine grained sand, low plasticity silt, trace angular to sub-angular, medium to fine grained, ironstone gravel		D		25	RESIDUAL SOIL
1.5				1.50m EXCAVATION BH03 TERMINATED AT 1.50 m Target depth					
2.0									
2.5									
3.0									
3.5									
4.0									
4.5									
5.0									

VE PENETRATION E F H
SUPPORT: STABLE
GROUND WATER LEVELS: Not Encountered
DCP TEST scale: 5 10 15 20 25
HAND PENETRO-METER kPa scale: 100 200 300 400

PHOTOGRAPHS NOTES ☐ YES ☒ NO

METHOD
N Natural Exposure
E Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

SUPPORT
T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
U50 - Undisturbed Sample 50 mm diameter
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
HP - Hand Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
D - Dry
M - Moist
W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

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

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File: 304100928 BH03 1 OF 1

RMS LIB 40.3 EXTERNAL M6E REV1.3.GLB Log RTA EXCAVATION 304100928_GILLIESTON.GPJ <<DrawingFile>> 08/Feb/2023 14:16 10.03.00.09 Cardno M6E

EXCAVATION - GEOLOGICAL LOG

PIT NO : BH04
FILE / JOB NO : 304100928
SHEET : 1 OF 1

PROJECT : Proposed School Redevelopment
LOCATION : Gillieston Public School

POSITION : E: 362432.683, N: 6375153.028 (56 MGA2020) | SURFACE ELEVATION : 24.879 (AHD)
EQUIPMENT TYPE : MI2 | METHOD : Auger Drilling
DATE EXCAVATED : 19/12/22 | LOGGED BY : PB | CHECKED BY : TH
EXCAVATION DIMENSIONS : 0.10 m LONG 0.10 m WIDE

DRILLING | MATERIAL

PENETRATION (VE E F H)	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY / RELATIVE DENSITY	HAND PENETROMETER kPa (100 200 300 400)	DCP TEST (AS 1289.6.3.2-1997) Blows/100 mm (5 10 15 20 25)	STRUCTURE & Other Observations
	STABLE	Not Encountered		0.0			FILL: SILTY SAND: brown, fine grained sand, low plasticity silt, trace angular, medium to fine grained gravel, trace of rootlets	D			4 8 7	TOPSOIL
				0.5							11 12 12	
							0.70m CLAY: brown red, brown yellow and grey, medium to high plasticity, with fine grained sand, trace sub-rounded to rounded, medium to fine grained gravel		St to VSt		12 13	ALLUVIUM
				1.0		CI-CH					14 14 14	
							1.20m SILTY CLAY: pale grey, mottled yellow, low to medium plasticity, with fine grained sand	M	D		14 15	RESIDUAL SOIL
				1.5		CL-CI	1.50m EXCAVATION BH04 TERMINATED AT 1.50 m Target depth				25	
				2.0								
				2.5								
				3.0								
				3.5								
				4.0								
				4.5								
				5.0								

PHOTOGRAPHS NOTES ☐ YES ☒ NO

METHOD
N Natural Exposure
E Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

SUPPORT
T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
U50 - Undisturbed Sample 50 mm diameter
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
HP - Hand Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
D - Dry
M - Moist
W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

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

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File: 304100928 BH04 1 OF 1

RMS LIB 40.3 EXTERNAL M6E REV1.3.GLB Log RTA EXCAVATION 304100928_GILLIESTON.GPJ <<DrawingFile>> 08/Feb/2023 14:16 10.03.00.09 Cardno M6E

EXCAVATION - GEOLOGICAL LOG

PIT NO : BH05
FILE / JOB NO : 304100928
SHEET : 1 OF 1

PROJECT : Proposed School Redevelopment
LOCATION : Gillieston Public School

POSITION : E: 362432.632, N: 6375152.988 (56 MGA2020) | SURFACE ELEVATION : 24.901 (AHD)
EQUIPMENT TYPE : MI2 | METHOD : Auger Drilling
DATE EXCAVATED : 19/12/22 | LOGGED BY : PB | CHECKED BY : TH
EXCAVATION DIMENSIONS : 0.10 m LONG 0.10 m WIDE

DRILLING | MATERIAL

DEPTH (m)	PENETRATION (VE E F H)	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION (Soil Type, Colour, Plasticity or Particle Characteristic, Secondary and Minor Components)	MOISTURE CONDITION	CONSISTENCY / RELATIVE DENSITY	HAND PENETROMETER kPa (100 200 300 400)	DCP TEST (AS 1289.6.3.2-1997) Blows/100 mm (5 10 15 20 25)	STRUCTURE & Other Observations
0.0		STABLE	Not Encountered				FILL: SILTY SAND: brown, fine grained sand, low plasticity silt, trace angular, medium to fine grained gravel, trace of rootlets				5	TOPSOIL
0.50m				0.50m B							10	
0.5							CLAY: brown red, brown yellow and grey, medium to high plasticity, with fine grained sand, trace sub-rounded to rounded, medium to fine grained gravel	D	VSt		11	ALLUVIUM
1.00m						CI-CH					12	
1.0											12	
1.20m											13	
							SILTY SAND: pale grey, fine grained sand, low plasticity silt, trace angular to sub-angular, medium to fine grained, ironstone gravel		D		15	RESIDUAL SOIL
1.50m						SM					15	
1.5							EXCAVATION BH05 TERMINATED AT 1.50 m Target depth				15	
											12	
											14	
											16	
											25	
2.0												
2.5												
3.0												
3.5												
4.0												
4.5												
5.0												

PHOTOGRAPHS NOTES ☐ YES ☒ NO

METHOD
N Natural Exposure
E Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

SUPPORT
T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
U50 - Undisturbed Sample 50 mm diameter
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
HP - Hand Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
D - Dry
M - Moist
W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

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

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File: 304100928 BH05 1 OF 1

RMS LIB 40.3 EXTERNAL M6E REV1.3.GLB Log RTA EXCAVATION 304100928_GILLIESTON.GPJ <<DrawingFile>> 08/Feb/2023 14:16 10.03.00.09 Cardno M6E

EXCAVATION - GEOLOGICAL LOG

PIT NO : BH06
FILE / JOB NO : 304100928
SHEET : 1 OF 1

PROJECT : Proposed School Redevelopment
LOCATION : Gillieston Public School

POSITION : E: 362436.988, N: 6375233.710 (56 MGA2020) | SURFACE ELEVATION : 20.898 (AHD)
EQUIPMENT TYPE : MI2 | METHOD : Auger Drilling
DATE EXCAVATED : 19/12/22 | LOGGED BY : PB | CHECKED BY : TH
EXCAVATION DIMENSIONS : 0.10 m LONG 0.10 m WIDE

DRILLING					MATERIAL						
PENETRATION (VE, E, F, H)	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	HAND PENETROMETER (100, 200, 300, 400)	STRUCTURE & Other Observations
VE, E, F, H	STABLE	Not Encountered	1.50m SPT 10/130mm HB N=R 1.63m	0.0			FILL: SILTY SAND: brown, fine grained sand, low plasticity silt, trace angular, medium to fine grained gravel, trace of rootlets				TOPSOIL
				0.40m							
				0.50m			FILL: SANDY GRAVEL: grey, medium to coarse gravel, fine grained sand, trace low plasticity silt				FILL
				0.5			GRAVELLY SAND: orange brown, pale grey, fine grained sand, angular to sub-angular, medium to fine grained, ironstone gravel, trace low plasticity silt	D			WEATHERED ROCK
				1.0							
				1.5							
				1.80m			EXCAVATION BH06 TERMINATED AT 1.80 m Auger refusal on medium strength rock				
				2.0							
				2.5							
				3.0							
				3.5							
				4.0							
				4.5							
				5.0							

PHOTOGRAPHS NOTES ☐ YES ☒ NO

METHOD
N Natural Exposure
E Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

SUPPORT
T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
U50 - Undisturbed Sample 50 mm diameter
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
HP - Hand Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
D - Dry
M - Moist
W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

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

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File: 304100928 BH06 1 OF 1

RMS LIB 40.3 EXTERNAL M6E REV1.3.GLB Log RTA EXCAVATION 304100928_GILLIESTON.GPJ <<DrawingFile>> 08/Feb/2023 14:16 10.03.00.09 Cardno M6E

EXCAVATION - GEOLOGICAL LOG

PIT NO : BH07
FILE / JOB NO : 304100928
SHEET : 1 OF 1

PROJECT : Proposed School Redevelopment
LOCATION : Gillieston Public School

POSITION : E: 362431.770, N: 6375215.274 (56 MGA2020) | SURFACE ELEVATION : 21.916 (AHD)
EQUIPMENT TYPE : MI2 | METHOD : Auger Drilling
DATE EXCAVATED : 19/12/22 | LOGGED BY : PB | CHECKED BY : TH
EXCAVATION DIMENSIONS : 0.10 m LONG 0.10 m WIDE

DRILLING | MATERIAL

VE / PENETRATION E F H	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	HAND PENETRO-METER kPa 100 200 300 400	STRUCTURE & Other Observations
	STABLE	Not Encountered	1.00m D	0.0			FILL: SILTY SAND: brown, fine grained sand, low plasticity silt, trace angular, medium to fine grained gravel, trace of rootlets				TOPSOIL
				0.40m							
				0.5			FILL: GRAVELLY SAND: grey, medium to coarse grained sand, sub-rounded to rounded, medium to fine grained gravel, trace low plasticity silt				FILL
				0.80m							
				1.0			GRAVELLY SAND: orange brown, medium to fine grained sand, angular to sub-rounded, medium to coarse grained gravel, trace low plasticity silt	D			WEATHERED ROCK
			1.50m SPT 5, 10/90mm HB N=R 1.74m	1.5							
				1.74m			EXCAVATION BH07 TERMINATED AT 1.74 m Auger refusal on medium strength rock				
				2.0							
				2.5							
				3.0							
				3.5							
				4.0							
				4.5							
				5.0							

PHOTOGRAPHS NOTES ☐ YES ☒ NO

METHOD
N Natural Exposure
E Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

SUPPORT
T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
U50 - Undisturbed Sample 50 mm diameter
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
HP - Hand Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
D - Dry
M - Moist
W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

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

STANTEC AUSTRALIA PTY LTD

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File: 304100928 BH07 1 OF 1

RMS LIB 40.3 EXTERNAL M6E REV1.3.GLB Log RTA EXCAVATION 304100928_GILLIESTON.GPJ <<DrawingFile>> 08/Feb/2023 14:16 10.03.00.09 Cardno M6E

NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : BH08
FILE / JOB NO : 304100928
SHEET : 1 OF 2

PROJECT : Proposed School Redevelopment
LOCATION : Gillieston Public School

POSITION : E: 362417.343, N: 6375244.410 (56 MGA2020) SURFACE ELEVATION : 22.156 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : MI2 MOUNTING : Track CONTRACTOR : Stratacore DRILLER : ML

DATE STARTED : 20/12/22 DATE COMPLETED : 20/12/22 DATE LOGGED : 20/12/22 LOGGED BY : PB CHECKED BY : TH

DRILLING						MATERIAL					
PROGRESS: DRILLING & CASING	PROGRESS: WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m) RL (m AHD)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
AD/T HWT Casing		E	Not Encountered	0.50m D	0.0 22.2			FILL: SILTY SAND: brown, fine grained sand, low plasticity silt, trace angular, medium to fine grained gravel, trace of rootlets	D		TOPSOIL
					0.5 21.7		CI-CH	0.50m CLAY: brown red, brown yellow and grey, medium to high plasticity, with fine to coarse grained sand, trace sub-angular to sub-rounded, medium to fine grained gravel		St	ALLUVIUM
				1.00m	1.0 21.2			0.90m SILTY SAND: brown, fine to coarse grained sand, low plasticity silt, trace angular to sub-angular, medium to fine grained, ironstone gravel			RESIDUAL SOIL
		F		1.50m SPT 5, 13/50mm HB N=R 1.70m	1.5 20.7		SM			D	
					2.0 20.2			2.10m SANDSTONE: recovered as silty sand, grey, orange brown, inferred extremely weathered sandstone, very low strength			WEATHERED ROCK
		H		3.00m SPT 14/10mm HB N=R 3.01m	2.5 19.7 3.0 19.2			3.10m Continued as Cored Drill Hole			
					3.5 18.7						
					4.0 18.2						
					4.5 17.7						
					5.0 17.2						

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

STANTEC AUSTRALIA PTY LTD

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RMS LIB 40.3 EXTERNAL M6E REV1.3.GLB Log RTA NON-CORE DRILL HOLE 2 304100928_GILLIESTON.GPJ <<DrawingFile>> 08/Feb/2023 14:17 10.03.00.09 Cardno M6E

CORED DRILL HOLE LOG

HOLE NO : BH08
FILE / JOB NO : 304100928
SHEET : 2 OF 3

PROJECT : Proposed School Redevelopment
LOCATION : Gillieston Public School

POSITION : E: 362417.343, N: 6375244.410 (56 MGA2020) SURFACE ELEVATION : 22.156 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : MI2 MOUNTING : Track CONTRACTOR : Stratacore DRILLER : ML

DATE STARTED : 20/12/22 DATE COMPLETED : 20/12/22 DATE LOGGED : 20/12/22 LOGGED BY : PB CHECKED BY : TH

CASING DIAMETER : HWT BARREL (Length) : 3.00 m BIT : Stepped BIT CONDITION : good

DRILLING						MATERIAL			FRACTURES	
PROGRESS: DRILLING & CASING	PROGRESS: WATER	(CORE LOSS RUN %) / DRILL DEPTH	RQD (%)	SAMPLES & FIELD TESTS	DEPTH (m) / RL (m AHD)	GRAPHIC LOG	DESCRIPTION ROCK TYPE : Colour, Grain size, Structure (texture, fabric, mineral composition, hardness alteration, cementation, etc as applicable)	Weathering	ESTIMATED STRENGTH Is(50) ● - Axial ○ - Diametral VL (-0.1) L (-0.4) M (-1.3) H (-3.8) VH (-12.5) EH	NATURAL FRACTURE (mm) 20 40 100 300 1000	ADDITIONAL DATA (joints, partings, seams, zones, etc) Description, orientation, infilling or coating, shape, roughness, thickness, other
					0.0 22.2						
					0.5 21.7						
					1.0 21.2						
					1.5 20.7						
					2.0 20.2						
					2.5 19.7						
					3.0 19.2		3.10m START CORING AT 3.10m				
HQ	10% LOSS	0% LOSS	25	Is(50) d=0.17 a=0.46 MPa UCS =2.5 MPa 3.57m	3.5 18.7		SANDSTONE: grey, orange brown and brown red, fine grained, bedded at 0-10 degree, ironstained	MW SW to MW MW SW to MW HW			3.12-3.14: JT 35° Clay IR S closed 3.18-3.21: JT 35° Clay IR S closed 3.29: BP 0° Clay PR S 3.38-3.42: JT 45° Fe SN IR RF 3.40-3.42: JT 20° Fe SN IR RF 3.30-3.60: JT 40° Fe SN IR RF closed 3.47-3.53: JT 45° Fe SN IR RF closed 3.56: DB 3.52-3.64: JT 45° Fe SN IR RF closed 3.55-3.64: JT 40° Fe SN IR RF 3.62-3.66: JT 20 - 40° Fe SN IR RF 3.63-3.67: JT 35° Fe SN IR RF closed 3.68: BP 5° Clay CU S closed 3.78-3.81: JT 30° Fe SN IR RF 3.80-3.84: JT 45° Fe SN IR RF 3.85-3.92: JT 55° Fe SN CU RF 3.90: BP 5° Fe SN CU RF 3.93: BP 10° Fe SN CU RF 4.00: DB 4.14-4.17: SM Clay 4.17: BP 0° Fe SN CU RF 4.10-4.30: JT 20° Fe SN IR RF 4.17-4.26: JT 60° Fe SN IR RF 4.25-4.29: FZ 4.43: BP 10° Fe SN IR S 4.48: BP 10° Fe SN IR RF 4.55: BP 10° Fe SN UN RF 4.63-4.67: JT 70° Fe SN IR RF 4.63-4.69: JT 60° Fe SN IR RF 4.70: BP 0° Sand IR RF 4.74: BP 0° Sand PR RF 4.75: DB
					4.0 18.2		4.28m MUDSTONE: pale grey, indistinctly bedded, trace of sand and mudstone gravel clast	HW HW			
					4.5 17.7		4.44m SANDSTONE: grey, brown and orange brown, fine grained, 2-20 mm gravel in the strata, ironstained	MW HW			
	10% LOSS	4.75 0% LOSS	48	Is(50) d=0.33 a=0.36 MPa				SW to MW			
		5.00			5.0 17.2		5.00m BOREHOLE BH08 TERMINATED AT 5.00 m Target depth				

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

STANTEC AUSTRALIA PTY LTD

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RMS LIB 40.3 EXTERNAL M6E REV1.3.GLB Log RTA CORED DRILL HOLE 5 304100928_GILLIESTON.GPJ <<DrawingFile>> 08/Feb/2023 14:29 10.03.00.09 Cardno M6E

CORED DRILL HOLE LOG

HOLE NO : BH08
FILE / JOB NO : 304100928
SHEET : 3 OF 3

PROJECT : Proposed School Redevelopment
LOCATION : Gillieston Public School

POSITION : E: 362417.343, N: 6375244.410 (56 MGA2020) SURFACE ELEVATION : 22.156 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : MI2 MOUNTING : Track CONTRACTOR : Stratacore DRILLER : ML

DATE STARTED : 20/12/22 DATE COMPLETED : 20/12/22 DATE LOGGED : 20/12/22 LOGGED BY : PB CHECKED BY : TH

CASING DIAMETER : HWT BARREL (Length) : 3.00 m BIT : Stepped BIT CONDITION : good

DRILLING						MATERIAL				FRACTURES	
PROGRESS: DRILLING & CASING	PROGRESS: WATER	(CORE LOSS RUN %) / DRILL DEPTH	RQD (%)	SAMPLES & FIELD TESTS	DEPTH (m) / RL (m AHD)	GRAPHIC LOG	DESCRIPTION ROCK TYPE : Colour, Grain size, Structure (texture, fabric, mineral composition, hardness alteration, cementation, etc as applicable)	Weathering	ESTIMATED STRENGTH Is(50) ● - Axial ○ - Diametral VL -0.1 L -0.4 M -1.3 H -3.8 VH -12.5 EH	NATURAL FRACTURE (mm) 20 40 100 300 1000	ADDITIONAL DATA (joints, partings, seams, zones, etc) Description, orientation, infilling or coating, shape, roughness, thickness, other
					5.0 17.2						4.88-4.89: JT 45° Fe SN IR RF 4.90-4.92: FZ
					5.5 16.7						
					6.0 16.2						
					6.5 15.7						
					7.0 15.2						
					7.5 14.7						
					8.0 14.2						
					8.5 13.7						
					9.0 13.2						
					9.5 12.7						
					10.0 12.2						

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

STANTEC AUSTRALIA PTY LTD

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RMS LIB 40.3 EXTERNAL M6E REV1.3.GLB Log RTA CORED DRILL HOLE 5 304100928_GILLIESTON.GPJ <<DrawingFile>> 08/Feb/2023 14:29 10.03.00.09 Cardno M6E

Stantec	TITLE: **Borehole Core Photographs – BH08** **Gillieston Public School**			
	PROJECT NO: **304100928**	TEST DATE: **20/12/2022**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **3.1-5.0m (1.9 m Length)**
	DRILL RIG: **MI2**	CONTRACTOR: **Stratacore**	LOGGED BY: **PB**	CHECKED BY: **TH**



EXCAVATION - GEOLOGICAL LOG

PIT NO : BH09
FILE / JOB NO : 304100928
SHEET : 1 OF 1

PROJECT : Proposed School Redevelopment
LOCATION : Gillieston Public School

POSITION : E: 362404.420, N: 6375211.026 (56 MGA2020) | SURFACE ELEVATION : 24.519 (AHD)
EQUIPMENT TYPE : MI2 | METHOD : Auger Drilling
DATE EXCAVATED : 21/12/22 | LOGGED BY : PB | CHECKED BY : TH
EXCAVATION DIMENSIONS : 0.10 m LONG 0.10 m WIDE

DRILLING | MATERIAL

PENETRATION (VE E F H)	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	HAND PENETRO-METER kPa	STRUCTURE & Other Observations
	STABLE	Not Encountered	0.50m D	0.0			FILL: SILTY SAND: brown, fine grained sand, low plasticity silt, trace angular, medium to fine grained gravel, trace of rootlets				TOPSOIL
				0.5		CI-CH	0.50m CLAY: brown red, brown yellow and grey, medium to high plasticity, with fine to coarse grained sand, trace sub-angular to sub-rounded, medium to fine grained gravel 0.65m		F		ALLUVIUM
			1.00m	1.0			SILTY SAND: orange brown, grey, fine to coarse grained sand, low plasticity silt, with angular to sub-angular, medium to fine grained, ironstone gravel	D			WEATHERED ROCK
			1.50m SPT 12/10mm HB N=R 1.51m	1.5			1.51m EXCAVATION BH09 TERMINATED AT 1.51 m Auger refusal on medium strength rock				
				2.0							
				2.5							
				3.0							
				3.5							
				4.0							
				4.5							
				5.0							

PHOTOGRAPHS NOTES ☐ YES ☒ NO

METHOD
N Natural Exposure
E Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

SUPPORT
T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
U50 - Undisturbed Sample 50 mm diameter
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
HP - Hand Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
D - Dry
M - Moist
W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

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

STANTEC AUSTRALIA PTY LTD

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File: 304100928 BH09 1 OF 1

RMS LIB 40.3 EXTERNAL M6E REV1.3.GLB Log RTA EXCAVATION 304100928_GILLIESTON.GPJ <<DrawingFile>> 08/Feb/2023 14:16 10.03.00.09 Cardno M6E

EXCAVATION - GEOLOGICAL LOG

PIT NO : BH10
FILE / JOB NO : 304100928
SHEET : 1 OF 1

PROJECT : Proposed School Redevelopment
LOCATION : Gillieston Public School

POSITION : E: 362403.006, N: 6375247.651 (56 MGA2020) | SURFACE ELEVATION : 23.292 (AHD)

EQUIPMENT TYPE : MI2 | METHOD : Auger Drilling

DATE EXCAVATED : 21/12/22 | LOGGED BY : PB | CHECKED BY : TH

EXCAVATION DIMENSIONS : 0.10 m LONG 0.10 m WIDE

DRILLING				MATERIAL							
PENETRATION (VE, E, F, H)	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	HAND PENETROMETER kPa (100, 200, 300, 400)	STRUCTURE & Other Observations
VE	STABLE	Not Encountered		0.0			FILL: SILTY SAND: brown, fine grained sand, low plasticity silt, trace angular, medium to fine grained gravel, trace of rootlets				TOPSOIL
				0.30m							
				0.5		SM	SILTY SAND: orange brown, grey, fine grained sand, low plasticity silt, trace angular to sub-angular, medium to fine grained gravel	D	D		RESIDUAL SOIL
				0.90m							
				1.00m			SILTY SAND: pale grey, fine grained sand, low plasticity silt, trace angular to sub-angular, medium to fine grained gravel, inferred weathered sandstone				WEATHERED ROCK
				1.0			EXCAVATION BH10 TERMINATED AT 1.00 m Auger refusal on medium strength rock				
				1.5							
				2.0							
				2.5							
				3.0							
				3.5							
				4.0							
				4.5							
				5.0							

PHOTOGRAPHS NOTES ☐ YES ☒ NO

METHOD
- N Natural Exposure
- E Existing Excavation
- BH Backhoe Bucket
- B Bulldozer Blade
- R Ripper

SUPPORT
- T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
- U50 - Undisturbed Sample 50 mm diameter
- D - Disturbed Sample
- B - Bulk Disturbed Sample
- MC - Moisture Content
- HP - Hand Penetrometer (UCS kPa)
- VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
- PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
- D - Dry
- M - Moist
- W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

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

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File: 304100928 BH10 1 OF 1

RMS LIB 40.3 EXTERNAL M6E REV1.3.GLB Log RTA EXCAVATION 304100928_GILLIESTON.GPJ <<DrawingFile>> 08/Feb/2023 14:16 10.03.00.09 Cardno M6E

EXCAVATION - GEOLOGICAL LOG

PIT NO : BH11
FILE / JOB NO : 304100928
SHEET : 1 OF 1

PROJECT : Proposed School Redevelopment
LOCATION : Gillieston Public School

POSITION : E: 362379.585, N: 6375210.150 (56 MGA2020) | SURFACE ELEVATION : 25.695 (AHD)

EQUIPMENT TYPE : MI2 | METHOD : Auger Drilling

DATE EXCAVATED : 21/12/22 | LOGGED BY : PB | CHECKED BY : TH

EXCAVATION DIMENSIONS : 0.10 m LONG 0.10 m WIDE

DRILLING				MATERIAL							
PENETRATION (VE, E, F, H)	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	HAND PENETROMETER (100, 200, 300, 400)	STRUCTURE & Other Observations
	STABLE	Not Encountered		0.0			FILL: SILTY SAND: brown, fine grained sand, low plasticity silt, trace angular, medium to fine grained gravel, trace of rootlets	D	L		TOPSOIL
				0.30m			SILTY SAND: grey to pale grey, fine grained sand, low plasticity silt, trace angular, medium to fine grained, ironstone gravel				WEATHERED ROCK
				0.50m			EXCAVATION BH11 TERMINATED AT 0.50 m Auger refusal on medium strength rock				
				0.5							
				1.0							
				1.5							
				2.0							
				2.5							
				3.0							
				3.5							
				4.0							
				4.5							
				5.0							

PHOTOGRAPHS NOTES ☐ YES ☒ NO

METHOD
- N Natural Exposure
- E Existing Excavation
- BH Backhoe Bucket
- B Bulldozer Blade
- R Ripper

SUPPORT
- T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
- U50 - Undisturbed Sample 50 mm diameter
- D - Disturbed Sample
- B - Bulk Disturbed Sample
- MC - Moisture Content
- HP - Hand Penetrometer (UCS kPa)
- VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
- PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
- D - Dry
- M - Moist
- W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

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

STANTEC AUSTRALIA PTY LTD

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File: 304100928 BH11 1 OF 1

RMS LIB 40.3 EXTERNAL M6E REV1.3.GLB Log RTA EXCAVATION 304100928_GILLIESTON.GPJ <<DrawingFile>> 08/Feb/2023 14:16 10.03.00.09 Cardno M6E

EXCAVATION - GEOLOGICAL LOG

PIT NO : BH12
FILE / JOB NO : 304100928
SHEET : 1 OF 1

PROJECT : Proposed School Redevelopment
LOCATION : Gillieston Public School

POSITION : E: 362382.560, N: 6375243.284 (56 MGA2020) | SURFACE ELEVATION : 24.905 (AHD)
EQUIPMENT TYPE : MI2 | METHOD : Auger Drilling
DATE EXCAVATED : 21/12/22 | LOGGED BY : PB | CHECKED BY : TH
EXCAVATION DIMENSIONS : 0.10 m LONG 0.10 m WIDE

DRILLING | MATERIAL

VE / PENETRATION / E / F / H	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	HAND PENETRO-METER kPa 100 200 300 400	STRUCTURE & Other Observations
	STABLE	Not Encountered	0.20m D	0.0			FILL: SILTY SAND: brown, fine grained sand, low plasticity silt, trace angular, medium to fine grained gravel, trace of rootlets		L		TOPSOIL
			0.50m	0.5							
							0.80m CLAY: brown red, brown yellow and grey, medium to high plasticity, with fine grained sand, trace sub-rounded to rounded, medium to fine grained gravel	D	St		ALLUVIUM
				1.0		CI-CH					
			1.50m SPT 18/100mm HB N=R 1.60m	1.5			1.40m SILTY SAND: orange brown, pale grey, fine grained sand, low plasticity silt, trace angular to sub-angular, medium to fine grained gravel, inferred weathered sandstone 1.60m				WEATHERED ROCK
							EXCAVATION BH12 TERMINATED AT 1.60 m Auger refusal on medium strength rock				
				2.0							
				2.5							
				3.0							
				3.5							
				4.0							
				4.5							
				5.0							

PHOTOGRAPHS NOTES ☐ YES ☒ NO

METHOD
N Natural Exposure
E Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

SUPPORT
T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
U50 - Undisturbed Sample 50 mm diameter
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
HP - Hand Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
D - Dry
M - Moist
W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

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

STANTEC AUSTRALIA PTY LTD

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File: 304100928 BH12 1 OF 1

RMS LIB 40.3 EXTERNAL M6E REV1.3.GLB Log RTA EXCAVATION 304100928_GILLIESTON.GPJ <<DrawingFile>> 08/Feb/2023 14:16 10.03.00.09 Cardno M6E

EXCAVATION - GEOLOGICAL LOG

PIT NO : BH13
FILE / JOB NO : 304100928
SHEET : 1 OF 1

PROJECT : Proposed School Redevelopment
LOCATION : Gillieston Public School

POSITION : E: 362364.357, N: 6375226.656 (56 MGA2020) | SURFACE ELEVATION : 25.279 (AHD)
EQUIPMENT TYPE : MI2 | METHOD : Auger Drilling
DATE EXCAVATED : 21/12/22 | LOGGED BY : PB | CHECKED BY : TH
EXCAVATION DIMENSIONS : 0.10 m LONG 0.10 m WIDE

DRILLING | MATERIAL

PENETRATION (VE E F H)	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	HAND PENETRO-METER kPa (100 200 300 400)	STRUCTURE & Other Observations
	STABLE	Not Encountered	D 0.50m 0.70m SPT 10/10mm HB N=R 0.71m	0.0			FILL: SILTY SAND: brown, fine grained sand, low plasticity silt, trace angular, medium to fine grained gravel, trace of rootlets				TOPSOIL
							0.30m				
						CI-CH	CLAY: brown red, brown yellow and grey, medium to high plasticity, with fine grained sand, trace sub-rounded to rounded, medium to fine grained gravel	D	St		ALLUVIUM
				0.5			0.45m				
						CL	SILTY SAND: orange brown, brown-red, fine grained sand, low plasticity silt, trace angular to sub-angular, medium to fine grained, ironstone gravel		D		RESIDUAL SOIL
							0.60m				
							0.71m				WEATHERED ROCK
				1.0			SILTY SAND: pale grey, fine to medium grained sand, low plasticity silt, trace angular to sub-angular, medium to fine grained, ironstone gravel, inferred weathered sandstone				
							EXCAVATION BH13 TERMINATED AT 0.71 m Auger refusal on medium strength rock				
				1.5							
				2.0							
				2.5							
				3.0							
				3.5							
				4.0							
				4.5							
				5.0							

PHOTOGRAPHS NOTES ☐ YES ☒ NO

METHOD
N Natural Exposure
E Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

SUPPORT
T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
U50 - Undisturbed Sample 50 mm diameter
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
HP - Hand Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
D - Dry
M - Moist
W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

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

STANTEC AUSTRALIA PTY LTD

Stantec

File: 304100928 BH13 1 OF 1

RMS LIB 40.3 EXTERNAL M6E REV1.3.GLB Log RTA EXCAVATION 304100928_GILLIESTON.GPJ <<DrawingFile>> 08/Feb/2023 14:16 10.03.00.09 Cardno M6E

NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : BH14
FILE / JOB NO : 304100928
SHEET : 1 OF 2

PROJECT : Proposed School Redevelopment
LOCATION : Gillieston Public School

POSITION : E: 362352.234, N: 6375240.475 (56 MGA2020) SURFACE ELEVATION : 24.777 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : MI2 MOUNTING : Track CONTRACTOR : Stratacore DRILLER : ML

DATE STARTED : 20/12/22 DATE COMPLETED : 20/12/22 DATE LOGGED : 20/12/22 LOGGED BY : PB CHECKED BY : TH

DRILLING						MATERIAL					
PROGRESS: DRILLING & CASING	PROGRESS: WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m) RL (m AHD)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
AD/T HWT Casing		E	Not Encountered		0.0 24.8			FILL: SILTY SAND: brown, fine grained sand, low plasticity silt, trace angular, medium to fine grained gravel, trace of rootlets			TOPSOIL
					0.50m						
		F			0.5 24.3		CI-CH	CLAY: brown red, brown yellow and grey, medium to high plasticity, with fine grained sand, trace sub-rounded to rounded, medium to fine grained gravel	D	F	ALLUVIUM
					1.0 23.8						
		H			1.10m			SILTY SAND: pale grey, fine to medium grained sand, low plasticity silt, trace angular to sub-angular, medium to fine grained, ironestone gravel			WEATHERED ROCK
				1.50m SPT 10/100mm HB N=R 1.60m	1.5 23.3			colour becomming orange brown			
					1.60m			Continued as Cored Drill Hole			
					2.0 22.8						
					2.5 22.3						
					3.0 21.8						
					3.5 21.3						
					4.0 20.8						
					4.5 20.3						
					5.0 19.8						

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

STANTEC AUSTRALIA PTY LTD

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File: 304100928 BH14 1 OF 2

RMS LIB 40.3 EXTERNAL M6E REV1.3.GLB Log RTA NON-CORE DRILL HOLE 2 304100928_GILLIESTON.GPJ <<DrawingFile>> 08/Feb/2023 14:17 10.03.00.09 Cardno M6E

CORED DRILL HOLE LOG

HOLE NO : BH14
FILE / JOB NO : 304100928
SHEET : 2 OF 2

PROJECT : Proposed School Redevelopment
LOCATION : Gillieston Public School

POSITION : E: 362352.234, N: 6375240.475 (56 MGA2020) SURFACE ELEVATION : 24.777 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : MI2 MOUNTING : Track CONTRACTOR : Stratacore DRILLER : ML

DATE STARTED : 20/12/22 DATE COMPLETED : 20/12/22 DATE LOGGED : 20/12/22 LOGGED BY : PB CHECKED BY : TH

CASING DIAMETER : HWT BARREL (Length) : 3.00 m BIT : Stepped BIT CONDITION : good

DRILLING					MATERIAL				FRACTURES	
PROGRESS: DRILLING & CASING	PROGRESS: WATER	(CORE LOSS RUN %) / DRILL DEPTH	RQD (%)	SAMPLES & FIELD TESTS	DEPTH (m) / RL (m AHD)	GRAPHIC LOG	DESCRIPTION ROCK TYPE : Colour, Grain size, Structure (texture, fabric, mineral composition, hardness alteration, cementation, etc as applicable)	Weathering	NATURAL FRACTURE (mm)	ADDITIONAL DATA (joints, partings, seams, zones, etc) Description, orientation, infilling or coating, shape, roughness, thickness, other
					0.0 / 24.8					
					0.5 / 24.3					
					1.0 / 23.8					
					1.5 / 23.3					
					1.60m		START CORING AT 1.60m			
HQ	10% LOSS	0% LOSS 2.05	22	Is(50) d=0.03 a=0.03 MPa	2.0 / 22.8		SANDSTONE: brown, orange brown and pale grey, medium to fine grained, bedded at 0-10 degrees	EW HW		1.60-1.61: DB 1.61: DB 1.75: BP 0 - 5° Fe SN IR RF 1.83: BP 25° Fe SN CU RF 1.85: BP 25° Fe SN CU RF 1.89: BP 25° Fe SN CU RF 1.91-1.95: JT 70° Fe SN IR RF 1.95-1.97: EWS 1.97-2.10: JT 80° Fe SN IR RF
					2.10m					
	10% LOSS	7% LOSS 3.00	38	Is(50) d=0.14 a=0.96 MPa	2.5 / 22.3		CONGLOMERATE: orange brown, coarse grained, clast supported, clast range from gravel to pebbles, pebble dominated, sub-rounded to sub-angular clast, silicious and clay are the cementing material	EW HW		2.10-2.25: Fz
					2.19m		SANDSTONE: brown, pale grey and orange brown, medium to fine grained, bedded at 0-10 degrees	HW HW		2.29-2.30: EWS 2.34: BP 0° Fe SN PR RF 2.36-2.41: JT 45° Fe SN IR RF 2.37-2.41: JT 40° Fe SN IR RF 2.41-2.44: JT 45° Fe SN IR RF 2.44-2.48: JT 45° Fe SN IR RF 2.51: BP 10° Fe SN IR RF 2.59-2.62: JT 35° Fe SN IR RF 2.63: DB 2.66-2.72: JT 35° Sand IR RF
					2.70m					
					2.93m		CONGLOMERATE: orange brown, pale grey, medium to coarse grained, matrix supported, clast range from gravel to pebbles, gravel dominated, sub angular to sub-rounded clast, silicious material, sand and clay are the cementing material and matrix	HW		2.71-2.92: EWS
					3.00m		CORE LOSS 0.07m (2.93-3.00)	MW		
	10% LOSS	0% LOSS 3.68	51	Is(50) d=0.91 a=0.96 MPa	3.0 / 21.8		SANDSTONE: brown, pale grey, medium to fine grained, bedded at 0-10 degrees, trace of pebbles, sub-angular to sub-rounded, medium to fine grained	EW MW to HW SW HW SW		3.02-3.05: JT 25° Sand PR RF 3.06: BP 0° Sand PR S 3.15: BP 0° Fe SN PR S 3.18: BP 20° Fe SN PR S 3.20-3.22: EWS 3.23: DB 3.29-3.31: EWS 3.36-3.41: JT 65° Fe SN IR S 3.43-3.47: EWS 3.48: BP 10° Fe SN PR S 3.50-3.53: EWS
					3.5 / 21.3					
					3.68m		BOREHOLE BH14 TERMINATED AT 3.68 m Target depth			
					4.0 / 20.8					
					4.5 / 20.3					
					5.0 / 19.8					

ESTIMATED STRENGTH Is(50) — ● - Axial ○ - Diametral
VL -0.1 L -0.4 M -1.3 H -3.8 VH -12.5 EH
NATURAL FRACTURE (mm): 20 40 100 300 1000

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

STANTEC AUSTRALIA PTY LTD

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RMS LIB 40.3 EXTERNAL M6E REV1.3.GLB Log RTA CORED DRILL HOLE 5 304100928_GILLIESTON.GPJ <<DrawingFile>> 08/Feb/2023 14:29 10.03.00.09 Cardno M6E

Stantec	TITLE: **Borehole Core Photographs – BH14** **Gillieston Public School**			
	PROJECT NO: **304100928**	TEST DATE: **20/12/2022**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **1.6-3.68m (2.08 m Length)**
	DRILL RIG: **MI2**	CONTRACTOR: **Stratacore**	LOGGED BY: **PB**	CHECKED BY: **TH**



EXCAVATION - GEOLOGICAL LOG

PIT NO : BH15
FILE / JOB NO : 304100928
SHEET : 1 OF 1

PROJECT : Proposed School Redevelopment
LOCATION : Gillieston Public School

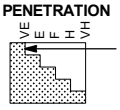
POSITION : E: 362343.297, N: 6375226.124 (56 MGA2020) | SURFACE ELEVATION : 24.989 (AHD)
EQUIPMENT TYPE : MI2 | METHOD : Auger Drilling
DATE EXCAVATED : 20/12/22 | LOGGED BY : PB | CHECKED BY : TH
EXCAVATION DIMENSIONS : 0.10 m LONG 0.10 m WIDE

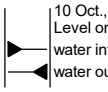
DRILLING				MATERIAL						
PENETRATION (VE, E, F, H)	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	HAND PENETRO-METER kPa (100, 200, 300, 400)	STRUCTURE & Other Observations
	STABLE	Not Encountered	1.25m SPT 10/50mm HB N=R 1.30m	0.0			FILL: SILTY SAND: brown, fine grained sand, low plasticity silt, trace angular, medium to fine grained gravel, trace of rootlets	D			TOPSOIL
				0.40m							
				0.5		SM	SILTY SAND: brown, grey, fine grained sand, low plasticity silt, trace sub-rounded to rounded, medium to fine grained, ironstone gravel, trace medium to high plasticity clay		MD		FILL
				0.60m							
						CI-CH	CLAY: brown red, brown yellow and grey, medium to high plasticity, with fine grained sand, trace sub-rounded to rounded, medium to fine grained gravel	M	VSt		ALLUVIUM
				1.00m							
				1.0			SANDSTONE: recovered as silty sand, grey, orange brown, inferred extremely weathered sandstone, very low strength	D			WEATHERED ROCK
				1.30m			EXCAVATION BH15 TERMINATED AT 1.30 m Auger refusal on medium strength rock				
				1.5							
				2.0							
				2.5							
				3.0							
				3.5							
				4.0							
				4.5							
				5.0							

PHOTOGRAPHS NOTES ☐ YES ☒ NO

METHOD
N Natural Exposure
E Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

SUPPORT
T Timbering

PENETRATION


WATER


SAMPLES & FIELD TESTS
U50 - Undisturbed Sample 50 mm diameter
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
HP - Hand Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
D - Dry
M - Moist
W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

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

STANTEC AUSTRALIA PTY LTD

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File: 304100928 BH15 1 OF 1

RMS LIB 40.3 EXTERNAL M6E REV1.3.GLB Log RTA EXCAVATION 304100928_GILLIESTON.GPJ <<DrawingFile>> 08/Feb/2023 14:16 10.03.00.09 Cardno M6E

EXCAVATION - GEOLOGICAL LOG

PIT NO : BH16
FILE / JOB NO : 304100928
SHEET : 1 OF 1

PROJECT : Proposed School Redevelopment
LOCATION : Gillieston Public School

POSITION : E: 362331.221, N: 6375179.241 (56 MGA2020) | SURFACE ELEVATION : 26.038 (AHD)
EQUIPMENT TYPE : MI2 | METHOD : Auger Drilling
DATE EXCAVATED : 21/12/22 | LOGGED BY : PB | CHECKED BY : TH
EXCAVATION DIMENSIONS : 0.10 m LONG 0.10 m WIDE

DRILLING | MATERIAL

PENETRATION (VE, E, F, H)	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	HAND PENETRO-METER kPa (100, 200, 300, 400)	STRUCTURE & Other Observations
	STABLE	Not Encountered		0.0			FILL: SILTY SAND: brown, fine grained sand, low plasticity silt, trace angular, medium to fine grained gravel, trace of rootlets	D	D		TOPSOIL
				0.5							
				1.0			1.00m GRAVELLY SAND: brown, brown-red, fine grained sand, angular to sub-angular, medium to fine grained, ironstone gravel, trace low plasticity silt, inferred weathered sandstone				WEATHERED ROCK
			1.50m SPT 10/10mm HB N=R 1.51m	1.5			1.51m EXCAVATION BH16 TERMINATED AT 1.51 m Auger refusal on medium strength rock				
				2.0							
				2.5							
				3.0							
				3.5							
				4.0							
				4.5							
				5.0							

PHOTOGRAPHS NOTES ☐ YES ☒ NO

METHOD
N Natural Exposure
E Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

SUPPORT
T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
U50 - Undisturbed Sample 50 mm diameter
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
HP - Hand Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
D - Dry
M - Moist
W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

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

STANTEC AUSTRALIA PTY LTD

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File: 304100928 BH16 1 OF 1

RMS LIB 40.3 EXTERNAL M6E REV1.3.GLB Log RTA EXCAVATION 304100928_GILLIESTON.GPJ <<DrawingFile>> 08/Feb/2023 14:16 10.03.00.09 Cardno M6E

EXCAVATION - GEOLOGICAL LOG

PIT NO : BH17
FILE / JOB NO : 304100928
SHEET : 1 OF 1

PROJECT : Proposed School Redevelopment
LOCATION : Gillieston Public School

POSITION : E: 362316.507, N: 6375167.385 (56 MGA2020) | SURFACE ELEVATION : 25.205 (AHD)
EQUIPMENT TYPE : MI2 | METHOD : Auger Drilling
DATE EXCAVATED : 21/12/22 | LOGGED BY : PB | CHECKED BY : TH
EXCAVATION DIMENSIONS : 0.10 m LONG 0.10 m WIDE

DRILLING					MATERIAL						
PENETRATION (VE, E, F, H)	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	HAND PENETRO-METER (100, 200, 300, 400 kPa)	STRUCTURE & Other Observations
VE	STABLE	Not Encountered	0.90m SPT 10/10mm HB N=R 0.91m	0.0			FILL: SILTY SAND: brown, fine grained sand, low plasticity silt, trace angular, medium to fine grained gravel, trace of rootlets				TOPSOIL
							0.30m SILTY SAND: brown-red, brown-yellow, fine grained sand, low plasticity silt, with medium to high plasticity clay, trace angular, medium to fine grained gravel	D	D		RESIDUAL SOIL
				0.5		SM	0.60m SILTY SAND: pale grey, medium to fine grained sand, low plasticity silt, trace angular, fine grained gravel, inferred weathered sandstone				WEATHERED ROCK
							0.91m EXCAVATION BH17 TERMINATED AT 0.91 m Auger refusal on medium strength rock				
				1.0							
				1.5							
				2.0							
				2.5							
				3.0							
				3.5							
				4.0							
				4.5							
				5.0							

PHOTOGRAPHS NOTES ☐ YES ☒ NO

METHOD
- N Natural Exposure
- E Existing Excavation
- BH Backhoe Bucket
- B Bulldozer Blade
- R Ripper

SUPPORT
- T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
- U50 - Undisturbed Sample 50 mm diameter
- D - Disturbed Sample
- B - Bulk Disturbed Sample
- MC - Moisture Content
- HP - Hand Penetrometer (UCS kPa)
- VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
- PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
- D - Dry
- M - Moist
- W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

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

STANTEC AUSTRALIA PTY LTD

Stantec

File: 304100928 BH17 1 OF 1

RMS LIB 40.3 EXTERNAL M6E REV1.3.GLB Log RTA EXCAVATION 304100928_GILLIESTON.GPJ <<DrawingFile>> 08/Feb/2023 14:16 10.03.00.09 Cardno M6E

EXCAVATION - GEOLOGICAL LOG

PIT NO : BH18
FILE / JOB NO : 304100928
SHEET : 1 OF 1

PROJECT : Proposed School Redevelopment
LOCATION : Gillieston Public School

POSITION : E: 362324.695, N: 6375150.118 (56 MGA2020) | SURFACE ELEVATION : 26.495 (AHD)
EQUIPMENT TYPE : MI2 | METHOD : Auger Drilling
DATE EXCAVATED : 21/12/22 | LOGGED BY : PB | CHECKED BY : TH
EXCAVATION DIMENSIONS : 0.10 m LONG 0.10 m WIDE

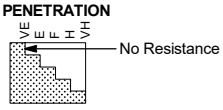
DRILLING | MATERIAL

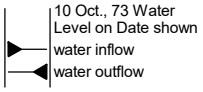
PENETRATION (VE / E / F / H)	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION (Soil Type, Colour, Plasticity or Particle Characteristic; Secondary and Minor Components)	MOISTURE CONDITION	CONSISTENCY / RELATIVE DENSITY	HAND PENETROMETER kPa (100 / 200 / 300 / 400)	STRUCTURE & Other Observations
VE	STABLE	Not Encountered	0.50m D	0.0			FILL: SILTY SAND: brown, fine grained sand, low plasticity silt, trace angular, medium to fine grained gravel, trace of rootlets	D	L		TOPSOIL
				0.5			0.60m				
						SM	SILTY SAND: orange-brown, fine grained sand, low plasticity silt, trace angular, medium to fine grained, ironstone gravel, trace medium to high plasticity clay		D		RESIDUAL SOIL
			1.00m				0.95m				
			1.20m	1.0			SILTY SAND: pale grey, medium to fine grained sand, low plasticity silt, trace angular, fine grained, ironstone gravel, inferred weathered sandstone		VD		WEATHERED ROCK
			SPT 10/10mm HB N=R 1.21m				1.21m EXCAVATION BH18 TERMINATED AT 1.21 m Auger refusal on medium strength rock				
				1.5							
				2.0							
				2.5							
				3.0							
				3.5							
				4.0							
				4.5							
				5.0							

PHOTOGRAPHS NOTES ☐ YES ☒ NO

METHOD
N Natural Exposure
E Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

SUPPORT
T Timbering

PENETRATION


WATER


SAMPLES & FIELD TESTS
U50 - Undisturbed Sample 50 mm diameter
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
HP - Hand Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
D - Dry
M - Moist
W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

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

STANTEC AUSTRALIA PTY LTD

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File: 304100928 BH18 1 OF 1

RMS LIB 40.3 EXTERNAL M6E REV1.3.GLB Log RTA EXCAVATION 304100928_GILLIESTON.GPJ <<DrawingFile>> 08/Feb/2023 14:16 10.03.00.09 Cardno M6E

EXCAVATION - GEOLOGICAL LOG

PIT NO : BH19
FILE / JOB NO : 304100928
SHEET : 1 OF 1

PROJECT : Proposed School Redevelopment
LOCATION : Gillieston Public School

POSITION : E: 362352.390, N: 6375188.685 (56 MGA2020) | SURFACE ELEVATION : 26.667 (AHD)
EQUIPMENT TYPE : MI2 | METHOD : Auger Drilling
DATE EXCAVATED : 21/12/22 | LOGGED BY : PB | CHECKED BY : TH
EXCAVATION DIMENSIONS : 0.10 m LONG 0.10 m WIDE

DRILLING | MATERIAL

DEPTH (m)	PENETRATION (VE E F H)	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	HAND PENETRO-METER kPa	STRUCTURE & Other Observations
0.0		STABLE	Not Encountered				FILL: SILTY SAND: brown, fine grained sand, low plasticity silt, trace angular, medium to fine grained gravel, trace of rootlets	D			TOPSOIL
							0.40m				
0.5						CI-CH	CLAY: brown red, brown yellow and grey, medium to high plasticity, with fine grained sand, trace sub-rounded to rounded, medium to fine grained gravel		St		ALLUVIUM
				1.00m D							
1.0							1.00m				
						SM	SILTY SAND: orange brown, fine grained sand, low plasticity silt, trace angular to sub-angular, medium to fine grained, ironestone gravel, trace medium to high plasticity clay		D		RESIDUAL SOIL
							1.30m				
1.5				1.50m SPT 5, 15/50mm HB N=R 1.70m			SILTY SAND: pale grey, fine to medium grained sand, low plasticity silt, trace angular to sub-angular, medium to fine grained, ironestone gravel, inferred sandstone				WEATHERED ROCK
							1.70m				
							EXCAVATION BH19 TERMINATED AT 1.70 m Auger refusal on medium strength rock				
2.0											
2.5											
3.0											
3.5											
4.0											
4.5											
5.0											

PHOTOGRAPHS NOTES ☐ YES ☒ NO

METHOD
N Natural Exposure
E Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

SUPPORT
T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
U50 - Undisturbed Sample 50 mm diameter
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
HP - Hand Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
D - Dry
M - Moist
W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

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

STANTEC AUSTRALIA PTY LTD

Stantec

File: 304100928 BH19 1 OF 1

RMS LIB 40.3 EXTERNAL M6E REV1.3.GLB Log RTA EXCAVATION 304100928_GILLIESTON.GPJ <<DrawingFile>> 08/Feb/2023 14:16 10.03.00.09 Cardno M6E

EXCAVATION - GEOLOGICAL LOG

PIT NO : BH20
FILE / JOB NO : 304100928
SHEET : 1 OF 1

PROJECT : Proposed School Redevelopment
LOCATION : Gillieston Public School

POSITION : E: 362348.789, N: 6375146.458 (56 MGA2020) | SURFACE ELEVATION : 28.080 (AHD)
EQUIPMENT TYPE : MI2 | METHOD : Auger Drilling
DATE EXCAVATED : 21/12/22 | LOGGED BY : PB | CHECKED BY : TH
EXCAVATION DIMENSIONS : 0.10 m LONG 0.10 m WIDE

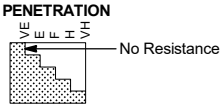
DRILLING | MATERIAL

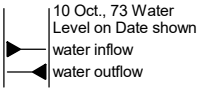
PENETRATION (VE E F H)	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION (Soil Type, Colour, Plasticity or Particle Characteristic, Secondary and Minor Components)	MOISTURE CONDITION	CONSISTENCY / RELATIVE DENSITY	HAND PENETROMETER (kPa)	STRUCTURE & Other Observations
	STABLE	Not Encountered	0.50m D	0.0			FILL: SILTY SAND: brown, fine grained sand, low plasticity silt, trace angular, medium to fine grained gravel, trace of rootlets	D	St	100 200 300 400	TOPSOIL
				0.5		CI-CH	0.50m CLAY: brown red, brown yellow and grey, medium to high plasticity, with fine grained sand, trace sub-rounded to rounded, medium to fine grained gravel				ALLUVIUM
			1.00m	1.0		SM	1.10m SILTY SAND: orange brown, fine grained sand, low plasticity silt, trace angular to sub-angular, medium to fine grained, ironestone gravel, trace medium to high plasticity clay		D		RESIDUAL SOIL
			1.50m SPT 10/10mm HB N=R 1.51m	1.5			1.30m SILTY SAND: pale grey, fine to medium grained sand, low plasticity silt, trace angular to sub-angular, medium to fine grained, ironestone gravel, inferred sandstone 1.51m				WEATHERED ROCK
							EXCAVATION BH20 TERMINATED AT 1.51 m Auger refusal on medium strength rock				
				2.0							
				2.5							
				3.0							
				3.5							
				4.0							
				4.5							
				5.0							

PHOTOGRAPHS NOTES ☐ YES ☒ NO

METHOD
N Natural Exposure
E Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

SUPPORT
T Timbering

PENETRATION


WATER


SAMPLES & FIELD TESTS
U50 - Undisturbed Sample 50 mm diameter
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
HP - Hand Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
D - Dry
M - Moist
W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

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

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File: 304100928 BH20 1 OF 1

RMS LIB 40.3 EXTERNAL M6E REV1.3.GLB Log RTA EXCAVATION 304100928_GILLIESTON.GPJ <<DrawingFile>> 08/Feb/2023 14:16 10.03.00.09 Cardno M6E

EXCAVATION - GEOLOGICAL LOG

PIT NO : BH21
FILE / JOB NO : 304100928
SHEET : 1 OF 1

PROJECT : Proposed School Redevelopment
LOCATION : Gillieston Public School

POSITION : E: 362369.477, N: 6375164.614 (56 MGA2020) | SURFACE ELEVATION : 27.880 (AHD)
EQUIPMENT TYPE : MI2 | METHOD : Auger Drilling
DATE EXCAVATED : 21/12/22 | LOGGED BY : PB | CHECKED BY : TH
EXCAVATION DIMENSIONS : 0.10 m LONG 0.10 m WIDE

DRILLING | MATERIAL

PENETRATION (VE E F H)	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	HAND PENETRO-METER kPa (100 200 300 400)	STRUCTURE & Other Observations
	STABLE	Not Encountered	D 0.50m	0.0			FILL: SILTY SAND: brown, fine grained sand, low plasticity silt, trace angular, medium to fine grained gravel, trace of rootlets				TOPSOIL
				0.40m				D			
				0.5			SILTY SAND: orange brown, grey, fine grained sand, low plasticity silt, trace angular to sub-angular, medium to fine grained, ironestone gravel, inferred weathered sandstone				WEATHERED ROCK
				0.80m			EXCAVATION BH21 TERMINATED AT 0.80 m Auger refusal on medium strength rock				
				1.0							
				1.5							
				2.0							
				2.5							
				3.0							
				3.5							
				4.0							
				4.5							
				5.0							

PHOTOGRAPHS NOTES ☐ YES ☒ NO

METHOD
- N Natural Exposure
- E Existing Excavation
- BH Backhoe Bucket
- B Bulldozer Blade
- R Ripper

SUPPORT
- T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
- U50 - Undisturbed Sample 50 mm diameter
- D - Disturbed Sample
- B - Bulk Disturbed Sample
- MC - Moisture Content
- HP - Hand Penetrometer (UCS kPa)
- VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
- PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
- D - Dry
- M - Moist
- W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

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

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File: 304100928 BH21 1 OF 1

RMS LIB 40.3 EXTERNAL M6E REV1.3.GLB Log RTA EXCAVATION 304100928_GILLIESTON.GPJ <<DrawingFile>> 08/Feb/2023 14:16 10.03.00.09 Cardno M6E

EXCAVATION - GEOLOGICAL LOG

PIT NO : BH22
FILE / JOB NO : 304100928
SHEET : 1 OF 1

PROJECT : Proposed School Redevelopment
LOCATION : Gillieston Public School

POSITION : E: 362382.597, N: 6375162.292 (56 MGA2020) | SURFACE ELEVATION : 27.659 (AHD)

EQUIPMENT TYPE : MI2 | METHOD : Auger Drilling

DATE EXCAVATED : 21/12/22 | LOGGED BY : PB | CHECKED BY : TH

EXCAVATION DIMENSIONS : 0.10 m LONG 0.10 m WIDE

DRILLING					MATERIAL						
PENETRATION (VE, E, F, H)	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	HAND PENETROMETER (100, 200, 300, 400 kPa)	STRUCTURE & Other Observations
	STABLE	Not Encountered	1.50m SPT 5, 10/10mm HB N=R 1.66m	0.0			FILL: SILTY SAND: brown, fine grained sand, low plasticity silt, trace angular, medium to fine grained gravel, trace of rootlets				TOPSOIL
				0.5			0.60m CLAY: brown red, brown yellow and grey, medium to high plasticity, with fine grained sand, trace sub-rounded to rounded, medium to fine grained gravel	D	St		ALLUVIUM
				1.0		CI-CH	1.10m SILTY SAND: orange brown, fine grained sand, low plasticity silt, trace angular to sub-angular, medium to fine grained, ironestone gravel, trace medium to high plasticity clay		D		RESIDUAL SOIL
				1.5		SM	1.40m SILTY SAND: pale grey, fine to medium grained sand, low plasticity silt, trace angular to sub-angular, medium to fine grained, ironestone gravel, inferred weathered sandstone				WEATHERED ROCK
				2.0			1.66m EXCAVATION BH22 TERMINATED AT 1.66 m Auger refusal on medium strength rock				
				2.5							
				3.0							
				3.5							
				4.0							
				4.5							
				5.0							

PHOTOGRAPHS NOTES ☐ YES ☒ NO

METHOD
- N Natural Exposure
- E Existing Excavation
- BH Backhoe Bucket
- B Bulldozer Blade
- R Ripper

SUPPORT
- T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
- U50 - Undisturbed Sample 50 mm diameter
- D - Disturbed Sample
- B - Bulk Disturbed Sample
- MC - Moisture Content
- HP - Hand Penetrometer (UCS kPa)
- VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
- PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
- D - Dry
- M - Moist
- W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

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

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File: 304100928 BH22 1 OF 1

RMS LIB 40.3 EXTERNAL M6E REV1.3.GLB Log RTA EXCAVATION 304100928_GILLIESTON.GPJ <<DrawingFile>> 08/Feb/2023 14:16 10.03.00.09 Cardno M6E

EXCAVATION - GEOLOGICAL LOG

PIT NO : BH23
FILE / JOB NO : 304100928
SHEET : 1 OF 1

PROJECT : Proposed School Redevelopment
LOCATION : Gillieston Public School

POSITION : E: 362373.044, N: 6375146.309 (56 MGA2020) | SURFACE ELEVATION : 28.565 (AHD)
EQUIPMENT TYPE : MI2 | METHOD : Auger Drilling
DATE EXCAVATED : 21/12/22 | LOGGED BY : PB | CHECKED BY : TH
EXCAVATION DIMENSIONS : 0.10 m LONG 0.10 m WIDE

DRILLING | MATERIAL

PENETRATION (VE E F H)	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	HAND PENETRO-METER kPa	STRUCTURE & Other Observations
	STABLE	Not Encountered	1.50m SPT 13/130mm HB N=R 1.63m	0.0			FILL: SILTY SAND: brown, fine grained sand, low plasticity silt, trace angular, medium to fine grained gravel, trace of rootlets				TOPSOIL
				0.5			0.50m				
						CI-CH	CLAY: brown red, brown yellow and grey, medium to high plasticity, with fine grained sand, trace sub-rounded to rounded, medium to fine grained gravel 0.65m		St		ALLUVIUM
				1.0			SILTY SAND: pale grey, orange brown, fine to medium grained sand, low plasticity silt, trace angular to sub-angular, medium to fine grained, ironestone gravel, inferred weathered sandstone	D			WEATHERED ROCK
				1.5			1.63m EXCAVATION BH23 TERMINATED AT 1.63 m Auger refusal on medium strength rock				
				2.0							
				2.5							
				3.0							
				3.5							
				4.0							
				4.5							
				5.0							

PHOTOGRAPHS NOTES ☐ YES ☒ NO

METHOD
N Natural Exposure
E Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

SUPPORT
T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
U50 - Undisturbed Sample 50 mm diameter
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
HP - Hand Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
D - Dry
M - Moist
W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

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

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File: 304100928 BH23 1 OF 1

RMS LIB 40.3 EXTERNAL M6E REV1.3.GLB Log RTA EXCAVATION 304100928_GILLIESTON.GPJ <<DrawingFile>> 08/Feb/2023 14:16 10.03.00.09 Cardno M6E

EXCAVATION - GEOLOGICAL LOG

PIT NO : BH24
FILE / JOB NO : 304100928
SHEET : 1 OF 1

PROJECT : Proposed School Redevelopment
LOCATION : Gillieston Public School

POSITION : E: 362397.539, N: 6375156.658 (56 MGA2020) | SURFACE ELEVATION : 27.043 (AHD)
EQUIPMENT TYPE : MI2 | METHOD : Auger Drilling
DATE EXCAVATED : 21/12/22 | LOGGED BY : PB | CHECKED BY : TH
EXCAVATION DIMENSIONS : 0.10 m LONG 0.10 m WIDE

DRILLING				MATERIAL						
PENETRATION (VE, E, F, H)	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	HAND PENETRO-METER kPa	STRUCTURE & Other Observations
	STABLE	Not Encountered	0.50m D	0.0			FILL: SILTY SAND: brown, fine grained sand, low plasticity silt, trace angular, medium to fine grained gravel, trace of rootlets				TOPSOIL
				0.30m			SILTY SAND: pale grey, orange brown, fine to medium grained sand, low plasticity silt, trace angular to sub-angular, medium to fine grained, ironestone gravel, inferred weathered sandstone	D			WEATHERED ROCK
			1.00m SPT 10/10mm HB N=R 1.01m	1.01m			EXCAVATION BH24 TERMINATED AT 1.01 m Auger refusal on medium strength rock				
				5.0							

PHOTOGRAPHS NOTES ☐ YES ☒ NO

METHOD
- N Natural Exposure
- E Existing Excavation
- BH Backhoe Bucket
- B Bulldozer Blade
- R Ripper

SUPPORT
- T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
- U50 - Undisturbed Sample 50 mm diameter
- D - Disturbed Sample
- B - Bulk Disturbed Sample
- MC - Moisture Content
- HP - Hand Penetrometer (UCS kPa)
- VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
- PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
- D - Dry
- M - Moist
- W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

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

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File: 304100928 BH24 1 OF 1

RMS LIB 40.3 EXTERNAL M6E REV1.3.GLB Log RTA EXCAVATION 304100928_GILLIESTON.GPJ <<DrawingFile>> 08/Feb/2023 14:16 10.03.00.09 Cardno M6E

NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : BH25
FILE / JOB NO : 304100928
SHEET : 1 OF 2

PROJECT : Proposed School Redevelopment
LOCATION : Gillieston Public School

POSITION : E: 362395.898, N: 6375142.870 (56 MGA2020) SURFACE ELEVATION : 27.949 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : MI2 MOUNTING : Track CONTRACTOR : Stratacore DRILLER : ML

DATE STARTED : 20/12/22 DATE COMPLETED : 20/12/22 DATE LOGGED : 20/12/22 LOGGED BY : PB CHECKED BY : TH

DRILLING						MATERIAL					
PROGRESS: DRILLING & CASING	PROGRESS: WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m) RL (m AHD)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
AD/T HWT Casing		E	Not Encountered		0.0 27.9			FILL: SILTY SAND: brown, fine grained sand, low plasticity silt, trace angular, medium to fine grained gravel, trace of rootlets			TOPSOIL
								0.40m			
		F			0.5 27.4		SM	SILTY SAND: orange-brown, fine grained sand, low plasticity silt, trace sub-angular to sub-rounded, medium to fine grained gravel	D	D	FILL
				0.90m D				0.90m			
					1.0 26.9		CI-CH	CLAY: brown red, brown yellow and grey, medium to high plasticity, with fine grained sand, trace sub-rounded to rounded, medium to fine grained gravel		VSt	ALLUVIUM
		H		1.30m SPT 15/80mm				1.10m SILTY SAND: pale grey, fine to medium grained sand, low plasticity silt, trace angular to sub-angular, medium to fine grained, ironestone gravel, inferred weathered sandstone			WEATHERED ROCK
				HB N=R 1.38m				1.38m Continued as Cored Drill Hole			
					1.5 26.4						
					2.0 25.9						
					2.5 25.4						
					3.0 24.9						
					3.5 24.4						
					4.0 23.9						
					4.5 23.4						
					5.0 22.9						

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

STANTEC AUSTRALIA PTY LTD

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File: 304100928 BH25 1 OF 2

RMS LIB 40.3 EXTERNAL M6E REV1.3.GLB Log RTA NON-CORE DRILL HOLE 2 304100928_GILLIESTON.GPJ <<DrawingFile>> 08/Feb/2023 14:17 10.03.00.09 Cardno M6E

CORED DRILL HOLE LOG

HOLE NO : BH25
FILE / JOB NO : 304100928
SHEET : 2 OF 2

PROJECT : Proposed School Redevelopment
LOCATION : Gillieston Public School

POSITION : E: 362395.898, N: 6375142.870 (56 MGA2020) SURFACE ELEVATION : 27.949 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : MI2 MOUNTING : Track CONTRACTOR : Stratacore DRILLER : ML

DATE STARTED : 20/12/22 DATE COMPLETED : 20/12/22 DATE LOGGED : 20/12/22 LOGGED BY : PB CHECKED BY : TH

CASING DIAMETER : HWT BARREL (Length) : 3.00 m BIT : Stepped BIT CONDITION : good

DRILLING					MATERIAL				FRACTURES	
PROGRESS: DRILLING & CASING	PROGRESS: WATER	(CORE LOSS RUN %) / DRILL DEPTH	RQD (%)	SAMPLES & FIELD TESTS	DEPTH (m) / RL (m AHD)	GRAPHIC LOG	DESCRIPTION ROCK TYPE : Colour, Grain size, Structure (texture, fabric, mineral composition, hardness alteration, cementation, etc as applicable)	Weathering	NATURAL FRACTURE (mm)	ADDITIONAL DATA (joints, partings, seams, zones, etc) Description, orientation, infilling or coating, shape, roughness, thickness, other
					0.0 27.9					
					0.5 27.4					
					1.0 26.9					
					1.38m		START CORING AT 1.38m			
HQ	0% LOSS	0% LOSS 2.58	36	Is(50) d=0.65 a=0.79 MPa	1.5 26.4		SANDSTONE: pale grey, brown and orange brown, medium to coarse grained, 1-5 % carbonaceous lamination at 10-50 degrees, dark grey, trace of ironstone gravel	SW to MW		1.44: BP 5 - 10° Fe SN CU RF 1.50: BP 5° Fe SN PR RF 1.60: DB 1.67-1.70: JT 35° Sand IR RF
					2.0 25.9			MW		1.85: BP 0 - 5° Fe SN PR RF 1.87: BP 0 - 5° Fe SN PR RF 1.90: BP 0 - 5° Fe SN PR RF 1.91: BP 0° Sand PR RF 1.92-2.00: FZ 2.05-2.07: JT 55° Fe SN IR RF 2.06: BP 5° Fe SN PR RF 2.12: BP 5° Fe SN UN RF 2.12-2.19: JT 45° Fe SN CU RF 2.15-2.19: JT 60° Fe SN IR RF 2.19-2.22: JT 40° Fe SN IR RF 2.19-2.24: JT 65° Fe SN IR RF 2.24-2.28: FZ 2.43: BP 5° Fe SN IR RF 2.43-2.49: FZ 2.58: EOR
				Is(50) d=0.11 a=0.16 MPa	2.5 25.4			SW		
	10% LOSS	10% LOSS 3.82	48	UCS =13 MPa 2.92m						2.64-2.68: JT 55° Fe SN ST RF 2.67: DB 2.74: BP 0° Fe SN PR RF
				Is(50) d=1.2 a=0.67 MPa	3.0 24.9			EW SW		2.91: DB 2.97-3.00: JT 45° Fe SN IR RF 3.00-3.30: CS 3.21: DB 3.26-3.29: BP 35° Fe SN IR RF 3.32-3.40: JT 75° Sand IR RF
								EW		
					3.40m			HW		
					3.5 24.4		SANDSTONE: pale grey to grey, medium to fine grained, 10-15 % of carbonaceous lamination at 10-20 degrees, dark grey, with gravel medium to fine grained, rounded to sub-rounded			
					3.70m			EW		3.61-3.63: JT 45° Sand CU RF 3.64: BP 0° Sand PR RF 3.70: BP 0° Sand PR RF 3.70-3.82: Core Loss
					3.82m		CORE LOSS 0.12m (3.70-3.82)			
	10% LOSS	52% LOSS 4.42	22		3.86m		SANDSTONE: grey, brown yellow, medium to coarse grained, with gravel, medium to fine grained, rounded to sub-rounded	EW		
					4.0 23.9		CORE LOSS 0.31m (3.86-4.17)			3.86-4.17: Core Loss
					4.17m					
							SANDSTONE: pale grey, brown and brown yellow, medium to coarse grained, with gravel, medium to fine grained, rounded to sub-angular	MW		4.17-4.29: FZ
					4.5 23.4			EW		4.36-4.42: FZ 4.49: DB 4.52-4.59: FZ
	10% LOSS	0% LOSS 5.00	35	Is(50) d=0.33 a=0.25 MPa						4.69: DB 4.75: BP 0° Sand CU S
								SW		4.70-5.00: JT 50° Fe SN PR RF 4.84-4.86: JT 45° Fe SN PR RF 4.88-4.92: JT 45° Fe SN PR RF
					5.0 22.9					
					5.00m		BOREHOLE BH25 TERMINATED AT 5.00 m Target depth			

ESTIMATED STRENGTH Is(50) — ● - Axial ○ - Diametral — VL -0.1, L -0.4, M -1.3, H -3.8, VH -12.5, EH

NATURAL FRACTURE (mm) — 20, 40, 100, 300, 1000

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

STANTEC AUSTRALIA PTY LTD

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File: 304100928 BH25 2 OF 2

RMS LIB 40.3 EXTERNAL M6E REV1.3.GLB Log RTA CORED DRILL HOLE 5 304100928_GILLIESTON.GPJ <<DrawingFile>> 08/Feb/2023 14:29 10.03.00.09 Cardno M6E

Stantec	TITLE: **Borehole Core Photographs – BH25** **Gillieston Public School**			
	PROJECT NO: **304100928**	TEST DATE: **20/12/2022**	INCLINATION: **-90 degree**	CORED LENGTH: **BOX 1 OF 1** **1.38-5.0m (3.62 m Length)**
	DRILL RIG: **MI2**	CONTRACTOR: **Stratacore**	LOGGED BY: **PB**	CHECKED BY: **TH**



EXCAVATION - GEOLOGICAL LOG

PIT NO : BH26
FILE / JOB NO : 304100928
SHEET : 1 OF 1

PROJECT : Proposed School Redevelopment
LOCATION : Gillieston Public School

POSITION : E: 362436.114, N: 6375141.277 (56 MGA2020) | SURFACE ELEVATION : 25.480 (AHD)

EQUIPMENT TYPE : MI2 | METHOD : Auger Drilling

DATE EXCAVATED : 19/12/22 | LOGGED BY : PB | CHECKED BY : TH

EXCAVATION DIMENSIONS : 0.10 m LONG 0.10 m WIDE

DRILLING | MATERIAL

DEPTH (m)	SAMPLES & FIELD TESTS	GROUNDWATER LEVELS	SUPPORT	PENETRATION (VE E F H)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	HAND PENETROMETER kPa (100 200 300 400)	DCP TEST (AS 1289.6.3.2-1997) Blows/100 mm (5 10 15 20 25)	STRUCTURE & Other Observations
0.0							FILL: SILTY SAND: brown, fine grained sand, low plasticity silt, trace angular, medium to fine grained gravel, trace of rootlets				5	TOPSOIL
0.5	0.50m D	Not Encountered	STABLE								6	
											10	
											20	
											25	
							0.70m	D				ALLUVIUM
1.0	1.00m B					CI-CH	CLAY: brown red, brown yellow and grey, medium to high plasticity, with fine grained sand, trace sub-rounded to rounded, medium to fine grained gravel		St			
							1.10m					WEATHERED ROCK
	1.35m						SILTY SAND: orange-brown, pale grey, fine to medium grained sand, low plasticity silt, trace angular to sub-angular, medium to fine grained, ironestone gravel					
							1.35m					
1.5							EXCAVATION BH26 TERMINATED AT 1.35 m Auger refusal on medium strength rock					
2.0												
2.5												
3.0												
3.5												
4.0												
4.5												
5.0												

PHOTOGRAPHS NOTES ☐ YES ☒ NO

METHOD
- N Natural Exposure
- E Existing Excavation
- BH Backhoe Bucket
- B Bulldozer Blade
- R Ripper

SUPPORT
- T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
- U50 - Undisturbed Sample 50 mm diameter
- D - Disturbed Sample
- B - Bulk Disturbed Sample
- MC - Moisture Content
- HP - Hand Penetrometer (UCS kPa)
- VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
- PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
- D - Dry
- M - Moist
- W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

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

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File: 304100928 BH26 1 OF 1

RMS LIB 40.3 EXTERNAL M6E REV1.3.GLB Log RTA EXCAVATION 304100928_GILLIESTON.GPJ <<DrawingFile>> 08/Feb/2023 14:16 10.03.00.09 Cardno M6E

EXCAVATION - GEOLOGICAL LOG

PIT NO : BH27
FILE / JOB NO : 304100928
SHEET : 1 OF 1

PROJECT : Proposed School Redevelopment
LOCATION : Gillieston Public School

POSITION : E: 362496.104, N: 6375194.206 (56 MGA2020) | SURFACE ELEVATION : 18.916 (AHD)
EQUIPMENT TYPE : MI2 | METHOD : Auger Drilling
DATE EXCAVATED : 19/12/22 | LOGGED BY : PB | CHECKED BY : TH
EXCAVATION DIMENSIONS : 0.10 m LONG 0.10 m WIDE

DRILLING | MATERIAL

DEPTH (m)	PENETRATION (VE, E, F, H)	SUPPORT	GROUNDWATER LEVELS	SAMPLES & FIELD TESTS	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION (Soil Type, Colour, Plasticity or Particle Characteristic, Secondary and Minor Components)	MOISTURE CONDITION	CONSISTENCY / RELATIVE DENSITY	HAND PENETROMETER kPa (100, 200, 300, 400)	DCP TEST (AS 1289.6.3.2-1997) Blows/100 mm (5, 10, 15, 20, 25)	STRUCTURE & Other Observations
0.0		STABLE					FILL: SILTY SAND: brown, fine grained sand, low plasticity silt, trace angular, medium to fine grained gravel, trace of rootlets	M			2 5 5 7 6	TOPSOIL
0.5											5 5 6	
1.0								W	St		4 3 5	
1.20m							CLAY: brown red, brown yellow and grey, medium to high plasticity, with fine grained sand, trace sub-rounded to rounded, medium to fine grained gravel		VSt		15 15 17	ALLUVIUM
1.50m						CI-CH	EXCAVATION BH27 TERMINATED AT 1.50 m Target depth				16 15 25	
1.5												
2.0												
2.5												
3.0												
3.5												
4.0												
4.5												
5.0												

PHOTOGRAPHS NOTES ☐ YES ☒ NO

METHOD
N Natural Exposure
E Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

SUPPORT
T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
U50 - Undisturbed Sample 50 mm diameter
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
HP - Hand Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
D - Dry
M - Moist
W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

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

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File: 304100928 BH27 1 OF 1

RMS LIB 40.3 EXTERNAL M6E REV1.3.GLB Log RTA EXCAVATION 304100928_GILLIESTON.GPJ <<DrawingFile>> 08/Feb/2023 14:16 10.03.00.09 Cardno M6E

EXCAVATION - GEOLOGICAL LOG

PIT NO : BH28
FILE / JOB NO : 304100928
SHEET : 1 OF 1

PROJECT : Proposed School Redevelopment
LOCATION : Gillieston Public School

POSITION : E: 362490.485, N: 6375233.916 (56 MGA2020) | SURFACE ELEVATION : 16.031 (AHD)
EQUIPMENT TYPE : MI2 | METHOD : Auger Drilling
DATE EXCAVATED : 19/12/22 | LOGGED BY : PB | CHECKED BY : TH
EXCAVATION DIMENSIONS : 0.10 m LONG 0.10 m WIDE

DRILLING | MATERIAL

DEPTH (m)	PENETRATION (VE E F H)	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION (Soil Type, Colour, Plasticity or Particle Characteristic, Secondary and Minor Components)	MOISTURE CONDITION	CONSISTENCY / RELATIVE DENSITY	HAND PENETROMETER kPa (100 200 300 400)	DCP TEST (AS 1289.6.3.2-1997) Blows/100 mm (5 10 15 20 25)	STRUCTURE & Other Observations
0.0		STABLE	Not Encountered	0.50m B			FILL: SILTY SAND: brown, fine grained sand, low plasticity silt, trace angular, medium to fine grained gravel, trace of rootlets				0 1 1 1 1 1	TOPSOIL
0.5							0.70m					
						CI-CH	CLAY: brown red, brown yellow and grey, medium to high plasticity, with fine grained sand, trace sub-rounded to rounded, medium to fine grained gravel	D	F		1 1 1	ALLUVIUM
				1.00m			0.90m SILTY SAND: orange-brown, pale grey, fine to medium grained sand, low plasticity silt, trace angular to sub-angular, medium to fine grained, ironestone gravel				2 2 3 3 3 4	RESIDUAL SOIL
1.0						SM			MD			
1.5							1.50m EXCAVATION BH28 TERMINATED AT 1.50 m Target depth				4 5 5 5 15 25	
2.0												
2.5												
3.0												
3.5												
4.0												
4.5												
5.0												

PHOTOGRAPHS NOTES ☐ YES ☒ NO

METHOD
N Natural Exposure
E Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

SUPPORT
T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
U50 - Undisturbed Sample 50 mm diameter
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
HP - Hand Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
D - Dry
M - Moist
W - Wet

CONSISTENCY/ RELATIVE DENSITY

VS	- Very Soft
S	- Soft
F	- Firm
St	- Stiff
VSt	- Very Stiff
H	- Hard
VL	- Very Loose
L	- Loose
MD	- Medium Dense
D	- Dense
VD	- Very Dense

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

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File: 304100928 BH28 1 OF 1

RMS LIB 40.3 EXTERNAL M6E REV1.3.GLB Log RTA EXCAVATION 304100928_GILLIESTON.GPJ <<DrawingFile>> 08/Feb/2023 14:16 10.03.00.09 Cardno M6E

Stantec

Borehole Record: AHA101

Project: Gillieston Public School
Location: Gillieston Public School, Ryans Road, Gillieston Heights NSW
Loc Comment:
Job No: 304100928

Position: Easting: 384,678.90
Northing: 6,356,200.20
Elevation: Not Surveyed
Inclination:

Date Drilled: 22/04/2024
Drill Rig Hand Tools
Drill Supplier Stantec
Logged/Checked: Dave Bastian

Drilling Method	Elevation (m)	Depth (m)	Water	Soil Origin	Graphic Log	Material Description	Moisture	Sample: Primary	Sample: QA	Testing: PID	Remarks
		0		Fill		SAND SP: pale grey and brown, very loose, medium grained, moist.	M	AHA101_0-0.1			
		0.15				Silty SAND SM: dark brown, loose, fine to medium grained, moist.					
		0.25				Sandy GRAVEL GW: dark brown, loose, fine to coarse sized, fine to medium grained sand, moist.					
		0.3				Sandy CLAY CI: medium plasticity, orange light brown mottled grey, firm, medium grained sand, w > pl.	w > PL				
						AHA101 refusal at 0.35m (Refusal on gravel)					

This report must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

Stantec

Borehole Record: AHA102

Project: Gillieston Public School	**Position:** Easting: 0.00	**Date Drilled:** 22/04/2024
Location: Gillieston Public School, Ryans Road, Gillieston Heights NSW	Northing: 0.00	**Drill Rig** Hand Auger
Loc Comment:	**Elevation:** Not Surveyed	**Drill Supplier** Stantec Australia Pty Ltd
Job No: 304100928	**Inclination:**	**Logged/Checked:** Dave Bastian

Elevation (m)	Depth (m)	Water	Soil Origin	Graphic Log	Material Description	Moisture	Sample		Testing	Remarks
							Primary	QA	PID	
	0.1		Fill		Sandy SILT SM: non-plastic, dark brown, very soft, fine to medium grained sand, w ≈ pl, organic material.	w ≈ PL	AHA102_0-0.1			
					Silty SAND SM: dark brown, very loose, fine to medium grained, moist.	M				
	0.3		Natural		Clayey SAND SC: very loose, (low plasticity clay), (dark brown), (fine to medium grained), trace iron indurated work (red).					
					AHA102 Terminated at 0.4m (Target depth reached)					

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Borehole Record: AHA103

Project: Gillieston Public School	**Position:** Easting: 0.00	**Date Drilled:** 29/04/2024
Location: Gillieston Public School, Ryans Road, Gillieston Heights NSW	Northing: 0.00	**Drill Rig** Hand Auger
Loc Comment:	**Elevation:** Not Surveyed	**Drill Supplier** Stantec Australia Pty Ltd
Job No: 304100928	**Inclination:**	**Logged/Checked:** Dave Bastian

Elevation (m)	Depth (m)	Water	Soil Origin	Graphic Log	Material Description	Moisture	Sample		Testing	Remarks
							Primary	QA	PID	
	0.1		Fill		Sandy SILT SM: non-plastic, dark brown, very soft, fine to medium grained sand, w ≈ pl.	w ≈ PL	AHA103_0.1			
					Clayey SAND SC: low plasticity clay, dark brown, very loose, fine to medium grained, moist.	M				
	0.3				Clayey SAND SC: low plasticity clay, dark brown, very loose, fine to medium grained, trace fine sized gravel, moist.		AHA103_0.4			
					AHA103 Terminated at 0.5m (Target depth reached)					

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Stantec

Borehole Record: AHA104

Project: Gillieston Public School	**Position:** Easting: 0.00	**Date Drilled:** 29/04/2024
Location: Gillieston Public School, Ryans Road, Gillieston Heights NSW	Northing: 0.00	**Drill Rig** Hand Auger
Loc Comment:	**Elevation:** Not Surveyed	**Drill Supplier** Stantec Australia Pty Ltd
Job No: 304100928	**Inclination:**	**Logged/Checked:** Brock Collinson

Elevation (m)	Depth (m)	Water	Soil Origin	Graphic Log	Material Description	Moisture	Sample		Testing	Remarks
							Primary	QA	PID	
	0.05		Fill		Clayey SAND SC: low plasticity clay, dark brown, very loose, fine to medium grained, moist, trace carbonaceous material, trace rootlets..	M	AHA104_0-0.1			
					Clayey SAND SC: low plasticity clay, dark brown, very loose, fine to medium grained, moist, trace chitter, trace indurated rock fragments (red).					
	0.3				As above, but trace glass, trace fine gravel..		AHA104_0.34-0.4			
					AHA104 Terminated at 0.4m (Target depth reached)					

This report must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

Borehole Record: AHA105

Project: Gillieston Public School	**Position:** Easting: 0.00	**Date Drilled:** 29/04/2024
Location: Gillieston Public School, Ryans Road, Gillieston Heights NSW	Northing: 0.00	**Drill Rig** Hand Auger
Loc Comment:	**Elevation:** Not Surveyed	**Drill Supplier** Stantec Australia Pty Ltd
Job No: 304100928	**Inclination:**	**Logged/Checked:** Dave Bastian

Elevation (m)	Depth (m)	Water	Soil Origin	Graphic Log	Material Description	Moisture	Sample: Primary	Sample: QA	Testing: PID	Remarks
	0.1		Fill		Clayey to sandy GRAVEL GC: low plasticity clay, dark brown, loose, fine sized, fine to medium grained sand, moist, trace indurated rock fragments (red).	M	AHA105_0-0.1			
					Sandy to gravelly CLAY CH: high plasticity, dark brown, soft, fine to medium sized gravel, fine grained sand, inorganic, w > pl.	w > PL	AHA105_0.2-0.25			
					AHA105 refusal at 0.25m (End of Hole - PVC)					

This report must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

Stantec

Borehole Record: AHA106

Project: Gillieston Public School
Location: Gillieston Public School, Ryans Road, Gillieston Heights NSW
Loc Comment:
Job No: 304100928

Position: Easting: 0.00
Northing: 0.00
Elevation: Not Surveyed
Inclination:

Date Drilled: 29/04/2024
Drill Rig Hand Auger
Drill Supplier Stantec Australia Pty Ltd
Logged/Checked: Dave Bastian

Elevation (m)	Depth (m)	Water	Soil Origin	Graphic Log	Material Description	Moisture	Sample		Testing	Remarks
							Primary	QA	PID	
	0.05		Fill		Sandy SILT SM: non-plastic, dark brown, very soft, fine grained sand, w > pl.	w > PL	AHA106_0-0.1			
					Silty SAND SM: grey, loose, medium grained, moist.	M				
	0.2				Sandy SILT SM: non-plastic, grey, soft, fine to medium grained sand, trace low plasticity clay, w > ll.	w > LL	AHA106_0.3-0.35			
					AHA106 Terminated at 0.4m (Target depth reached)					

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Stantec

Borehole Record: AHA107

Project: Gillieston Public School
Location: Gillieston Public School, Ryans Road, Gillieston Heights NSW
Loc Comment:
Job No: 304100928

Position: Easting: 0.00
Northing: 0.00
Elevation: Not Surveyed
Inclination:

Date Drilled: 29/04/2024
Drill Rig Hand Auger
Drill Supplier Stantec Australia Pty Ltd
Logged/Checked: Dave Bastian

Elevation (m)	Depth (m)	Water	Soil Origin	Graphic Log	Material Description	Moisture	Sample		Testing	Remarks
							Primary	QA	PID	
			Fill		Silty SAND SM: dark brown, very loose, fine to medium grained, trace fine to medium sized gravel, moist.	M	AHA107_0-0.1			
	0.2				Sandy SILT SM: non-plastic, brown grey, very soft, fine grained sand, with fine sized gravel, w ≈ ll.	w ≈ LL	AHA107_0.35-0.4			
					AHA107 refusal at 0.45m (Refusal on Services)					

This report must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

Borehole Record: AHA108

Project: Gillieston Public School	**Position:** Easting: 0.00	**Date Drilled:** 29/04/2024
Location: Gillieston Public School, Ryans Road, Gillieston Heights NSW	Northing: 0.00	**Drill Rig** Hand Auger
Loc Comment:	**Elevation:** Not Surveyed	**Drill Supplier** Stantec Australia Pty Ltd
Job No: 304100928	**Inclination:**	**Logged/Checked:** Dave Bastian

Elevation (m)	Depth (m)	Water	Soil Origin	Graphic Log	Material Description	Moisture	Sample		Testing	Remarks
							Primary	QA	PID	
	0.02		Fill		Silty CLAY CH: high plasticity, grey, soft, organic, w > pl.	w > PL				
					Sandy SILT SM: non-plastic, black, very soft, fine grained sand, w > pl.		AHA108_0.02-0.1			
	0.3				Gravelly to sandy SILT ML: non-plastic, very soft, fine to medium sized gravel, fine to medium grained sand, inorganic, trace indurated rock fragments (red).		AHA108_0.35-0.4			
					AHA108 Terminated at 0.4m (Target depth reached)					

This report must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

Borehole Record: AHA109

Project: Gillieston Public School
Location: Gillieston Public School, Ryans Road, Gillieston Heights NSW
Loc Comment:
Job No: 304100928

Position: Easting: 0.00
Northing: 0.00
Elevation: Not Surveyed
Inclination:

Date Drilled: 29/04/2024
Drill Rig Hand Auger
Drill Supplier Stantec Australia Pty Ltd
Logged/Checked: Dave Bastian

Elevation (m)	Depth (m)	Water	Soil Origin	Graphic Log	Material Description	Moisture	Sample		Testing	Remarks
							Primary	QA	PID	
	0.1		Fill		Silty CLAY CH: high plasticity, dark grey, soft, with fine to coarse sized gravel, organic, w > pl, trace indurated rock fragments (red).	w > PL	AHA109_0-0.1			
					Sandy to gravelly SILT ML: non-plastic, grey, soft, fine to medium sized gravel, fine grained sand, w > ll, trace indurated rock fragments (red).	w > LL	AHA109_0.35-0.4			
					AHA109 Terminated at 0.4m (Target depth reached)					

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Borehole Record: AHA110

Project: Gillieston Public School	**Position:** Easting: 0.00	**Date Drilled:** 29/04/2024
Location: Gillieston Public School, Ryans Road, Gillieston Heights NSW	Northing: 0.00	**Drill Rig** Hand Auger
Loc Comment:	**Elevation:** Not Surveyed	**Drill Supplier** Stantec Australia Pty Ltd
Job No: 304100928	**Inclination:**	**Logged/Checked:** Dave Bastian

Elevation (m)	Depth (m)	Water	Soil Origin	Graphic Log	Material Description	Moisture	Sample		Testing	Remarks
							Primary	QA	PID	
			Fill		Sandy to gravelly SILT ML: non-plastic, dark grey, soft, fine to medium sized gravel, fine to coarse grained sand, w ≈ pl.	w ≈ PL	AHA110_0-0.1			
	0.25				Silty to sandy GRAVEL GM: dark grey, loose, fine to coarse sized, fine to medium grained sand, moist.	M	AHA110_0.25-0.3			
					AHA110 refusal at 0.3m					

This report must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

Stantec

Borehole Record: AHA111

Project: Gillieston Public School
Location: Gillieston Public School, Ryans Road, Gillieston Heights NSW
Loc Comment:
Job No: 304100928

Position: Easting: 362,334.75
Northing: 6,375,203.18
Elevation: Not Surveyed
Inclination:

Date Drilled: 24/04/2024
Drill Rig Hand Auger
Drill Supplier Stantec Australia Pty Ltd
Logged/Checked: Dave Bastian

Elevation (m)	Depth (m)	Water	Soil Origin	Graphic Log	Material Description	Moisture	Sample		Testing	Remarks
							Primary	QA	PID	
			Fill		Sandy to gravelly SILT ML: non-plastic, grey brown, very soft, fine to medium sized gravel, fine grained sand, w > pl.	w > PL	AHA111_0-0.1			
	0.35		Colluvium		Gravelly to sandy SILT ML: very soft, low plasticity, pale grey brown, fine to medium sized gravel, fine grained sand, trace low plasticity clay, organic.		AHA111_0.4-0.5			
					AHA111 Terminated at 0.5m (Target depth reached)					

This report must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

Borehole Record: AHA112

Project: Gillieston Public School
Location: Gillieston Public School, Ryans Road, Gillieston Heights NSW
Loc Comment:
Job No: 304100928

Position: Easting: 362,336.35
Northing: 6,375,198.77
Elevation: Not Surveyed
Inclination:

Date Drilled: 24/04/2024
Drill Rig Hand Auger
Drill Supplier Stantec Australia Pty Ltd
Logged/Checked: Dave Bastian

Elevation (m)	Depth (m)	Water	Soil Origin	Graphic Log	Material Description	Moisture	Sample		Testing	Remarks
							Primary	QA	PID	
			Fill		Sandy to gravelly SILT ML: non-plastic, grey brown, very soft, fine to medium sized gravel, fine grained sand, w ≈ pl.	w ≈ PL	AHA112_0-0.1			
	0.1				Sandy GRAVEL GW: grey brown, medium dense, fine to coarse sized, fine to coarse grained sand, trace low plasticity clay, moist.	M				
					AHA112 refusal at 0.2m (Refusal on cobble)					

This report must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

Borehole Record: AHA113

Project: Gillieston Public School	**Position:** Easting: 362,336.28	**Date Drilled:** 24/04/2024
Location: Gillieston Public School, Ryans Road, Gillieston Heights NSW	Northing: 6,375,184.61	**Drill Rig** Hand Auger
Loc Comment:	**Elevation:** Not Surveyed	**Drill Supplier** Stantec Australia Pty Ltd
Job No: 304100928	**Inclination:**	**Logged/Checked:** Dave Bastian

Elevation (m)	Depth (m)	Water	Soil Origin	Graphic Log	Material Description	Moisture	Sample		Testing	Remarks
							Primary	QA	PID	
			Fill		Sandy to gravelly SILT ML: non-plastic, grey brown, very soft, fine to medium sized gravel, fine grained sand, w ≈ pl.	w ≈ PL	AHA113_0-0.1			
	0.15				Sandy GRAVEL GW: grey brown, medium dense, fine to coarse sized, fine to coarse grained sand, trace low plasticity clay, moist, trace chitter.	M				
					AHA113 refusal at 0.2m					

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Test Pit Record: TP1

Project: Gillieston Public School	**Position:** Easting: 362,444.27	**Date Drilled:** 23/04/2024
Location: Gillieston Public School, Ryans Road, Gillieston Heights NSW	Northing: 6,375,107.17	**Excavator** 5T
Loc Comment:	**Elevation:** Not Surveyed	**Excavator Supplier** Robbo s Demos
Job No: 304100928	**Inclination:**	**Logged/Checked:** Dave Bastian

Elevation (m)	Depth (m)	Water	Soil Origin	Graphic Log	Material Description	Moisture	Sample		Testing	Remarks
							Primary	QA	PID	
			Fill		Sandy to gravelly SILT ML: non-plastic, dark brown, soft, fine to medium sized gravel, fine grained sand, w ≈ pl.	w ≈ PL	TP1_0-0.1			
	0.2		Colluvium		Gravelly to clayey SAND SC: loose, (low to medium plasticity clay), (grey), (fine grained), (fine to coarse sized gravel), moist.	M	TP1_0.3-0.4			
	0.45		Residual		Sandy to gravelly CLAY CL-CI: soft, low to medium plasticity, red brown mottled grey, fine sized gravel, medium grained sand, inorganic, w ≈ pl.	w ≈ PL	TP1_0.6-0.7			
	0.75				Sandy CLAY CL: very soft, low plasticity, grey mottled red and brown, medium to coarse grained sand, inorganic, wet to w ≈ pl.	W-w ≈ PL				
					TP1 Terminated at 0.85m (Target depth reached)					

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Stantec

Test Pit Record: TP2

Project: Gillieston Public School	**Position:** Easting: 362,509.94	**Date Drilled:** 23/04/2024
Location: Gillieston Public School, Ryans Road, Gillieston Heights NSW	Northing: 6,375,078.17	**Excavator** 5T
Loc Comment:	**Elevation:** Not Surveyed	**Excavator Supplier** Robbo s Demos
Job No: 304100928	**Inclination:**	**Logged/Checked:** Dave Bastian

Elevation (m)	Depth (m)	Water	Soil Origin	Graphic Log	Material Description	Moisture	Sample		Testing	Remarks
							Primary	QA	PID	
	0.1		Fill		Sandy to gravelly SILT ML: non-plastic, dark brown, soft, fine to medium sized gravel, fine grained sand, w ≈ pl.	w ≈ PL	TP2_0-0.1		5.2	
			Colluvium		Clayey to sandy GRAVEL GC: loose, (medium plasticity clay), (pale grey), (fine to coarse sized), (medium to coarse grained sand), moist.	M				
	0.3						TP2_0.2-0.3		6.5	
			Residual		Sandy to gravelly CLAY CL: soft, low plasticity, red brown mottled grey, fine sized gravel, fine grained sand, inorganic, w ≈ pl.	w ≈ PL				
							TP2_0.5-0.6		4.9	
					TP2 Terminated at 0.7m (Target depth reached.)					

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Stantec

Test Pit Record: TP3

Project: Gillieston Public School	**Position:** Easting: 362,449.38	**Date Drilled:** 23/04/2024
Location: Gillieston Public School, Ryans Road, Gillieston Heights NSW	Northing: 6,375,095.55	**Excavator** 5T
Loc Comment:	**Elevation:** Not Surveyed	**Excavator Supplier** Robbo s Demos
Job No: 304100928	**Inclination:**	**Logged/Checked:** Dave Bastian

Elevation (m)	Depth (m)	Water	Soil Origin	Graphic Log	Material Description	Moisture	Sample		Testing	Remarks
							Primary	QA	PID	
			Fill		Sandy to gravelly SILT ML: non-plastic, dark brown, soft, fine to medium sized gravel, fine grained sand, w ≈ pl.	w ≈ PL	TP3_0-0.1		5.5	
	0.3		Colluvium		Clayey to sandy GRAVEL GC: loose, (medium plasticity clay), (pale grey), (fine to coarse sized), (medium to coarse grained sand), moist.	M	TP3_0.4-0.5		6.3	
	0.5		Residual		Sandy to gravelly CLAY CL: soft, low plasticity, red brown mottled grey, fine to coarse sized gravel, medium to coarse grained sand, inorganic, w ≈ pl.	w ≈ PL	TP3_0.7-0.8		4.6	
	0.8				As above, but grey mottled red, fine sized gravel, fine grained sand.					
					TP3 Terminated at 0.85m					

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Stantec

Test Pit Record: TP4

Project: Gillieston Public School	**Position:** Easting: 362,536.32	**Date Drilled:** 23/04/2024
Location: Gillieston Public School, Ryans Road, Gillieston Heights NSW	Northing: 6,375,088.63	**Excavator** 5T
Loc Comment:	**Elevation:** Not Surveyed	**Excavator Supplier** Robbo s Demos
Job No: 304100928	**Inclination:**	**Logged/Checked:** Dave Bastian

Elevation (m)	Depth (m)	Water	Soil Origin	Graphic Log	Material Description	Moisture	Sample		Testing	Remarks
							Primary	QA	PID	
			Fill		Sandy to gravelly SILT ML: non-plastic, dark brown, soft, fine to medium sized gravel, fine grained sand, w ≈ pl.	w ≈ PL	TP4_0-0.1		6.6	
	0.3		Colluvium		Clayey to gravelly SAND SC: very loose, (low to medium plasticity clay), (pale grey), (medium to coarse grained), (fine sized gravel), moist.	M	TP4_0.4-0.5		6.4	
	0.7		Residual		As above, but Sandy CLAY CL: soft, low plasticity, grey mottled light brown, fine grained sand, trace fine to medium sized gravel, inorganic, w ≈ pl.	w ≈ PL	TP4_1-1.1		4.8	
					TP4 Terminated at 1.3m (Target depth reached.)					

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Test Pit Record: TP5

Project: Gillieston Public School	**Position:** Easting: 362,529.76	**Date Drilled:** 23/04/2024
Location: Gillieston Public School, Ryans Road, Gillieston Heights NSW	Northing: 6,375,083.21	**Excavator** 5T
Loc Comment:	**Elevation:** Not Surveyed	**Excavator Supplier** Robbo s Demos
Job No: 304100928	**Inclination:**	**Logged/Checked:** Dave Bastian

Elevation (m)	Depth (m)	Water	Soil Origin	Graphic Log	Material Description	Moisture	Sample		Testing	Remarks
							Primary	QA	PID	
			Fill		Silty SAND SM: pale grey, very loose, fine to medium grained, trace fine to medium sized gravel, moist, occasional lenses of residual clay, trace plastic.	M	TP5_0-0.1		4.9	
							TP5_0.4-0.5		5.4	
							TP5_0.9-1		5.6	
	2						TP5_1.4-1.5		5.2	
							TP5_1.8-1.9			
			Colluvium		Clayey SAND SC: loose, (low plasticity clay), (light brown mottled grey and red), (medium to coarse grained), moist.		TP5_2.2-2.3		5.5	
					TP5 Terminated at 2.3m (Target depth reached.)					

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Test Pit Record: TP6

Project: Gillieston Public School	**Position:** Easting: 362,428.62	**Date Drilled:** 23/04/2024
Location: Gillieston Public School, Ryans Road, Gillieston Heights NSW	Northing: 6,375,134.95	**Excavator** 5T
Loc Comment:	**Elevation:** Not Surveyed	**Excavator Supplier** Robbo s Demos
Job No: 304100928	**Inclination:**	**Logged/Checked:** Dave Bastian

Elevation (m)	Depth (m)	Water	Soil Origin	Graphic Log	Material Description	Moisture	Sample: Primary	Sample: QA	Testing: PID	Remarks
			Fill		Sandy to gravelly SILT ML: non-plastic, dark brown, soft, fine to medium sized gravel, fine grained sand, w ≈ pl.	w ≈ PL	TP6_0-0.1		4.4	
	0.4		Colluvium		Clayey to gravelly SAND SC: very loose, (low to medium plasticity clay), (pale grey), (medium to coarse grained), (fine sized gravel), moist.	M	TP6_0.5-0.6		4.6	
	0.8		Residual		As above, but Sandy CLAY CL: soft, low plasticity, grey mottled light brown, fine grained sand, trace fine to medium sized gravel, inorganic, w ≈ pl.	w ≈ PL	TP6_1-1.1		3.6	
					TP6 Terminated at 1.2m (Target depth reached.)					

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Stantec

Test Pit Record: TP7

Project: Gillieston Public School
Location: Gillieston Public School, Ryans Road, Gillieston Heights NSW
Loc Comment:
Job No: 304100928

Position: Easting: 362,793.00
Northing: 6,374,891.04
Elevation: Not Surveyed
Inclination:

Date Drilled: 23/04/2024
Excavator 5T
Excavator Supplier Robbo s Demos
Logged/Checked: Dave Bastian

Elevation (m)	Depth (m)	Water	Soil Origin	Graphic Log	Material Description	Moisture	Sample		Testing	Remarks
							Primary	QA	PID	
			Fill		Sandy SILT SM: non-plastic, dark grey, very soft, fine grained sand, organic, w > pl.		TP7_0-0.1		5.2	
	0.2		Colluvium		Clayey SAND SC: loose, (low to medium plasticity clay), (pale grey), (medium to coarse grained), wet to moist.	W-M	TP7_0.4-0.5		2	
	0.7		Residual		As above, but Sandy CLAY CI: soft, medium plasticity, grey mottled light brown, fine grained sand, trace fine to medium sized gravel, inorganic, w > pl.	w > PL	TP7_0.9-1		4.8	
					TP7 Terminated at 1.2m (Target depth reached)					

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Stantec

Test Pit Record: TP8

Project: Gillieston Public School	**Position:** Easting: 362,512.87	**Date Drilled:** 23/04/2024
Location: Gillieston Public School, Ryans Road, Gillieston Heights NSW	Northing: 6,375,123.98	**Excavator** 5T
Loc Comment:	**Elevation:** Not Surveyed	**Excavator Supplier** Robbo s Demos
Job No: 304100928	**Inclination:**	**Logged/Checked:** Dave Bastian

Elevation (m)	Depth (m)	Water	Soil Origin	Graphic Log	Material Description	Moisture	Sample		Testing	Remarks
							Primary	QA	PID	
			Fill		Sandy SILT SM: non-plastic, dark grey, very soft, fine grained sand, organic, w > pl.		TP8_0-0.1		4.5	
	0.2		Colluvium		Clayey to gravelly SAND SC: loose, (low plasticity clay), (pale grey), (medium to coarse grained), (fine to coarse sized gravel), wet to moist.	W-M	TP8_0.4-0.5		4.8	
	0.6		Residual		As above, but Sandy to gravelly CLAY CI-CH: soft, medium to high plasticity, brown mottled grey and red, fine grained sand, inorganic, w > pl.	w > PL	TP8_0.9-1		1.6	
					TP8 Terminated at 1.1m (Target depth reached.)					

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Test Pit Record: TP9

Stantec

Project: Gillieston Public School	**Position:** Easting: 362,393.19	**Date Drilled:** 23/04/2024
Location: Gillieston Public School, Ryans Road, Gillieston Heights NSW	Northing: 6,375,114.96	**Excavator** 5T
Loc Comment:	**Elevation:** Not Surveyed	**Excavator Supplier** Robbo s Demos
Job No: 304100928	**Inclination:**	**Logged/Checked:** Dave Bastian

Elevation (m)	Depth (m)	Water	Soil Origin	Graphic Log	Material Description	Moisture	Sample		Testing	Remarks
							Primary	QA	PID	
			Fill		Sandy to gravelly SILT ML: non-plastic, dark brown, soft, fine to medium sized gravel, fine grained sand, w ≈ pl.	w ≈ PL	TP9_0-0.1		1	
	0.2		Colluvium		Clayey to gravelly SAND SC: loose, (low to medium plasticity clay), (grey), (fine grained), (fine to coarse sized gravel), moist.	M	TP9_0.4-0.5		4.8	
	0.6		Residual		Sandy to gravelly CLAY CL-CI: soft, low to medium plasticity, red brown mottled grey, fine sized gravel, medium grained sand, inorganic, w ≈ pl.	w ≈ PL	TP9_0.7-0.8		4.0	
					TP9 Terminated at 0.8m (Target depth reached.)					

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Stantec

Test Pit Record: TP10

Project: Gillieston Public School	**Position:** Easting: 362,422.71	**Date Drilled:** 23/04/2024
Location: Gillieston Public School, Ryans Road, Gillieston Heights NSW	Northing: 6,375,108.88	**Excavator** 5T
Loc Comment:	**Elevation:** Not Surveyed	**Excavator Supplier** Robbo s Demos
Job No: 304100928	**Inclination:**	**Logged/Checked:** Dave Bastian

Elevation (m)	Depth (m)	Water	Soil Origin	Graphic Log	Material Description	Moisture	Sample		Testing	Remarks
							Primary	QA	PID	
			Fill		Sandy to gravelly SILT ML: non-plastic, dark brown, soft, fine to medium sized gravel, fine grained sand, w ≈ pl.	w ≈ PL	TP10_0-0.1		4.6	
	0.4		Colluvium		Clayey to gravelly SAND SC: loose, (low to medium plasticity clay), (grey), (fine grained), (fine to coarse sized gravel), moist.	M	TP10_0.4-0.5		4.2	
	0.6		Residual		Sandy to gravelly CLAY CL-CI: soft, low to medium plasticity, red brown mottled grey, fine sized gravel, medium grained sand, inorganic, w ≈ pl.	w ≈ PL	TP10_0.7-0.8		3.7	
					TP10 Terminated at 0.9m (Target depth reached)					

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Test Pit Record: TP11

Project: Gillieston Public School
Location: Gillieston Public School, Ryans Road, Gillieston Heights NSW
Loc Comment:
Job No: 304100928

Position: Easting: 362,408.56
Northing: 6,375,165.84
Elevation: Not Surveyed
Inclination:

Date Drilled: 23/04/2024
Excavator 5T
Excavator Supplier Robbo s Demos
Logged/Checked: Dave Bastian

Elevation (m)	Depth (m)	Water	Soil Origin	Graphic Log	Material Description	Moisture	Sample		Testing	Remarks
							Primary	QA	PID	
			Fill		Sandy to gravelly SILT ML: non-plastic, dark brown, soft, fine to medium sized gravel, fine grained sand, w ≈ pl.	w ≈ PL	TP11_0-0.1		4.6	
	0.3		Colluvium		Clayey to gravelly SAND SC: loose, (low to medium plasticity clay), (grey), (fine grained), (fine to coarse sized gravel), wet to moist.	W-M	TP11_0.4-0.5		3.8	
	0.6		Residual		Sandy to gravelly CLAY CL-CI: soft, low to medium plasticity, red brown mottled grey, fine sized gravel, medium grained sand, inorganic, w ≈ pl.	w ≈ PL	TP11_0.7-0.8		4.6	
					TP11 Terminated at 0.8m (Target depth reached.)					

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Stantec

Test Pit Record: TP12

Project: Gillieston Public School
Location: Gillieston Public School, Ryans Road, Gillieston Heights NSW
Loc Comment:
Job No: 304100928

Position: Easting: 362,493.63
Northing: 6,375,086.41
Elevation: Not Surveyed
Inclination:

Date Drilled: 23/04/2024
Excavator 5T
Excavator Supplier Robbo s Demos
Logged/Checked: Dave Bastian

Elevation (m)	Depth (m)	Water	Soil Origin	Graphic Log	Material Description	Moisture	Sample		Testing	Remarks
							Primary	QA	PID	
			Fill		Sandy to gravelly SILT ML: non-plastic, dark brown, soft, fine to coarse sized gravel, fine grained sand, w ≈ pl, trace sandstone gravels (red, yellow & brown).	w ≈ PL	TP12_0-0.1		3.7	
	0.4		Colluvium		Clayey to gravelly SAND SC: loose, (low to medium plasticity clay), (grey), (fine grained), (fine to coarse sized gravel), moist.	M	TP12_0.5-0.6		4.1	
	0.6		Residual		Sandy to gravelly CLAY CL-CI: soft, low to medium plasticity, red brown mottled grey, fine sized gravel, medium grained sand, inorganic, w ≈ pl.	w ≈ PL	TP12_0.65-0.75		3.7	
	0.75		Rock		CONGLOMERATE: distinctly weathered, low strength, pale brown and white, medium grained, indistinct, moist.	M				
					TP12 Terminated at 0.85m (Target depth reached.)					

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Stantec

Test Pit Record: TP13

Project: Gillieston Public School	**Position:** Easting: 362,414.50	**Date Drilled:** 23/04/2024
Location: Gillieston Public School, Ryans Road, Gillieston Heights NSW	Northing: 6,375,195.61	**Excavator** 5T
Loc Comment:	**Elevation:** Not Surveyed	**Excavator Supplier** Robbo s Demos
Job No: 304100928	**Inclination:**	**Logged/Checked:** Dave Bastian

Elevation (m)	Depth (m)	Water	Soil Origin	Graphic Log	Material Description	Moisture	Sample Primary	Sample QA	Testing PID	Remarks
			Fill		Sandy to gravelly SILT ML: non-plastic, dark brown, soft, fine to coarse sized gravel, fine grained sand, w ≈ pl, trace sandstone gravels (red, yellow & brown).	w ≈ PL	TP13_0-0.1		4.4	
	0.5		Colluvium		Clayey to gravelly SAND SC: loose, (low to medium plasticity clay), (grey), (fine grained), (fine to coarse sized gravel), moist.	M	TP13_0.5-0.6		4.9	
	0.7		Residual		Sandy to gravelly CLAY CL-CI: soft, low to medium plasticity, red brown mottled grey, fine sized gravel, medium grained sand, inorganic, w ≈ pl.	w ≈ PL	TP13_0.9-1		4.0	
	1.3		Rock		CONGLOMERATE: distinctly weathered, low strength, and pale white brown, medium grained, indistinct, moist.	M				
					TP13 refusal at 1.35m					

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Stantec

Test Pit Record: TP14

Project: Gillieston Public School
Location: Gillieston Public School, Ryans Road, Gillieston Heights NSW
Loc Comment:
Job No: 304100928

Position: Easting: 362,407.35
Northing: 6,375,144.92
Elevation: Not Surveyed
Inclination:

Date Drilled: 23/04/2024
Excavator 5T
Excavator Supplier Robbo s Demos
Logged/Checked: Dave Bastian

Elevation (m)	Depth (m)	Water	Soil Origin	Graphic Log	Material Description	Moisture	Sample		Testing	Remarks
							Primary	QA	PID	
			Fill		Sandy to gravelly SILT ML: non-plastic, dark brown, soft, fine to coarse sized gravel, fine grained sand, w ≈ pl, trace organics.	w ≈ PL	TP14_0-0.1		2.5	
	0.4		Colluvium		Clayey to gravelly SAND SC: loose, (low to medium plasticity clay), (grey), (fine grained), (fine to coarse sized gravel), moist.	M	TP14_0.5-0.6		3.4	
	0.6		Residual		Sandy to gravelly CLAY CL-CI: soft, low to medium plasticity, red brown mottled grey, fine sized gravel, medium grained sand, inorganic, w ≈ pl.	w ≈ PL				
	1		Rock		CONGLOMERATE: distinctly weathered, low strength, and pale white brown, medium grained, indistinct, moist.	M	TP14_1-1.1		3.3	
					TP14 refusal at 1.1m					

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Stantec

Test Pit Record: TP15

Project: Gillieston Public School	**Position:** Easting: 362,399.12	**Date Drilled:** 23/04/2024
Location: Gillieston Public School, Ryans Road, Gillieston Heights NSW	Northing: 6,375,181.23	**Excavator** 5T
Loc Comment:	**Elevation:** Not Surveyed	**Excavator Supplier** Robbo s Demos
Job No: 304100928	**Inclination:**	**Logged/Checked:** Dave Bastian

Elevation (m)	Depth (m)	Water	Soil Origin	Graphic Log	Material Description	Moisture	Sample		Testing	Remarks
							Primary	QA	PID	
			Fill		Sandy to gravelly SILT ML: non-plastic, dark brown, soft, fine to coarse sized gravel, fine grained sand, w ≈ pl, trace organics.	w ≈ PL	TP15_0-0.1		3.4	
	0.4		Colluvium		Clayey to gravelly SAND SC: loose, (low to medium plasticity clay), (grey), (fine grained), (fine to coarse sized gravel), moist.	M	TP15_0.6-0.7		3.4	
	1.1		Rock		CONGLOMERATE: distinctly weathered, low strength, and pale white brown, medium grained, indistinct, moist.		TP15_1.1-1.2		4.4	
					TP15 refusal at 1.3m					

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Stantec

Test Pit Record: TP16

Project: Gillieston Public School	**Position:** Easting: 362,572.45	**Date Drilled:** 23/04/2024
Location: Gillieston Public School, Ryans Road, Gillieston Heights NSW	Northing: 6,375,091.27	**Excavator** 5T
Loc Comment:	**Elevation:** Not Surveyed	**Excavator Supplier** Robbo s Demos
Job No: 304100928	**Inclination:**	**Logged/Checked:** Dave Bastian

Elevation (m)	Depth (m)	Water	Soil Origin	Graphic Log	Material Description	Moisture	Sample		Testing	Remarks
							Primary	QA	PID	
			Fill		Sandy to gravelly SILT ML: non-plastic, dark brown, soft, fine to coarse sized gravel, fine grained sand, w ≈ pl, trace organics.	w ≈ PL	TP16_0-0.1		3.6	
	0.4		Colluvium		Clayey to gravelly SAND SC: loose, (low to medium plasticity clay), (grey), (fine grained), (fine to coarse sized gravel), moist.	M	TP16_0.5-0.6		6.0	
	0.7		Residual		Sandy to gravelly CLAY CL: soft, low plasticity, red brown, fine to medium sized gravel, medium grained sand, inorganic, w ≈ pl.	w ≈ PL				
	0.9		Rock		CONGLOMERATE: distinctly weathered, low strength, and pale white brown, medium grained, indistinct, moist.	M	TP16_0.9-1		3.8	
					TP16 refusal at 1m					

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Test Pit Record: TP17

Project: Gillieston Public School	**Position:** Easting: 362,524.22	**Date Drilled:** 24/04/2024
Location: Gillieston Public School, Ryans Road, Gillieston Heights NSW	Northing: 6,375,092.01	**Excavator** 5T
Loc Comment:	**Elevation:** Not Surveyed	**Excavator Supplier** Robbo s Demos
Job No: 304100928	**Inclination:**	**Logged/Checked:** Dave Bastian

Elevation (m)	Depth (m)	Water	Soil Origin	Graphic Log	Material Description	Moisture	Sample: Primary	Sample: QA	Testing: PID	Remarks
			Fill		Sandy to gravelly SILT ML: non-plastic, dark brown, soft, fine to coarse sized gravel, fine grained sand, w ≈ pl, trace organics.	w ≈ PL	TP17_0-0.1		34.0	
	0.35		Colluvium		Clayey to gravelly SAND SC: loose, (low to medium plasticity clay), (grey), (fine grained), (fine to coarse sized gravel), moist.	M				
	0.4		Residual		Sandy to gravelly CLAY CL: soft, low plasticity, red brown, fine to medium sized gravel, medium grained sand, inorganic, w ≈ pl.	w ≈ PL	TP17_0.5-0.6		43.2	
	1		Rock		CONGLOMERATE: distinctly weathered, low strength, and pale white brown, medium grained, indistinct, moist.	M	TP17_1-1.1		15.9	
					TP17 refusal at 1.2m					

This report must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

Test Pit Record: TP18

Stantec

Project: Gillieston Public School	**Position:** Easting: 362,387.50	**Date Drilled:** 24/04/2024
Location: Gillieston Public School, Ryans Road, Gillieston Heights NSW	Northing: 6,375,190.84	**Excavator** 5T
Loc Comment:	**Elevation:** Not Surveyed	**Excavator Supplier** Robbo s Demos
Job No: 304100928	**Inclination:**	**Logged/Checked:** Dave Bastian

Elevation (m)	Depth (m)	Water	Soil Origin	Graphic Log	Material Description	Moisture	Sample Primary	Sample QA	Testing PID	Remarks
			Fill		Sandy to gravelly SILT ML: non-plastic, dark brown, soft, fine to coarse sized gravel, fine grained sand, w ≈ pl, trace red gravels/cobbles.	w ≈ PL	TP18_0-0.1		9.4	
	0.3		Colluvium		Clayey to gravelly SAND SC: loose, (low to medium plasticity clay), (grey), (fine grained), (fine to coarse sized gravel), moist.	M	TP18_0.4-0.5		7.4	
	0.5		Residual		Sandy to gravelly CLAY CL: soft, low plasticity, red brown, fine to medium sized gravel, medium grained sand, inorganic, w ≈ pl.	w ≈ PL	TP18_0.7-0.8		4.4	
	0.8		Rock		CONGLOMERATE: distinctly weathered, low strength, and pale white brown, medium grained, indistinct, moist.	M				
					TP18 Terminated at 0.9m (Target depth reached.)					

This report must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

Test Pit Record: TP19

Project: Gillieston Public School	**Position:** Easting: 362,362.82	**Date Drilled:** 24/04/2024
Location: Gillieston Public School, Ryans Road, Gillieston Heights NSW	Northing: 6,375,228.13	**Excavator** 5t
Loc Comment:	**Elevation:** Not Surveyed	**Excavator Supplier** Robbo s Demos
Job No: 304100928	**Inclination:**	**Logged/Checked:** Dave Bastian

Elevation (m)	Depth (m)	Water	Soil Origin	Graphic Log	Material Description	Moisture	Sample		Testing	Remarks
							Primary	QA	PID	
			Fill		Sandy GRAVEL GW: green grey, loose, fine to medium sized, medium to coarse grained sand, moist.	M	TP19_0-0.1		6.5	
	0.3		Colluvium		Sandy to gravelly SILT ML: very soft, non-plastic, grey, fine sized gravel, fine to medium grained sand, w > pl, carbonaceous lenses @ 0.4. with roots.	w > PL	TP19_0.3-0.4		10	
							TP19_0.4-0.5		9.6	
	0.7				Sandy to gravelly CLAY CI: soft, medium plasticity, orange brown and white, fine to medium sized gravel, medium to coarse grained sand, inorganic, w > pl.		TP19_0.8-0.9		3.6	
	1.1		Alluvial		SAND SP: loose to medium dense, (orange brown), (medium grained), moist.	M	TP19_1.2-1.3		4.5	
					TP19 refusal at 1.3m					

This report must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

Stantec

Test Pit Record: TP20

Project: Gillieston Public School	**Position:** Easting: 362,354.21	**Date Drilled:** 24/04/2024
Location: Gillieston Public School, Ryans Road, Gillieston Heights NSW	Northing: 6,375,245.68	**Excavator** 5t
Loc Comment:	**Elevation:** Not Surveyed	**Excavator Supplier** Robbo s Demos
Job No: 304100928	**Inclination:**	**Logged/Checked:** Dave Bastian

Elevation (m)	Depth (m)	Water	Soil Origin	Graphic Log	Material Description	Moisture	Sample Primary	Sample QA	Testing PID	Remarks
			Fill		Sandy GRAVEL GW: green grey, loose, fine to medium sized, medium to coarse grained sand, moist.	M	TP20_0-0.1		3.2	
	0.2		Colluvium		Sandy to gravelly SILT ML: very soft, non-plastic, grey, fine sized gravel, fine to medium grained sand, w > pl, carbonaceous lenses @ 0.4. with roots.	w > PL				
	0.4				Sandy to gravelly SILT ML: very soft, non-plastic, grey, fine sized gravel, fine to medium grained sand, w ≈ ll.	w ≈ LL	TP20_0.4-0.5		5.0	
	0.6				Sandy to gravelly CLAY CI: soft, medium plasticity, orange brown and white, fine to medium sized gravel, medium to coarse grained sand, inorganic, w > pl.	w > PL	TP20_0.7-0.8		3.2	
	0.8		Natural		SAND SP: loose to medium dense, (orange brown), (medium grained), moist, 300mm boulder.	M				
					TP20 refusal at 0.95m					

This report must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

Stantec

Test Pit Record: TP21

Project: Gillieston Public School	**Position:** Easting: 362,371.69	**Date Drilled:** 24/04/2024
Location: Gillieston Public School, Ryans Road, Gillieston Heights NSW	Northing: 6,375,190.89	**Excavator** 5T
Loc Comment:	**Elevation:** Not Surveyed	**Excavator Supplier** Robbo s Demos
Job No: 304100928	**Inclination:**	**Logged/Checked:** Dave Bastian

Elevation (m)	Depth (m)	Water	Soil Origin	Graphic Log	Material Description	Moisture	Sample		Testing	Remarks
							Primary	QA	PID	
			Fill		Sandy to gravelly SILT ML: non-plastic, grey, soft, fine to coarse sized gravel, fine to coarse grained sand, w ≈ pl, trace carbonaceous material.	w ≈ PL	TP21_0-0.1		4.4	
	0.5		Colluvium		Silty to sandy GRAVEL GM: loose, (grey), (fine to coarse sized), (medium to coarse grained sand), (with low plasticity clay), moist.	M	TP21_0.5-0.6		6.3	
	0.7				Clayey to gravelly SAND SC: loose, (low plasticity clay), (pale grey and orange), (medium to coarse grained), (fine to medium sized gravel), moist.					
	0.75		Residual		Sandy to gravelly CLAY CI: soft, medium plasticity, orange brown and red, fine to coarse sized gravel, medium to coarse grained sand, inorganic, w > pl, grading to ewm, with prf.	w > PL	TP21_1-1.1		8.6	
	1.1		Rock		SANDSTONE: distinctly weathered, low strength, orange and white, fine grained, indistinct, moist.	M				
					TP21 refusal at 1.3m					

This report must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

Borehole Record: TP/HA22

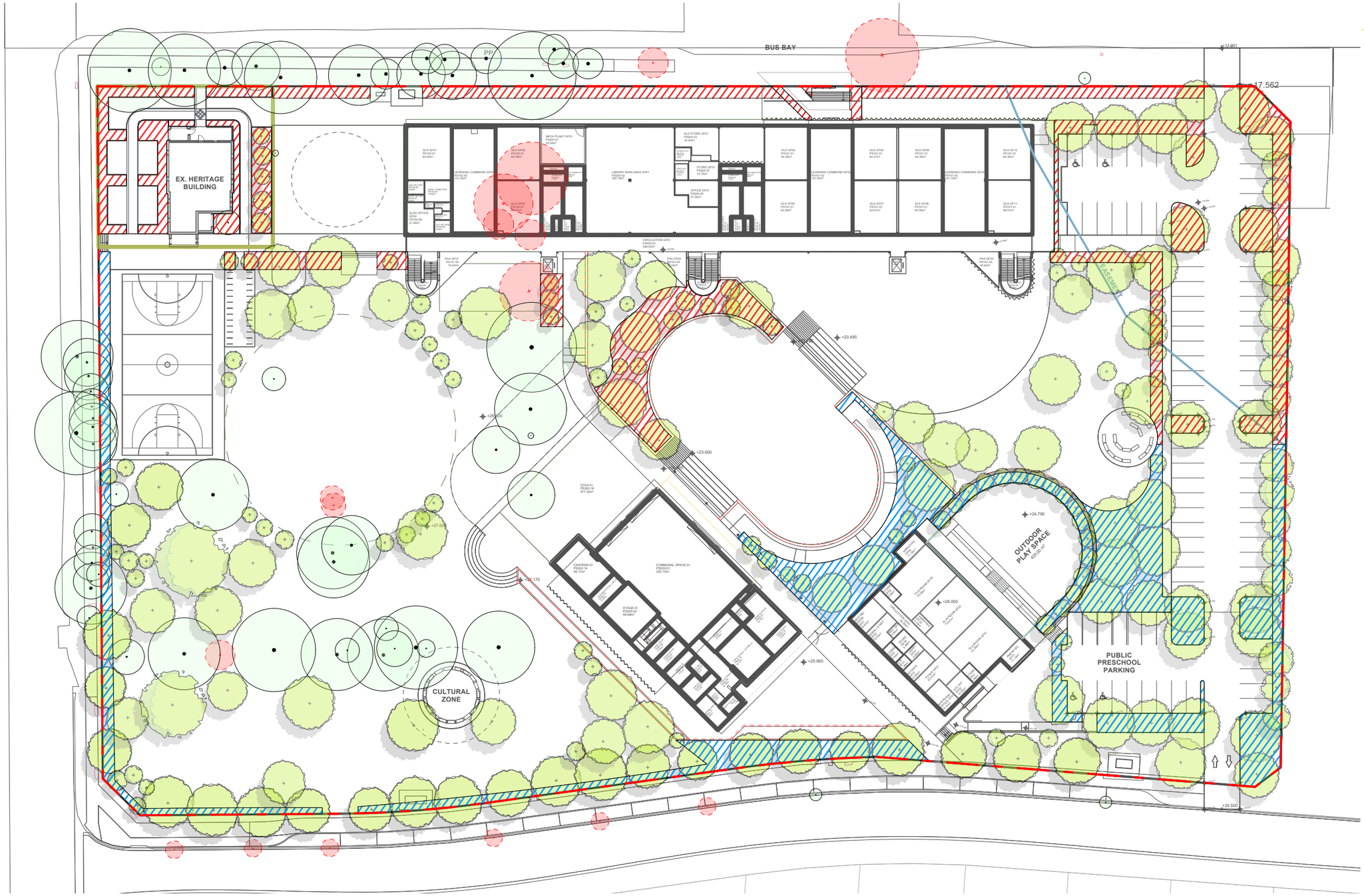
Project: Gillieston Public School	**Position:** Easting: 362,375.10	**Date Drilled:** 24/04/2024
Location: Gillieston Public School, Ryans Road, Gillieston Heights NSW	Northing: 6,375,170.70	**Drill Rig** Hand Auger
Loc Comment:	**Elevation:** Not Surveyed	**Drill Supplier** Stantec Australia Pty Ltd
Job No: 304100928	**Inclination:**	**Logged/Checked:** Dave Bastian

Elevation (m)	Depth (m)	Water	Soil Origin	Graphic Log	Material Description	Moisture	Sample		Testing	Remarks
							Primary	QA	PID	
	0.1		Fill		Sandy to gravelly SILT ML: non-plastic, grey, very soft, fine to medium sized gravel, fine grained sand, w > pl, trace carbonaceous material.	w > PL	TP/HA22_0-0.1		4.8	
			Colluvium		Sandy GRAVEL GW: loose, (pale grey), (fine to coarse sized), (fine to medium grained sand), moist.	M				
							TP/HA22_0.2-0.3		5.4	
					TP/HA22 refusal at 0.3m					

This report must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

Appendix C Proposed Site Plans

IRRIGATION DIAGRAM



LEGEND

- EXISTING TREES TO BE RETAINED
- PROPOSED TREE PLANTINGS AS SPECIFIED
- SITE BOUNDARY
- IRRIGATED AREA 1
- IRRIGATED AREA 2

SITE AREA : 23429m²

IRRIGATED AREA 1 : 1408m²

IRRIGATED AREA 2 : 1376m²

TOTAL IRRIGATED AREA: 2785m²

1 / L403 IRRIGATION DIAGRAM
Scale: 1:700

0 10 20 30 40 50 M

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LANDSCAPE SCHEMATIC

TLA SUBMISSION

Cnr Northview Street & Ryans Road,
Gillieston Heights

GILLIESTON PUBLIC SCHOOL

School Infrastructure NSW

REV J- 13.09.2024

NSW GOVERNMENT Education School Infrastructure

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CONTENTS

01

ANALYSIS

Study of the existing



Local Context

Site Analysis

Bushfire Analysis

02

VISION

Study of the proposed



Landscape Vision

Materials

03

PLANNING

We have a plan



Landscape Masterplan

Masterplan

Future Nature Play Elements

Future exploratory Ecological Play elements

Future Active Nature Play Elements

04

STRATEGIES

Study of plan



Plant Materials

Canopy Coverage

Playspace Diagram

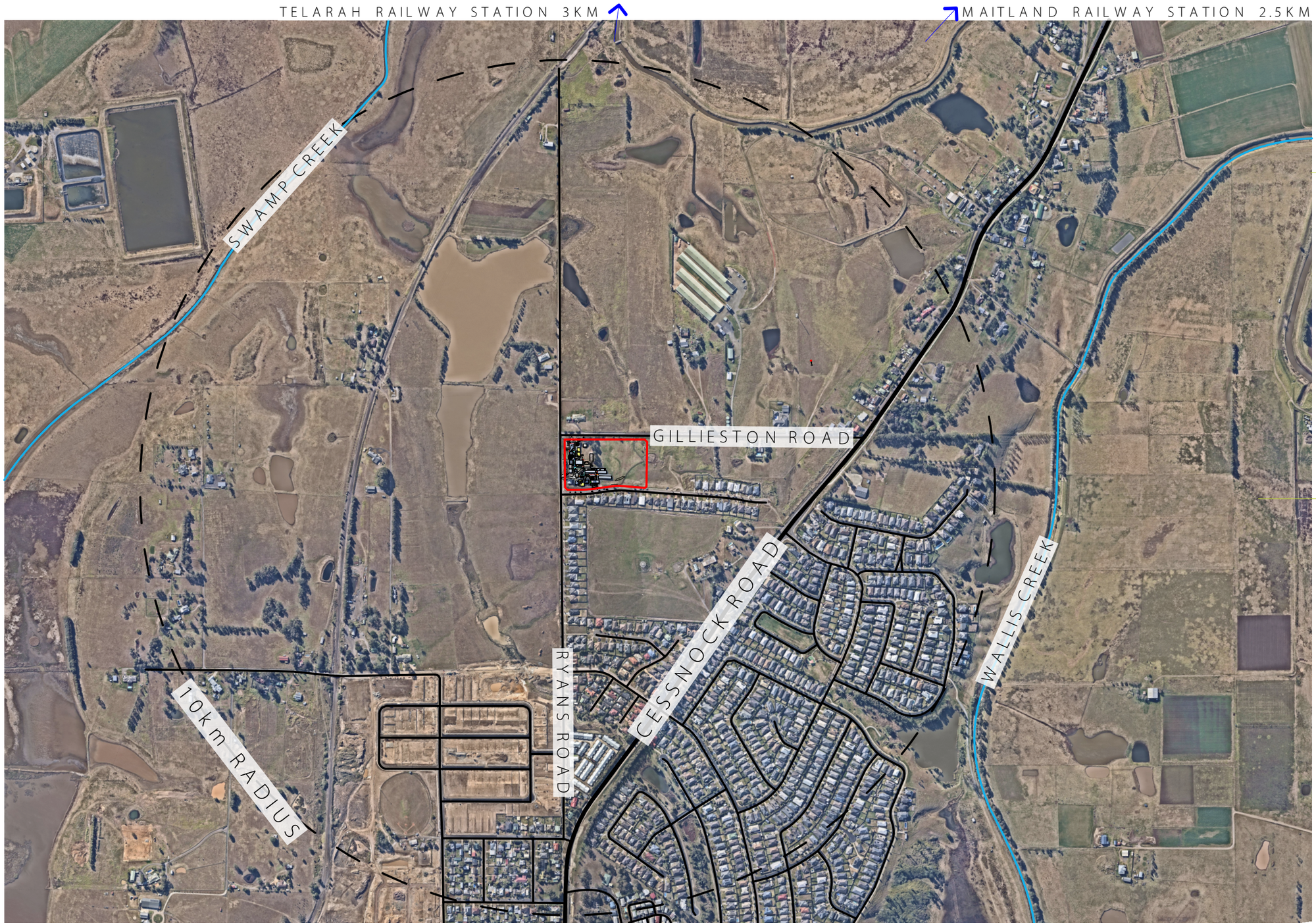
Connection With Country

Acknowledgement of Country

Terras acknowledge the Traditional Custodians of the lands on which we work and live. We pay our respects to the elders, past, present and emerging and recognise their continuing connection to country and contribution to this land.

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LOCAL CONTEXT



LEGEND

- SITE BOUNDARY
- MAJOR ROAD
- MINOR ROAD
- CREEKLINE

NOTES

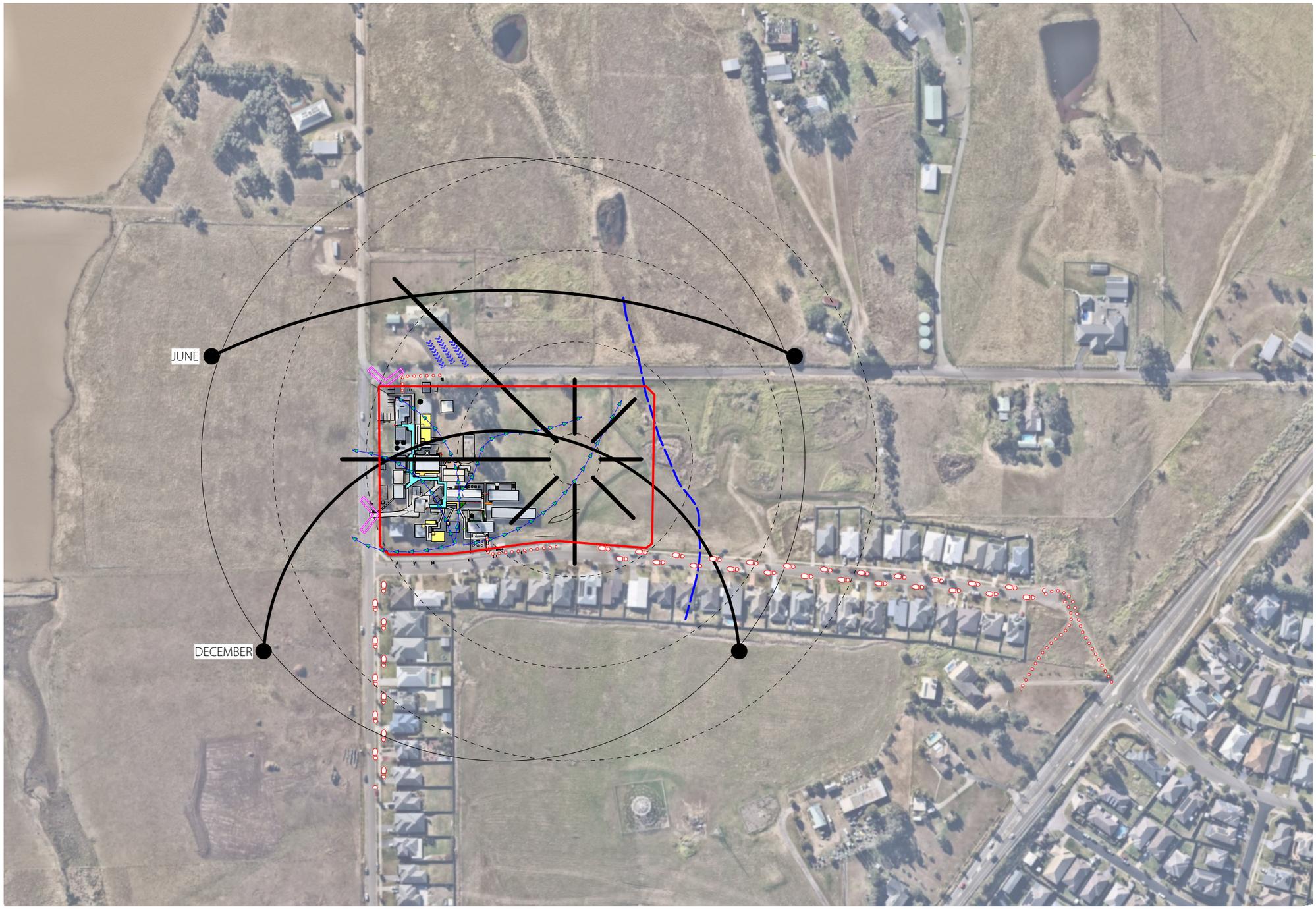
The site is located approximately 3km south of Telarah Railway Station and 1.5km north of the Gillieston Heights Medical Centre. It is bordered to the west by Ryans Road, which connects to Cessnock Road, a major regional transport route. Gillieston Road adjoins the northern boundary, which also connects to Cessnock Road.

Temporary demountible classrooms occupy the eastern half of the site, which shall be removed to accomodate the proposed classrooms.

As the site is located on the northern extents of the Gillieston development footprint, broad open views across undulating paddocks are afforded to the north and west, presenting an opportunity for connection with country in many aspects of the site design.

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SITE ANALYSIS



ACCESS

VEHICULAR ACCESS

FOOTPATH

UNFORMED PEDESTRIAN ACCESS

NATURAL SYSTEMS

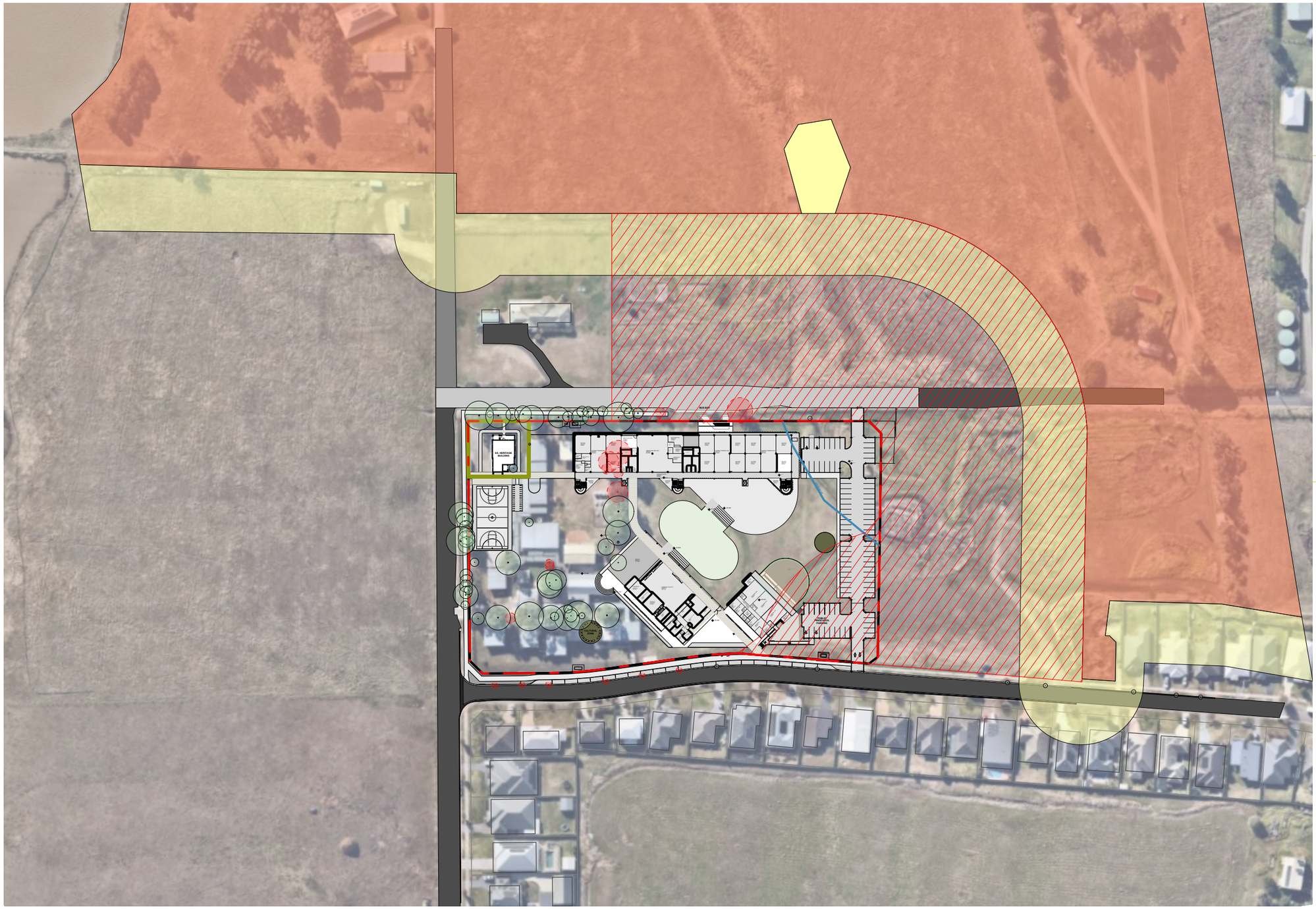
WATER COURSE

DIRECTION OF WATER PATH

NORTH WEST WINTER WINDS

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BUSHFIRE ANALYSIS



LEGEND

- SITE BOUNDARY
- 100m Temporary APZ
- MINOR ROAD
- VEGETATION BUFFER
- VEGETATION CATEGORY 3

NOTES

Refer to:

ECO LOGICAL AUSTRALIA Pre DA advice

Ref 22HNC_4039 DATED: 06-10-23

1 / L103 Bushfire Analysis
Scale: 1:2000

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LANDSCAPE VISION

CONNECTION TO COUNTRY



As a landscape architecture practice that deals with land, places, culture, history and the natural environment, everything we do is on Country and it is our responsibility to care for country. We are committed to understand more about the Traditional Owners of this land, and their deep cultural connections to Country. Our ambition is to:

- Reduce the impacts of natural events through sustainable land and water use practices
- Value and respect Aboriginal cultural knowledge and language and engage with truth
- Ensure Country is cared for appropriately and sensitive sites are protected

HUMAN CONNECTIONS



Provide legible and easily accessible links through the site at a human scale to encourage physical connection. Creating opportunities for active and passive recreation spaces and a variety of interactive experiences.

The environments in which we live profoundly affect us. Positive relationships and connections to natural and built landscapes impact our health and well-being in a variety of ways. Including reducing stress and minimizing anxiety.

It is our intention to foster these connections for people to Live, Work, Play, Gather, and Learn.

CLIMATE POSITIVE DESIGN



As stewards of the environment, landscape architects must advocate for climate positive outcomes. As designers of the built environment we need to ensure the future of our planet by reducing carbon footprints and increasing sequestration. Climate Positive Design can mean:

- Retention of as many trees on site as possible
- Reduce demolition and recycle and reuse materials
- Reduce the extent of high carbon elements
- Maximise soft surfaces and soil root plate volumes
- Increase biodiversity
- Design for longevity
- Utilise WSUD principles

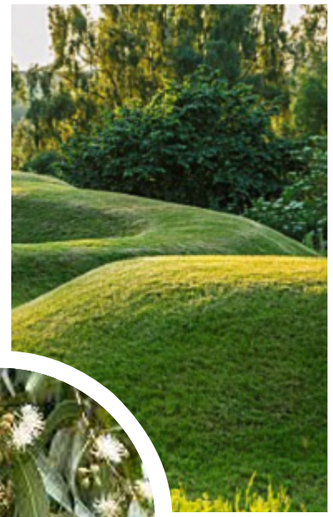
SITE SPECIFIC DESIGN



Design which preserves, enhances, and creates strong visual and physical connections to the natural features inherent to the site ,whether they are a stand of trees, the topography of a site, a body of water, or a distant view.

MATERIALS


Native vegetation

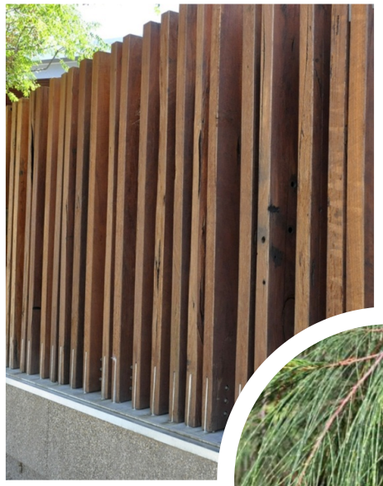







Naturalistic planting themes

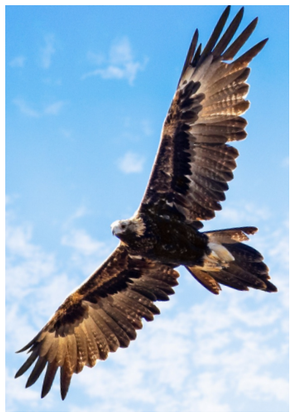






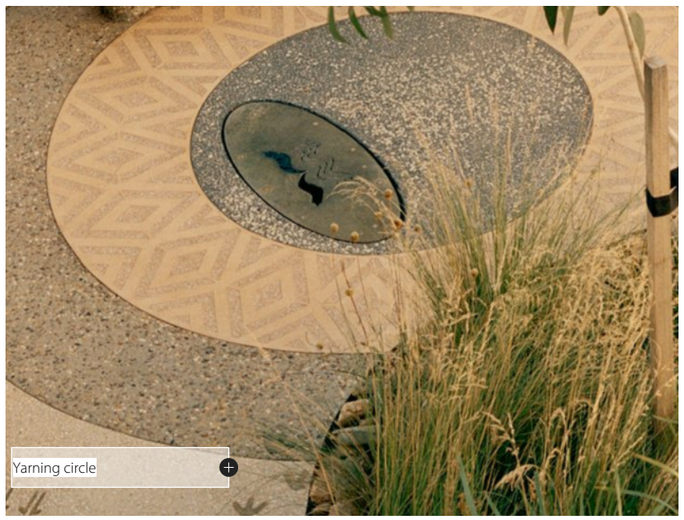






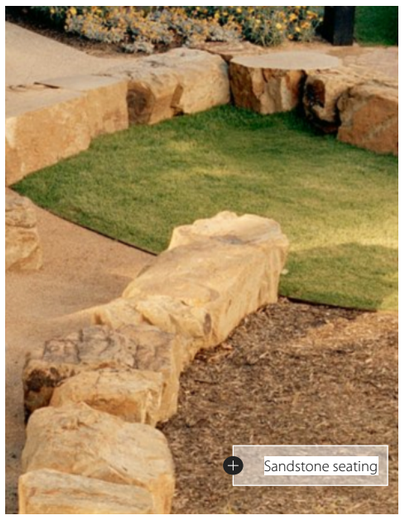





Yarning circle




Pavement patterning


Sandstone seating

NOTES

The proposed material palette is inspired by the history and heritage of the site and use of materials relating to sandstone and cedar. Souring material from Country, with consent.

Sandstone is proposed to be used in a variety of ways throughout the site. Timber referencing Cedar from the banks of Wallis Creek may be used in feature walling.

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LANDSCAPE MASTERPLAN

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MASTERPLAN



LEGEND

- EXISTING TREES TO BE REMOVED
- EXISTING TREES TO BE RETAINED
- PROPOSED TREE PLANTINGS AS SPECIFIED
- SITE BOUNDARY
- TURFED AREA
- PERENNIAL/FORMAL PLANTING
- MASS PLANTING
- NATIVE GRASS MATRIX
- CRUSHED DECO GRAVEL
- CONCRETE
- CONCRETE RETAINING

Notes

1. HARD PLAY SPACE AND ASSEMBLY AREA
2. POTENTIAL FOR FUTURE OUTDOOR CLASSROOM AND PASSIVE PLAY SPACE
3. POTENTIAL FOR FUTURE ECOLOGICAL PLAY SPACE
4. VEGITATION BUFFER BETWEEN CHILDCARE AND GREATER PLAY SPACE TO INCLUDE ENDEMIC PLANTINGS.
5. CONCRETE BLEACHERS
6. ACCESSIBILITY RAMP FROM UPPER ACCESS TO BALL PLAY AREA
7. TURFED BALL PLAY AREA
8. BATTERED MASS PLANTING
9. MAIN NORTH/ SOUTH ACCESS PATH
10. COLA BREAKOUT SPACE WITH CONCRETE BLEACHER SEATING
11. GRAVEL TRANSITION SPACE
12. WIND BREAK PLANTING
13. OPEN GRASS SPORT FIELD
14. YARNING CIRCLE
15. POTENTIAL FOR FUTURE CULTURAL SPACE AND EXPLORITORY NATURE PLAY
16. POTENTIAL FOR SCHOOL SIGNAGE AND PERIMITER CONOPY SCREENING
17. POTENTIAL FOR FUTURE PRODUCTIVE GARDEN AND BUSH TUCKER WALK
18. MASS PLANTING AND TREES FOR HERITAGE BUILDING SPACIAL BUFFER
19. LEVEL TURF SOFT PLAY SPACE
20. FORMAL GARDEN WITH CONNECTION TO HERITAGE BUILDING AND POTENTIAL FOR PUBLIC INTERACTION

1 / L301 Landscape Masterplan
Scale: 1:700

0 10 20 30 40 50 M

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FUTURE NATURE PLAY ELEMENTS











NOTES

Active adventure play inspired by the native bushland character.

Nature play with active play features such as climbing, swinging, hanging, balancing, jumping, sliding and stepping.

Inclusive play area accessible for all.

The current landscape schematic design supports the future development and integration of play equipment and nature play elements.

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FUTURE EXPLORATORY ECOLOGICAL PLAY ELEMENTS













NOTES

Sensory and imagination play derived from natural elements.

Potential to use the natural slope and central valley for various play.

The current landscape schematic design supports the future development and integration of play equipment and nature play elements.

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FUTURE ACTIVE NATURE PLAY ELEMENTS



ACTIVE PLAY FOR JUNIORS. COMBINATION OF SPINS, SWINGS, BALANCING AND NATURE PLAY.











NOTES

1. Play mulch under trees-
The use of Natural materials in play areas to promote nature play elements

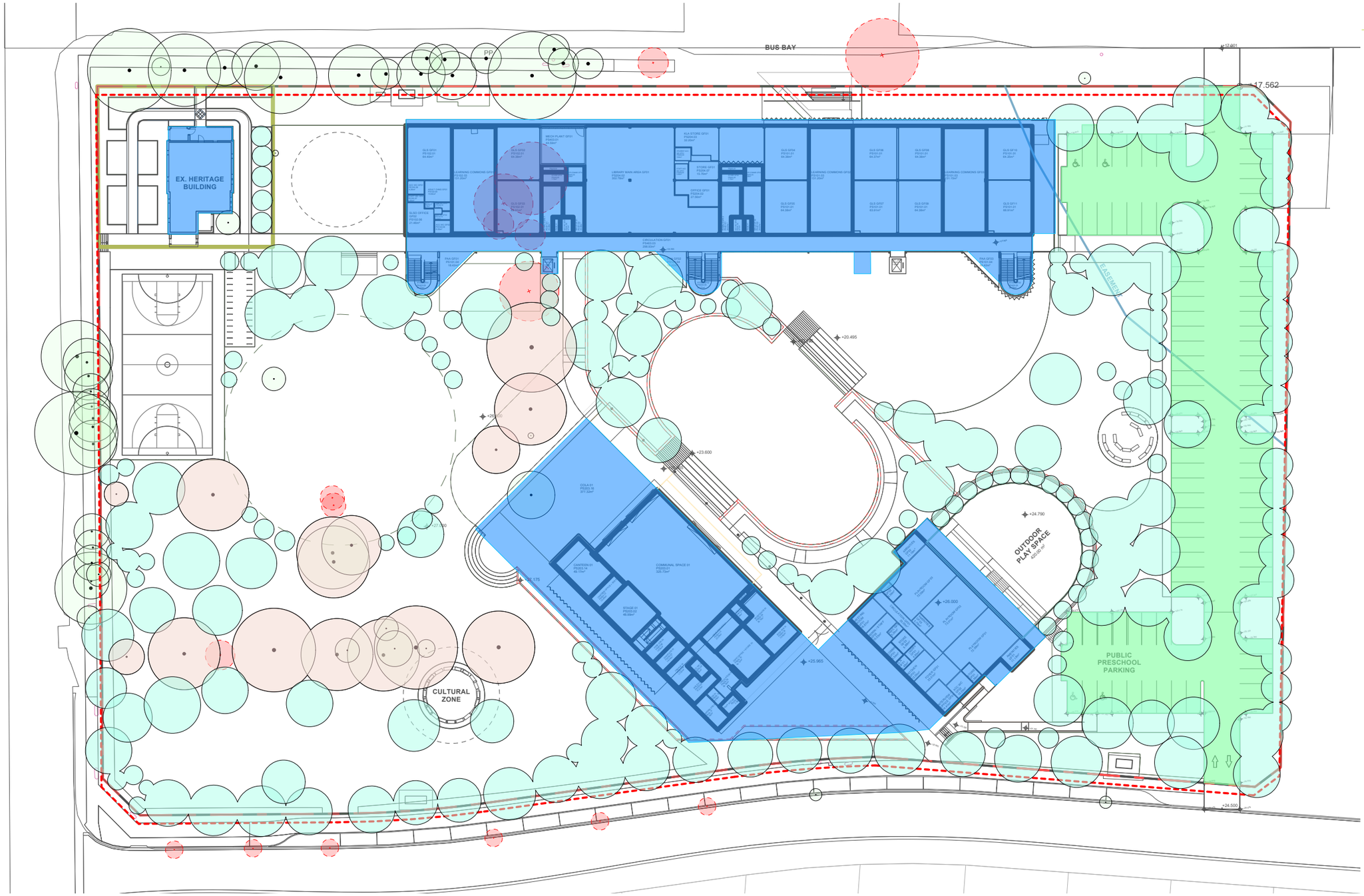
2. Trees as part of ecological play areas-
Endemic tree selection as part of the connection to country process and to ensure sufficiant canopy shade in incorporated into the playspaces.

The current landscape schematic design supports the future development and integration of play equipment and nature play elements.

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PLANT MATERIALS

CANOPY COVERAGE



LEGEND

- OFF SITE CANOPY
- EXISTING TREES TO BE REMOVED
- EXISTING CANOPY COVER
- PROPOSED CANOPY COVER
- SITE BOUNDARY
- CARPARK
- BUILDING FOOTPRINT

SITE AREA : 23429m²

BUILDING FOOTPRINT: 5109m²

CARPARK : 2174m²

EXISTING CANOPY COVER: 1638m²

PORPOSED CANOPY COVER: 5561m²

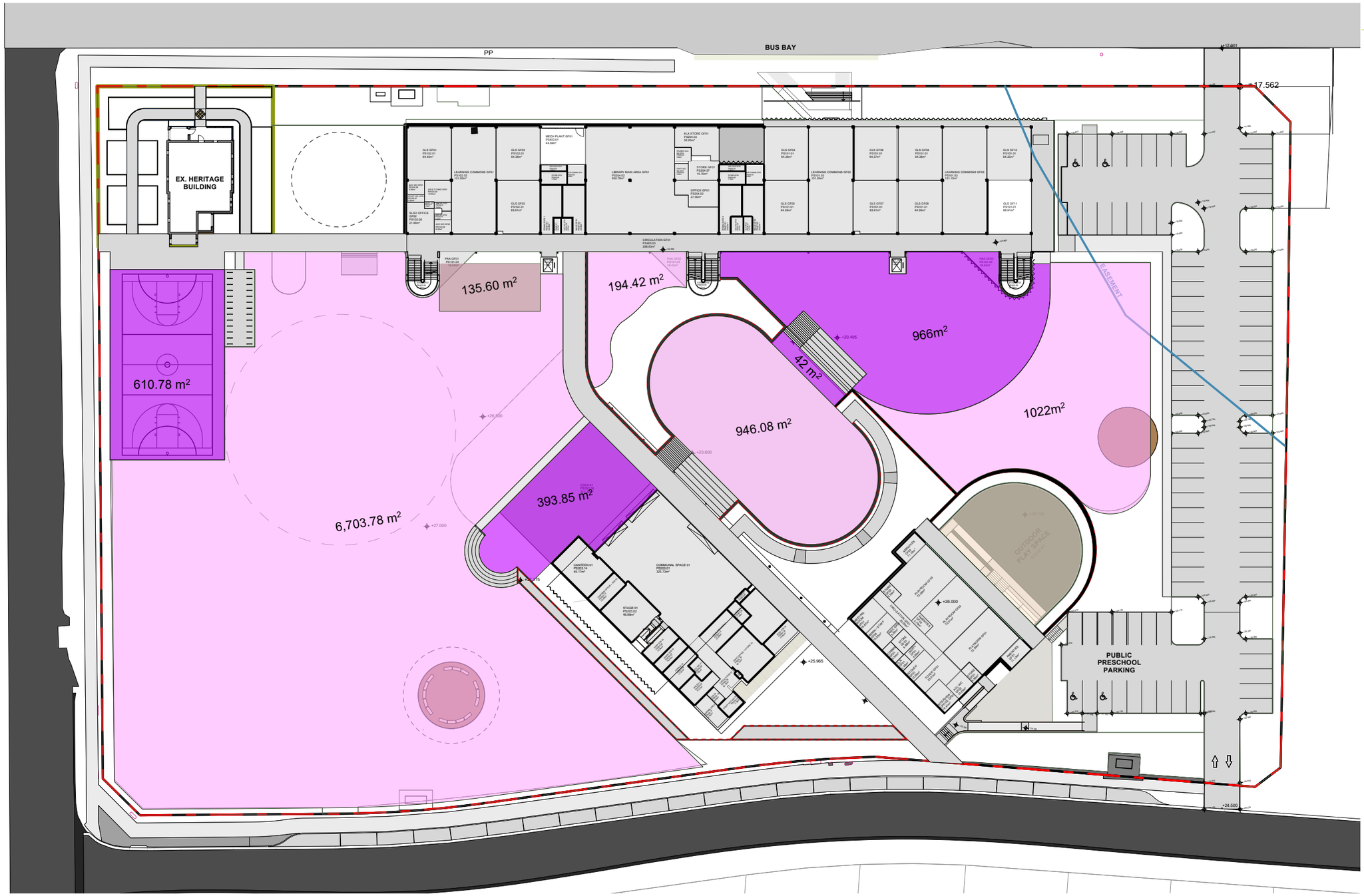
TOTAL CANOPY COVER: 7199m²
or 30.7% of external site (calculation excludes building footprint.)

1 / L401 CANOPY COVERAGE
Scale: 1:700

0 10 20 30 40 50 M

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PLAYSPACE DIAGRAM



LEGEND

- SITE BOUNDARY
- SOFTSCAPE PLAYSPACE
- HARDSCAPE PLAYSPACE
- SUPPORT LEARNING SPACE

SITE AREA : 23429m²

BUILDING FOOTPRINT: 5109m²

CARPARK : 2174m²

HARD PLAYSPACE: 2019m²

SOFT PLAYSPACE: 8213.4m²

TOTAL PLAYSPACE: 10232.4m²

1 L402 PLAYSPACE DIAGRAM
Scale: 1:700

0 10 20 30 40 50 M

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CONNECTION WITH COUNTRY



The introduction of Indigenous Dreamtime stories through local art and plaques guided by local eldersand community representitives to encourage sense of place and history.



The introduction of yarning circles into the landscape encourages connection to country while providing significant places for knowledge sharing and cultural education.



The future establishment of endemic bushtucker plants for productive purposes and cultural learning and placemaking opportunities.





Eco Play and nature play encourporating Dreamtime stories in natural materials incorporated into playground theming



Endemic Plantings of species such as Lophostemon suaveolens (Swamp Box) throughout this softscapes of the school and around this potential outdoor learning and nature play space encourage exploratory learning and connection to place and support local fauna and ecological communities



The introduction of outdoor learning spaces provide flexible learning opportunities and encourages multisensory learning experiences and fosters a connection to country through integrated learning.

NOTES

Design considerations to incorporate the site's unique character and endemic vegetation within the Hunter region

Material use and movement design has been incorporated and carefully considered in each component of the landscape design to reach maximum audience in recognition of the site's Connection to Country

1 / L403 Connection With Country
Scale: 1:1000

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PLANT MATERIALS









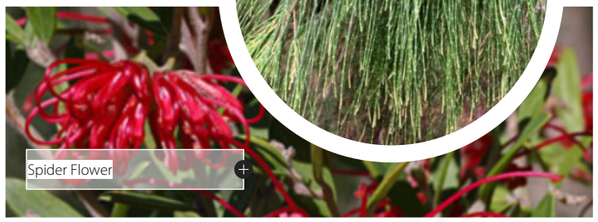


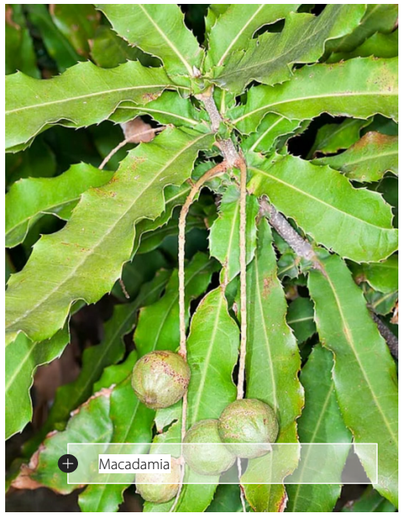




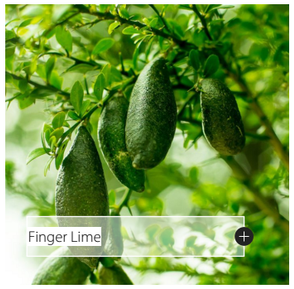














NOTES

The proposed planting palette shall include predominanty native species with an emphasis on bush tucker. Species shall provide a variety of form and texture for visual and tactile stimulation, whilst having demonstrated hardiness and low maintenance requirements.

CPTED principples shall also be included as per school design standards.

Planting of endemic vegetation will help to create a sense of place unique to the site with swathes of native grasses proposed to reinforce movement and the site's relationship to water.

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240358-SPS-001(B)

SEWER PUMP STATION
GILLIESTON PUBLIC SCHOOL SPS
DETAIL DESIGN
LOT 51 DP1162489
RYANS ROAD, GILLIESTON HEIGHTS

NOTES (GENERAL):

1. THE ENTIRE PLUMBING INSTALLATION IS TO COMPLY WITH THE REQUIREMENTS OF AS3500.2:2021 AND THE PLUMBING AND BUILDING CODES OF AUSTRALIA.
2. THE CONTRACTOR IS TO VISIT SITE DURING TENDERING PERIOD TO FAMILIARISE THEMSELVES WITH SITE CONDITIONS AND MAKE NECESSARY ALLOWANCE IN THE TENDER.
3. DESIGN OF MAIN GRAVITY DRAIN, PUMPSTATION AND RISING MAIN HAS BEEN UNDERTAKEN TO ENSURE COMPATIBILITY WITH FUTURE SCHOOL EXPANSIONS. CONTRACTOR IS TO READ THIS DRAWING IN CONJUNCTION WITH THE ARCHITECTURAL DRAWINGS AND NOTIFY SCHOOLS INFRASTRUCTURE IF ANY CLASHES ARE IDENTIFIED.
4. GEOTECHNICAL INVESTIGATION ON SITE HAS ENCOUNTERED SANDSTONE AT A DEPTH OF 1.1m. CONTRACTOR TO MAKE PROVISIONAL ALLOWANCE FOR ROCK EXCAVATION.
5. CONTRACTOR TO CREATE CONSTRUCTION ACCESS AND RESTORE TO PRE EXISTING CONDITIONS AT COMPLETION OF WORKS.



LOCALITY SKETCH

NOT TO SCALE

240358–SPS SHEET LIST

Sheet Title	Sheet Description
240358–SPS–001(B)	TITLESHEET, DRAWING INDEX, GENERAL NOTES & LOCALITY PLAN
240358–SPS–002(B)	OVERALL SITE PLAN
240358–SPS–101(B)	GRAVITY MAIN AND SPS DETAIL
240358–SPS–102(B)	RISING MAIN DETAIL PLAN
240358–SPS–201(B)	GRAVITY MAIN LONGITUDINAL SECTION
240358–SPS–202(B)	RISING MAIN LONGITUDINAL SECTION
240358–SPS–211(B)	TYPICAL SECTIONS: COLLECTING MH, SPS & DISCHARGE MH

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SCALES

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PROPERTY DESCRIPTION
SEWER PUMP STATION
GILLIESTON PUBLIC SCHOOL SPS
DETAIL DESIGN
LOT 51 DP1162489
RYANS ROAD, GILLIESTON HEIGHTS

SURVEYED: ADW Johnson

DATUM: GDA94 M.G.A. ZONE 56 A.H.D.

PROJECT: GILLIESTON PUBLIC SCHOOL SPS

PLAN TITLE: TITLESHEET, DRAWING INDEX, GENERAL NOTES & LOCALITY PLAN

PROJECT No.	DISCIPLINE	NUMBER	REV.
240358	SPS	001	B

Plotted By: iainb Plot Date: 22/09/23 – 12:02 Cad File: N:\240358\DWG\Water & Sewer\SPS\240358–SPS–001(B).dwg

100mm AT FULL SIZE
This plan includes coloured information. If you have a black and white copy you do not have all of the information. This note is coloured RED.

240358-SPS-002(B)

LEGEND

- RM — NEW RISING MAIN
- S — S — NEW GRAVITY SEWER
- S — S — EXISTING GRAVITY SEWER
- EXISTING LOT BOUNDARY

CONTOUR INTERVAL = 1.0m

MGA

ORIGIN OF LEVELS
P.M.60149
E: 362313.440
N: 6375277.330
AHD: 21.398 A.H.D.

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NOTE:
1. SCHOOL EXPANSION MASTERPLAN SHOWN AS TRANSPARENT OVERLAY IS DRAFT ONLY PROVIDED FOR INFORMATION.

SHEET 1

SHEET 2

GILLIESTON ROAD

RYANS ROAD

NORTHVIEW STREET

NEW DN150 PVC GRAVITY DRAIN BETWEEN SEPTIC AND NEW PUMPSTATION

NEW DN1500 PRE-PACKAGED PUMPSTATION

EXISTING SEPTIC TANK

DN900 INSPECTION CHAMBER

COLLECTING CHAMBER DN1500

NEW DN75 HDPE RISING MAIN

CONNECTION TO TMS JUNCTION

RECEIVING DN900 INSPECTION CHAMBER

EXISTING MH J7382

HWC TMS AND GRAVITY CROSSING. REFER TO DWG 240358-SEW-001 to 003

PLAN
SCALE 1:500

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100mm AT FULL SIZE

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DESIGN FILE N:\JOBNUMBER\Design\12D\

SCALES 0 10 20 A1 / A3 1:500 / 1:1000

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PROPERTY DESCRIPTION
SEWER PUMP STATION
GILLIESTON PUBLIC SCHOOL SPS
DETAIL DESIGN
LOT 51 DP1162489
RYANS ROAD, GILLIESTON HEIGHTS

SURVEYED: ADW Johnson
DATUM: GDA94 M.G.A. ZONE 56 A.H.D.

PROJECT: GILLIESTON PUBLIC SCHOOL SPS

PLAN TITLE: OVERALL SITE PLAN

DRAFT

PROJECT No.	DISCIPLINE	NUMBER	REV.
240358	SPS	002	B

Plotted By: iainb Plot Date: 22/09/23 - 12:03 Cad File: N:\240358\DWG\Water & Sewer\SPS\240358-SPS-002(B).dwg

LEGEND

- RM — PROPOSED RISING MAIN
- S S — PROPOSED SEWER
- W — PROPOSED WATER COPPER DN32
- E — PROPOSED ELECTRICAL 100mm CONDUIT
- EXISTING LOT BOUNDARY
- T — EXISTING TELECOM
- OPT — EXISTING FIBRE OPTIC
- W — EXISTING WATER
- E — EXISTING ELECTRIC
- RW — EXISTING RECYCLED WATER
- GAS — EXISTING GAS
- S — EXISTING SEWER
- O/H — EXISTING OVERHEAD POWER

CONTOUR INTERVAL = 1.0m

MGA

NOTES (MAIN GRAVITY DRAIN):

1. DRAIN TO BE DN150 PVCU PN6 LAID AT MINIMUM OF 0.8% GRADE.
2. DEPTH OF COVER AND PIPE GRADES TO BE INSTALLED AS PER THE LONG SECTION SHEET 201.
3. BENEATH CARPARK, ENSURE MINIMUM 50mm OF OVERLAY SEPARATING DRAIN FROM CONCRETE.
4. SERVICE CROSSINGS TO HAVE MINIMUM VERTICAL SEPARATION OF 100mm.
5. PROVIDE INSPECTION OPENINGS AS REQUIRED BY A3500.2:2021
6. ALL PIPEWORK TO BE TESTED TO AS3500 REQUIREMENTS.
7. PIPE EXCAVATION AND BEDDING TO BE IN ACCORDANCE WITH AS3500.2:2012 SECTION 5.
8. PROVIDE INSPECTION OPENINGS ON THE MAIN DRAIN AT MAX 30m INTERVALS AS PER AS3500.2 SECTION 4.7.
9. INSPECTION OPENINGS IN TRAFFICABLE AREAS TO BE SUPPLIED WITH TRAFFICABLE LID.

NOTES (PUMPSTATION SERVICES):

1. WET WELL TO REQUIRE WATER AND ELECTRICAL SERVICE CONNECTION. CONTRACTOR TO COORDINATE INSTALLATION OF SERVICES.
2. 100mm ELECTRICAL CONDUIT TO BE INSTALLED TO PUMPSTATION IN ACCORDANCE WITH THE RELEVANT AUSTRALIAN STANDARDS.
3. 32mm TYPE B COPPER TO AS1432 WATER SUPPLY TO BE INSTALLED TO PUMPSTATION.
4. PUMPSTATION SERVICES TO SHARE TRENCH WITH MAIN GRAVITY DRAIN BETWEEN CHAINAGES 0.000 TO 75.000. CONTRACTOR TO LOCATE SUITABLE POINT OF CONNECTION FOR SERVICES INTERNAL TO SCHOOL AND INSTALL IN ACCORDANCE WITH RELEVANT AUSTRALIAN STANDARDS.

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GILLIESTON ROAD

GRAVITY ROUTE TO CROSS OVER STORMWATER WITH 100mm MIN VERTICAL CLEARANCE. 50mm MIN VERTICAL CLEARANCE TO UNDERSIDE OF CONCRETE

CONTRACTOR TO BREAK CONCRETE IN CARPARK TO LAY PIPE. RESTORE FOLLOWING COMPLETION. AT ALL CUT EDGES, DOWEL AND EPOXY INTO EXISTING CONCRETE WITH N12 DOWELS AT 500 CENTRES, MIN EMBEDMENT 100mm

ALIGNMENT BETWEEN CARPARK AND SEPTIC TANK SHOWN INDICATIVE ONLY. CONTRACTOR TO UNEARTH INCOMING SEWER TO SEPTIC TANK AND REROUTE AS APPROPRIATE

SEWER INSPECTION OPENING. (SURVEYED LOCATION)

UNDERGROUND TANK AND INCOMING SEWER BETWEEN INSPECTION OPENING AND SEPTIC TANK HAS NOT BEEN LOCATED. CONTRACTOR TO EXCAVATE AROUND SEPTIC TANK AND UNEARTH INCOMING SEWER. CONNECTION TO EXISTING SEWER TO BE MADE UPSTREAM OF SEPTIC TANK THROUGH FITTINGS TO SUIT, PROVIDE INSPECTION OPENING IMMEDIATELY DOWNSTREAM OF CONECTION.

EXISTING SEPTIC TANK TO BE DEMOLISHED.

CONTRACTOR TO CONNECT WATER AND ELECTRICITY TO SPS TO SUIT

ELECTRICAL KIOSK

DN900 INSPECTION CHAMBER

ELECTRICAL PIT

WATER SERVICE AND ELECTRICAL TO SHARE TRENCH WITH GRAVITY MAIN BETWEEN PUMP STATION TO APPROXIMATELY CHAINAGE 60m (ADJACENT ELECTRICAL KIOSK)

ELECTRICAL TO BE INSTALLED BY LICENSED ELECTRICIAN IN ACCORDANCE WITH AS3000:2018

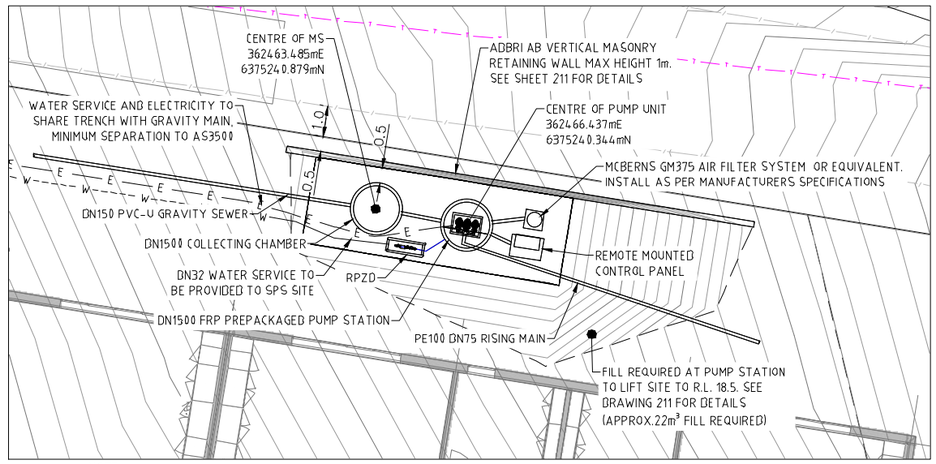
REFER. DETAIL 1

COLLECTION MH DN1500

DN1500 WET WELL

SEE SHEET 102 FOR SEWER RISING MAIN

PLAN
SCALE 1:250



NOTE:
SEE DRAWING 211 FOR SPS AND COLLECTING CHAMBER DETAILS.

DETAIL 1 SPS PLAN
SCALE 1:100

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SCALES: 0 5 10 A1 / A3 — 1:250 / 1:500

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PROPERTY DESCRIPTION
SEWER PUMP STATION
GILLIESTON PUBLIC SCHOOL SPS
DETAIL DESIGN
LOT 51 DP1162489
RYANS ROAD, GILLIESTON HEIGHTS

SURVEYED: ADW Johnson
DATUM: GDA94 M.G.A. ZONE 56 A.H.D.

PROJECT: GILLIESTON PUBLIC SCHOOL SPS

PLAN TITLE: GRAVITY MAIN AND SPS DETAIL

DRAFT

PROJECT No.		DISCIPLINE		NUMBER	REV.
240358	–	SPS	–	101	B

Plotted By: iainb Plot Date: 22/09/23 – 12:05 Cad File: N:\240358\DWG\Water & Sewer\SPS\240358-SPS-101(B).dwg

240358-SPS-101(B)

100mm AT FULL SIZE

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240358-SPS-102(B)

LEGEND

- RM — PROPOSED RISING MAIN
- S — S — PROPOSED SEWER
- EXISTING LOT BOUNDARY
- T — EXISTING TELECOM
- OPT — EXISTING FIBRE OPTIC
- W — EXISTING WATER
- E — EXISTING ELECTRIC
- RW — EXISTING RECYCLED WATER
- GAS — EXISTING GAS
- S — EXISTING SEWER
- O/H — EXISTING OVERHEAD POWER

CONTOUR INTERVAL = 1.0m

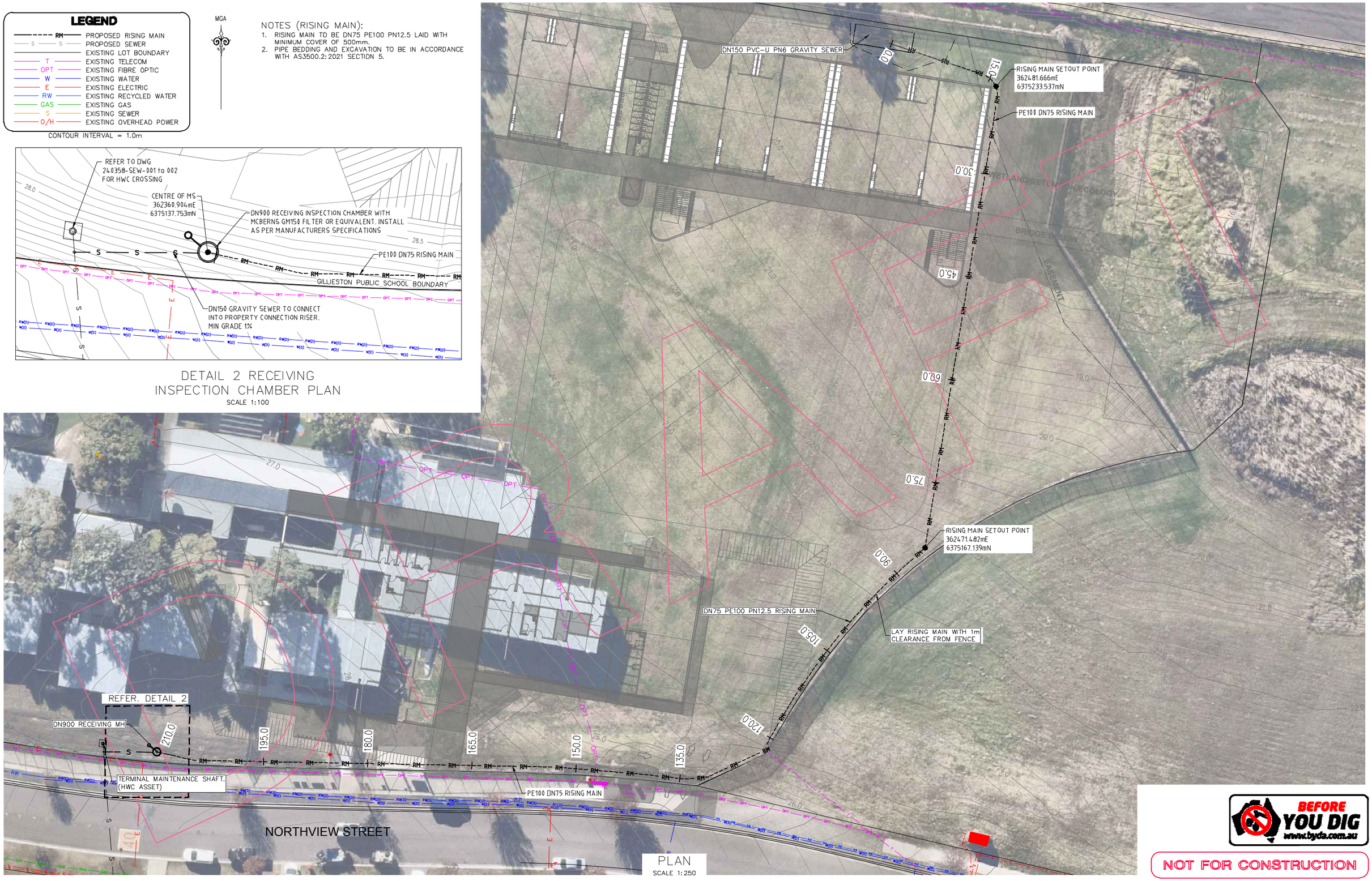
MGA

NOTES (RISING MAIN):

1. RISING MAIN TO BE DN75 PE100 PN12.5 LAID WITH MINIMUM COVER OF 500mm.
2. PIPE BEDDING AND EXCAVATION TO BE IN ACCORDANCE WITH AS3500.2:2021 SECTION 5.

DETAIL 2 RECEIVING INSPECTION CHAMBER PLAN

SCALE 1:100



PLAN

SCALE 1:250

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SCALES: 0 5 10 A1 / A3 1:250 / 1:500

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ABN 62 129 445 398

CLIENT: NSW GOVERNMENT

PROPERTY DESCRIPTION: SEWER PUMP STATION, GILLIESTON PUBLIC SCHOOL SPS, DETAIL DESIGN, LOT 51 DP1162489, RYANS ROAD, GILLIESTON HEIGHTS

SURVEYED: ADW Johnson

DATUM: GDA94 M.G.A. ZONE 56 A.H.D.

PROJECT: GILLIESTON PUBLIC SCHOOL SPS

PLAN TITLE: RISING MAIN DETAIL PLAN

DRAFT

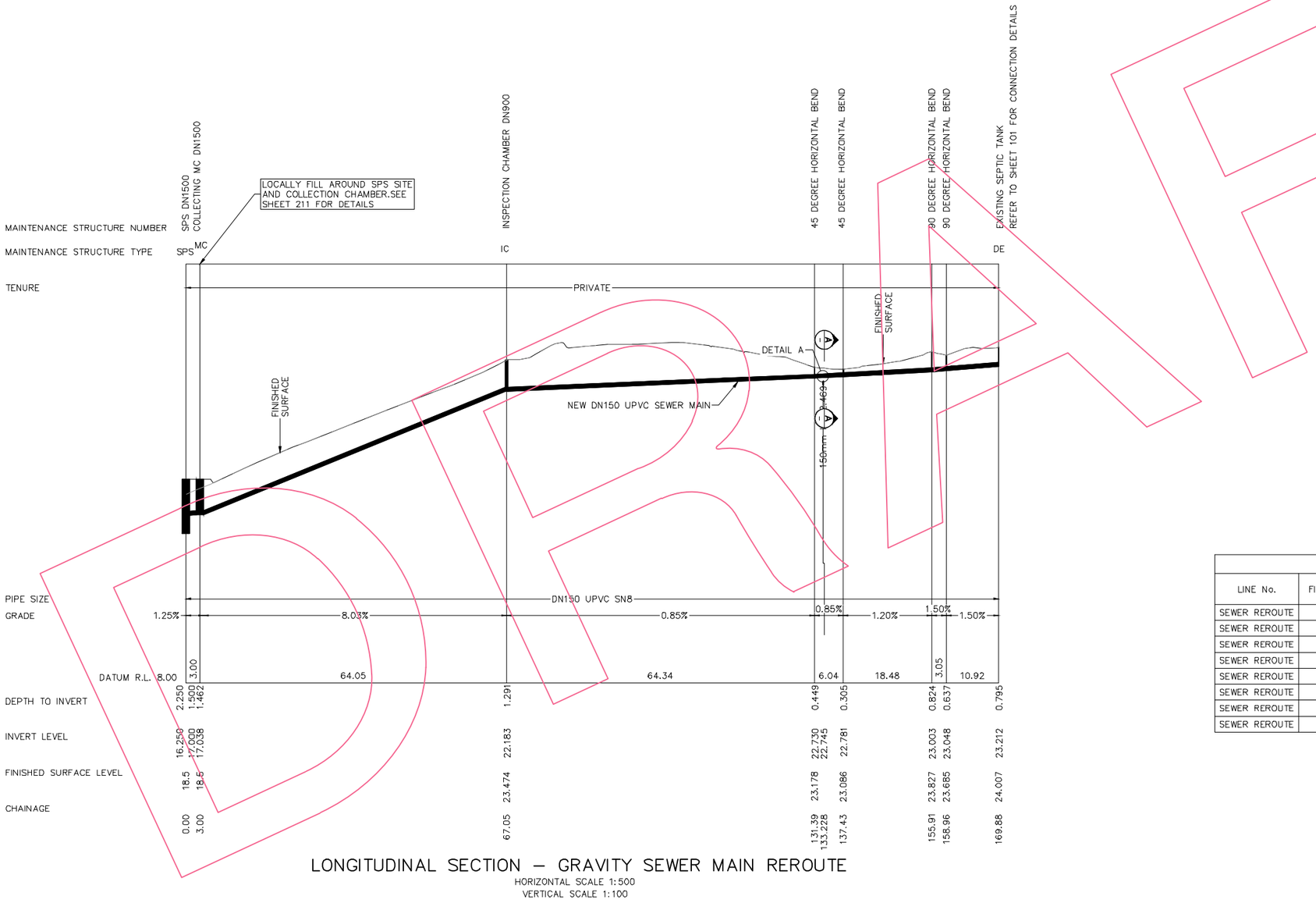
PROJECT No.	DISCIPLINE	NUMBER	REV.
240358	SPS	102	B

Plotted By: iainb Plot Date: 22/09/23 - 12:06 Cad File: N:\240358\DWG\Water & Sewer\SPS\240358-SPS-102(B).dwg

100mm AT FULL SIZE

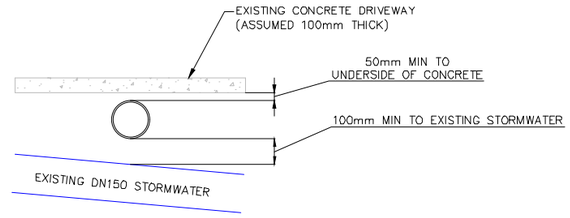
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240358-SPS-201(B)



LONGITUDINAL SECTION – GRAVITY SEWER MAIN REROUTE

HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:100



SECTION A

FITTING SCHEDULE

LINE No.	FITTING ID	EASTING	NORTHING	H–DEFLN	V–DEFLN	COMPOUND DEFLN	FITTING TYPE
SEWER REROUTE	SPS	362466.437	6375240.344				SPS
SEWER REROUTE	MC	362463.485	6375240.879				MC
SEWER REROUTE	IC	362400.201	6375250.769	0 ° 0'	4 ° 6'	4 ° 6"	IC
SEWER REROUTE	BEND	362336.632	6375260.705	45 ° 1'	0 ° 0'	45 ° 1"	VAR. BEND
SEWER REROUTE	BEND	362331.753	6375257.143	44 ° 26'	0 ° 12'	44 ° 26"	VAR. BEND
SEWER REROUTE	BEND	362328.722	6375238.913	89 ° 26'	0 ° 10'	89 ° 26"	VAR. BEND
SEWER REROUTE	BEND	362325.714	6375239.383	90 ° 0'	0 ° 0'	90 ° 0"	VAR. BEND
SEWER REROUTE	DE	362324.03	6375228.592				DE

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SCALES
VERT 0 2 4 A1 / A3 1:100 / 1:200
HORIZ 0 10 20 A1 / A3 1:500 / 1:1000

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PROPERTY DESCRIPTION
SEWER PUMP STATION
GILLIESTON PUBLIC SCHOOL SPS
DETAIL DESIGN
LOT 51 DP1162489
RYANS ROAD, GILLIESTON HEIGHTS

SURVEYED: ADW Johnson
DATUM: GDA94 M.G.A. ZONE 56 A.H.D.

PROJECT: GILLIESTON PUBLIC SCHOOL SPS
PLAN TITLE: GRAVITY MAIN LONGITUDINAL SECTION

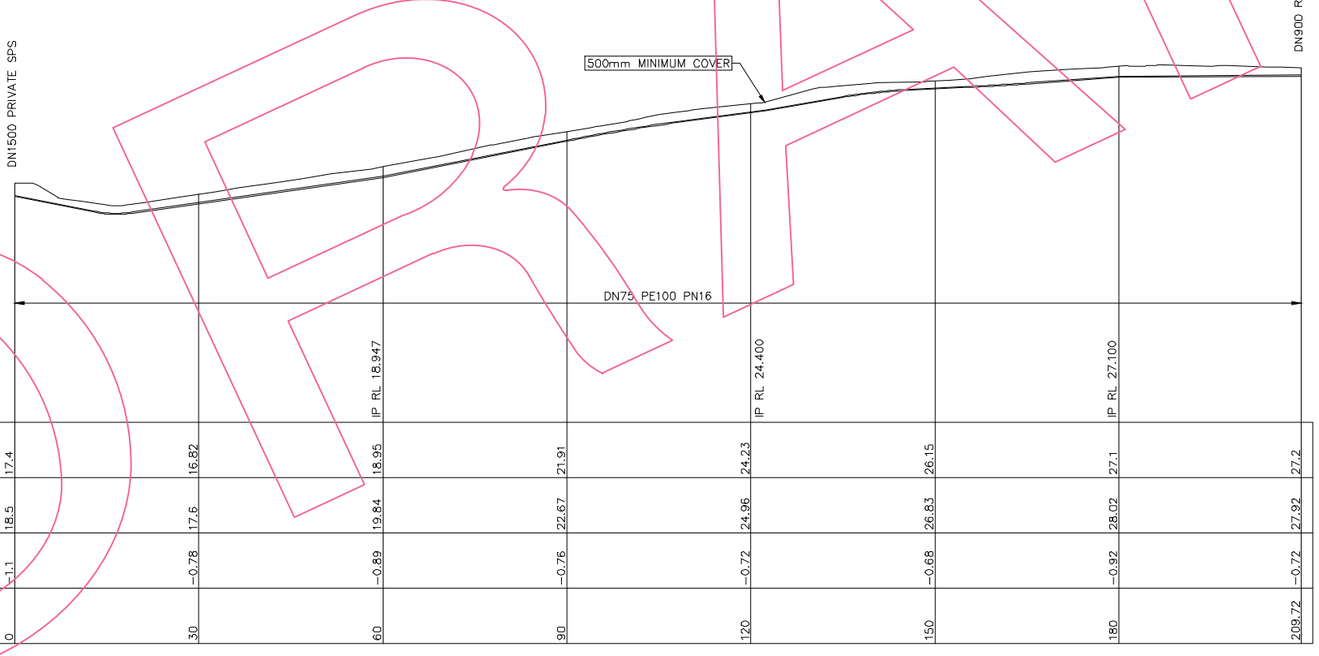
PROJECT No.	DISCIPLINE	NUMBER	REV.
240358 –	SPS –	201	B

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240358-SPS-202(B)



LONGITUDINAL SECTION – SEWER RISING MAIN

HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:250

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SCALES
VERT 0 2 4 A1 / A3 1:100 / 1:200
HORIZ 0 10 20 A1 / A3 1:500 / 1:1000

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PROPERTY DESCRIPTION
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GILLIESTON PUBLIC SCHOOL SPS
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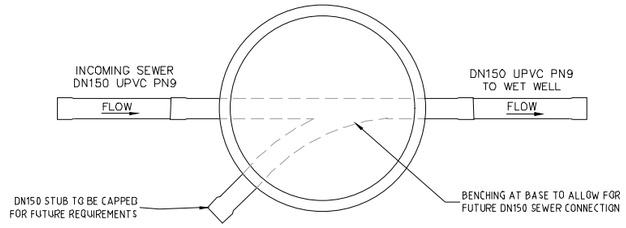
SURVEYED ADW Johnson
DATUM GDA94 M.G.A. ZONE 56 A.H.D.

PROJECT GILLIESTON PUBLIC SCHOOL SPS
PLAN TITLE RISING MAIN LONGITUDINAL SECTION

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PROJECT No.	DISCIPLINE	NUMBER	REV.
240358	SPS	202	B

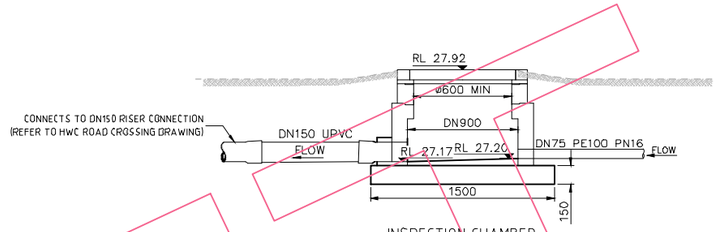
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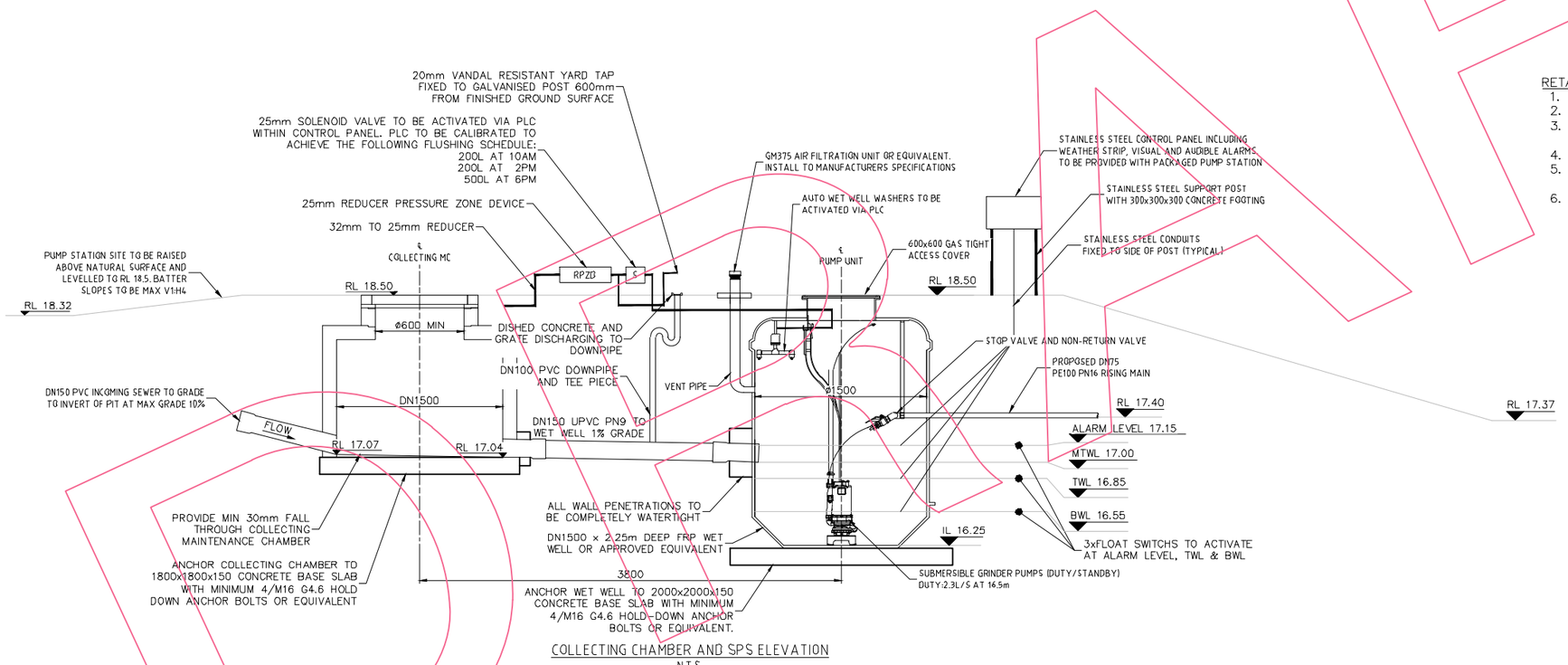
COLLECTING MC PLAN
SCALE 1:25

PRE-PACKED PUMP STATION NOTES:

1. WET WELL TO BE SUPPLIED WITH 2 x SUBMERSIBLE GRINDER PUMPS OPERATING IN DUTY/STANDBY TO ACHIEVE DUTY OF 2.3L/s AT 16.5m HEAD. PUMP TO BE INSTALLED WITH STAINLESS STEEL FREESTANDING BASE COMPLETE WITH STAINLESS STEEL LIFTING CHAINS AND CABLE. PUMP TO BE INTERNALLY PLUMBED AND FITTED WITH NON-RETURN VALVE AND ISOLATION VALVE.
2. WET WELL TO BE FIBREGLASS 1500mm DIAMETER INSTALLED AS PER LEVELS SHOWN BELOW.
3. STAINLESS STEEL LADDER TO BE INSTALLED IN PUMP STATION AND MAINTENANCE CHAMBER COMPLIANT WITH AS1657:2018 AS STRUCTURES EXCEED 1.2m DEPTH.
4. FLUSHING SCHEDULE TO ACTIVATE WET WELL WASHERS TO PREVENT SEPTICITY. FLUSHING SCHEDULE TO BE IMPLEMENTED VIA SOLENOID VALVE ON WET WELL WASHER WATER SUPPLY AND PLC WITHIN CONTROL PANEL. SCHEDULE NOMINATED ON DRAWING.
5. FLOAT SWITCHES TO CONTROL PUMPSTATION OPERATION. TWL SWITCH TO TURN ON PUMP. BWL SWITCH TO TURN OFF PUMP. ALARM LEVEL TO SOUND ALARM FIXED TO CONTROL PANEL AND DISABLE FLUSHING SCHEDULE.



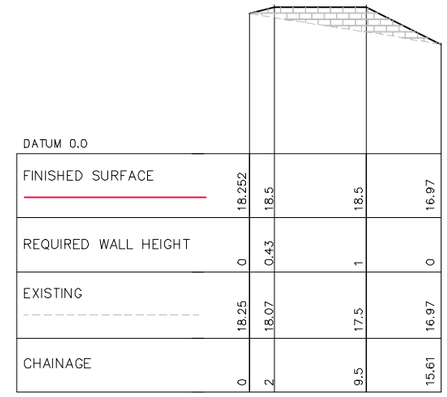
INSPECTION CHAMBER
SCALE 1:25



COLLECTING CHAMBER AND SPS ELEVATION
N.T.S.

RETAINING WALL NOTES:

1. ALL VOIDS IN AB VERTICAL UNIT MUST BE FILLED
2. THE DESIGN IS BASED ON A 2.5kPa SURCHARGE LOAD AT THE TOP OF THE WALL
3. CONSTRUCTION OF WALL TO BE IN ACCORDANCE WITH ADBRI "SEGMENTAL RETAINING WALL SYSTEMS" TECHNICAL SPECIFICATION OCT 2021.
4. INSTALL HAND-RAILING ALONG TOP OF WALL IN ACCORDANCE WITH AS1657-2018.
5. BACKFILL SHOULD NOT BE PLACED BEHIND THE WALL UNTIL ATLEAST TEN (10) DAYS AFTER GROUTING.
6. THE WALL MUST BE FOUNDED ON A FOUNDATION REPLACEMENT ZONE AS DETAILED IN THE TYPICAL CROSS SECTION



LONGITUDINAL SECTION RETAINING WALL
HORIZONTAL SCALE 1:250
VERTICAL SCALE 1:125

NOTES:

1. ALL DIMENSIONS IN MILLIMETRES.
2. THIS DRAWING APPLICABLE TO PRECAST AND IN-SITU MH.
3. ALL CONNECTION TYPES SHOWN IN THIS DRAWING ARE APPLICABLE TO VC, PVC SOLVENT WELD (SWJ), & PVC RUBBER RING (RRJ), PE & GRP PIPES, UNLESS OTHERWISE SPECIFIED.
4. TO ENSURE BONDING COAT PVC AND GRP PIPES CAST INTO MH WALL AND BASE WITH RESIN/SOLVENT & SAND OR ABRADE FOR LENGTH OF WALL PENETRATION.
5. FILL JOINT AROUND INSERT PIPE WITH EPOXY OR MASTIC SEALING MATERIAL.

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NOT FOR CONSTRUCTION

REV.	DATE	AMENDMENT	DRAWN	CHECK	DESIGN	VERIFY
A	17.04.2023	INITIAL ISSUE	I.B.	S.S.	A.F.	C.B.
B	22.09.2023	AMENDED ISSUE	I.B.	S.S.	A.F.	C.B.

SCALES: NOT TO SCALE

DESIGN FILE N:\JOBNUMBER\Design\12D\

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ABN 62 129 445 398

CLIENT: NSW GOVERNMENT

PROPERTY DESCRIPTION
SEWER PUMP STATION
GILLIESTON PUBLIC SCHOOL SPS
DETAIL DESIGN
LOT 51 DP1162489
RYANS ROAD, GILLIESTON HEIGHTS

SURVEYED: ADW Johnson
DATUM: GDA94 M.G.A. ZONE 56 A.H.D.

PROJECT: GILLIESTON PUBLIC SCHOOL SPS
PLAN TITLE: TYPICAL SECTIONS: COLLECTING MH, SPS & DISCHARGE MH

DRAFT

PROJECT No. 240358 - DISCIPLINE SPS - NUMBER 211 REV. B

240358-SPS-211(B)

100mm AT FULL SIZE

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Plotted By: iainb Plot Date: 22/09/23 - 12:07 Cad File: N:\240358\DWG\Water & Sewer\SPS\240358-SPS-211(B).dwg

240358-SPS-001(D)

SEWER PUMP STATION
GILLIESTON PUBLIC SCHOOL SPS
DETAIL DESIGN
LOT 51 DP1162489
RYANS ROAD, GILLIESTON HEIGHTS

NOTES (GENERAL):

1. THE ENTIRE PLUMBING INSTALLATION IS TO COMPLY WITH THE REQUIREMENTS OF AS3500.2:2021 AND THE PLUMBING AND BUILDING CODES OF AUSTRALIA.
2. THE CONTRACTOR IS TO VISIT SITE DURING TENDERING PERIOD TO FAMILIARISE THEMSELVES WITH SITE CONDITIONS AND MAKE NECESSARY ALLOWANCE IN THE TENDER.
3. DESIGN OF MAIN GRAVITY DRAIN, PUMPSTATION AND RISING MAIN HAS BEEN UNDERTAKEN TO ENSURE COMPATIBILITY WITH FUTURE SCHOOL EXPANSIONS. CONTRACTOR IS TO READ THIS DRAWING IN CONJUNCTION WITH THE ARCHITECTURAL DRAWINGS AND NOTIFY SCHOOLS INFRASTRUCTURE IF ANY CLASHES ARE IDENTIFIED.
4. GEOTECHNICAL INVESTIGATION ON SITE HAS ENCOUNTERED SANDSTONE AT A DEPTH OF 1.1m. CONTRACTOR TO MAKE PROVISIONAL ALLOWANCE FOR ROCK EXCAVATION.
5. CONTRACTOR TO CREATE CONSTRUCTION ACCESS AND RESTORE TO PRE EXISTING CONDITIONS AT COMPLETION OF WORKS.



LOCALITY SKETCH

NOT TO SCALE

240358–SPS SHEET LIST

Sheet Title	Sheet Description
240358–SPS–001(D)	TITLESHEET, DRAWING INDEX, GENERAL NOTES & LOCALITY PLAN
240358–SPS–002(D)	OVERALL SITE PLAN
240358–SPS–101(D)	GRAVITY MAIN AND SPS DETAIL
240358–SPS–102(D)	RISING MAIN DETAIL PLAN
240358–SPS–201(D)	GRAVITY MAIN LONGITUDINAL SECTION
240358–SPS–202(D)	RISING MAIN LONGITUDINAL SECTION
240358–SPS–211(D)	TYPICAL SECTIONS: COLLECTING MH, SPS & DISCHARGE MH

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D	01.12.2023	TENDER ISSUE AMENDED	I.B.	S.S.	A.F.	C.B.

SCALES

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CLIENT

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PROPERTY DESCRIPTION
SEWER PUMP STATION
GILLIESTON PUBLIC SCHOOL SPS
DETAIL DESIGN
LOT 51 DP1162489
RYANS ROAD, GILLIESTON HEIGHTS

SURVEYED: ADW Johnson

DATUM: GDA94 M.G.A. ZONE 56 A.H.D.

PROJECT: GILLIESTON PUBLIC SCHOOL SPS

PLAN TITLE: TITLESHEET, DRAWING INDEX, GENERAL NOTES & LOCALITY PLAN

PROJECT No.	DISCIPLINE	NUMBER	REV.
240358	SPS	001	D

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240358-SPS-002(D)

LEGEND

- RM — NEW RISING MAIN
- S — S — NEW GRAVITY SEWER
- S — S — EXISTING GRAVITY SEWER
- EXISTING LOT BOUNDARY

CONTOUR INTERVAL = 1.0m

MGA

ORIGIN OF LEVELS
P.M.60149
E: 362313.440
N: 6375277.330
AHD: 21.398 A.H.D.

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NOTE:
1. SCHOOL EXPANSION MASTERPLAN SHOWN AS TRANSPARENT OVERLAY IS DRAFT ONLY PROVIDED FOR INFORMATION.

SHEET 1

GILLIESTON ROAD

NEW DN150 PVC GRAVITY DRAIN BETWEEN SEPTIC AND NEW PUMPSTATION

NEW DN1500 PRE-PACKAGED PUMPSTATION

EXISTING SEPTIC TANK

SHEET 2

RYANS ROAD

DN900 INSPECTION CHAMBER

COLLECTING CHAMBER DN1500

NEW DN75 HDPE RISING MAIN

CONNECTION TO TMS JUNCTION

RECEIVING DN900 INSPECTION CHAMBER

NORTHVIEW STREET

EXISTING MH J7382

HWC TMS AND GRAVITY CROSSING. REFER TO DWG 240358-SEW-001 to 003

PLAN
SCALE 1:500

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D	01.12.2023	TENDER ISSUE AMENDED	I.B.	S.S.	A.F.	C.B.

DESIGN FILE N:\JOBNUMBER\Design\12D\

SCALES: 0 10 20 A1 / A3 1:500 / 1:1000

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CLIENT: NSW GOVERNMENT

PROPERTY DESCRIPTION
SEWER PUMP STATION
GILLIESTON PUBLIC SCHOOL SPS
DETAIL DESIGN
LOT 51 DP1162489
RYANS ROAD, GILLIESTON HEIGHTS

SURVEYED: ADW Johnson
DATUM: GDA94 M.G.A. ZONE 56 A.H.D.

PROJECT: GILLIESTON PUBLIC SCHOOL SPS
PLAN TITLE: OVERALL SITE PLAN

PROJECT No. 240358 - DISCIPLINE SPS - NUMBER 002 REV. D

100mm AT FULL SIZE

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Plotted By: iainb Plot Date: 01/12/23 - 07:47 Cad File: N:\240358\DWG\Water & Sewer\SPS\240358-SPS-002(D).dwg

240358-SPS-101(D)

LEGEND

- RM — PROPOSED RISING MAIN
- S — PROPOSED SEWER
- W — PROPOSED WATER COPPER DN32
- E — PROPOSED ELECTRICAL 100mm CONDUIT
- EXISTING LOT BOUNDARY
- T — EXISTING TELECOM
- OPT — EXISTING FIBRE OPTIC
- W — EXISTING WATER
- E — EXISTING ELECTRIC
- RW — EXISTING RECYCLED WATER
- GAS — EXISTING GAS
- S — EXISTING SEWER
- O/H — EXISTING OVERHEAD POWER

CONTOUR INTERVAL = 1.0m

MGA

NOTES (MAIN GRAVITY DRAIN):

1. DRAIN TO BE DN150 PVCU PN6 LAID AT MINIMUM OF 0.8% GRADE.
2. DEPTH OF COVER AND PIPE GRADES TO BE INSTALLED AS PER THE LONG SECTION SHEET 201.
3. BENEATH CARPARK, ENSURE MINIMUM 50mm OF OVERLAY SEPARATING DRAIN FROM CONCRETE.
4. SERVICE CROSSINGS TO HAVE MINIMUM VERTICAL SEPARATION OF 100mm.
5. PROVIDE INSPECTION OPENINGS AS REQUIRED BY A3500.2:2021
6. ALL PIPEWORK TO BE TESTED TO AS3500 REQUIREMENTS.
7. PIPE EXCAVATION AND BEDDING TO BE IN ACCORDANCE WITH AS3500.2:2012 SECTION 5.
8. PROVIDE INSPECTION OPENINGS ON THE MAIN DRAIN AT MAX 30m INTERVALS AS PER AS3500.2 SECTION 4.7.
9. INSPECTION OPENINGS IN TRAFFICABLE AREAS TO BE SUPPLIED WITH TRAFFICABLE LID.

NOTES (PUMPSTATION SERVICES):

1. WET WELL TO REQUIRE WATER AND ELECTRICAL SERVICE CONNECTION. CONTRACTOR TO COORDINATE INSTALLATION OF SERVICES.
2. 100mm ELECTRICAL CONDUIT TO BE INSTALLED TO PUMPSTATION IN ACCORDANCE WITH THE RELEVANT AUSTRALIAN STANDARDS.
3. 32mm TYPE B COPPER TO AS1432 WATER SUPPLY TO BE INSTALLED TO PUMPSTATION.
4. PUMPSTATION SERVICES TO SHARE TRENCH WITH MAIN GRAVITY DRAIN BETWEEN CHAINAGES 0.000 TO 75.000. CONTRACTOR TO LOCATE SUITABLE POINT OF CONNECTION FOR SERVICES INTERNAL TO SCHOOL AND INSTALL IN ACCORDANCE WITH RELEVANT AUSTRALIAN STANDARDS.

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GILLIESTON ROAD

GRAVITY ROUTE TO CROSS OVER STORMWATER WITH 100mm MIN VERTICAL CLEARANCE. 50mm MIN VERTICAL CLEARANCE TO UNDERSIDE OF CONCRETE

CONTRACTOR TO BREAK CONCRETE IN CARPARK TO LAY PIPE. RESTORE FOLLOWING COMPLETION. AT ALL CUT EDGES, DOWEL AND EPOXY INTO EXISTING CONCRETE WITH N12 DOWELS AT 500 CENTRES, MIN EMBEDMENT 100mm

ALIGNMENT BETWEEN CARPARK AND SEPTIC TANK SHOWN INDICATIVE ONLY. CONTRACTOR TO UNEARTH INCOMING SEWER TO SEPTIC TANK AND REROUTE AS APPROPRIATE

SEWER INSPECTION OPENING. (SURVEYED LOCATION)

UNDERGROUND TANK AND INCOMING SEWER BETWEEN INSPECTION OPENING AND SEPTIC TANK HAS NOT BEEN LOCATED. CONTRACTOR TO EXCAVATE AROUND SEPTIC TANK AND UNEARTH INCOMING SEWER. CONNECTION TO EXISTING SEWER TO BE MADE UPSTREAM OF SEPTIC TANK THROUGH FITTINGS TO SUIT, PROVIDE INSPECTION OPENING IMMEDIATELY DOWNSTREAM OF CONECTION.

EXISTING SEPTIC TANK TO BE DEMOLISHED.

ELECTRICAL KIOSK

CONTRACTOR TO CONNECT WATER AND ELECTRICITY TO SPS TO SUIT

DN900 INSPECTION CHAMBER

ELECTRICAL PIT

SEWER DEPTH INCREASED FOR FUTURE RETAINING WALLS. REFER TO LONG SECTION SHEET 201

WATER SERVICE AND ELECTRICAL TO SHARE TRENCH WITH GRAVITY MAIN BETWEEN PUMP STATION TO APPROXIMATELY CHAINAGE 80m (ADJACENT ELECTRICAL KIOSK)

ELECTRICAL TO BE INSTALLED BY LICENSED ELECTRICIAN IN ACCORDANCE WITH AS3000:2018

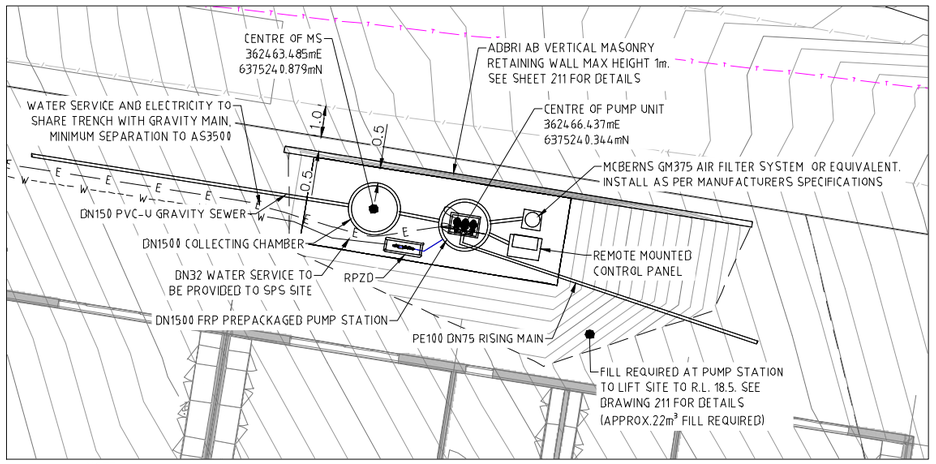
REFER. DETAIL 1

COLLECTION MH DN1500

DN1500 WET WELL

SEE SHEET 102 FOR SEWER RISING MAIN

PLAN
SCALE 1:250



NOTE:
SEE DRAWING 211 FOR SPS AND COLLECTING CHAMBER DETAILS.

DETAIL 1 SPS PLAN
SCALE 1:100

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D	01.12.2023	TENDER ISSUE AMENDED	I.B.	S.S.	A.F.	C.B.

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SCALES: 0 5 10 A1 / A3 1:250 / 1:500

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ABN 62 129 445 398

CLIENT: NSW GOVERNMENT

PROPERTY DESCRIPTION
SEWER PUMP STATION
GILLIESTON PUBLIC SCHOOL SPS
DETAIL DESIGN
LOT 51 DP1162489
RYANS ROAD, GILLIESTON HEIGHTS

PROJECT: GILLIESTON PUBLIC SCHOOL SPS

PLAN TITLE: GRAVITY MAIN AND SPS DETAIL

SURVEYED	DATUM	PROJECT No.	DISCIPLINE	NUMBER	REV.
ADW Johnson	GDA94 M.G.A. ZONE 56 A.H.D.	240358	SPS	101	D

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240358-SPS-102(D)

LEGEND

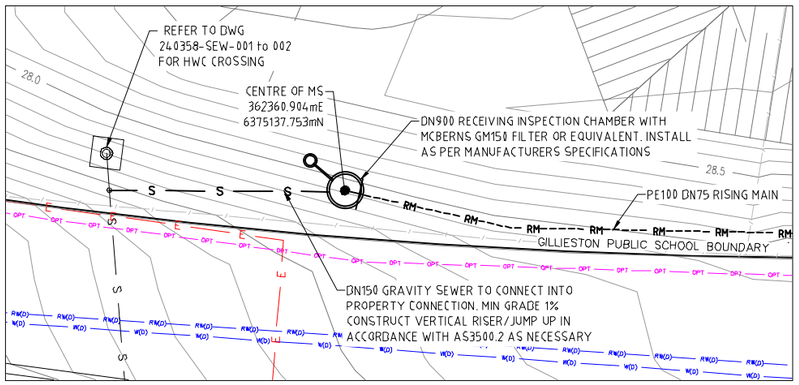
- RM — PROPOSED RISING MAIN
- S — S — PROPOSED SEWER
- EXISTING LOT BOUNDARY
- T — EXISTING TELECOM
- OPT — EXISTING FIBRE OPTIC
- W — EXISTING WATER
- E — EXISTING ELECTRIC
- RW — EXISTING RECYCLED WATER
- GAS — EXISTING GAS
- S — EXISTING SEWER
- O/H — EXISTING OVERHEAD POWER

CONTOUR INTERVAL = 1.0m

MGA

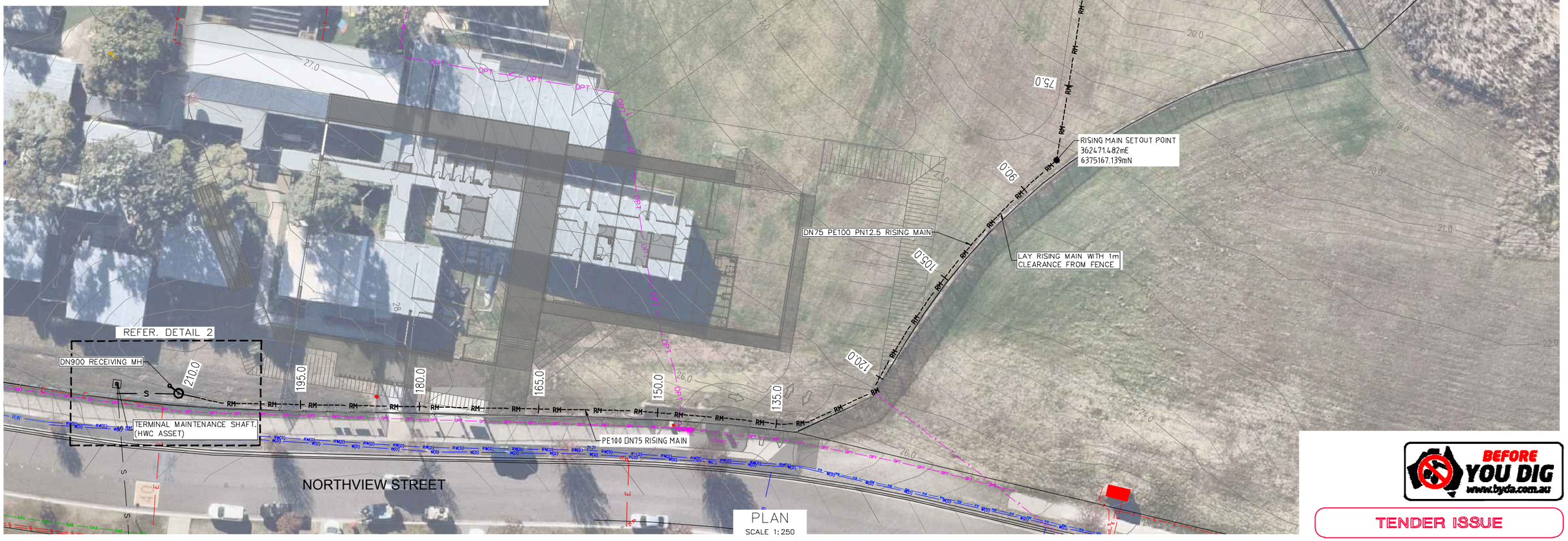
NOTES (RISING MAIN):

1. RISING MAIN TO BE DN75 PE100 PN12.5 LAID WITH MINIMUM COVER OF 500mm.
2. PIPE BEDDING AND EXCAVATION TO BE IN ACCORDANCE WITH AS3500.2:2021 SECTION 5.



DETAIL 2 RECEIVING INSPECTION CHAMBER PLAN

SCALE 1:100



PLAN

SCALE 1:250

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D	01.12.2023	TENDER ISSUE AMENDED	I.B.	S.S.	A.F.	C.B.

SCALES: 0 5 10 A1 / A3 1:250 / 1:500

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ABN 62 129 445 398

CLIENT: NSW GOVERNMENT

PROPERTY DESCRIPTION: SEWER PUMP STATION, GILLIESTON PUBLIC SCHOOL SPS, DETAIL DESIGN, LOT 51 DP1162489, RYANS ROAD, GILLIESTON HEIGHTS

SURVEYED: ADW Johnson

DATUM: GDA94 M.G.A. ZONE 56 A.H.D.

PROJECT: GILLIESTON PUBLIC SCHOOL SPS

PLAN TITLE: RISING MAIN DETAIL PLAN

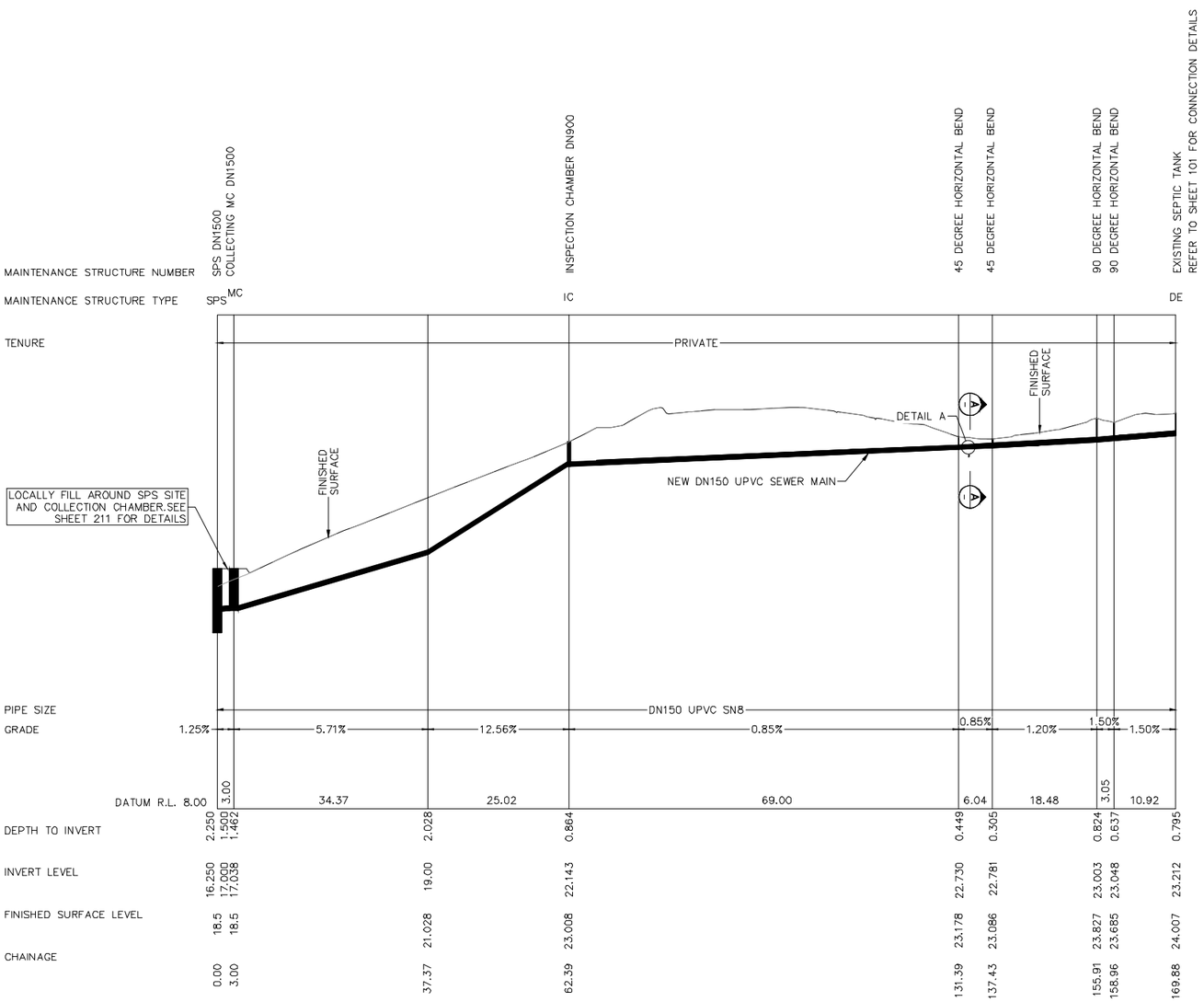
PROJECT No.	DISCIPLINE	NUMBER	REV.
240358	SPS	102	D

Plotted By: iainb Plot Date: 01/12/23 - 07:50 Cad File: N:\240358\DWG\Water & Sewer\SPS\240358-SPS-102(D).dwg

100mm AT FULL SIZE

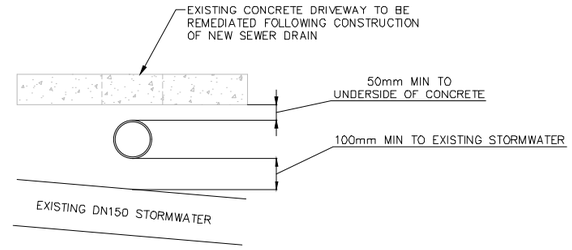
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240358-SPS-201(D)



LONGITUDINAL SECTION – GRAVITY SEWER MAIN REROUTE

HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:100



SECTION A

FITTING SCHEDULE

LINE No.	FITTING ID	EASTING	NORTHING	H–DEFLN	V–DEFLN	COMPOUND DEFLN	FITTING TYPE
SEWER REROUTE	SPS	362466.437	6375240.344				SPS
SEWER REROUTE	MC	362463.485	6375240.879				MC
SEWER REROUTE	IC	362404.802	6375250.037	0 ° 0'	4 ° 6'	4 ° 6'	IC
SEWER REROUTE	BEND	362336.632	6375260.705	45 ° 1'	0 ° 0'	45 ° 1'	VAR. BEND
SEWER REROUTE	BEND	362331.753	6375257.143	44 ° 26'	0 ° 12'	44 ° 26'	VAR. BEND
SEWER REROUTE	BEND	362328.722	6375238.913	89 ° 26'	0 ° 10'	89 ° 26'	VAR. BEND
SEWER REROUTE	BEND	362325.714	6375239.383	90 ° 0'	0 ° 0'	90 ° 0'	VAR. BEND
SEWER REROUTE	DE	362324.03	6375228.592				DE

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D	01.12.2023	TENDER ISSUE AMENDED	I.B.	S.S.	A.F.	C.B.

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SCALES
VERT 0 2 4 A1 / A3 1:100 / 1:200
HORIZ 0 10 20 A1 / A3 1:500 / 1:1000

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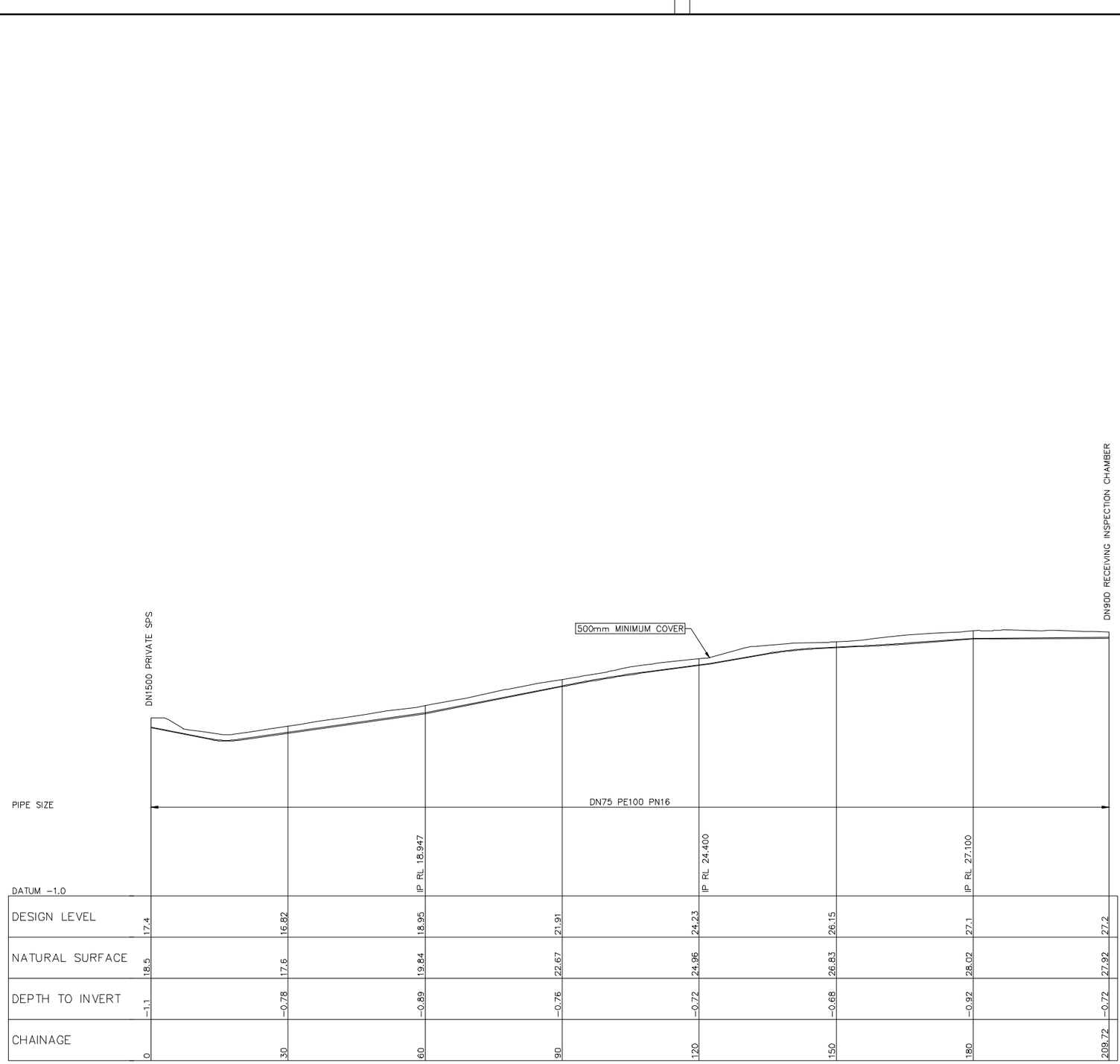
SURVEYED ADW Johnson
DATUM GDA94 M.G.A. ZONE 56 A.H.D.

PROJECT GILLIESTON PUBLIC SCHOOL SPS
PLAN TITLE GRAVITY MAIN LONGITUDINAL SECTION

PROJECT No. 240358 – DISCIPLINE SPS – NUMBER 201 REV. D

Plotted By: iainb Plot Date: 01/12/23 – 07:50 Cad File: N:\240358\DWG\Water & Sewer\SPS\240358-SPS-201(D).dwg

240358-SPS-202(D)



LONGITUDINAL SECTION – SEWER RISING MAIN

HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:250

100mm AT FULL SIZE
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SCALES
VERT 0 2 4 A1 / A3 1:100 / 1:200
HORIZ 0 10 20 A1 / A3 1:500 / 1:1000

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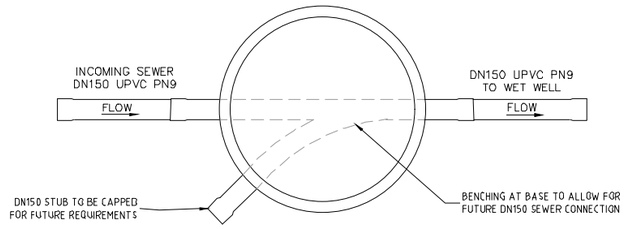
PROPERTY DESCRIPTION
SEWER PUMP STATION
GILLIESTON PUBLIC SCHOOL SPS
DETAIL DESIGN
LOT 51 DP1162489
RYANS ROAD, GILLIESTON HEIGHTS

SURVEYED ADW Johnson
DATUM GDA94 M.G.A. ZONE 56 A.H.D.

PROJECT GILLIESTON PUBLIC SCHOOL SPS
PLAN TITLE RISING MAIN LONGITUDINAL SECTION

PROJECT No.	DISCIPLINE	NUMBER	REV.
240358	SPS	202	D

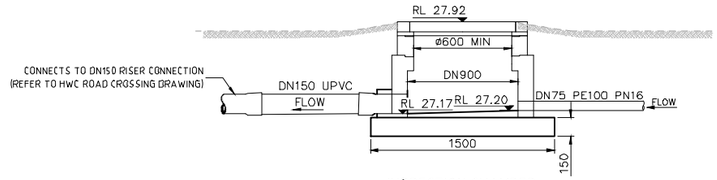
Plotted By: iainb Plot Date: 01/12/23 – 07:50 Cad File: N:\240358\DWG\Water & Sewer\SPS\240358-SPS-202(D).dwg



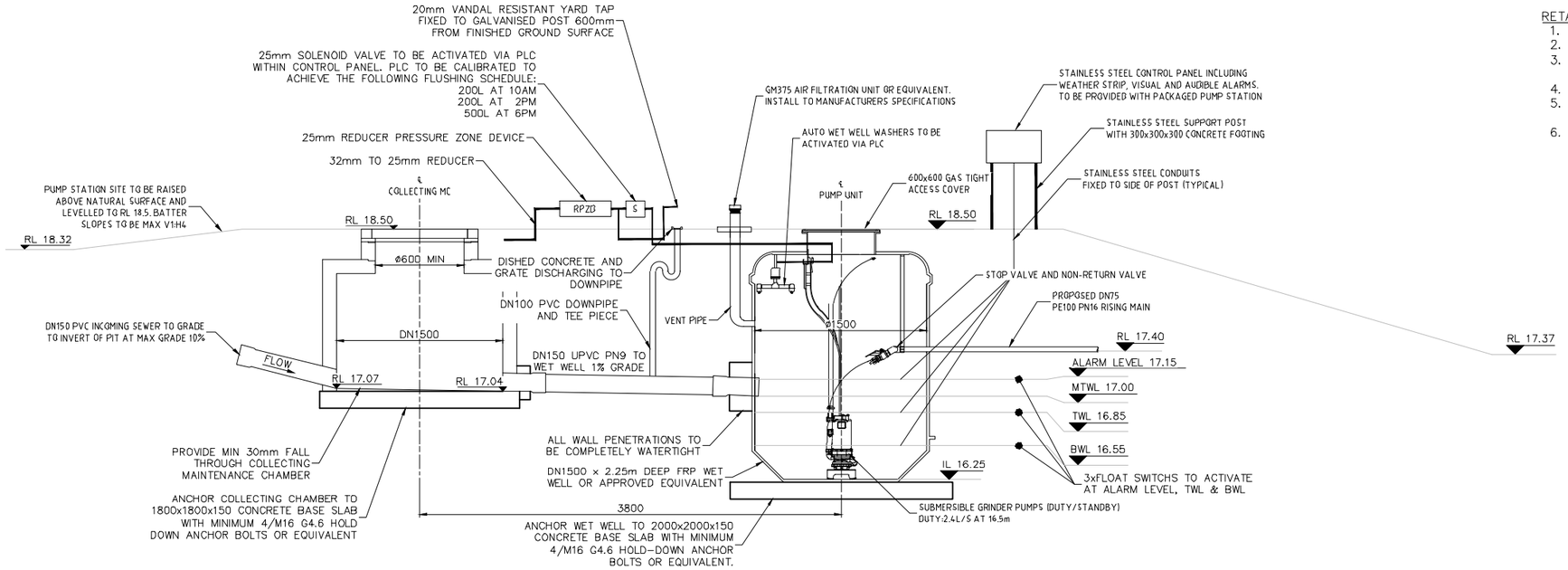
COLLECTING MC PLAN
SCALE 1:25

PRE-PACKED PUMP STATION NOTES:

1. WET WELL TO BE SUPPLIED WITH 2 x SUBMERSIBLE GRINDER PUMPS OPERATING IN DUTY/STANDBY TO ACHIEVE DUTY OF 2.4L/s AT 16.5m HEAD. PUMP TO BE INSTALLED WITH STAINLESS STEEL FREESTANDING BASE COMPLETE WITH STAINLESS STEEL LIFTING CHAINS AND CABLE. PUMP TO BE INTERNALLY PLUMBED AND FITTED WITH NON-RETURN VALVE AND ISOLATION VALVE.
2. WET WELL TO BE FIBREGLASS 1500mm DIAMETER INSTALLED AS PER LEVELS SHOWN BELOW.
3. STAINLESS STEEL LADDER TO BE INSTALLED IN PUMP STATION AND MAINTENANCE CHAMBER COMPLIANT WITH AS1657:2018 AS STRUCTURES EXCEED 1.2m DEPTH.
4. FLUSHING SCHEDULE TO ACTIVATE WET WELL WASHERS TO PREVENT SEPTICITY. FLUSHING SCHEDULE TO BE IMPLEMENTED VIA SOLENOID VALVE ON WET WELL WASHER WATER SUPPLY AND PLC WITHIN CONTROL PANEL. SCHEDULE NOMINATED ON DRAWING.
5. FLOAT SWITCHES TO CONTROL PUMPSTATION OPERATION. TWL SWITCH TO TURN ON PUMP. BWL SWITCH TO TURN OFF PUMP. ALARM LEVEL TO SOUND ALARM FIXED TO CONTROL PANEL AND DISABLE FLUSHING SCHEDULE.



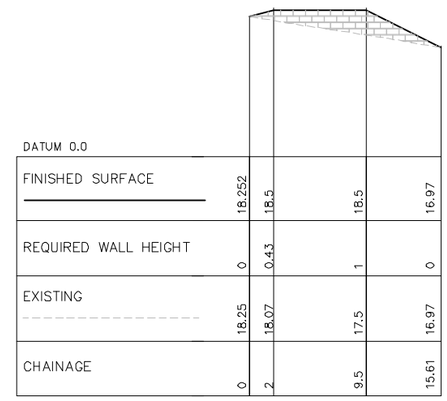
INSPECTION CHAMBER
SCALE 1:25



COLLECTING CHAMBER AND SPS ELEVATION
N.T.S.

RETAINING WALL NOTES:

1. ALL VOIDS IN AB VERTICAL UNIT MUST BE FILLED
2. THE DESIGN IS BASED ON A 2.5kPa SURCHARGE LOAD AT THE TOP OF THE WALL
3. CONSTRUCTION OF WALL TO BE IN ACCORDANCE WITH ADBRI "SEGMENTAL RETAINING WALL SYSTEMS" TECHNICAL SPECIFICATION OCT 2021.
4. INSTALL HAND-RAILING ALONG TOP OF WALL IN ACCORDANCE WITH AS1657-2018.
5. BACKFILL SHOULD NOT BE PLACED BEHIND THE WALL UNTIL ATLEAST TEN (10) DAYS AFTER GROUTING.
6. THE WALL MUST BE FOUNDED ON A FOUNDATION REPLACEMENT ZONE AS DETAILED IN THE TYPICAL CROSS SECTION



LONGITUDINAL SECTION RETAINING WALL
HORIZONTAL SCALE 1:250
VERTICAL SCALE 1:125

NOTES:

1. ALL DIMENSIONS IN MILLIMETRES.
2. THIS DRAWING APPLICABLE TO PRECAST AND IN-SITU MH.
3. ALL CONNECTION TYPES SHOWN IN THIS DRAWING ARE APPLICABLE TO VC, PVC SOLVENT WELD (SWJ), & PVC RUBBER RING (RRJ), PE & GRP PIPES, UNLESS OTHERWISE SPECIFIED.
4. TO ENSURE BONDING COAT PVC AND GRP PIPES CAST INTO MH WALL AND BASE WITH RESIN/SOLVENT & SAND OR ABRADE FOR LENGTH OF WALL PENETRATION.
5. FILL JOINT AROUND INSERT PIPE WITH EPOXY OR MASTIC SEALING MATERIAL.

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TENDER ISSUE

REV.	DATE	AMENDMENT	DRAWN	CHECK	DESIGN	VERIFY
A	17.04.2023	INITIAL ISSUE	I.B.	S.S.	A.F.	C.B.
B	22.09.2023	AMENDED ISSUE	I.B.	S.S.	A.F.	C.B.
C	01.11.2023	TENDER ISSUE	I.B.	S.S.	A.F.	C.B.
D	01.12.2023	TENDER ISSUE AMENDED	I.B.	S.S.	A.F.	C.B.

SCALES: NOT TO SCALE

DESIGN FILE N:\JOBNUMBER\Design\12D\

ALL DIMENSIONS ARE IN METRES U.N.O. DO NOT SCALE

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www.adwjohnson.com.au
ABN 62 129 445 398

CLIENT: NSW GOVERNMENT

PROPERTY DESCRIPTION
SEWER PUMP STATION
GILLIESTON PUBLIC SCHOOL SPS
DETAIL DESIGN
LOT 51 DP1162489
RYANS ROAD, GILLIESTON HEIGHTS

SURVEYED: ADW Johnson
DATUM: GDA94 M.G.A. ZONE 56 A.H.D.

PROJECT: GILLIESTON PUBLIC SCHOOL SPS

PLAN TITLE: TYPICAL SECTIONS: COLLECTING MH, SPS & DISCHARGE MH

PROJECT No.	DISCIPLINE	NUMBER	REV.
240358	SPS	211	D

240358-SPS-211(D)

100mm AT FULL SIZE

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240375(1)-DET-001-B

(A) EASEMENT TO DRAIN WATER VARIABLE WIDTH AFFECTING THE PART (S) SHOWN SO BURDENED IN THE TITLE DIAGRAM (DP1162489)

(X) LAND EXCLUDES MINERALS AND IS SUBJECT TO RIGHTS TO MINE WITHIN THE PART SHOWN SO INDICATED IN THE TITLE DIAGRAM (A290830)

LEGEND

CH CUBBY HOUSE
SI SIGN
26.20 FFL SPOT HEIGHT DENOTES BUILDING FINISHED FLOOR LEVEL
24.00 SPOT HEIGHT TOP OF ELECTRICAL SERVICE
24.71 SPOT HEIGHT TOP OF COMMUNICATIONS SERVICE
23.92 SL SPOT HEIGHT DENOTES SURFACE LEVEL
23.12 IV SPOT HEIGHT DENOTES INVERSE LEVEL
26.66 TRW SPOT HEIGHT TOP OF RETAINING WALL
26.50 BRW SPOT HEIGHT BOTTOM OF RETAINING WALL

- W(D) UNDERGROUND WATER MAIN (QL D)
- E(D) UNDERGROUND ELECTRICITY (QL D)
- RW(D) RECYCLED WATER MAIN QL D
- G(D) UNDERGROUND GAS MAIN (QL D)
- UC(D) UNDERGROUND COMMS (QL D)

- EPIT ELECTRICAL PIT
- EP ELECTRICAL PILLAR
- SL STREET LIGHT
- ELECTRICAL PIT
- PP POWER POLE
- GRT GRATED PIT
- SURFACE INLET PIT
- HYD HYDRANT
- SV STOP VALVE
- WM WATER METER
- SIO SEWER INSPECTION PIT
- SMH SEWER MAN HOLE
- CMK COMMS MARKER
- TEL COMMUNICATIONS PIT
- 1 PHOTOGRAPH DIRECTION (SEE SHEET 7)
- BOUNDARY LINE
- MINOR CONTOUR LINE
- MAJOR CONTOUR LINE
- FENCE LINE
- GAS GAS LINE DBYD APPROX. POSITION ONLY
- W WATER LINE APPROX. POSITION ONLY
- RW RECYCLED WATER APPROX. POSITION ONLY
- S SEWER LINE DBYD APPROX. POSITION ONLY
- E ELECTRICAL LINE APPROX. POSITION ONLY
- T COMMS. DBYD APPROX. POSITION ONLY
- O/H OVERHEAD POWER LINE
- D DRAINAGE LINE
- STORMWATER PIPE
- TOP & TOE OF BANKS

WINDOW
WIN

TREE DETAILS
S:12 D:1 H:18
FOLIAGE SPREAD
TREE HEIGHT
TRUNK DIAMETER

RYANS ROAD
GILLIESTON ROAD
NORTHVIEW STREET

SEE SHEET 2
SEE SHEET 3
SEE SHEET 4
SEE SHEET 5

1 DP1119043
2 DP997874
1 DP986279
17 DP263196
116
117
DP1172940
1180
1181
DP1195378
119
213 DP1186997

51
DP1162489
2.064ha

PROPOSED ACQUISITION PARCEL

(A)
(X)

99 (76.005)
07
55
194.525
8.475
40.205
189°50'15"
274°57'35" ~ 24.725
274°31'10" ~ 23.98
323°40'55" ~ 24.295
213°40'50" ~ 33.375
237°14'55" ~ 68.655
214°57'20" ~ 17.705
214°39'55" ~ 14.44
(21.355)

NOTES:-

1. WHERE RELEVANT, UNDERGROUND UTILITIES HAVE BEEN LOCATED BY ELECTRONIC DETECTION, SITE INSPECTION AND/OR BY ESTIMATION BASED UPON SUPPLIED DBYD INFORMATION PLANS. ADDITIONAL SERVICES MAY EXIST THROUGHOUT THE SITE. TRUE LEVELS & POSITION WILL NEED TO BE VERIFIED BY POTHOLING OR MANUAL EXCAVATION PRIOR TO COMMENCING ANY CONSTRUCTION WORKS.
2. REFER TO AS5488-2013-CLASSIFICATION OF SUBSURFACE UTILITY INFORMATION (SUI) FOR THE DEFINITION OF SERVICE LOCATION ACCURACIES SHOWN IN THIS PLAN.
3. QL - 'D': INFORMATION IS THE MOST BASIC LEVEL OF UTILITY LOCATION USING INFORMATION BASED ON EXISTING SERVICES PLANS, BY MEASURING BOUNDARY OFFSETS AND THROUGH THE ASSISTANCE OF ELECTROMAGNETIC WANDING, GROUND PENETRATING RADAR ETC. THIS METHOD OF UTILITY LOCATION SHOULD ALWAYS BE TREATED AS AN INDICATION OF THE PRESENCE OF A SERVICE ONLY AND SHOULD NOT BE RELIED ON ALONE FOR DESIGN PURPOSES.
4. PRIOR TO ANY EXCAVATION AND/OR CONSTRUCTION WORKS WITHIN THE VICINITY OF AN UNDERGROUND SERVICE, THE RELEVANT SERVICE AUTHORITY SHOULD BE INFORMED.
5. DIMENSIONS, EASEMENTS AND OTHER TITLE-RELATED INFORMATION SHOWN ON THIS PLAN HAVE BEEN OBTAINED FROM SEARCHES OF EXISTING TITLE DOCUMENTS AVAILABLE ON PUBLIC RECORD AND HAVE NOT NECESSARILY BE CONFIRMED BY CURRENT SURVEY.
6. SPOT LEVELS AND CONTOURS SHOWN HEREON ARE FOR DETAIL SURVEY PURPOSES ONLY AND ARE TO BE CONFIRMED ON SITE PRIOR TO ANY EXCAVATION OR CONSTRUCTION.
7. THIS PLAN HAS BEEN PREPARED FOR THE PURPOSE OF DETAIL SURVEY AND SHOULD NOT BE USED FOR ANYTHING OTHER THAN THAT PURPOSE.

REGISTERED SURVEYOR CERTIFICATION:-

1. THE BOUNDARIES DEPICTED ON THIS PLAN HAVE BEEN DEFINED FOR DETAIL PLAN PURPOSES ONLY IN ACCORDANCE WITH CLAUSE 9 OF THE SURVEY AND SPATIAL INFORMATION REGULATION 2017. THE BOUNDARIES HAVE BEEN DEFINED BY PARTIAL SURVEY AND EXISTING PLAN AND TITLE DIMENSIONS WHERE POSSIBLE. WHILST EVERY CARE HAS BEEN TAKEN TO ENSURE THE ACCURACY OF THE SURVEY SUITS THE REQUIRED PURPOSE, A MORE COMPREHENSIVE SURVEY MAY RESULT IN DIFFERENCES IN THE DEFINITION OF THE SUBJECT BOUNDARIES. NO RESPONSIBILITY CAN BE ACCEPTED FOR ANY FUTURE DIFFERENCE IN BOUNDARY LOCATION WHICH MIGHT RESULT FROM RE-SURVEY OF SUBJECT OR ADJOINING LANDS OR FROM SUBSEQUENT REGISTRATION OF NEW SURVEY INFORMATION.

SURVEYOR REGISTERED UNDER THE SURVEYING AND SPATIAL INFORMATION ACT 2002, AS AMENDED

WARNING OPTICAL FIBRE IN AREA

WARNING UNDERGROUND ELECTRICITY LINES

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GDA2020

nearmap
AERIAL IMAGE TAKEN FROM NEARMAP
DATED: 6.08.2022
(USED IN ACCORDANCE WITH COMMERCIAL LICENCE)

ver.	date	comment	surveyed	drawn	checked	pm
A	21-09-22	INITIAL ISSUE	JJW	MC	JJW	DLE
B	1-11-23	TRANSLATE TO GDA2020	N/A	DLE	DLE	DLE

co-ordinate information: CO-ORDINATE SYSTEM: MGA 56 GDA2020; ORIGIN OF CO-ORDINATES: P.M.60149; DATE OF SURVEY 6/9/2022

level information: DATUM: AHD CONTOUR INTERVAL: 0.5m; ORIGIN OF LEVELS: P.M.60149 RL:21.398

scale (A1 original size): 0 10.0 20.0m; SCALE: 1:400 (FULL)

page: 1 OF 7

drawing title: GILLIESTON PUBLIC SCHOOL

location: Corner of Northview ST. & Ryans Road Gilliestion Heights

council: Maitland

dwg ref: 240375(1)-DET-001-B.dwg

client: NSW GOVERNMENT SINSW

adw johnson
central coast office ph: (02) 4305 4300
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GILLIESTON ROAD

RYANS ROAD

SHADE AWNING OVER SAND PIT

FLAGPOLES & BELL

ELECTRICAL KIOSK

ELECTRICAL PIT

CONC. CARPARK

"LEARNING CENTRE" SINGLE STOREY BK & METAL ROOF

VERANDAH

COMMS. PIT

METAL ROOF OVER PLAY EQUIPMENT

ROOM 11 DEMOUNTABLE

51 DP1162489

ROOM 4 DEMOUNTABLE

ROOM 12 DEMOUNTABLE

TABLE

GIRLS TOILET

SEPTIC

U/G TANKS NOT LOCATED BY SURVEY

SEPTIC PUMP OUT POINT

MAIN ELECTRICAL DIST. BOARD

WATER TANK

ROOM 5 DEMOUNTABLE UNDER CONSTRUCTION

"ROOM 3" SINGLE STOREY F/C CLAD CLASSROOMS METAL ROOF

"ROOM 2"

PAVERS

METAL SHED

CONC.

SEAT

WARNING
OPTICAL FIBRE IN AREA

WARNING
UNDERGROUND ELECTRICITY LINES

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drawing title:

GILLIESTON PUBLIC SCHOOL

location: Corner of Northview ST. & Ryans Road Gillieston Heights

council: Maitland

dwg ref: 240375(1)-DET-001-B.dwg

client: SINSW

ver.	date	comment	surveyed	drawn	checked	pm
A	21-09-22	INITIAL ISSUE	JJW	MC	JJW	DLE
B	1-11-2023	TRANSLATE TO GDA2020	N/A	DLE	DLE	DLE

co-ordinate information
CO-ORDINATE SYSTEM: MGA 56 GDA2020
ORIGIN OF CO-ORDINATES: P.M.60149
DATE OF SURVEY 6/9/2022

level information
DATUM: AHD CONTOUR INTERVAL:
ORIGIN OF LEVELS: P.M.60149 RL:21.398 0.5m

scale (A1 original size)
0 3.0 6.0 7.5m
SCALE: 1:150 (FULL)

page: 2 OF 7

(A) EASEMENT TO DRAIN WATER VARIABLE WIDTH AFFECTING THE PART (S) SHOWN SO BURDENED IN THE TITLE DIAGRAM (DP1162489)

(X) LAND EXCLUDES MINERALS AND IS SUBJECT TO RIGHTS TO MINE WITHIN THE PART SHOWN SO INDICATED IN THE TITLE DIAGRAM (A290830)

GDA2020

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N

RYANS ROAD

NORTHVIEW STREET

ROOM 6 DEMOUNTABLE
ROOM 7 DEMOUNTABLE
ROOM 1 DEMOUNTABLE
ROOM 10 DEMOUNTABLE 28.13 FFL
ROOM 9 DEMOUNTABLE 28.85 FFL
ROOM 8 DEMOUNTABLE 28.82 FFL
STAFF ROOM & FIRST AID DEMOUNTABLE 28.85 FFL
OFFICE DEMOUNTABLE
VERANDAH
RAMP
COVERED WALKWAY
COLA 31.85 ROOF RIDGE
BOAT
G.A'S SHED METAL
VEGE PATCH
G.I.
CONC. DRIVE
GIRLS TOILET UNDER CONST. 28.15 FFL
BOYS TOILET 28.1 FFL
LIBRARY SINGLE STOREY W'BOARD METAL ROOF 27.99 FFL
33.15 ROOF RIDGE
CANTEEN 27.08 FFL
HALL DEMOUNTABLE BUILDINGS
STORAGE
UNDER CONST. DEMOUNTABLE BUILDINGS 27.52 FFL
APPROX. POSITION
PAVERS
GARDEN'S
MAIL BOX
51 DP1162489
28
BLUE
GARDEN
CONC.
STAIRS
STAIR
SEAT
CH
DOOR
WIN
SIP
SIO
SV
SI
WM
GL
FFL
TRW
BRW
RW
E(D)
U/G(D)
W(D)
RW(D)

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GDA2020

ver.	date	comment	surveyed	drawn	checked	pm
A	21-09-22	INITIAL ISSUE	JJW	MC	JJW	DLE
B	1-11-2023	TRANSLATE TO GDA2020	N/A	DLE	DLE	DLE

co-ordinate information:
CO-ORDINATE SYSTEM: MGA 56 GDA2020
ORIGIN OF CO-ORDINATES: P.M.60149
DATE OF SURVEY 6/9/2022

level information:
DATUM: AHD CONTOUR INTERVAL:
ORIGIN OF LEVELS: P.M.60149 RL:21.398 0.5m

scale (A1 original size): 0 3.0 6.0 7.5m SCALE: 1:150 (FULL)

page: 3 OF 7

drawing title:
GILLIESTON PUBLIC SCHOOL

location: Corner of Northview ST. & Ryans Road Gillieston Heights

council: Maitland

dwg ref: 240375(1)-DET-001-B.dwg

client: SINSW

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240375(1)-DET-001-B

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N

GILLIESTON ROAD

51
DP1162489
(X)

(A)
(X)

99° 21'
194.525
55"
144° 11' 30"
8.477
237° 14' 45"
68.665
40.205
189° 50' 15"

DAM

PROPOSED ACQUISITION PARCEL

CANTEEN
27.08 FFL
HALL
DEMOUNTABLE
BUILDINGS
VERANDAH
STORAGE
STAIRS
RAMP
PAVERS
APPROX. POSITION
CH

WARNING
OPTICAL FIBRE IN AREA

WARNING
UNDERGROUND ELECTRICITY LINES

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ver.	date	comment	surveyed	drawn	checked	pm
A	21-09-22	INITIAL ISSUE	JJW	MC	JJW	DLE
B	1-11-2023	TRANSLATE TO GDA2020	N/A	DLE	DLE	DLE

co-ordinate information
CO-ORDINATE SYSTEM: MGA 56 GDA2020
ORIGIN OF CO-ORDINATES: P.M.60149
DATE OF SURVEY 6/9/2022

level information
DATUM: AHD CONTOUR INTERVAL: 0.5m
ORIGIN OF LEVELS: P.M.60149 RL:21.398

scale (A1 original size)
0 5.0 10.0 12.5m
SCALE: 1:250 (FULL)

page
4 OF 7

GDA2020

drawing title:
GILLIESTON PUBLIC SCHOOL

location: Corner of Northview ST. & Ryans Road Gillieston Heights

council: Maitland

dwg ref: 240375(1)-DET-001-B.dwg

client: NSW GOVERNMENT SINSW

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51
DP1162489

PROPOSED ACQUISITION PARCEL

DAM

HALL
DEMOUNTABLE
BUILDINGS

STORAGE

UNDER CONST.
DEMOUNTABLE
BUILDINGS
27.52 FFL

STAIRS

APPROX. POSITION

ELECT. KIOSK

NORTHVIEW STREET

237°14'55" – 68.656
237°14'55" – 42.51
274°31'10" – 23.83
215°57'20" – 10.25
144°58'55"
271°14'20"

(A) EASEMENT TO DRAIN WATER VARIABLE WIDTH AFFECTING THE PART (S) SHOWN SO BURDENED IN THE TITLE DIAGRAM (DP1162489)

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WARNING
OPTICAL FIBRE
IN AREA

WARNING
UNDERGROUND
ELECTRICITY LINES

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ver.	date	comment	surveyed	drawn	checked	pm
A	21-09-22	INITIAL ISSUE	JJW	MC	JJW	DLE
B	1-11-2023	TRANSLATE TO GDA2020	DLE	DLE	DLE	DLE

co-ordinate information
CO-ORDINATE SYSTEM: MGA 56 GDA2020
ORIGIN OF CO-ORDINATES: P.M.60149
DATE OF SURVEY 6/9/2022

level information
DATUM: AHD CONTOUR INTERVAL: 0.5m
ORIGIN OF LEVELS: P.M.60149 RL:21.398

scale (A1 original size)
0 5.0 10.0m
SCALE: 1:200 (FULL)

page
5 OF 7

drawing title:
GILLIESTON PUBLIC SCHOOL

location: Corner of Northview ST. & Ryans Road Gillieston Heights

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Plotted By: Darren Lewis Plot Date: 01/11/23 2:56:31 PM Cad File: N:\240375\240375(1) GILLIESTON HEIGHTS\DWG\SURVEY\DET\240375(1)-DET-001-B.DWG
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LEGEND

- W(D) — UNDERGROUND WATER MAIN (QL D)
- E(D) — UNDERGROUND ELECTRICITY (QL D)
- RW(D) — RECYCLED WATER MAIN QL D
- GD(D) — UNDERGROUND GAS MAIN (QL D)
- UC(D) — UNDERGROUND COMMS (QL D)
- GAS — GAS LINE DBYD APPROX. POSITION ONLY
- W — WATER LINE APPROX. POSITION ONLY
- RW — RECYCLED WATER LINE APPROX. POSITION ONLY
- S — SEWER LINE DBYD APPROX. POSITION ONLY
- E — ELECTRICAL LINE APPROX. POSITION ONLY
- T — COMMS. DBYD APPROX. POSITION ONLY
- O/H — OVERHEAD POWER LINE
- D — DRAINAGE LINE
- STORMWATER PIPE

QL - 'D': INFORMATION IS THE MOST BASIC LEVEL OF UTILITY LOCATIONS USING ONLY INFORMATION BASED ON EXISTING DIAL-BEFORE-YOU-DIG PLANS AND BY MEASURING BOUNDARY OFFSETS AS WELL AS ASSISTANCE VIA GROUND PENETRATING RADAR ETC. THIS METHOD OF UTILITY LOCATIONS SHOULD ALWAYS BE TREATED AS AN INDICATION OF THE PRESENCE OF A SERVICE ONLY AND SHOULD NOT BE USED FOR DESIGN.

WARNING OPTICAL FIBRE IN AREA

WARNING UNDERGROUND ELECTRICITY LINES

BEFORE YOU DIG www.byda.com.au

RYANS ROAD

GILLIESTON ROAD

NORTHVIEW STREET

(A) EASEMENT TO DRAIN WATER VARIABLE WIDTH AFFECTING THE PART (S) SHOWN SO BURDENED IN THE TITLE DIAGRAM (DP1162489)

(X) LAND EXCLUDES MINERALS AND IS SUBJECT TO RIGHTS TO MINE WITHIN THE PART SHOWN SO INDICATED IN THE TITLE DIAGRAM (A290830)

2 DP997874

1 DP986279

51 DP1162489 2.064ha

213 DP1186997

17 DP263196

116 DP1172940

117

1180 1181 DP1195378

119

ELECTRICAL KIOSK

ELECTRICAL PIT

PROPOSED ACQUISITION PARCEL

NOTES:-

1. PLEASE REFER TO AS5488-2013 CLASSIFICATION OF SUBSURFACE UTILITY INFORMATION (SUI) FOR THE DEFINITION OF SERVICE LOCATION ACCURACIES SHOWN IN THIS PLAN.
2. ALL UNDERGROUND UTILITIES SHOWN ON THIS PLAN HAVE BEEN LOCATED BY ELECTRONIC DETECTION, SITE INSPECTIONS AND/OR BY INFORMATION BASED UPON SUPPLIED DBYD INFORMATION PLANS. ADDITIONAL SERVICES MAY EXIST THROUGHOUT THE SITE. TRUE LEVELS & POSITIONS WILL NEED TO BE VERIFIED BY POTHOLES BEFORE ANY CONSTRUCTION COMMENCES.
3. DIMENSIONS SHOWN ON THIS PLAN ARE BASED ON PRELIMINARY BOUNDARY DEFINITION ONLY. ANY FUTURE PLAN OF SURVEY OF SUBDIVISION LOTS REGISTERED SUBSEQUENT TO THIS INITIAL SURVEY MAY IMPACT SUBJECT BOUNDARIES. ALL DIMENSIONS, AREAS AND EASEMENTS ARE SUBJECT TO FINAL SURVEY AND REGISTRATION OF THE PLAN WITH LAND AND PROPERTY INFORMATION.
4. SPOT LEVELS AND CONTOURS SHOWN HEREON ARE FOR DESIGN PURPOSES ONLY AND ARE TO BE CONFIRMED ON SITE PRIOR TO ANY EXCAVATION OR CONSTRUCTION.
5. THIS PLAN HAS BEEN PREPARED FOR THE PURPOSE OF DESIGN AND SHOULD NOT BE USED FOR ANYTHING OTHER THAN THAT PURPOSE.
6. THE WINDOWS, GUTTERS AND ROOFLINES OF BUILDINGS LOCATED ON ADJOINING PROPERTIES HAVE BEEN LOCATED BY INDIRECT SURVEY METHODS AND ARE SHOWN ON THIS PLAN IN THEIR APPROXIMATE LOCATION FOR THE PURPOSE OF GENERAL SITE ANALYSIS ONLY.

NOTES:-

1. BOUNDARIES HAVE BEEN DETERMINED BY PLAN DIMENSIONS ONLY, AND HAVE NOT BEEN SURVEYED. ALL BEARINGS, DIMENSIONS, AREAS AND EASEMENTS ARE SUBJECT TO FINAL SURVEY.
2. SERVICES HAVE BEEN LOCATED WHERE VISIBLE ONLY. PRIOR TO EXCAVATION OR CONSTRUCTION ALL SERVICES ARE TO BE LOCATED BY THE RELEVANT AUTHORITY.
3. SPOT LEVELS AND CONTOURS SHOWN HEREON ARE FOR DESIGN PURPOSES ONLY AND ARE TO BE CONFIRMED ON SITE PRIOR TO ANY EXCAVATION OR CONSTRUCTION.
4. THIS PLAN HAS BEEN PREPARED FOR THE PURPOSE OF DETAIL SURVEY AND SHOULD NOT BE USED FOR ANYTHING OTHER THAN THAT PURPOSE.
5. THE BOUNDARIES DEPICTED ON THIS PLAN HAVE BEEN DEFINED FOR DETAIL PLAN PURPOSES ONLY IN ACCORDANCE WITH CLAUSE 9 OF THE SURVEY AND SPATIAL INFORMATION REGULATION 2017. THE BOUNDARIES HAVE BEEN DEFINED BY PARTIAL SURVEY AND EXISTING PLAN AND TITLE DIMENSIONS WHERE POSSIBLE. WHILST EVERY CARE HAS BEEN TAKEN TO ENSURE THE ACCURACY OF THE SURVEY SUITS THE REQUIRED PURPOSE, A MORE COMPREHENSIVE SURVEY MAY RESULT IN DIFFERENCES IN THE DEFINITION OF THE SUBJECT BOUNDARIES. NO RESPONSIBILITY CAN BE ACCEPTED FOR ANY FUTURE DIFFERENCE IN BOUNDARY LOCATION WHICH MIGHT RESULT FROM RE-SURVEY OF SUBJECT OR ADJOINING LANDS OR FROM SUBSEQUENT REGISTRATION OF NEW SURVEY INFORMATION.

ver.	date	comment	surveyed	drawn	checked	pm	co-ordinate information	level information	scale (A1 original size)	page
A	21-09-22	INITIAL ISSUE	JJW	MC	JJW	DLE	CO-ORDINATE SYSTEM: MGA 56 GDA2020	DATUM: AHD CONTOUR INTERVAL:	0 10.0 20.0m	6 OF 7
B	1-11-2023	TRANSLATE TO GDA2020	N/A	DLE	DLE	DLE	ORIGIN OF CO-ORDINATES: P.M.60149	ORIGIN OF LEVELS: P.M.60149 RL:21.398 0.5m	SCALE: 1:400 (FULL)	
							DATE OF SURVEY 6/9/2022			

SURVEYOR REGISTERED UNDER THE SURVEYING AND SPATIAL INFORMATION ACT 2002, AS AMENDED

GDA2020

drawing title:

GILLIESTON PUBLIC SCHOOL

location: Corner of Northview ST. & Ryans Road Gillieston Heights

council: Maitland

dwg ref: 240375(1)-DET-001-B.dwg

client: NSW GOVERNMENT SINSW

adw johnson

central coast office ph: (02) 4305 4300
hunter office ph: (02) 4978 5100
sydney office ph: (02) 8046 7411
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PHOTO 1



PHOTO 4



PHOTO 7



PHOTO 2



PHOTO 5



PHOTO 8



PHOTO 3



PHOTO 6



PHOTO 9



PHOTO 10

ver.	date	comment	surveyed	drawn	checked	pm	co-ordinate information	level information	scale (A1 original size)	page
A	21-09-22	INITIAL ISSUE	JJW	MC	JJW	DLE	CO-ORDINATE SYSTEM: MGA 56 GDA2020	DATUM: AHD CONTOUR INTERVAL:	0 10.0 20.0m	7 OF 7
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							DATE OF SURVEY 6/9/2022			

GDA2020

drawing title:

GILLIESTON PUBLIC SCHOOL

location: Corner of Northview ST. & Ryans Road Gillieston Heights

council: Maitland

dwg ref: 240375(1)-DET-001-B.dwg

client: SINSW

central coast office ph: (02) 4305 4300
hunter office ph: (02) 4978 5100
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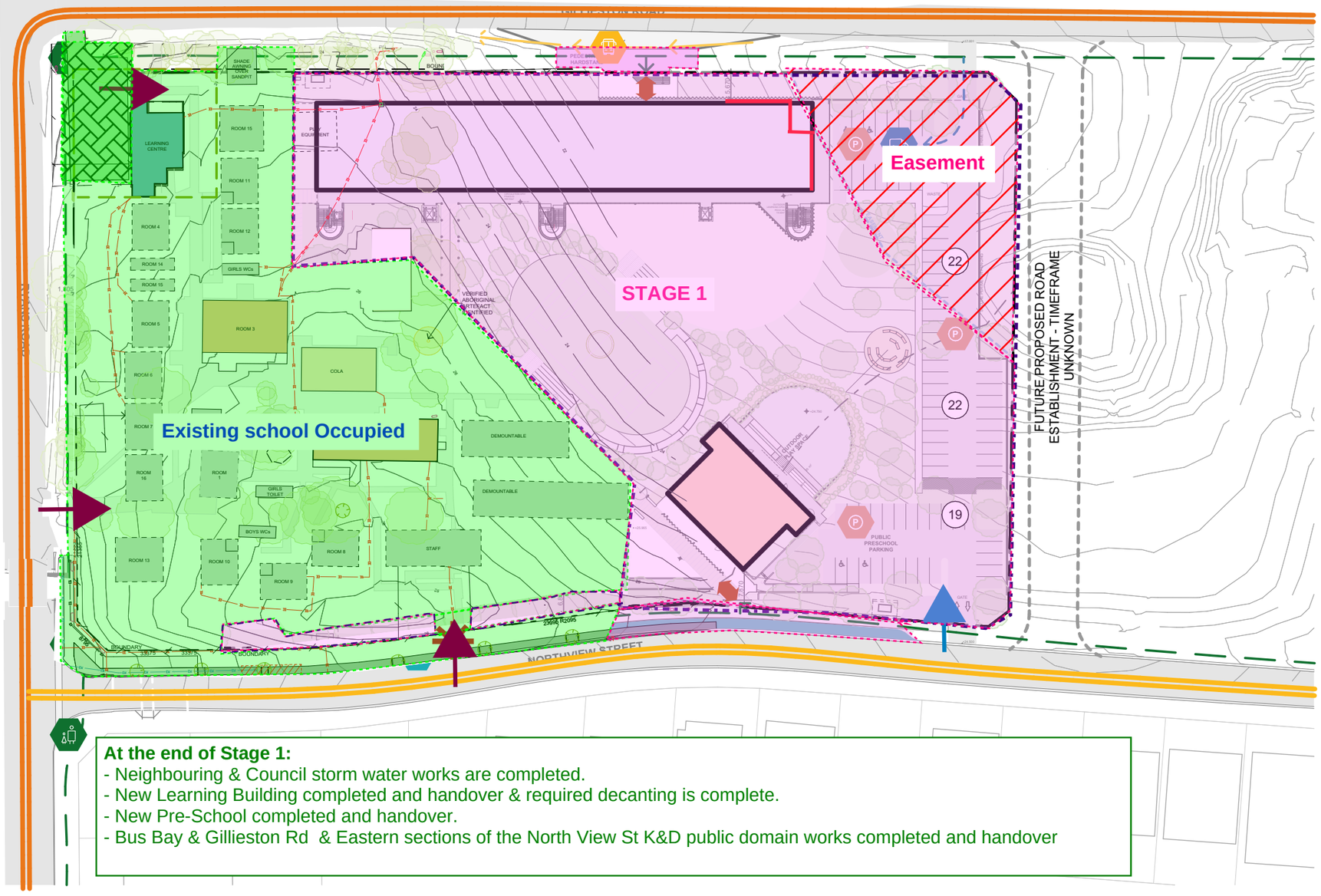
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Gillieston Public School - Stage 1 Construction Works

Construction works includes:
- Site Establishment
- Neighbouring & Council storm water works
- All works required for the Completion of the new Learning Building & required decanting
- All works required for the Completion of the new Pre-School
- Bus Bay & Gillieston Rd & Eastern sections of the North View St K&D public domain works

Key Notes:
1. Staff will be utilising the existing car park adjacent to Building D (Brick Cottage) on Gillieston Road during Stage 1 Construction Works
2. School Access on Northview Street is retained across Stage 1 Services corridor



At the end of Stage 1:
- Neighbouring & Council storm water works are completed.
- New Learning Building completed and handover & required decanting is complete.
- New Pre-School completed and handover.
- Bus Bay & Gillieston Rd & Eastern sections of the North View St K&D public domain works completed and handover

CONSTRUCTION LEGEND

- Easement - This area is in possession of the Contractor. However, works in this area cannot be commenced until neighbouring & council stormwater works are complete
- In Construction & Site in possession with the contractor
- Existing and Operational
- Completed and Occupied
- Contractor Site Access
- School Access
- Hoarding Line
- Staff car park
- Remediation - This area is required to be remediated and made good prior to Hall and OOSH demountable installation

TECHNICAL OVERLAY

- Bus Stop
- Carparking
- Kiss n Drop
- Bicycles and Scooters
- Crossings and School Zones
- Maintenance and Delivery Access

LEGEND

- FUTURE PROPOSED ROADS
- CAR PARKING
- KISS N DROP & QUEUING ZONE
- BICYCLE / SCOOTER PARKING
- MAINTENANCE / DELIVERY ACCESS
- ACTIVE TRANSPORT LINKS
- MULTIDIRECTIONAL CAR ACCESS
- NARROW CUL DE SAC
- BUSBAY DROP OFF
- ENTRY

4814
DA3502
RevA 17.09.24

Gillieston Public School
100 Ryans Road & 29 Northview Street

0m 10 20 30 40 50 1:1000 @A3

SHAC

Nominated Architect Justin Hamilton (6160) | ABN 32 131 584 846

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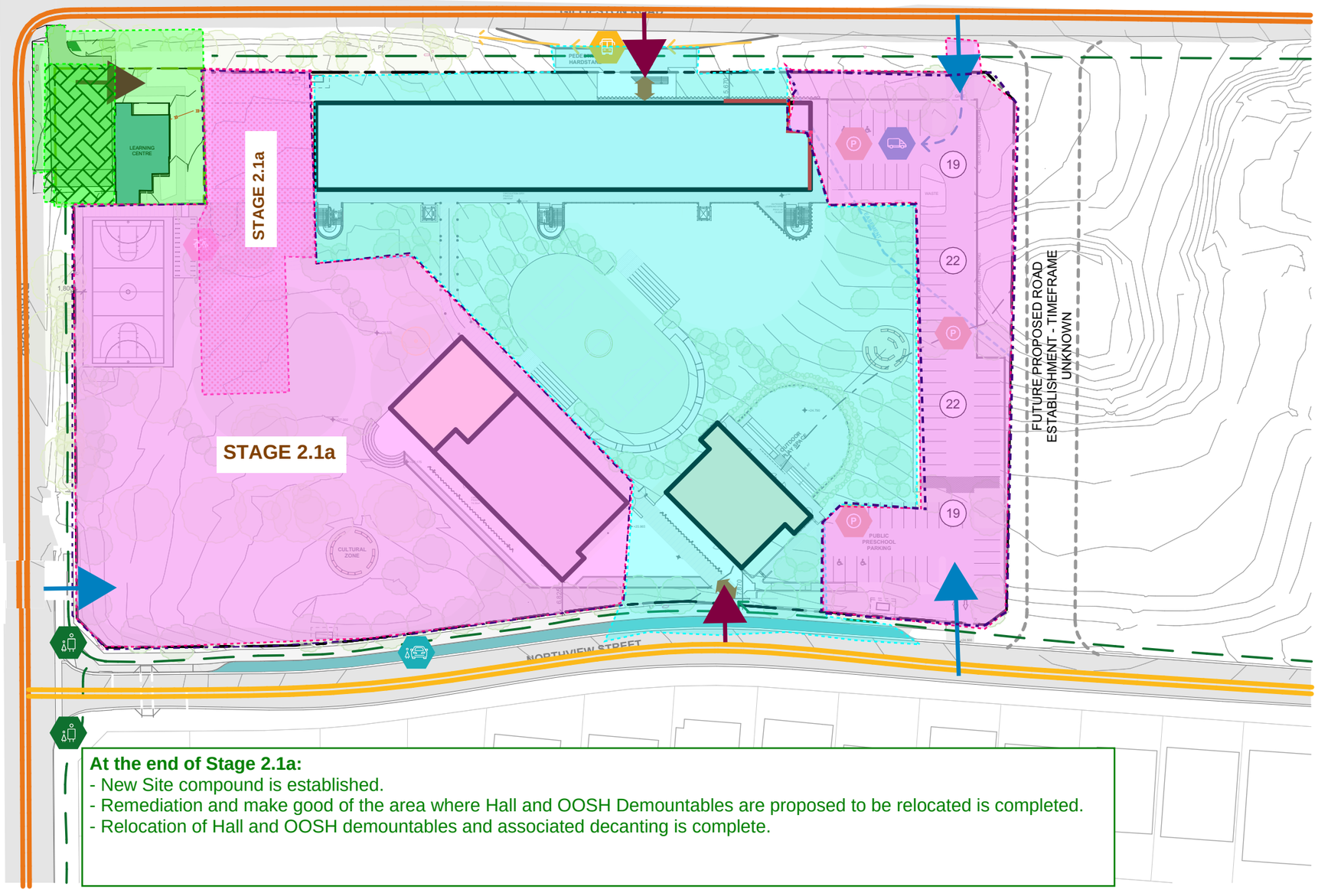
Gillieston Public School - Stage 2 Construction Works

Some parts of Stage 2 works would occur simultaneously

Gillieston Public School - Stage 2.1a Construction Works

Construction works include:
- Site shed relocation.
- Remediation and make good of the area where Hall and OOSH Demountables are proposed to be relocated.
- Relocation of Hall and OOSH demountables and associated decanting to facilitate construction of New Hall and OOSH Building.

Key Notes:
1. Staff will be utilising the existing car park adjacent to Building D (Brick Cottage) on Gillieston Road during Stage 2.1a Construction Works



At the end of Stage 2.1a:
- New Site compound is established.
- Remediation and make good of the area where Hall and OOSH Demountables are proposed to be relocated is completed.
- Relocation of Hall and OOSH demountables and associated decanting is complete.

CONSTRUCTION LEGEND

- Easement - This area is in possession of the Contractor. However, works in this area cannot be commenced until neighbouring & council stormwater works are complete
- In Construction & Site in possession with the contractor
- Existing and Operational
- Completed and Occupied
- Contractor Site Access
- School Access
- Hoarding Line
- Staff car park
- Remediation - This area is required to be remediated and made good prior to Hall and OOSH demountable installation

TECHNICAL OVERLAY

- Bus Stop
- Carparking
- Kiss n Drop
- Bicycles and Scooters
- Crossings and School Zones
- Maintenance and Delivery Access

LEGEND

- FUTURE PROPOSED ROADS
- CAR PARKING
- KISS N DROP & QUEUING ZONE
- BICYCLE / SCOOTER PARKING
- MAINTENANCE / DELIVERY ACCESS
- ACTIVE TRANSPORT LINKS
- MULTIDIRECTIONAL CAR ACCESS
- NARROW CUL DE SAC
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Gillieston Public School
100 Ryans Road & 29 Northview Street

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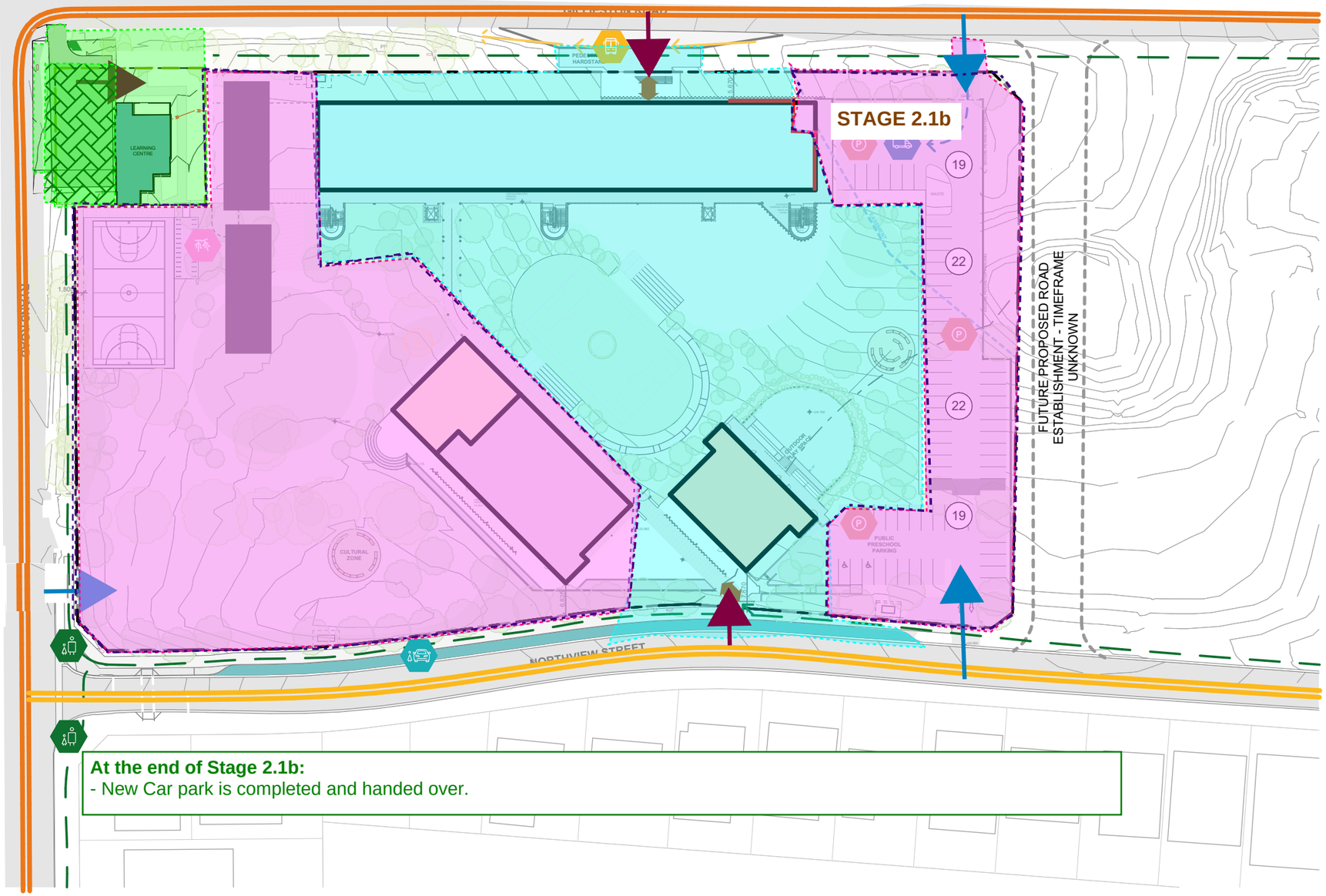
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Gillieston Public School - Stage 2.1b Construction Works

Construction works include:
- Construction of New Car park

Key Notes:
1. Staff will be utilising the existing car park adjacent to Building D (Brick Cottage) on Gillieston Road during Stage 2.1b Construction Works



At the end of Stage 2.1b:
- New Car park is completed and handed over.

CONSTRUCTION LEGEND

- Easement - This area is in possession of the Contractor. However, works in this area cannot be commenced until neighbouring & council stormwater works are complete
- In Construction & Site in possession with the contractor
- Existing and Operational
- Completed and Occupied
- Contractor Site Access
- School Access
- Hoarding Line
- Staff car park
- Remediation - This area is required to be remediated and made good prior to Hall and OOSH demountable installation

TECHNICAL OVERLAY

- **Bus Stop**
- **Carparking**
- **Kiss n Drop**
- **Bicycles and Scooters**
- **Crossings and School Zones**
- **Maintenance and Delivery Access**

LEGEND

- FUTURE PROPOSED ROADS
- CAR PARKING
- KISS N DROP & QUEUING ZONE
- BICYCLE / SCOOTER PARKING
- MAINTENANCE / DELIVERY ACCESS
- ACTIVE TRANSPORT LINKS
- MULTIDIRECTIONAL CAR ACCESS
- NARROW CUL DE SAC
- BUSBAY DROP OFF
- ENTRY

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Gillieston Public School
100 Ryans Road & 29 Northview Street

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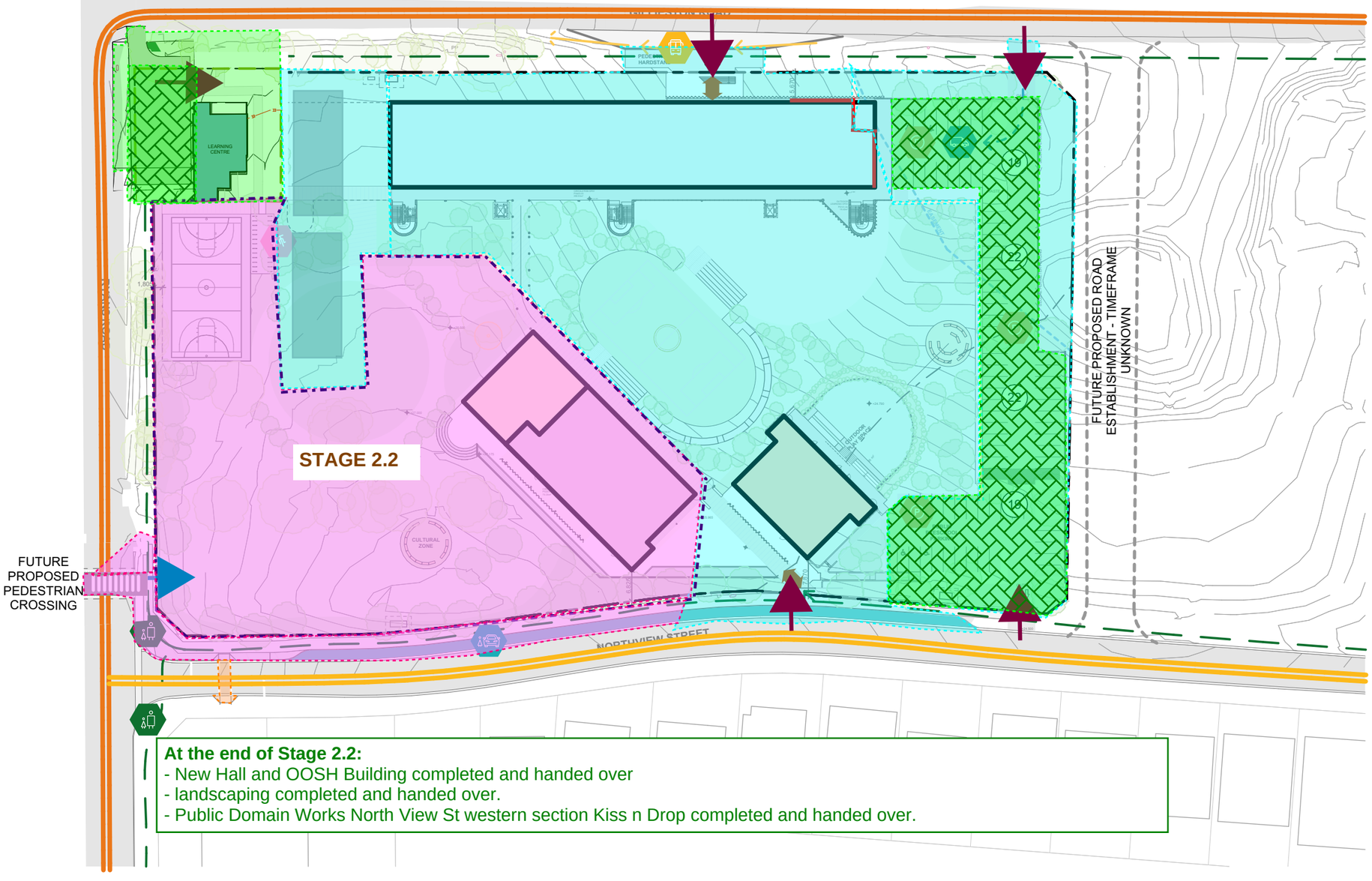
Nominated Architect Justin Hamilton (6160) | ABN 32 131 584 846

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Gillieston Public School - Stage 2.2 Construction Works

Construction works include:
- Completion & Handover of New Hall and OOSH Building
- Completion of landscaping
- Completion of Public Domain Works North View St western section Kiss n Drop

Key Notes:
1. Staff will be utilising the existing car park adjacent to Building D (Brick Cottage) on Gillieston Road and the new car park during Stage 2.2 Construction Works



At the end of Stage 2.2:
- New Hall and OOSH Building completed and handed over
- landscaping completed and handed over.
- Public Domain Works North View St western section Kiss n Drop completed and handed over.

CONSTRUCTION LEGEND

- Easement - This area is in possession of the Contractor. However, works in this area cannot be commenced until neighbouring & council stormwater works are complete
- In Construction & Site in possession with the contractor
- Existing and Operational
- Completed and Occupied
- Contractor Site Access
- School Access
- Hoarding Line
- Staff car park
- Remediation - This area is required to be remediated and made good prior to Hall and OOSH demountable installation

TECHNICAL OVERLAY

- **Bus Stop**
- **Carparking**
- **Kiss n Drop**
- **Bicycles and Scooters**
- **Crossings and School Zones**
- **Maintenance and Delivery Access**

LEGEND

- FUTURE PROPOSED ROADS
- CAR PARKING
- KISS N DROP & QUEUING ZONE
- BICYCLE / SCOOTER PARKING
- MAINTENANCE / DELIVERY ACCESS
- ACTIVE TRANSPORT LINKS
- MULTIDIRECTIONAL CAR ACCESS
- NARROW CUL DE SAC
- BUSBAY DROP OFF
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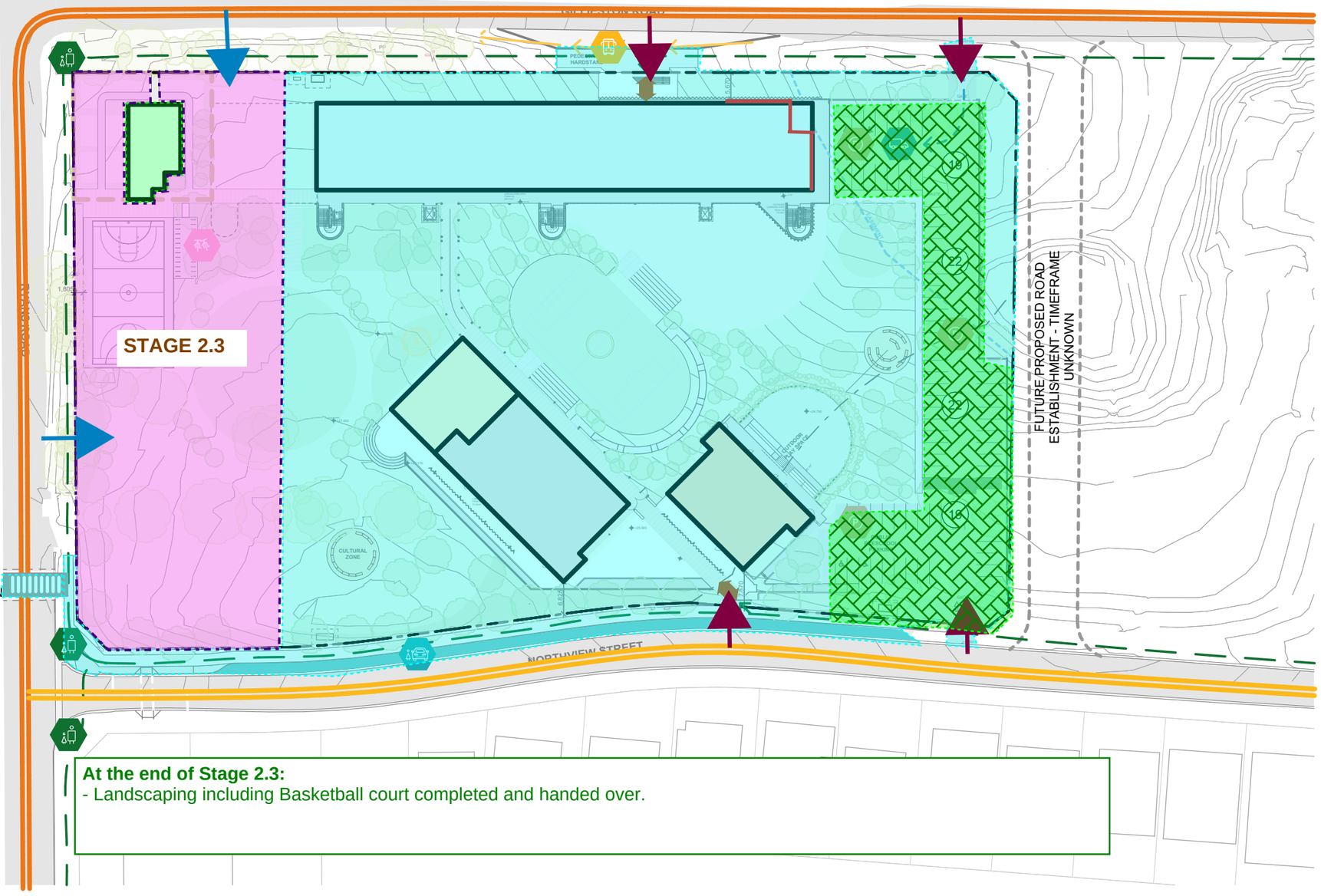
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Gillieston Public School - Stage 2.3 Construction Works

Construction works include:
- Removal of relocated demountables
- Completion of landscaping including Basketball court

Key Notes:
1. Staff will be utilising the new car park during Stage 2.3 Construction Works



At the end of Stage 2.3:
- Landscaping including Basketball court completed and handed over.

CONSTRUCTION LEGEND

- Easement - This area is in possession of the Contractor. However, works in this area cannot be commenced until neighbouring & council stormwater works are complete
- In Construction & Site in possession with the contractor
- Existing and Operational
- Completed and Occupied
- Contractor Site Access
- School Access
- Hoarding Line
- Staff car park
- Remediation - This area is required to be remediated and made good prior to Hall and OOSH demountable installation

TECHNICAL OVERLAY

- **Bus Stop**
- **Carparking**
- **Kiss n Drop**
- **Bicycles and Scooters**
- **Crossings and School Zones**
- **Maintenance and Delivery Access**

LEGEND

- FUTURE PROPOSED ROADS
- CAR PARKING
- KISS N DROP & QUEUING ZONE
- BICYCLE / SCOOTER PARKING
- MAINTENANCE / DELIVERY ACCESS
- ACTIVE TRANSPORT LINKS
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- BUSBAY DROP OFF
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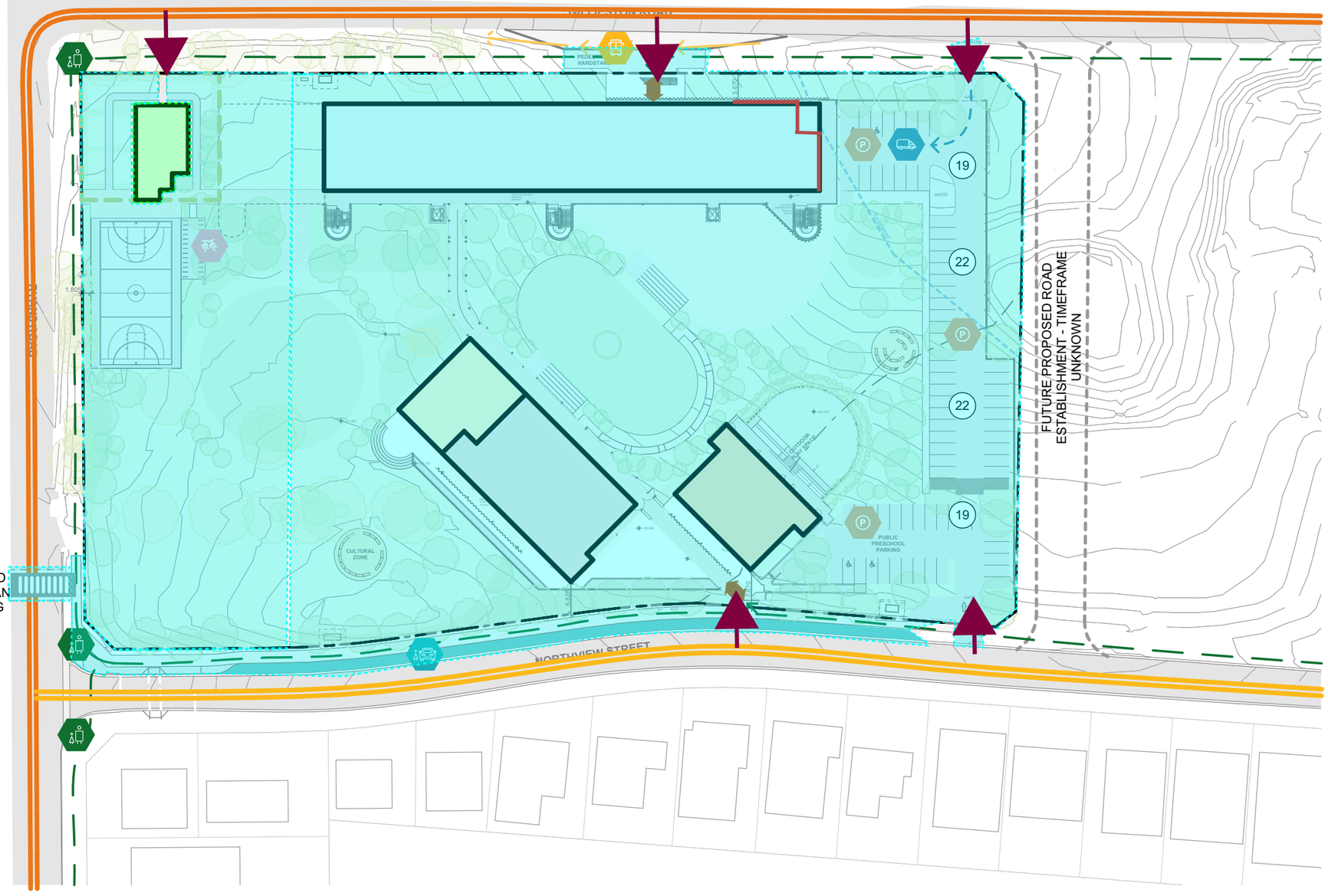
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Gillieston Public School - Completion



CONSTRUCTION LEGEND

- Easement - This area is in possession of the Contractor. However, works in this area cannot be commenced until neighbouring & council stormwater works are complete
- In Construction & Site in possession with the contractor
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- Completed and Occupied
- Contractor Site Access
- School Access
- Hoarding Line
- Staff car park
- Remediation - This area is required to be remediated and made good prior to Hall and OOSH demountable installation

TECHNICAL OVERLAY

- **Bus Stop**
- **Carparking**
- **Kiss n Drop**
- **Bicycles and Scooters**
- **Crossings and School Zones**
- **Maintenance and Delivery Access**

LEGEND

- FUTURE PROPOSED ROADS
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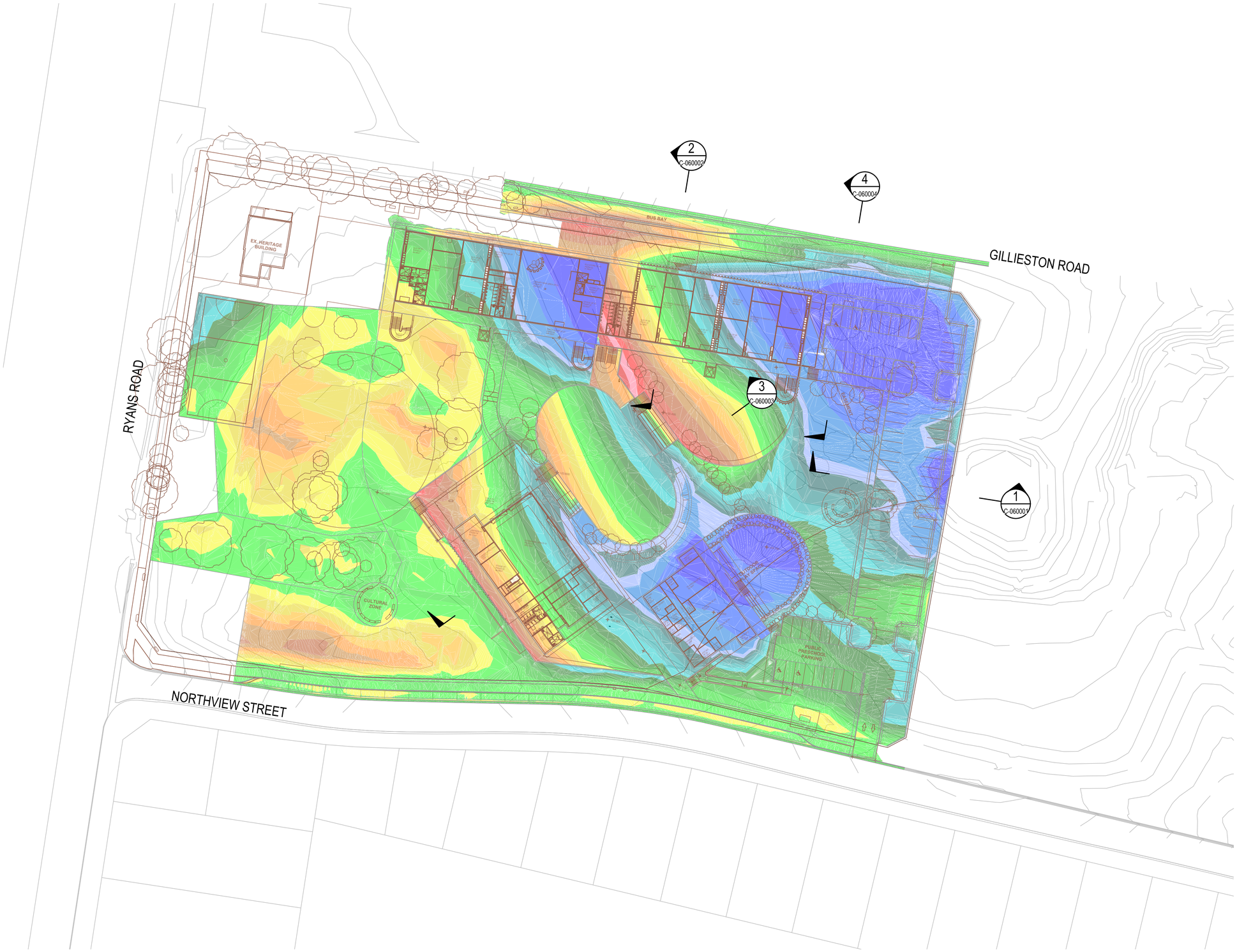
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ESL STRIPPED TO FSL ISOPACH LOWER VALUE		UPPER VALUE		COLOUR
-999	to	-5	m	
-5	to	-2.5	m	
-2.5	to	-1.5	m	
-1.5	to	-1.35	m	
-1.35	to	-1.2	m	
-1.2	to	-1.05	m	
-1.05	to	-0.9	m	
-0.9	to	-0.75	m	
-0.75	to	-0.6	m	
-0.6	to	-0.45	m	
-0.45	to	-0.3	m	
-0.3	to	-0.15	m	
-0.15	to	0.00	m	
0.00	to	0.15	m	
0.15	to	0.3	m	
0.3	to	0.45	m	
0.45	to	0.6	m	
0.6	to	0.75	m	
0.75	to	0.9	m	
0.9	to	1.05	m	
1.05	to	1.2	m	
1.2	to	1.35	m	
1.35	to	1.5	m	
1.5	to	2	m	
2	to	2.5	m	
2.5	to	5	m	
5	to	999	m	

EARTHWORKS QUANTITIES ARE AS FOLLOWS.

TOTAL CUT = -2,350 m³
TOTAL FILL = 16,460 m³
TOTAL FILL OVER CUT = 14,110 m³

NOTE - THESE VOLUMES ARE BETWEEN THE CURRENT DESIGN SURFACE LEVEL -200mm (FSL) AND EXISTING SURFACE LEVEL -300mm (ESL).

NO ALLOWANCE HAS BEEN MADE FOR BULKING, STRIPPING OF TOP SOIL, PAVEMENT THICKNESS, FOUNDATIONS AND FOOTINGS OR SERVICE TRENCHING

DRAWING UNDER REVISION

Issue.	Description	Date	Drawn	Approved
A	DRAFT SCHEMATIC DESIGN	27.09.24	MDM	JPR
A	DRAFT SCHEMATIC DESIGN	29.08.24	MDM	JPR

North

Scale
0 5 10 20 30m
SCALE BAR 1:500 @A1 1:1000 @A3

PRINT IN COLOUR

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Project
GILLIESTON PUBLIC SCHOOL
100 RYANS ROAD
GILLIESTON HEIGHTS, NSW, 2321

NOT FOR CONSTRUCTION

Drawing Title
CIVIL SERVICES
ISOPACH PLAN

Drawn	Designed	Q.A. Check	Date	Scale @ A1
MDM	SJO	JPR	27.09.24	1:500

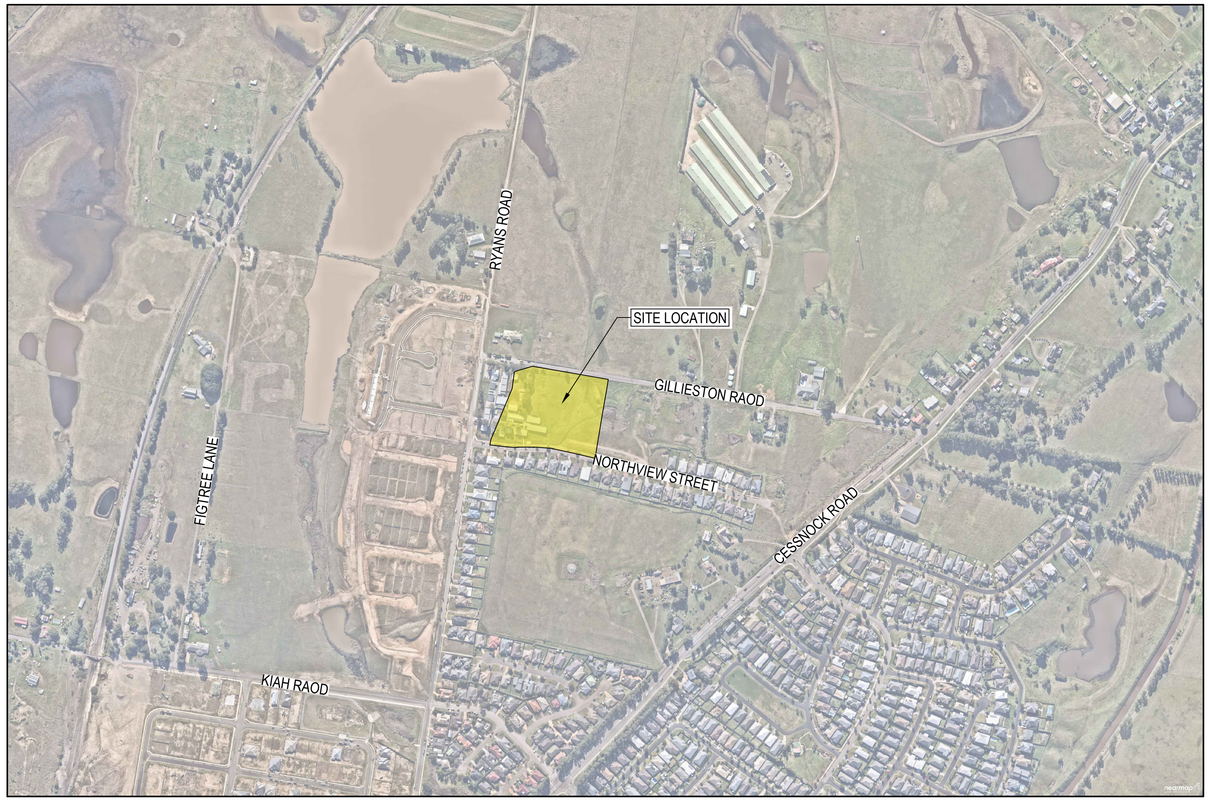
Project No.	Drawing No.	Issue
NS221454	GPS-ACOR-00-XX-DR-C-040001	A

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Sep 27, 2024 - 4:29pm

SCHOOL INFRASTRUCTURE NSW
GILLIESTON PUBLIC SCHOOL
DEVELOPMENT APPLICATION



LOCALITY PLAN
NOT TO SCALE

DRAWING NUMBER	DRAWING TITLE
GPS-ACOR-00-XX-DR-C-010001	COVER SHEET AND DRAWING INDEX
GPS-ACOR-00-XX-DR-C-010101	CONSTRUCTION NOTES
GPS-ACOR-00-XX-DR-C-030001	EROSION AND SEDIMENT CONTROL PLAN
GPS-ACOR-00-XX-DR-C-030101	EROSION AND SEDIMENT CONTROL NOTES - SHEET 1
GPS-ACOR-00-XX-DR-C-030102	EROSION AND SEDIMENT CONTROL NOTES - SHEET 2
GPS-ACOR-00-XX-DR-C-030201	EROSION AND SEDIMENT CONTROL DETAILS
GPS-ACOR-00-XX-DR-C-040001	ISOPACH PLAN
GPS-ACOR-00-XX-DR-C-050001	GENERAL ARRANGEMENT AND GRADING PLAN
GPS-ACOR-00-XX-DR-C-060001	SITE SECTIONS - SHEET 1
GPS-ACOR-00-XX-DR-C-060002	SITE SECTIONS - SHEET 2
GPS-ACOR-00-XX-DR-C-060003	SITE SECTIONS - SHEET 3
GPS-ACOR-00-XX-DR-C-060004	SITE SECTIONS - SHEET 4
GPS-ACOR-00-XX-DR-C-080001	STORMWATER MANAGEMENT PLAN
GPS-ACOR-00-XX-DR-C-080501	STORMWATER DETAILS
GPS-ACOR-00-XX-DR-C-090001	PAVEMENT AND JOINTING PLAN
GPS-ACOR-00-XX-DR-C-090101	PAVEMENT AND JOINTING DETAILS
GPS-ACOR-00-XX-DR-C-100001	RETAINING WALL PLAN
GPS-ACOR-00-XX-DR-C-100101	RETAINING WALL ELEVATIONS
GPS-ACOR-00-XX-DR-C-100201	RETAINING WALL DETAILS
GPS-ACOR-00-XX-DR-C-100202	RETAINING WALL NOTES

DRAWING UNDER REVISION

Issue.	Description	Date	Drawn	Approved
A	DRAFT SCHEMATIC DESIGN	29.08.24	MDM	JPR

North

Scale
0 50 100 200 300m
SCALE BAR 1:5000 @A1 1:10000 @A3

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Drawing Title
CIVIL SERVICES
COVER SHEET AND DRAWING INDEX

Drawn	Designed	Q.A. Check	Date	Scale @ A1
MDM	SJO	JPR	29.08.24	1:5000

Project No.	Drawing No.	Issue
NS221454	GPS-ACOR-00-XX-DR-C-010001	A

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Aug 29, 2024 - 9:24am

GENERAL NOTES

1. THE DRAWING DIMENSIONS SHALL NOT BE OBTAINED BY SCALING.
2. NO ADDITIONAL OR P.C. WORKS SHALL BE UNDERTAKEN WITHOUT THE SUPERINTENDENTS APPROVAL. CONFIRM COUNCIL INSTRUCTIONS WITH SUPERINTENDENT.
3. THE CONTRACTOR MUST ENSURE SUPERINTENDENT APPROVAL OF MATERIALS, PRIOR TO DELIVERY TO SITE.
4. DIVERSION OF WATER AND THE PROTECTION OF WORKS IS THE CONTRACTORS RESPONSIBILITY.
5. THE CONTRACTOR HAS SOLE RESPONSIBILITY TO EXERCISE CARE AND TAKE PRECAUTIONS TO ENSURE CONSTRUCTION ACTIVITIES DO NOT AFFECT ADJACENT PROPERTIES, ACCESS OR STRUCTURES. MAINTAIN EMBANKMENTS AND STRUCTURES IN STABLE CONDITION DURING CONSTRUCTION ENSURING NO PART IS OVERSTRESSED. TEMPORARY STRUCTURES, FORMWORK, TEMPORARY BRACING, SHORING AND THE LIKE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
6. THE CONTRACTOR WILL BE RESPONSIBLE FOR THE FULL QA DOCUMENTATION OF THE PROJECT TO ENSURE WORKS MEET THE RELEVANT SECTIONS OF AUSPEC FOR ROADS, DRAINAGE, WATER AND SEWER. A COMPLETE ITP PLAN SHALL BE SUBMITTED TO THE SUPERINTENDENT FOR APPROVAL PRIOR TO WORKS COMMENCING ON SITE.
7. CONTRACTOR IS TO VERIFY THE LOCATION OF ALL SERVICES WITH EACH RELEVANT AUTHORITY. ANY DAMAGE TO SERVICES SHALL BE REPAIRED BY THE CONTRACTOR OR THE RELEVANT AUTHORITY AT THE CONTRACTOR'S EXPENSE. SERVICES SHOWN ON THESE PLANS ARE ONLY THOSE EVIDENT AT THE TIME OF SURVEY.
8. UNDERTAKE WORKS TO PRINCIPLES OF AS 9001. SUBMIT WORK METHOD STATEMENT TO SUPERINTENDENT.

   HOLD POINTS SHALL APPLY TO:
   - APPROVAL OF WORK METHOD STATEMENT
   - APPROVAL OF TRAFFIC CONTROL PLAN
   - LOCATION OF INGROUND SERVICES
   - SETOUT OF EACH AREA OF WORKS
   - CERTIFICATION OF SUBGRADE
   - STORMWATER PIPEWORK PRIOR TO BACKFILL
   - CONDUITS PRIOR TO BACKFILL
   - WORK AS EXECUTED SURVEY
   - GEOTECHNICAL CERTIFICATION.
9. CONTRACTOR TO PROVIDE ALL SURVEY SETOUT, AND WAE FROM DATA.
   REFER SURVEY INFORMATION BY ADW JOHNSON
   REF No: 240375(1)-DET-001-A
   DATED: 06.09.2022
10. ALL WORKS ARE TO BE SETOUT BY A REGISTERED SURVEYOR.
11. ALL LEVELS SHALL BE OBTAINED FROM ESTABLISHED BENCH MARKS ONLY. STANDARD DATUM FOR ALL DRAWINGS IS AUSTRALIAN HEIGHT DATUM (A.H.D.).
12. A TRAFFIC CONTROL PLAN TO AS 1742.3 IS TO BE SUBMITTED TO COUNCIL FOR APPROVAL PRIOR TO WORKS COMMENCING.
13. SCOUR PROTECTION, SUB SOIL DRAINAGE AND UNSUITABLE SUB-GRADE REPLACEMENT SHALL BE AT THE DIRECTION OF THE SUPERINTENDENT.
14. SUBSOIL DRAINAGE TO BE PROVIDED AS PER APPROVED PLANS.

EXISTING SERVICES AND FEATURES

1. THE CONTRACTOR SHALL ALLOW FOR THE CAPPING OFF, EXCAVATION, REMOVAL AND DISPOSAL IF REQUIRED OF ALL EXISTING SERVICES IN AREAS AFFECTED BY WORKS WITHIN THE CONTRACT AREA AS DIRECTED OTHERWISE BY THE SUPERINTENDENT.
2. THE CONTRACTOR SHALL ENSURE THAT AT ALL TIMES SERVICES TO ALL BUILDINGS NOT AFFECTED BY THE WORKS ARE NOT DISRUPTED.
3. EXISTING BUILDINGS, EXTERNAL STRUCTURES, AND TREES SHOWN ON THESE DRAWINGS ARE FEATURES EXISTING PRIOR TO ANY DEMOLITION WORKS.
4. CONTRACTOR SHALL CONSTRUCT TEMPORARY SERVICES TO MAINTAIN EXISTING SUPPLY TO BUILDINGS REMAINING IN OPERATION DURING WORKS TO THE SATISFACTION AND APPROVAL OF THE SUPERINTENDENT. ONCE DIVERSION IS COMPLETE AND COMMISSIONED THE CONTRACTOR SHALL REMOVE ALL SUCH TEMPORARY SERVICES AND MAKE GOOD TO THE SATISFACTION OF THE SUPERINTENDENT.
5. INTERRUPTION TO SUPPLY OF EXISTING SERVICES SHALL BE DONE SO AS NOT TO CAUSE ANY INCONVENIENCE TO THE PRINCIPAL. CONTRACTOR TO GAIN APPROVAL OF SUPERINTENDENT FOR TIME OF INTERRUPTION.

EARTHWORKS AND PAVEMENT NOTES

1. ALL DISTURBED AREAS SHALL BE 100mm TOPSOILED, GRASS SEEDED, MULCHED OR TURFED AS SOON AS PRACTICABLE, AND BATTERS AND BERMS TREATED IMMEDIATELY AFTER CONSTRUCTION OF SEWERAGE AND STORMWATER. AREAS OF DISTURBANCE SHALL BE APPROVED BY THE SUPERINTENDENT. REFER EROSION AND SEDIMENT CONTROL PLAN.
2. GRASS TO BE TO LANDSCAPE ARCHITECT SPECIFICATION. GRASS/TURF TO BE MAINTAINED BY CONTRACTOR AT ALL TIMES INCLUDING PERIODS OF INSUFFICIENT RAIN AND REPLACED AS REQUIRED.
3. A SINGLE CONTINUOUS STRIP OF GRASS TURF SHALL BE PLACED AROUND THE PERIMETER OF ALL INLET PITS, EACH SIDE OF FOOTPAVING, TOP OF EXCAVATED BATTERS AND DIAGONALLY TO STEEP GRADES EXCEEDING 10% AND AS DIRECTED IMMEDIATELY AFTER THE COMPLETION OF FOOTPATH GRADING AND CONSTRUCTION OF PITS RESPECTIVELY. TURFING/LANDSCAPE GRASS SHALL ALSO BE PLACED TO THE FULL WIDTH OF SWALE DRAINS UPON COMPLETION.
4. REMOVE TOPSOIL, FILLS, SLOPEWASH & DELETERIOUS MATERIAL. GEOTECHNICAL ENGINEER TO CONFIRM SPOIL & UNSUITABLE.
5. EXCAVATED MATERIAL SHALL BE SELECTED TO PLACE BETTER QUALITY AT FILL SUBGRADES. REPLACEMENT OF CUT SUB-GRADES MAY BE INSTRUCTED BY THE SUPERINTENDENT AS EARTHWORKS OPERATION.
6. THE CONTROL TESTING OF EARTHWORKS SHALL BE IN ACCORDANCE WITH THE GUIDELINES IN AS 3798. WHERE IT IS PROPOSED TO USE TEST METHOD AS 1289 EB.1 OR AS 1289 EB.2 TO DETERMINE THE FIELD DENSITY, A SAND REPLACEMENT METHOD SHALL BE USED TO CONFIRM THE RESULTS AS DIRECTED.
7. EARTHWORKS, PREPARATIONS, SUB-GRADE TO BE CONFIRMED BY GEOTECHNICAL ENGINEER. SUBMIT GEOTECHNICAL ENGINEER'S CERTIFICATE OF WORKS ON COMPLETION.

   REFER GEOTECHNICAL REPORTS BY: STANTEC
   REF No: 304100928
   DATED: 08.02.2023
8. WHERE THE SLOPE OF THE NATURAL SURFACE EXCEEDS ONE IN FOUR (1V:4H) BENCHES ARE TO BE CUT TO PREVENT SLIPPING OF THE PLACED FILL MATERIAL AS REQUIRED BY THE GEOTECHNICAL ENGINEER TO STANDARD PRACTICE.
9. ALL BATTERS ARE TO BE SCARIFIED TO ASSIST WITH ADHESION OF TOP SOIL TO BATTER FACE.
10. REMOVE EXCESS SPOIL AND DEMOLISHED MATERIAL FROM SITE TO LOCATION AND DETAIL DETERMINED BY THE CONTRACTOR AT CONTRACTORS COST.

STORMWATER NOTES

1. PVC-U PIPEWORK INSTALLATION TO AS 2566 AND MANUFACTURER'S STANDARDS AND SPECIFICATIONS.
2. PVC-U PIPE BEDDING SHALL BE IN ACCORDANCE WITH AS 2566 AND MANUFACTURER'S STANDARDS AND SPECIFICATIONS.
3. MINIMUM GRADE TO STORMWATER LINES TO BE 1% (U.N.O.).
4. CONTRACTOR TO SUPPLY AND INSTALL ALL FITTINGS AND SPECIALS INCLUDING VARIOUS PIPE ADAPTORS TO ENSURE PROPER CONNECTION BETWEEN DISSIMILAR PIPEWORK.
5. ALL PIPE JUNCTIONS UP TO AND INCLUDING 450 DIA. AND TAPERS SHALL BE VIA PURPOSE MADE FITTINGS.
6. ALL CONNECTIONS TO EXISTING DRAINAGE PITS SHALL BE MADE IN A TRADESMAN-LIKE MANNER AND THE INTERNAL WALL OF THE PIT AT THE POINT OF ENTRY SHALL BE CEMENT RENDERED TO ENSURE A SMOOTH FINISH.
7. WHERE SUBSOIL DRAINAGE LINES PASS UNDER FLOOR SLABS AND VEHICULAR PAVEMENTS, UNSLOTTED PVC-U SEWER GRADE PIPE SHALL BE USED.
8. PROVIDE 3.0m LENGTH OF 100 DIA. SUBSOIL DRAINAGE PIPE WRAPPED IN FILTER SOCK, AT UPSTREAM END OF EACH PIT.
9. ENSURE ADEQUATE TRENCH FOUNDATION AND BEDDING COMPACTION SPECIFICALLY ADJACENT TO DRAINAGE STRUCTURES AND PROTECTION TO PIPES FROM CONSTRUCTION TRAFFIC. CRACKED STORMWATER PIPES WILL NOT BE ACCEPTED.
10. ALL INLET PIT GRATINGS AND PRECAST INLETS SHALL BE CONSTRUCTED TO COUNCILS STANDARD DRAWINGS.
11. ALL PITS DEEPER THAN 0.9m BUT LESS THAN 1.2m TO BE MINIMUM INTERNAL WIDTH 600 x 900 UNO. ALL PITS DEEPER THAN 1.2m TO BE MINIMUM INTERNAL WIDTH 900SQ UNO AND ARE TO BE CONSTRUCTED WITH STEP IRONS IN ACCORDANCE WITH AS 1657 AND DETAILS.
12. CARE TO BE TAKEN BY CONTRACTOR WHEN COMPACTING OVER BURIED PIPES.

SAFETY IN DESIGN

1. THE DESIGN SAFETY ASSESSMENT HAS BEEN CARRIED OUT WITH REFERENCE TO CURRENT WHS REGULATIONS FOR DESIGN TO BE SAFE SO FAR AS REASONABLY PRACTICABLE. HAZARD AND RISK IDENTIFICATION IS BASED ON INFORMATION AVAILABLE TO THE DESIGNER AT THE TIME OF THE DESIGN.
2. ASSESSMENT IS LIMITED TO THE SCOPE OF ACOR'S COMMISSION INCLUDING:
   - BULK EARTHWORKS
   - STORMWATER DRAINAGE
   - RETAINING STRUCTURES
3. IDENTIFIED HAZARDS ARE THOSE WHICH ARE AFFECTED BY THE DESIGN, AND ARE WITHIN THE CONTROL OF THE DESIGNER.
4. HAZARDS AND RISK RELATING TO CONSTRUCTION, OPERATION, MAINTENANCE AND DEMOLITION MUST BE CONSIDERED BY THE OWNER, MANAGER, BUILDER, USER, MAINTAINER AND DEMOLISHER. ALL SUCH ENTITIES ARE ASSUMED TO BE QUALIFIED, COMPETENT AND EXPERIENCED.
5. SEEK ADVICE WHERE ACTIVITIES ARE OUTSIDE THE FIELD OF EXPERIENCE OF THE OPERATOR/BUILDER/MAINTAINER, INCLUDING BUT NOT LIMITED TO QUALIFIED STRUCTURAL AND GEOTECHNICAL ENGINEERS.
6. ATYPICAL HAZARDS ON THIS PROJECT INCLUDE THE CONSTRUCTION OF A RETAINING WALLS IN EXCESS OF 4 METRES. THIS WILL NEED TO BE CONSTRUCTED IN SEVERAL LIFTS WITH THE APPROPRIATE SAFETY BARRIERS AND EQUIPMENT INSTALLED AND WORN BY THE CONTRACTORS. REFER TO SiD REPORT.

DRAWING UNDER REVISION

Issue.	Description	Date	Drawn	Approved
A	DRAFT SCHEMATIC DESIGN	29.08.24	MDM	JPR

NAME&CREDENTIALS

North

Scale

PRINT IN COLOUR

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100 RYANS ROAD
GILLIESTON HEIGHTS, NSW, 2321

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Drawing Title
CIVIL SERVICES
CONSTRUCTION NOTES

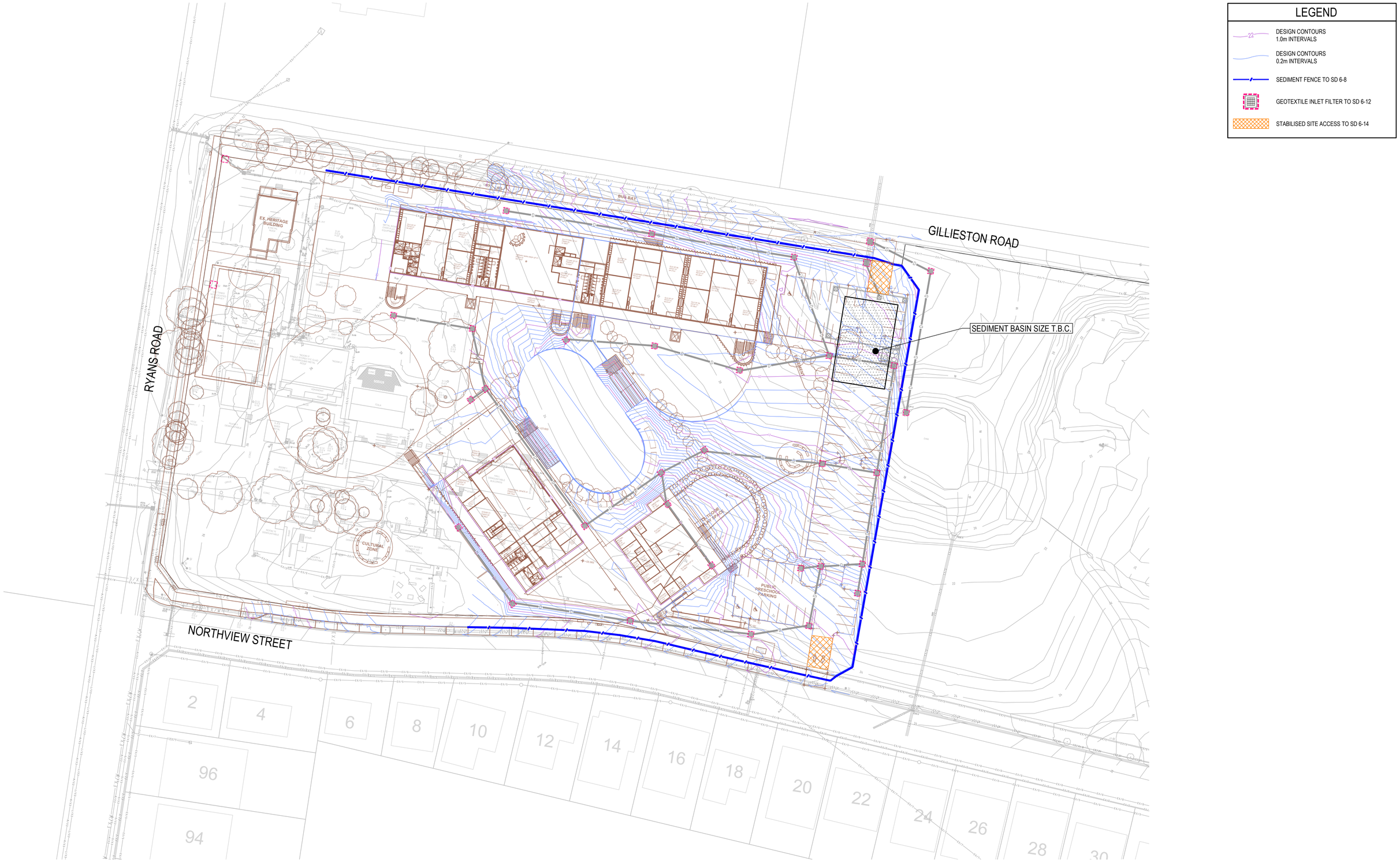
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MDM	SJO	JPR	29.08.24	N.T.S.

Project No.	Drawing No.	Issue
NS221454	GPS-ACOR-00-XX-DR-C-010101	A

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Aug 29, 2024 - 9:21am



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0 5 10 20 30m

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Drawing Title
CIVIL SERVICES
EROSION AND SEDIMENT CONTROL PLAN

Drawn	Designed	Q.A. Check	Date	Scale @ A1
MDM	SJO	JPR	29.08.24	1:500

Project No.	Drawing No.	Issue
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EROSION AND SEDIMENT CONTROL NOTES

GENERAL:

1. SWMP REFERS TO SOIL AND WATER MANAGEMENT PLAN.

2. SEDIMENT, INCLUDES, BUT IS NOT LIMITED TO, CLAY, SILT, SAND, GRAVEL, SOIL, MUD, CEMENT, AND CERAMIC WASTE THAT CAN BE WASHED FROM SITE.

3. ANY REFERENCE TO THE BLUE BOOK REFERS TO MANAGING URBAN STORMWATER - SOILS AND CONSTRUCTION. LANDCOM, 2004.

4. ANY REFERENCE TO THE IECA WHITE BOOKS (2008) REFERS TO IECA 2008. BEST PRACTICE EROSION AND SEDIMENT CONTROL. BOOKS 1-6. INTERNATIONAL EROSION CONTROL ASSOCIATION (AUSTRALASIA). PICTON NSW.

5. ANY MATERIAL DEPOSITED IN ANY CONSERVATION AREA FROM WORKS ASSOCIATED WITH THE DEVELOPMENT SHALL BE REMOVED IMMEDIATELY BY MEASURES INVOLVING MINIMAL GROUND AND/OR VEGETATION DISTURBANCE AND NO MACHINERY, OR FOLLOWING DIRECTIONS BY COUNCIL AND/OR WITHIN A TIMEFRAME ADVISED BY COUNCIL.

THE ESCP:

6. THE ESCP AND ITS ASSOCIATED ESC MEASURES SHALL BE CONSTANTLY MONITORED, REVIEWED, AND MODIFIED AS REQUIRED TO CORRECT DEFICIENCIES. COUNCIL HAS THE RIGHT TO DIRECT CHANGES IF, IN ITS OPINION, THE MEASURES THAT ARE PROPOSED OR HAVE BEEN INSTALLED ARE INADEQUATE TO PREVENT POLLUTION.

7. PRIOR TO ANY ACTIVITIES ONSITE, THE RESPONSIBLE PERSON(S) IS TO BE NOMINATED. THE RESPONSIBLE PERSON(S) SHALL BE RESPONSIBLE FOR THE ESC MEASURES ONSITE. THE NAME, ADDRESS AND 24 HOUR CONTACT DETAILS OF THE PERSON(S) SHALL BE PROVIDED TO COUNCIL IN WRITING. COUNCIL SHALL BE ADVISED WITHIN 48 HOURS OF ANY CHANGES TO THE RESPONSIBLE PERSON(S), OR THEIR CONTACT DETAILS, IN WRITING.

8. AT LEAST 14 DAYS BEFORE THE NATURAL SURFACE IS DISTURBED IN ANY STAGE, THE CONTRACTOR SHALL SUBMIT TO THE CERTIFIER, A PLAN SHOWING ESC MEASURES FOR THAT STAGE. THE DEGREE OF DESIGN DETAIL SHALL BE BASED ON THE DISTURBED AREA (UNLESS NOTED OTHERWISE).

9. AT ANY TIME, THE ESC MEASURES ONSITE SHALL BE APPROPRIATE FOR THE AREA OF DISTURBANCE AND ITS CHARACTERISTICS INCLUDING SOILS (IN ACCORDANCE WITH THOSE REQUIRED FOR THE SITE AS PER DCP).

10. THE IMPLEMENTATION OF THE ESCP SHALL BE SUPERVISED BY PERSONNEL WITH APPROPRIATE QUALIFICATIONS AND/OR EXPERIENCE IN ESC ON CONSTRUCTION SITES.

11. THE APPROVED ESCP SHALL BE AVAILABLE ON-SITE FOR INSPECTION BY COUNCIL OFFICERS WHILE WORK ACTIVITIES ARE OCCURRING.

12. THE APPROVED ESCP SHALL BE UP TO DATE AND SHOW A TIMELINE OF INSTALLATION, MAINTENANCE AND REMOVAL OF ESC MEASURES.

13. ALL ESC MEASURES SHALL BE APPROPRIATE FOR THE SEDIMENT TYPE(S) OF THE SOILS ONSITE, IN ACCORDANCE WITH THE BLUE BOOK, IECA WHITE BOOKS OR OTHER CURRENT RECOGNISED INDUSTRY STANDARD FOR ESC FOR AUSTRALIAN CONDITIONS.

14. ADEQUATE SITE DATA, INCLUDING SOIL DATA FROM A NATA APPROVED LABORATORY, SHALL BE OBTAINED TO ALLOW THE PREPARATION OF AN APPROPRIATE ESCP, AND ALLOW THE SELECTION, DESIGN AND SPECIFICATION OF REQUIRED ESC MEASURES.

15. ALL WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE APPROVED ESCP (AS AMENDED FROM TIME TO TIME) UNLESS CIRCUMSTANCES ARISE WHERE:

    a) COMPLIANCE WITH THE ESCP WOULD INCREASE THE POTENTIAL FOR ENVIRONMENTAL HARM; OR
    b) CIRCUMSTANCES CHANGE DURING CONSTRUCTION AND THOSE CIRCUMSTANCES COULD NOT HAVE BEEN FORESEEN; OR
    c) COUNCIL DETERMINES THAT UNACCEPTABLE OFF-SITE SEDIMENTATION IS OCCURRING AS A RESULT OF A LAND-DISTURBING ACTIVITY. IN EITHER CASE, THE PERSON(S) RESPONSIBLE MAY BE REQUIRED TO TAKE ADDITIONAL, OR ALTERNATIVE PROTECTIVE ACTION, AND/OR UNDERTAKE REASONABLE RESTORATION WORKS WITHIN THE TIMEFRAME SPECIFIED BY THE COUNCIL.

16. ADDITIONAL ESC MEASURES SHALL BE IMPLEMENTED, AND A REVISED ESCP SUBMITTED FOR APPROVAL TO THE CERTIFIER (WITHIN FIVE BUSINESS DAYS OF ANY SUCH AMENDMENTS) IN THE EVENT THAT:

    a) THERE IS A HIGH PROBABILITY THAT SERIOUS OR MATERIAL ENVIRONMENTAL HARM MAY OCCUR AS A RESULT OF SEDIMENT LEAVING THE SITE; OR
    b) THE IMPLEMENTED WORKS FAIL TO ACHIEVE COUNCIL'S WATER QUALITY OBJECTIVES SPECIFIED IN THESE CONDITIONS; OR
    c) SITE CONDITIONS SIGNIFICANTLY CHANGE; OR
    d) SITE INSPECTIONS INDICATE THAT THE IMPLEMENTED WORKS ARE FAILING TO ACHIEVE THE "OBJECTIVE" OF THE ESCP.

17. A COPY OF ANY AMENDED ESCP SHALL BE FORWARDED TO AN APPROPRIATE COUNCIL OFFICER, WITHIN FIVE BUSINESS DAYS OF ANY SUCH AMENDMENTS.

EROSION AND SEDIMENT CONTROL NOTES

SITE ESTABLISHMENT INCLUDING CLEARING AND MULCHING:

18. NO CLEARING SHALL BE UNDERTAKEN UNLESS PRECEDED BY THE INSTALLATION OF ADEQUATE DRAINAGE AND SEDIMENT CONTROL MEASURES, UNLESS SUCH CLEARING IS REQUIRED FOR THE PURPOSE OF INSTALLING SUCH MEASURES, IN WHICH CASE, ONLY THE MINIMUM CLEARING REQUIRED TO INSTALL SUCH MEASURES SHALL OCCUR.

19. BULK TREE CLEARING AND GRUBBING OF THE SITE SHALL BE IMMEDIATELY FOLLOWED BY SPECIFIED TEMPORARY EROSION CONTROL MEASURES (E.G. TEMPORARY GRASSING OR MULCHING) PRIOR TO COMMENCEMENT OF EACH STAGE OF CONSTRUCTION WORKS.

20. TREES AND VEGETATION CLEARED FROM THE SITE SHALL BE MULCHED ONSITE WITHIN 7 DAYS OF CLEARING.

21. APPROPRIATE MEASURES SHALL BE UNDERTAKEN TO CONTROL ANY DUST ORIGINATING DUE TO THE MULCHING OF VEGETATION ONSITE.

22. ALL OFFICE FACILITIES AND OPERATIONAL ACTIVITIES SHALL BE LOCATED SUCH THAT ANY EFFLUENT, INCLUDING WASH-DOWN WATER, CAN BE TOTALLY CONTAINED AND TREATED WITHIN THE SITE.

23. ALL REASONABLE AND PRACTICABLE MEASURES SHALL BE TAKEN TO ENSURE STORMWATER RUNOFF FROM ACCESS ROADS AND STABILISED ENTRY/EXIT SYSTEMS, DRAINS TO AN APPROPRIATE SEDIMENT CONTROL DEVICE.

24. SITE EXIT POINTS SHALL BE APPROPRIATELY MANAGED TO MINIMISE THE RISK OF SEDIMENT BEING TRACKED ONTO SEALED, PUBLIC ROADWAYS.

25. STORMWATER RUNOFF FROM ACCESS ROADS AND STABILISED ENTRY/EXIT POINTS SHALL DRAIN TO AN APPROPRIATE SEDIMENT CONTROL DEVICE.

26. THE APPLICANT SHALL ENSURE AN ADEQUATE SUPPLY OF ESC, AND APPROPRIATE POLLUTION CLEAN-UP MATERIALS ARE AVAILABLE ON-SITE AT ALL TIMES.

27. ALL TEMPORARY EARTH BANKS, FLOW DIVERSION SYSTEMS, AND SEDIMENT BASIN EMBANKMENTS SHALL BE MACHINE-COMPACTED, SEEDED AND MULCHED WITHIN TEN (10) DAYS OF FORMATION FOR THE PURPOSE OF ESTABLISHING A VEGETATIVE COVER, OR LINED APPROPRIATELY.

28. SEDIMENT DEPOSITED OFF SITE AS A RESULT OF ON-SITE ACTIVITIES SHALL BE COLLECTED AND THE AREA CLEANED/REHABILITATED AS SOON AS REASONABLE AND PRACTICABLE.

29. CONCRETE WASTE AND CHEMICAL PRODUCTS, INCLUDING PETROLEUM AND OIL-BASED PRODUCTS, SHALL BE PREVENTED FROM ENTERING ANY INTERNAL OR EXTERNAL WATER BODY, OR ANY EXTERNAL DRAINAGE SYSTEM, EXCLUDING THOSE ON-SITE WATER BODIES SPECIFICALLY DESIGNED TO CONTAIN AND/OR TREAT SUCH MATERIAL. APPROPRIATE MEASURES SHALL BE INSTALLED TO TRAP THESE MATERIALS ONSITE.

30. BRICK, TILE OR MASONRY CUTTING SHALL BE CARRIED OUT ON A PERVIOUS SURFACE (E.G. GRASS OR OPEN SOIL) AND IN SUCH A MANNER THAT ANY RESULTING SEDIMENT-LADEN RUNOFF IS PREVENTED FROM DISCHARGING INTO A GUTTER, DRAIN OR WATER. APPROPRIATE MEASURES SHALL BE INSTALLED TO TRAP THESE MATERIALS ONSITE.

31. NEWLY SEALED HARD-STAND AREAS (E.G. ROADS, DRIVEWAYS AND CAR PARKS) SHALL BE SWEPT THOROUGHLY AS SOON AS PRACTICABLE AFTER SEALING/SURFACING TO MINIMISE THE RISK OF COMPONENTS OF THE SURFACING COMPOUND ENTERING STORMWATER DRAINS.

32. STOCKPILES OF ERODIBLE MATERIAL SHALL BE PROVIDED WITH AN APPROPRIATE PROTECTIVE COVER (SYNTHETIC OR ORGANIC) IF THE MATERIALS ARE LIKELY TO BE STOCKPILED FOR MORE THAN 10 DAYS.

33. STOCKPILES, TEMPORARY OR PERMANENT, SHALL NOT BE LOCATED IN AREAS IDENTIFIED AS NO-GO ZONES (INCLUDING, BUT NOT LIMITED TO, RESTRICTED ACCESS AREAS, BUFFER ZONES, OR AREAS OF NON-DISTURBANCE) ON THE ESCP.

34. NO MORE THAN 150m OF A STORMWATER, SEWER LINE OR OTHER SERVICE TRENCH SHALL TO BE OPEN AT ANY ONE TIME.

35. SITE SPOIL SHALL BE LAWFULLY DISPOSED OF IN A MANNER THAT DOES NOT RESULT IN ONGOING SOIL EROSION OR ENVIRONMENTAL HARM.

36. WHEREVER REASONABLE AND PRACTICABLE, STORMWATER RUNOFF ENTERING THE SITE FROM EXTERNAL AREAS, AND NON-SEDIMENT LADEN (CLEAN) STORMWATER RUNOFF ENTERING A WORK AREA OR AREA OF SOIL DISTURBANCE, SHALL BE DIVERTED AROUND OR THROUGH THAT AREA IN A MANNER THAT MINIMISES SOIL EROSION AND THE CONTAMINATION OF THAT WATER FOR ALL DISCHARGES UP TO THE SPECIFIED DESIGN STORM DISCHARGE.

SITE MANAGEMENT INCLUDING DUST:

37. PRIORITY SHALL BE GIVEN TO THE PREVENTION, OR AT LEAST THE MINIMISATION, OF SOIL EROSION, RATHER THAN THE TRAPPING OF DISPLACED SEDIMENT. SUCH A CLAUSE SHALL NOT REDUCE THE RESPONSIBILITY TO APPLY AND MAINTAIN, AT ALL TIMES, ALL NECESSARY ESC MEASURES.

EROSION AND SEDIMENT CONTROL NOTES

38. MEASURES USED TO CONTROL WIND EROSION SHALL BE APPROPRIATE FOR THE LOCATION AND PREVENT SOIL EROSION AND EMISSIONS FROM SITE AT ALL TIMES, INCLUDING WORKING HOURS, OUT OF HOURS, WEEKENDS, PUBLIC HOLIDAYS, AND DURING ANY OTHER SHUTDOWN PERIODS.

39. THE APPLICATION OF LIQUID OR CHEMICAL-BASED DUST SUPPRESSION MEASURES SHALL ENSURE THAT SEDIMENT-LADEN RUNOFF RESULTING FROM SUCH MEASURES DOES NOT CREATE A TRAFFIC OR ENVIRONMENTAL HAZARD.

40. ALL DISTURBED AREAS SHALL BE STABILISED IN ACCORDANCE WITH TIME LINES IN THE BLUE BOOK.

41. ALL REASONABLE AND PRACTICABLE MEASURES SHALL BE TAKEN TO PREVENT, OR AT LEAST MINIMISE, THE RELEASE OF SEDIMENT FROM THE SITE.

42. SUITABLE ALL-WEATHER MAINTENANCE ACCESS SHALL BE PROVIDED TO ALL SEDIMENT CONTROL DEVICES.

43. SEDIMENT CONTROL DEVICES, OTHER THAN SEDIMENT BASINS, SHALL BE DE-SILTED AND MADE FULLY OPERATIONAL AS SOON AS REASONABLE AND PRACTICABLE AFTER A SEDIMENT-PRODUCING EVENT, WHETHER NATURAL OR ARTIFICIAL, IF THE DEVICE'S SEDIMENT RETENTION CAPACITY FALLS BELOW 75% OF ITS DESIGN RETENTION CAPACITY.

44. ALL EROSION AND SEDIMENT CONTROL MEASURES, INCLUDING DRAINAGE CONTROL MEASURES, SHALL BE MAINTAINED IN PROPER WORKING ORDER AT ALL TIMES DURING THEIR OPERATIONAL LIVES.

45. WASHING/FLUSHING OF SEALED ROADWAYS SHALL ONLY OCCUR WHERE SWEEPING HAS FAILED TO REMOVE SUFFICIENT SEDIMENT AND THERE IS A COMPELLING NEED TO REMOVE THE REMAINING SEDIMENT (E.G. FOR SAFETY REASONS). IN SUCH CIRCUMSTANCES, ALL REASONABLE AND PRACTICABLE SEDIMENT CONTROL MEASURES SHALL BE USED TO PREVENT, OR AT LEAST MINIMISE, THE RELEASE OF SEDIMENT INTO RECEIVING WATERS. ONLY THOSE MEASURES THAT WILL NOT CAUSE SAFETY AND PROPERTY FLOODING ISSUES SHALL BE EMPLOYED. SEDIMENT REMOVED FROM ROADWAYS SHALL BE DISPOSED OF IN A LAWFUL MANNER THAT DOES NOT CAUSE ONGOING SOIL EROSION OR ENVIRONMENTAL HARM.

46. SEDIMENT REMOVED FROM SEDIMENT TRAPS AND PLACES OF SEDIMENT DEPOSITION SHALL BE DISPOSED OF IN A LAWFUL MANNER THAT DOES NOT CAUSE ONGOING SOIL EROSION OR ENVIRONMENTAL HARM.

SEDIMENT BASINS - INSTALLATION, MAINTENANCE AND REMOVAL INCLUDING SEDIMENT TRAPS:

47. AS-CONSTRUCTED PLANS SHALL BE PREPARED FOR ALL CONSTRUCTED SEDIMENT BASINS AND ASSOCIATED EMERGENCY SPILLWAYS. SUCH PLANS SHALL VERIFY THE BASIN'S DIMENSIONS, LEVELS AND VOLUMES COMPLY WITH THE APPROVED DESIGN DRAWINGS. THESE PLANS MAY BE REQUESTED BY THE CERTIFIER OR COUNCIL.

48. SEDIMENT BASINS SHALL BE CONSTRUCTED AND FULLY OPERATIONAL PRIOR TO ANY OTHER SOIL DISTURBANCE IN THEIR CATCHMENT.

49. INSTALL AN INTERNAL GATED VALVE, OR SIMILAR, IN ANY OUTLET PIPE ONCE PIPES INSTALLED, OR INSTALL A SACRIFICIAL PIPE FROM BASIN THROUGH WALL TO EXTERNAL OUTLET POINT. THE VALVE SHALL BE CONNECTED TO A RISER MADE FROM SLOTTED PIPE IN THE BASIN. THE VALVE MAY BE OPENED ONCE CAPTURED WATER MEETS WATER QUALITY REQUIREMENTS. THE FINAL SETUP FOR TEMPORARY INTERNAL OUTLET STRUCTURES TO BE CONFIRMED PRIOR TO CONSTRUCTION WITH COUNCIL. THIS SETUP WILL ENABLE DISCHARGE OF TREATED WATER FROM SITE WITHOUT NEED FOR PUMPING.

50. A SEDIMENT STORAGE LEVEL MARKER POST SHALL BE WITH A CROSS MEMBER SET JUST BELOW THE TOP OF THE SEDIMENT STORAGE ZONE (AS SPECIFIED ON THE APPROVED ESCP). AT LEAST A 75mm WIDE POST SHALL BE FIRMLY SET INTO THE BASIN FLOOR.

51. THE SITE MANAGER SHALL OBTAIN THE RELEVANT APPROVALS FROM THE RELEVANT ORGANISATIONS TO DISCHARGE TREATED WATER FROM ANY EXISTING BASINS. ORGANISATIONS MAY INCLUDE, BUT NOT BE LIMITED TO, HUNTER WATER, AND COUNCIL.

52. WHERE MORE THAN ONE STAGE IS TO BE DEVELOPED AT ONE TIME, OR BEFORE THE PRECEDING STAGE IS COMPLETE, THE SEDIMENT BASIN(S) FOR THESE STAGES SHALL HAVE SUFFICIENT CAPACITY TO CATER FOR ALL AREA DIRECTED TO THE BASIN(S).

53. PRIOR TO ANY FORECAST WEATHER EVENT LIKELY TO RESULT IN RUNOFF, ANY BASINS/TRAPS SHALL BE DEWATERED TO PROVIDE SUFFICIENT CAPACITY TO CAPTURE SEDIMENT LADEN WATER FROM THE SITE.

54. SUFFICIENT QUANTITIES OF CHEMICALS/AGENTS TO TREAT CAPTURED WATER SHALL BE PLACED SUCH THAT WATER ENTERING THE BASIN MIXES WITH THE CHEMICAL/AGENTS AND IS CARRIED INTO THE BASIN TO SPEED UP CLARIFICATION.

55. ANY BASIN SHALL BE DEWATERED WITHIN THE X-DAY RAINFALL DEPTH USED TO CALCULATE THE CAPACITY OF THE BASIN, AFTER A RAINFALL EVENT.

56. SUFFICIENT QUANTITIES OF CHEMICALS/AGENTS TO TREAT TURBID WATER SHALL BE SECURELY STORED ON-SITE TO PROVIDE FOR AT LEAST THREE COMPLETE

EROSION AND SEDIMENT CONTROL NOTES

TREATMENTS OF ALL BASINS REQUIRING CHEMICALLY TREATMENT ONSITE.

57. PRIOR TO THE CONTROLLED DISCHARGE (E.G. DE-WATERING ACTIVITIES) FROM SITE INCLUDING EXCAVATIONS AND/OR SEDIMENT BASINS, THE FOLLOWING WATER QUALITY OBJECTIVES SHALL BE ACHIEVED:
    A) TOTAL SUSPENDED SOLIDS (TSS) TO A MAXIMUM 50 MILLIGRAMS/L;
    B) WATER PH BETWEEN 6.5 AND 8.5, UNLESS OTHERWISE REQUIRED BY THE COUNCIL;
    C) TURBIDITY (MEASURED IN NTUS) TO A MAXIMUM OF 60 NTU); AND
    D) EC LEVELS NO GREATER THAN BACKGROUND LEVELS.

60. THE DEVELOPMENT APPROVAL MAY REQUIRE TESTING OF ADDITIONAL WATER QUALITY ELEMENTS PRIOR TO DISCHARGE. E.G. INCLUDING BUT NOT LIMITED TO METALS, ORGANIC SUBSTANCES, CHEMICALS OR BACTERIOLOGICAL INDICATORS.

61. A SAMPLE OF THE RELEASED TREATED WATER SHALL BE KEPT ONSITE IN A CLEAR CONTAINER WITH THE SAMPLE DATE RECORDED ON IT.

62. WATER QUALITY SAMPLES SHALL BE TAKEN AT A DEPTH NO LESS THAN 200MM BELOW THE WATER SURFACE OF THE BASIN.

63. NO ALUMINIUM BASED PRODUCTS MAY BE USED TREAT CAPTURED WATER ONSITE WITHOUT THE PRIOR WRITTEN PERMISSION FROM AN APPROPRIATE COUNCIL OFFICER. THE APPLICANT SHALL HAVE A DEMONSTRATED ABILITY TO USE SUCH PRODUCTS CORRECTLY AND WITHOUT ENVIRONMENTAL HARM PRIOR TO ANY APPROVAL.

64. THE CHEMICAL/AGENT USED IN TYPE D AND TYPE F BASINS TO TREAT CAPTURED WATER CAPTURED IN THE BASIN SHALL BE APPLIED IN CONCENTRATIONS SUFFICIENT TO ACHIEVE COUNCIL'S WATER QUALITY OBJECTIVES WITHIN THE X-DAY RAINFALL DEPTH USED TO CALCULATE THE CAPACITY OF THE BASIN, AFTER A RAINFALL EVENT.

65. ALL MANUFACTURERS' INSTRUCTIONS SHALL BE FOLLOWED FOR ANY CHEMICALS/AGENTS USED ONSITE, EXCEPT WHERE APPROVED BY THE RESPONSIBLE PERSON OR AN APPROPRIATE COUNCIL OFFICER.

66. THE APPLICANT SHALL ENSURE THAT ON EACH OCCASION A TYPE C BASIN WAS NOT DE-WATERED PRIOR TO BEING SURCHARGED BY A FOLLOWING RAINFALL EVENT, A REPORT IS PRESENTED TO AN APPROPRIATE COUNCIL OFFICER WITHIN 5 DAYS IDENTIFYING THE CIRCUMSTANCES AND PROPOSED AMENDMENTS, IF ANY, TO THE BASIN'S OPERATING PROCEDURES.

67. SETTLED SEDIMENT SHALL BE REMOVED AS SOON AS REASONABLE AND PRACTICABLE FROM ANY SEDIMENT BASIN IF:
    a) IT IS ANTICIPATED THAT THE NEXT STORM EVENT IS LIKELY TO CAUSE SEDIMENT TO SETTLE ABOVE THE BASIN'S SEDIMENT STORAGE ZONE; OR
    b) THE ELEVATION OF SETTLED SEDIMENT IS ABOVE THE TOP OF THE BASIN'S SEDIMENT STORAGE ZONE; OR
    c) THE ELEVATION OF SETTLED SEDIMENT IS ABOVE THE BASINS SEDIMENT MARKER LINE.

68. SCOUR PROTECTION MEASURES PLACED ON SEDIMENT BASIN EMERGENCY SPILLWAYS SHALL APPROPRIATELY PROTECT THE SPILLWAY CHUTE AND ITS SIDE BATTERS FROM SCOUR, AND SHALL EXTEND A MINIMUM OF 3M BEYOND THE DOWNSTREAM TOE OF THE BASIN'S EMBANKMENT.

69. SUITABLE ALL-WEATHER MAINTENANCE ACCESS SHALL BE PROVIDED TO ALL SEDIMENT CONTROL DEVICES.

70. MATERIALS, WHETHER LIQUID OR SOLID, REMOVED FROM ANY ESC MEASURE OR EXCAVATION DURING MAINTENANCE OR DECOMMISSIONING, SHALL BE DISPOSED OF IN A MANNER THAT DOES NOT CAUSE ONGOING SOIL EROSION, WATER POLLUTION OR ENVIRONMENTAL HARM.

71. ALL SEDIMENT BASINS SHALL REMAIN FULLY OPERATIONAL AT ALL TIMES UNTIL THE BASIN'S DESIGN CATCHMENT ACHIEVES 70% GROUND COVER OR SURFACE STABILISATION ACCEPTABLE TO COUNCIL.

72. THE ESC MEASURES INSTALLED DURING THE DECOMMISSIONING AND REHABILITATION OF A SEDIMENT BASIN SHALL COMPLY WITH SAME STANDARDS SPECIFIED FOR THE NORMAL CONSTRUCTION WORKS.

73. A SEDIMENT BASIN SHALL NOT BE DECOMMISSIONED UNTIL ALL UP-SLOPE SITE STABILISATION MEASURES HAVE BEEN IMPLEMENTED AND ARE APPROPRIATELY WORKING TO CONTROL SOIL EROSION AND SEDIMENT RUNOFF..

74. IMMEDIATELY PRIOR TO THE CONSTRUCTION OF THE PERMANENT STORMWATER TREATMENT DEVICE, APPROPRIATE FLOW BYPASS CONDITIONS SHALL BE ESTABLISHED TO PREVENT SEDIMENT-LADEN WATER ENTERING THE DEVICE.

DRAWING UNDER REVISION

Issue.	Description	Date	Drawn	Approved
A	DRAFT SCHEMATIC DESIGN	29.08.24	MDM	JPR

North

Scale

PRINT IN COLOUR

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NOT FOR CONSTRUCTION

Drawing Title
CIVIL SERVICES
EROSION AND SEDIMENT CONTROL NOTES
SHEET 1

Drawn	Designed	Q.A. Check	Date	Scale @ A1
MDM	SJO	JPR	29.08.24	1:500

Project No.	Drawing No.	Issue
NS221454	GPS-ACOR-00-XX-DR-C-030101	A

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EROSION AND SEDIMENT CONTROL NOTES

REVEGETATION/STABILISATION:

75. TEMPORARY STABILISATION MAY BE ATTAINED USING VEGETATION, NON REWETTABLE SOIL POLYMERS, OR PNEUMATICALLY APPLIED EROSION CONTROLS.

76. AT THE COMPLETION OF FORMATION IN ANY SECTION, ALL DISTURBED AREAS SHALL BE STABILISED IN ACCORDANCE WITH TIME LINES IN THE BLUE BOOK.

77. THE CITY OF NEWCASTLE SEED MIX SHALL BE USED UNLESS STATED ON THE ESCP/SWMP.

78. THE PH LEVEL OF TOPSOIL SHALL BE APPROPRIATE TO ENABLE ESTABLISHMENT AND GROWTH OF SPECIFIED VEGETATION PRIOR TO INITIATING THE ESTABLISHMENT OF VEGETATION.

79. NON REWETTABLE BINDER SHALL BE USED IN ALL HYDROMULCH/HYDROSEED/POLYMER MIXES ON SLOPES OR WORKS ADJACENT TO A WATER COURSE.

80. SOIL AMELIORANTS SHALL BE ADDED TO THE SOIL IN ACCORDANCE WITH AN APPROVED LANDSCAPE PLAN, VEGETATION MANAGEMENT PLAN, AND/OR SOIL ANALYSIS.

81. SURFACE SOIL DENSITY, COMPACTION AND SURFACE ROUGHNESS SHALL BE ADJUSTED PRIOR TO SEEDING/PLANTING IN ACCORDANCE WITH AN APPROVED LANDSCAPE PLAN, VEGETATION MANAGEMENT PLAN, AND/OR SOIL ANALYSIS.

82. PROCEDURES FOR INITIATING A SITE SHUTDOWN, WHETHER PROGRAMMED OR UN-PROGRAMMED, SHALL INCORPORATE REVEGETATION OF ALL SOIL DISTURBANCES UNLESS OTHERWISE APPROVED BY COUNCIL. THE STABILISATION WORKS SHALL NOT RELY UPON THE LONGEVITY OF NON-VEGETATED EROSION CONTROL BLANKETS, OR TEMPORARY SOIL BINDERS.

SITE MONITORING AND MAINTENANCE:

83. THE APPLICANT SHALL ENSURE THAT APPROPRIATE PROCEDURES AND SUITABLY QUALIFIED PERSONNEL ARE ENGAGED TO PLAN AND CONDUCT SITE INSPECTIONS AND WATER QUALITY MONITORING THROUGHOUT THE CONSTRUCTION AND MAINTENANCE PHASE.

84. ALL ESC MEASURES SHALL BE INSPECTED AND ANY MAINTENANCE UNDERTAKEN IMMEDIATELY:
    A) AT LEAST DAILY (WHEN WORK IS OCCURRING ON-SITE); AND
    B) AT LEAST WEEKLY (WHEN WORK IS NOT OCCURRING ON-SITE); AND
    C) WITHIN 24HRS OF EXPECTED RAINFALL; AND
    D) WITHIN 18HRS OF A RAINFALL EVENT THAT CAUSES RUNOFF ON THE SITE.

85. WRITTEN RECORDS SHALL BE KEPT ONSITE OF ESC MONITORING AND MAINTENANCE ACTIVITIES CONDUCTED DURING THE CONSTRUCTION AND MAINTENANCE PERIODS, AND BE AVAILABLE TO COUNCIL OFFICERS ON REQUEST.

86. ALL ENVIRONMENTALLY RELEVANT INCIDENTS SHALL BE RECORDED IN A FIELD LOG THAT SHALL REMAIN ACCESSIBLE TO ALL RELEVANT REGULATORY AUTHORITIES.

87. ALL WATER QUALITY DATA, INCLUDING DATES OF RAINFALL, DATES OF TESTING, TESTING RESULTS AND DATES OF WATER RELEASE, SHALL BE KEPT IN AN ON-SITE REGISTER. THE REGISTER IS TO BE MAINTAINED UP TO DATE FOR THE DURATION OF THE APPROVED WORKS AND BE AVAILABLE ON-SITE FOR INSPECTION BY ALL RELEVANT REGULATORY AUTHORITIES ON REQUEST.

88. AT NOMINATED INSTREAM WATER MONITORING SITES, A MINIMUM OF 3 WATER SAMPLES SHALL BE TAKEN AND ANALYSED, AND THE AVERAGE RESULT USED TO DETERMINE QUALITY.

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DRAWING UNDER REVISION

Issue.	Description	Date	Drawn	Approved
A	DRAFT SCHEMATIC DESIGN	29.08.24	MDM	JPR

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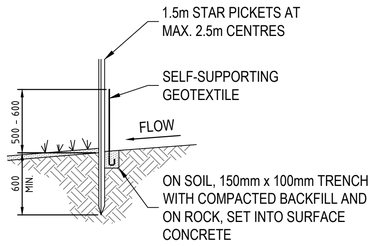
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CIVIL SERVICES
EROSION AND SEDIMENT CONTROL NOTES
SHEET 2

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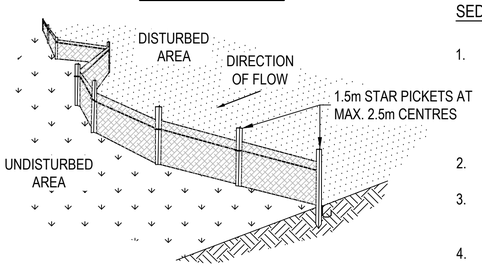
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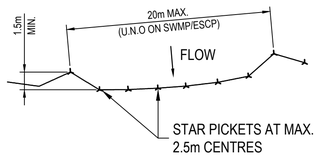
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SECTION DETAIL





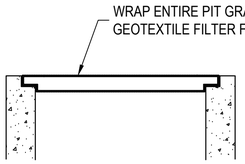
PLAN

SEDIMENT CONTROL FENCE DETAIL (TO SD6-8)

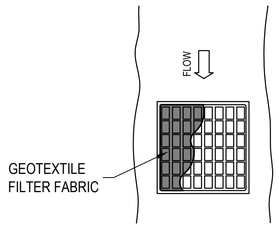
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SEDIMENT FENCE CONSTRUCTION NOTES:

1. CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DRAWING TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION. THE CATCHMENT AREA SHOULD BE SMALL ENOUGH TO LIMIT WATER FLOW IF CONCENTRATED AT ONE POINT TO 50L PER SECOND IN THE DESIGN STORM EVENT, USUALLY THE 10 YR EVENT.
2. CUT A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
3. DRIVE 1.5m LONG STAR PICKETS INTO GROUND AT 2.5m INTERVALS (MAX) AT THE DOWN SLOPE EDGE OF THE TRENCH. ENSURE ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
4. FIX SELF SUPPORTING GEOTEXTILE TO THE UPSLOPE SIDE OF THE POSTS ENSURING IT GOES TO THE BASE OF THE TRENCH. FIX THE GEOTEXTILE WITH WIRE TIES OR AS RECCOMENDED BY THE MANUFACTURER. ONLY USE GEOTEXTILE SPECIFICALLY PRODUCED FOR SEDIMENT FENCING. THE USE OF SHADE CLOTH FOR THIS PURPOSE IS NOT SATISFACTORY.
5. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150mm OVERLAP.
6. BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THROUGHLY OVER THE GEOTEXTILE.



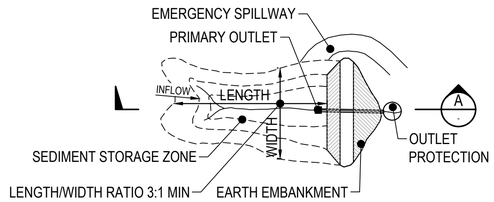
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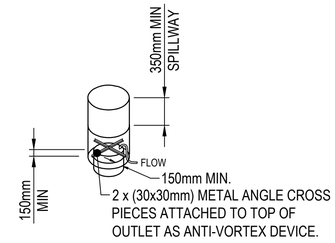
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GEOTEXTILE WRAPPED GRATE

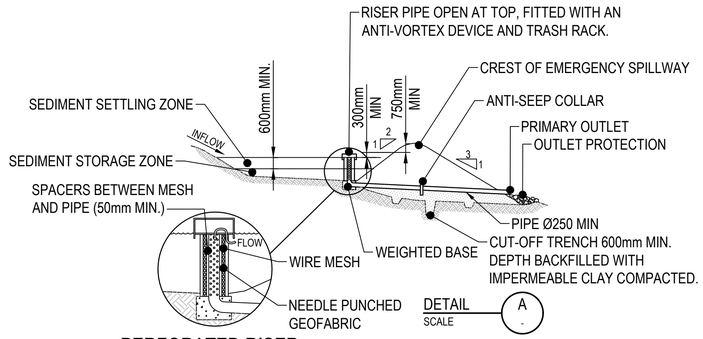
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PLAN VIEW



TRASH RACK/ANTI-VORTEX DEVICE

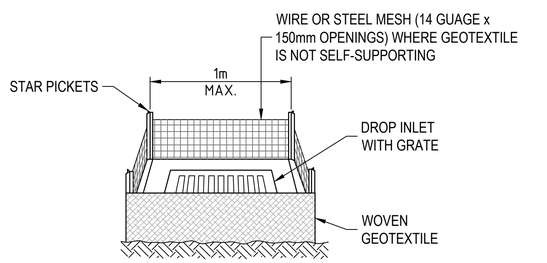


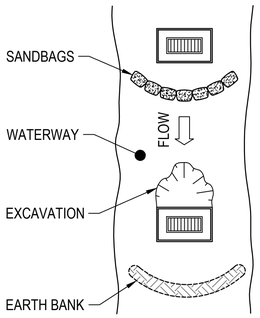
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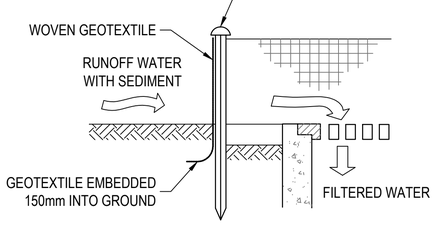
EARTH BASIN - DRY (SD 6-3)

CONSTRUCTION NOTES

1. REMOVE ALL VEGETATION AND TOPSOIL FROM UNDER THE DAM WALL AND FROM WITHIN THE STORAGE AREA.
2. FORM A CUT OFF TRENCH UNDER THE CENTRELINE OF THE EMBANKMENT 600mm DEEP AND 1200mm WIDE, EXTENDING TO A POINT ON THE WATERCOURSE WALL ABOVE THE RISER SILL LEVEL.
3. MAINTAIN THE TRENCH FREE OF WATER AND RECOMPACT THE MATERIALS WITH EQUIPMENT AS SPECIFIED IN THE SWMP TO 95 PER CENT STANDARD PROCTOR DENSITY.
4. SELECT FILL ACCORDING TO THE SWMP THAT IS FREE FROM ROOTS, WOOD, ROCK, LARGE STONE OR FOREIGN MATERIAL.
5. PREPARE THE SITE UNDER THE EMBANKMENT BY RIPPING TO AT LEAST 100mm TO HELP BOND THE COMPACTED FILL TO THE EXISTING SUBSTRATE.
6. SPREAD THE FILL IN 100mm TO 150mm LAYERS AND COMPACT IT AT OPTIMUM MOISTURE CONTENT FOLLOWING THE SWMP.
7. INSTALL THE PIPE OUTLET WITH SEEPAGE COLLARS AS SPECIFIED IN THE SWMP AND STANDARD DRAWING 6-3B.
8. FORM BATTER GRADES AT 2(H):1(V) UPSTREAM AND 3(H):1(V) DOWNSTREAM OR AS SPECIFIED IN THE SWMP.







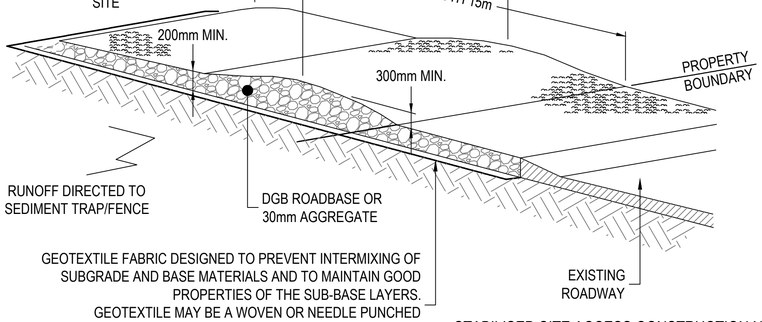
FOR DROP INLETS AT NON-SAG POINTS, SANDBAGS, EARTH BANK OR EXCAVATION USED TO CREATE ARTIFICIAL SAG POINT

GEOTEXTILE INLET FILTER CONSTRUCTION NOTES:

1. FABRICATE A SEDIMENT BARRIER FROM GEOTEXTILE OR STRAW BALES.
2. FOLLOW STANDARD DRAWING 6-7 AND STANDARD DRAWING 6-8 FOR INSTALLATION PROCEDURES FOR THE STRAW BALES OR GEOFABRIC. REDUCE THE PICKET SPACING TO 1m CENTRES.
3. IN WATERWAYS, ARTIFICIAL SAG POINTS CAN BE CREATED WITH SANDBAGS OR EARTH BANKS AS SHOWN IN THE DRAWING.
4. DO NOT COVER THE INLET WITH GEOTEXTILE UNLESS THE DESIGN IS ADEQUATE TO ALLOW FOR ALL WATERS TO BYPASS IT.

GEOTEXTILE INLET FILTER DETAIL (TO SD6-12)

NOT TO SCALE



GEOTEXTILE FABRIC DESIGNED TO PREVENT INTERMIXING OF SUBGRADE AND BASE MATERIALS AND TO MAINTAIN GOOD PROPERTIES OF THE SUB-BASE LAYERS. GEOTEXTILE MAY BE A WOVEN OR NEEDLE PUNCHED PRODUCT WITH A MINIMUM CBR BURST STRENGTH (AS3706.9-90) OF 2500 N

STABILISED SITE ACCESS DETAIL (TO SD6-14)

NOT TO SCALE

STABILISED SITE ACCESS CONSTRUCTION NOTES:

1. STRIP THE TOPSOIL, LEVEL THE SITE AND COMPACT THE SUBGRADE.
2. COVER AREA WITH NEEDLE-PUNCHED GEOTEXTILE.
3. CONSTRUCT 200mm THICK PAD OVER GEOTEXTILE USING ROAD BASE OR 30mm AGGREGATE.
4. ENSURE THE STRUCTURE IS AT LEAST 15m LONG OR TO BUILDING ALIGNMENT AND AT LEAST 3m WIDE.
5. WHERE A SEDIMENT FENCE JOINS ONTO THE STABILISED ACCESS, CONSTRUCT A HUMP IN THE STABILISED ACCESS TO DIVERT WATER TO THE SEDIMENT FENCE.

DRAWING UNDER REVISION

Issue.	Description	Date	Drawn	Approved
A	DRAFT SCHEMATIC DESIGN	29.08.24	MDM	JPR

North

Scale

PRINT IN COLOUR

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Project: GILLIESTON PUBLIC SCHOOL
100 RYANS ROAD
GILLIESTON HEIGHTS, NSW, 2321

NOT FOR CONSTRUCTION

Drawing Title: CIVIL SERVICES
EROSION AND SEDIMENT CONTROL DETAILS

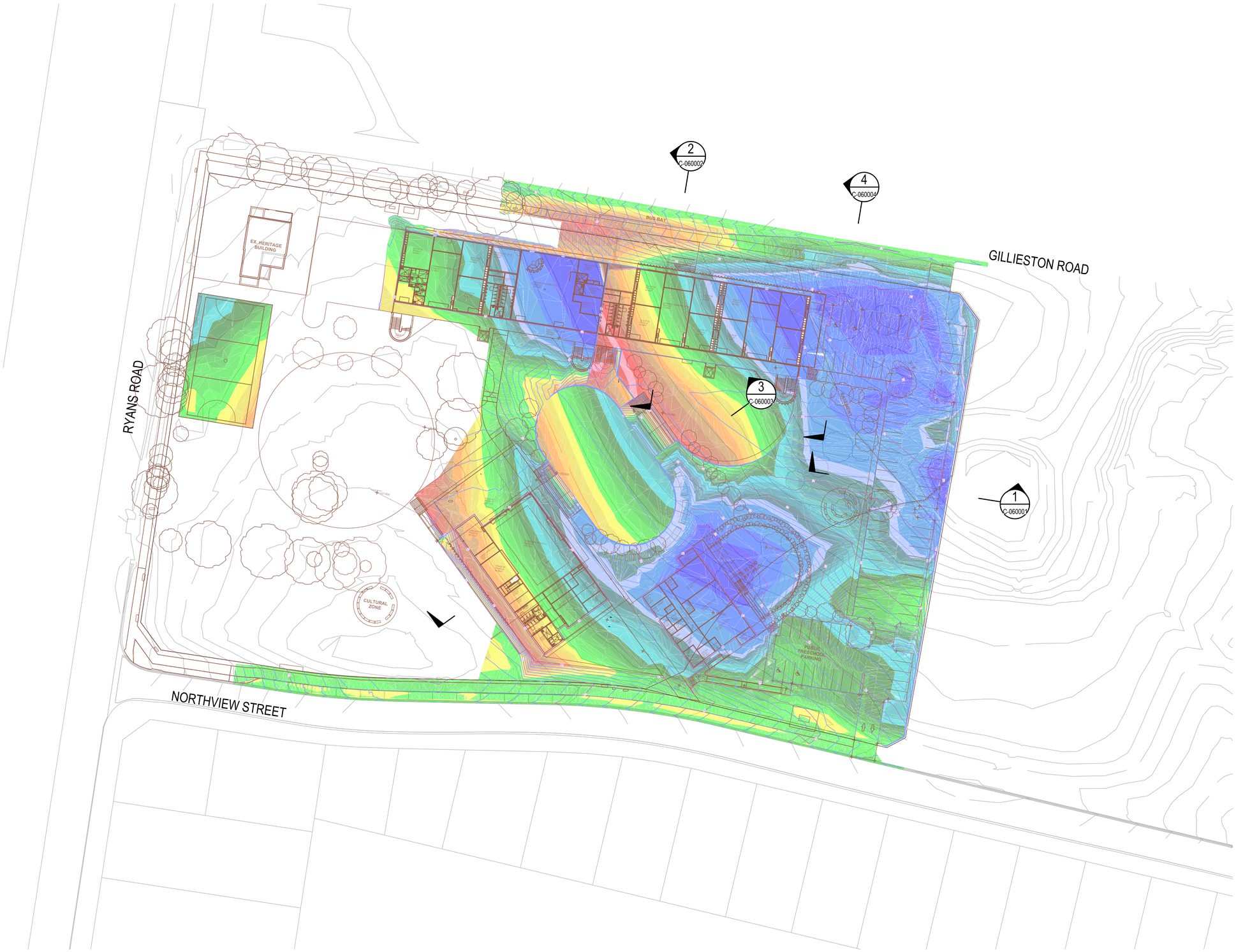
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MDM	SJO	JPR	29.08.24	N.T.S.

Project No.	Drawing No.	Issue
NS221454	GPS-ACOR-00-XX-DR-C-030201	A

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ESL STRIPPED TO FSL ISOPACH LOWER VALUE		UPPER VALUE		COLOUR
-999	to	-5	m	
-5	to	-2.5	m	
-2.5	to	-1.5	m	
-1.5	to	-1.35	m	
-1.35	to	-1.2	m	
-1.2	to	-1.05	m	
-1.05	to	-0.9	m	
-0.9	to	-0.75	m	
-0.75	to	-0.6	m	
-0.6	to	-0.45	m	
-0.45	to	-0.3	m	
-0.3	to	-0.15	m	
-0.15	to	0.00	m	
0.00	to	0.15	m	
0.15	to	0.3	m	
0.3	to	0.45	m	
0.45	to	0.6	m	
0.6	to	0.75	m	
0.75	to	0.9	m	
0.9	to	1.05	m	
1.05	to	1.2	m	
1.2	to	1.35	m	
1.35	to	1.5	m	
1.5	to	2	m	
2	to	2.5	m	
2.5	to	5	m	
5	to	999	m	

EARTHWORKS QUANTITIES ARE AS FOLLOWS.

TOTAL CUT = -1710 m³
TOTAL FILL = -15510 m³
TOTAL FILL OVER CUT = -13800 m³

NOTE - THESE VOLUMES ARE BETWEEN THE CURRENT DESIGN SURFACE LEVEL -200mm (FSL) AND EXISTING SURFACE LEVEL -300mm (ESL).

NO ALLOWANCE HAS BEEN MADE FOR BULKING, STRIPPING OF TOP SOIL, PAVEMENT THICKNESS, FOUNDATIONS AND FOOTINGS OR SERVICE TRENCHING

DRAWING UNDER REVISION

Issue.	Description	Date	Drawn	Approved
A	DRAFT SCHEMATIC DESIGN	29.08.24	MDM	JPR

North

Scale
0 5 10 20 30m
SCALE BAR 1:500 @A1 1:1000 @A3

PRINT IN COLOUR

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Project
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Drawing Title
CIVIL SERVICES
ISOPACH PLAN

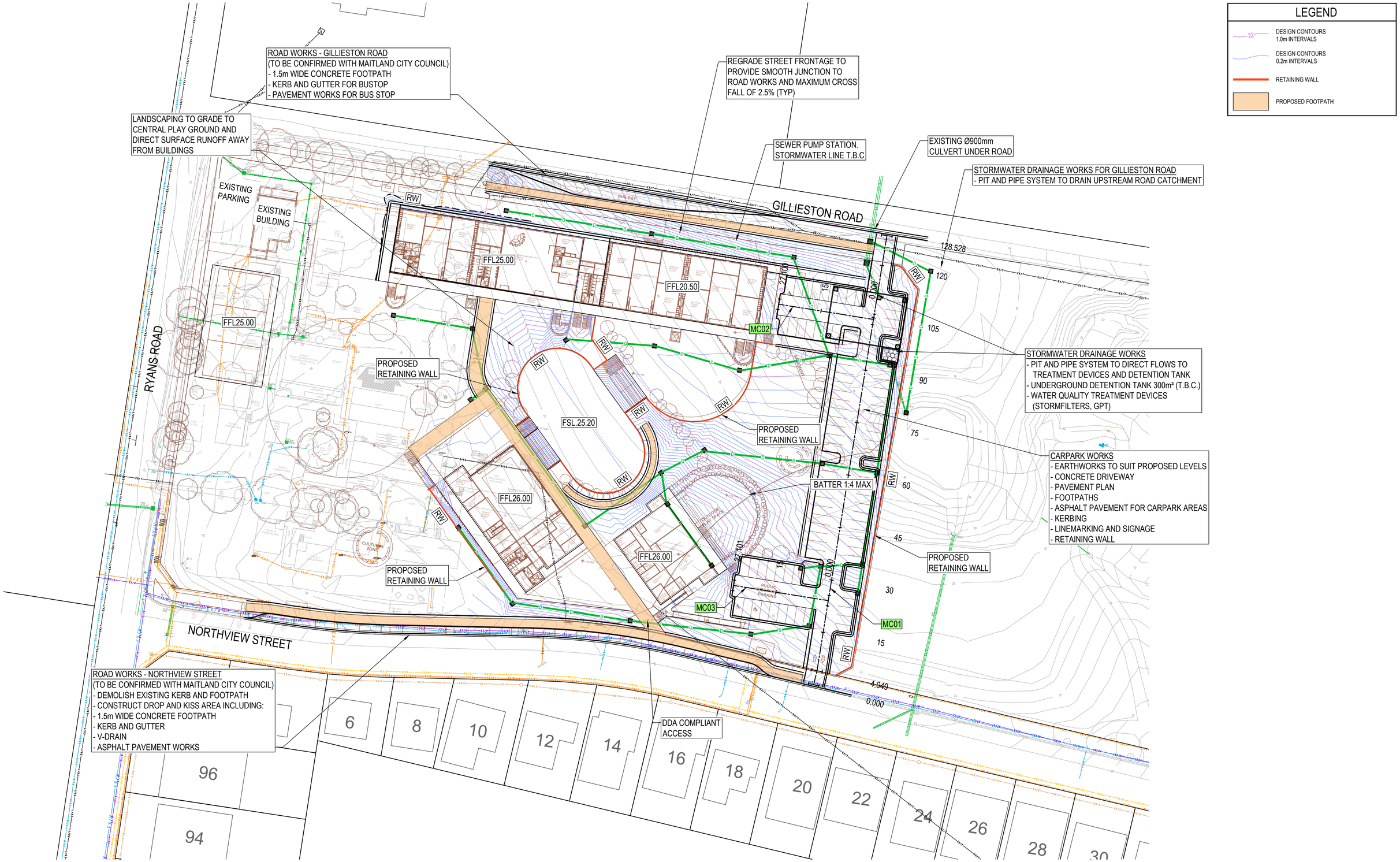
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MDM	SJO	JPR	29.08.24	1:500

Project No.	Drawing No.	Issue
NS221454	GPS-ACOR-00-XX-DR-C-040001	A

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Issue.	Description	Date	Drawn	Approved
A	DRAFT SCHEMATIC DESIGN	29.08.24	MDM	JPR

North

Scale: SCALE BAR 1:500 @A1 1:1000 @A3 (0, 5, 10, 20, 30m)

PRINT IN COLOUR

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Project: GILLIESTON PUBLIC SCHOOL
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GILLIESTON HEIGHTS, NSW, 2321

NOT FOR CONSTRUCTION

Drawing Title: CIVIL SERVICES
GENERAL ARRANGEMENT AND GRADING PLAN

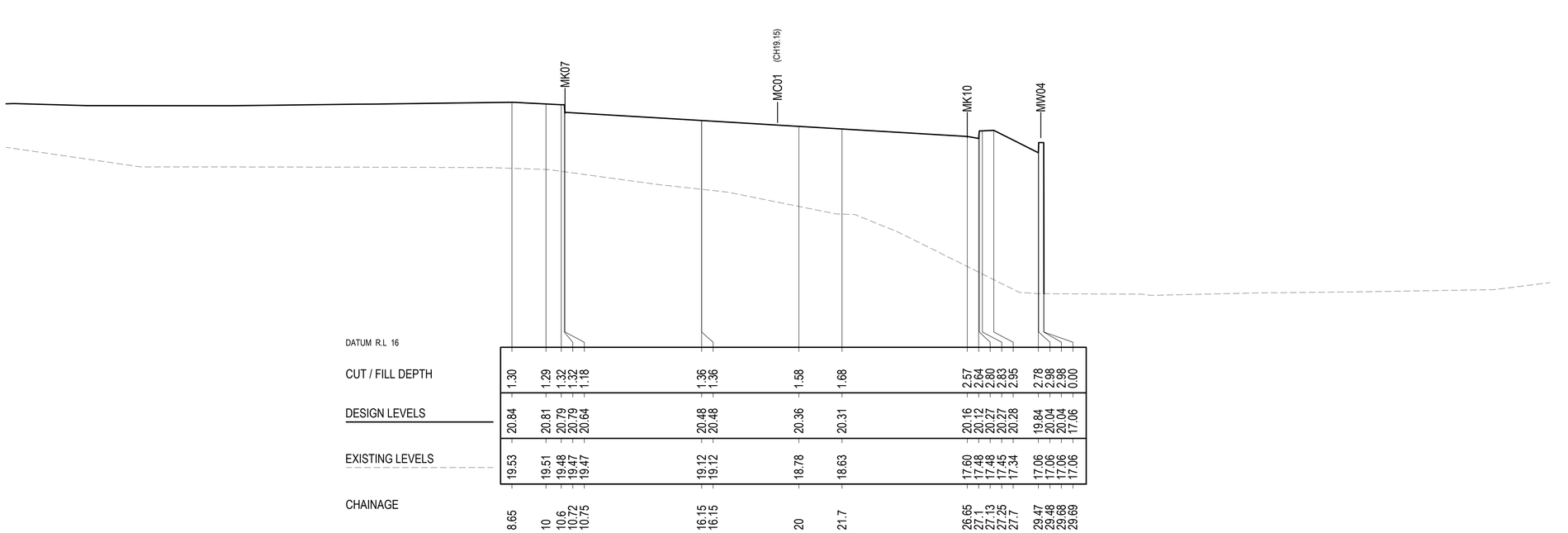
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Project No.: NS221454
Drawing No.: GPS-ACOR-00-XX-DR-C-050001
Issue: A

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Aug 29, 2024 - 9:39am



SECTION 1

A1 Horizontal Scale 1 : 100
A1 Vertical scale 1 : 50

DRAWING UNDER REVISION

Issue.	Description	Date	Drawn	Approved
A	DRAFT SCHEMATIC DESIGN	29.08.24	MDM	JPR

North

Scale

0 1 2 4 6m
SCALE BAR 1:100 @A1 1:200 @A3

0 0.5 1 2 3m
SCALE BAR 1:50 @A1 1:100 @A3

PRINT IN COLOUR

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Project
GILLIESTON PUBLIC SCHOOL
100 RYANS ROAD
GILLIESTON HEIGHTS, NSW, 2321

NOT FOR CONSTRUCTION

Drawing Title
CIVIL SERVICES
SITE SECTIONS
SHEET 1

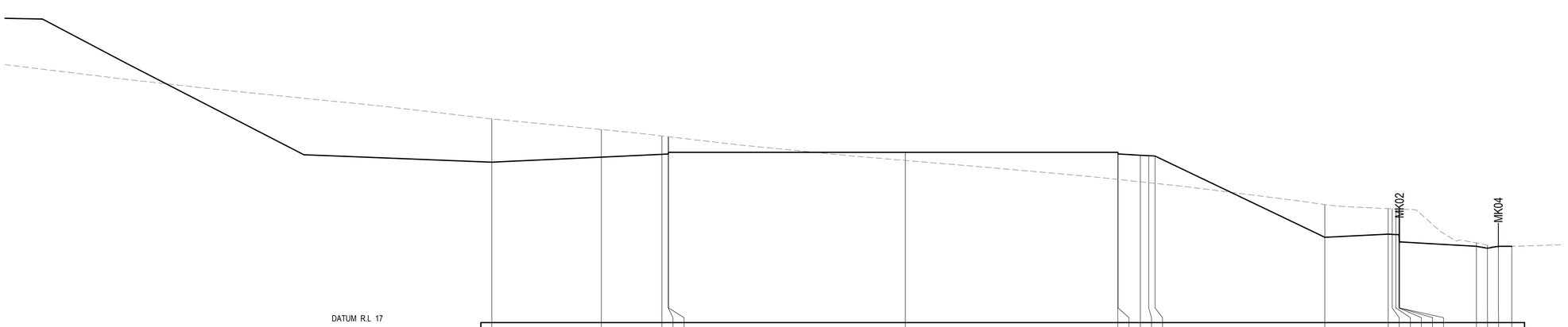
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MDM	SJO	JPR	29.08.24	AS SHOWN

Project No.	Drawing No.	Issue
NS221454	GPS-ACOR-00-XX-DR-C-060001	A

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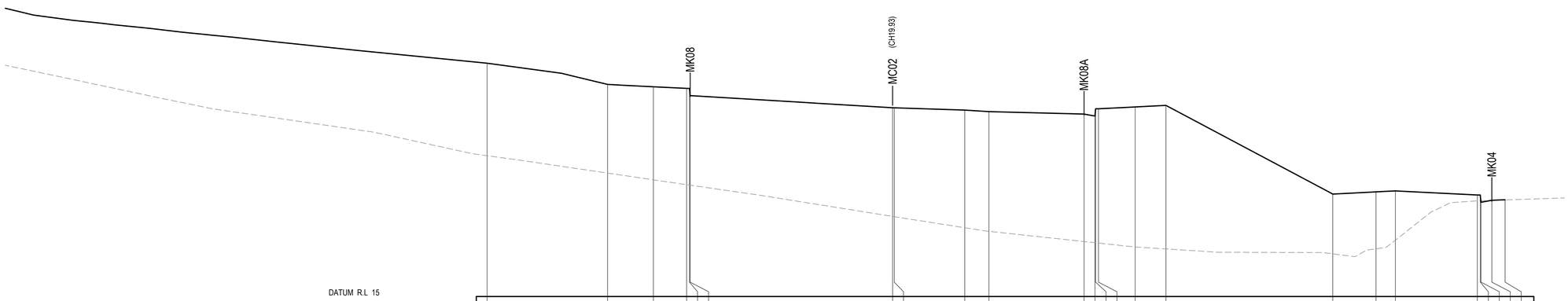
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Aug 29, 2024 - 9:22am


MK02
MK04

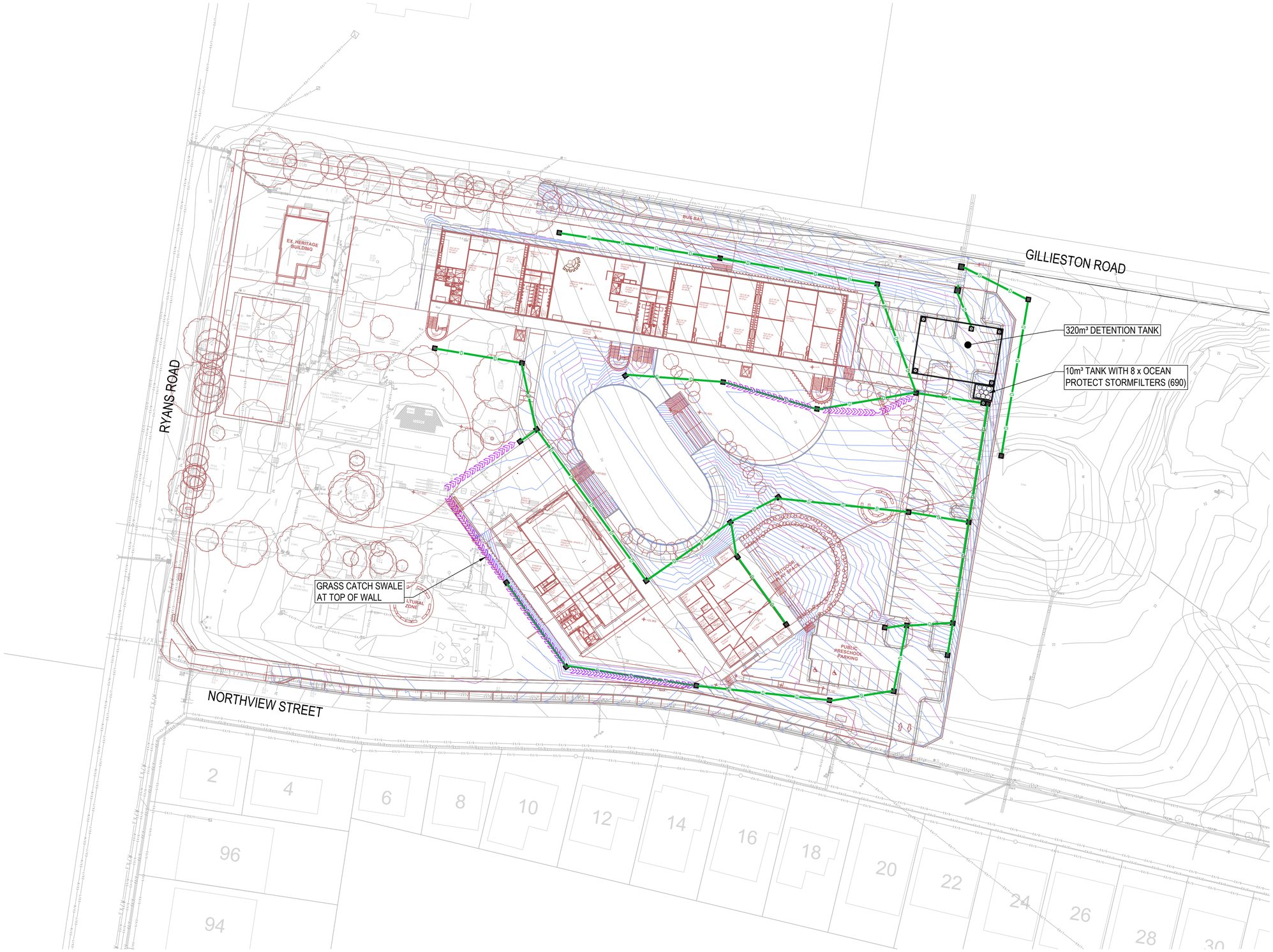
| | | |


RETAINING WALL
RETAINING WALL
RETAINING WALL

| | | |


MK08
MC02 (CH19.93)
MK08A
MK04

| | | |



LEGEND

- DESIGN CONTOURS 1.0m INTERVALS
- DESIGN CONTOURS 0.2m INTERVALS
- PROPOSED STORMWATER PIPE
- PROPOSED STORMWATER PIT
- PROPOSED STORMWATER SWALE

NOTE:
ALL PITS TO HAVE OCEAN PROTECT OCEAN GUARD OR APPROVED EQUIVALENT

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DRAWING UNDER REVISION

Issue.	Description	Date	Drawn	Approved
A	DRAFT SCHEMATIC DESIGN	29.08.24	MDM	JPR

North

Scale
0 5 10 20 30m
SCALE BAR 1:500 @A1 1:1000 @A3

PRINT IN COLOUR

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Project
GILLIESTON PUBLIC SCHOOL
100 RYANS ROAD
GILLIESTON HEIGHTS, NSW, 2321

NOT FOR CONSTRUCTION

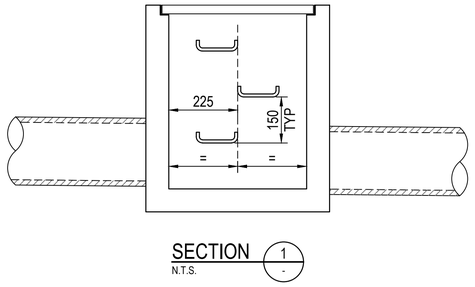
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CIVIL SERVICES
STORMWATER MANAGEMENT PLAN

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MDM	SJO	JPR	29.08.24	1:500

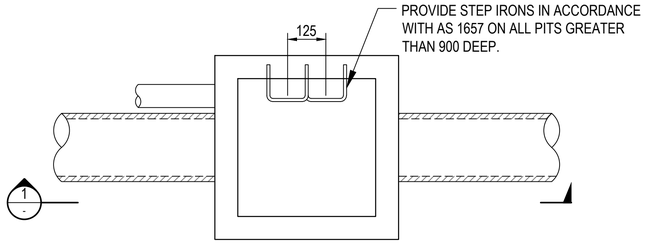
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NS221454	GPS-ACOR-00-XX-DR-C-080001	A

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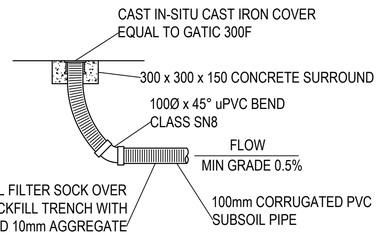


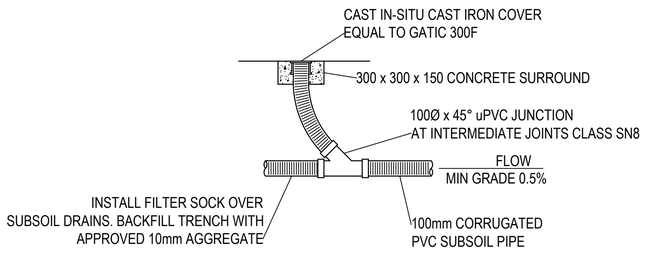
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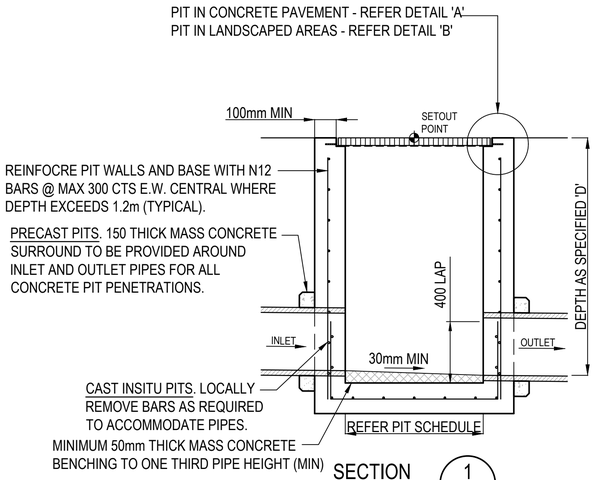
PLAN

TYPICAL STEP IRON DETAIL
N.T.S.

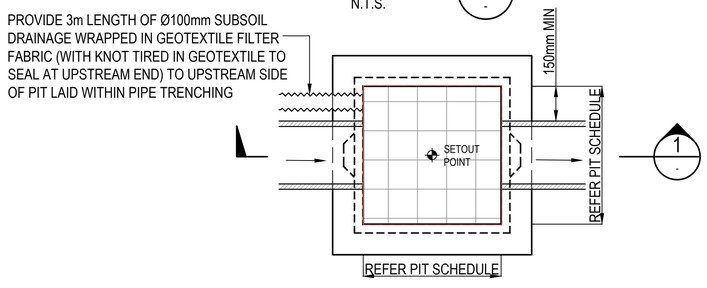




FLUSHING POINT DETAIL
N.T.S
INSTALL AT START OF SUBSOIL LINE AND AT 60m MAX INTERVALS



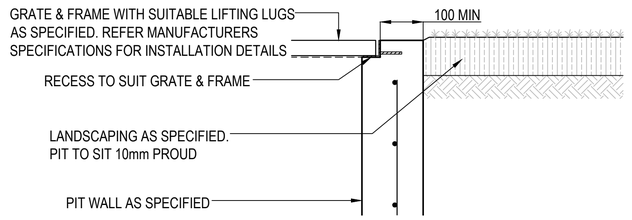
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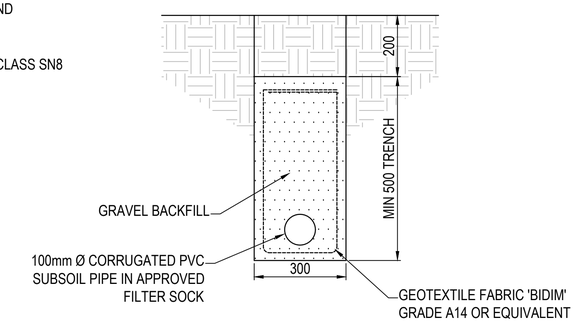
PLAN

SURFACE INLET 'SIP'

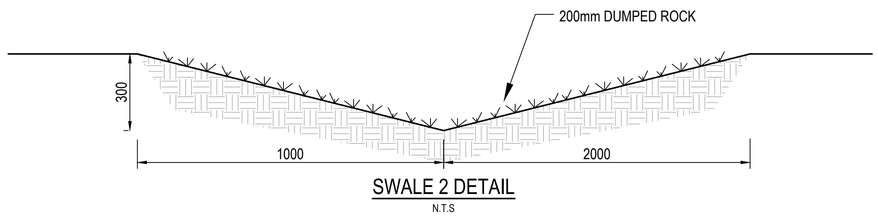
- PIT STRUCTURE TO BE 150mm THICK MINIMUM (UNLESS SHOWN OTHERWISE)
- REFER TO PIT INTERFACE DETAIL 'F' FOR CORNER REINFORCEMENT IF MESH IS USED IN LIEU OF N12-300 EACH WAY
- PROVIDE STEP IRONS IN ACCORDANCE WITH AS1657 WHEN PIT DEPTHS ARE GREATER THEN 1200mm
- SPARGE INTERNAL PIT FACE AT ALL PIPE CONNECTIONS AND PENETRATIONS.
- SHAPE BASE OF PIT TO DIRECT FLOWS TOWARDS OUTLET. PROVIDE A MINIMUM 30mm SMOOTH DROP FROM INLET TO OUTLET
- PROVIDE ADEQUATE LEVEL OF COMPACTION AROUND PIT. REFER TO SPECIFICATION FOR REQUIREMENTS.



PIT INTERFACE - DETAIL 'B'
REFER STORMWATER PIT SCHEDULE FOR GRATE DETAILS
SCALE 1:10



SUBSOIL TRENCH DETAIL
N.T.S.



SWALE 2 DETAIL
N.T.S

DRAWING UNDER REVISION

Issue.	Description	Date	Drawn	Approved
A	DRAFT SCHEMATIC DESIGN	29.08.24	MDM	JPR

North

Scale

PRINT IN COLOUR

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Project
GILLIESTON PUBLIC SCHOOL
100 RYANS ROAD
GILLIESTON HEIGHTS, NSW, 2321

NOT FOR CONSTRUCTION

Drawing Title
CIVIL SERVICES
STORMWATER DETAILS

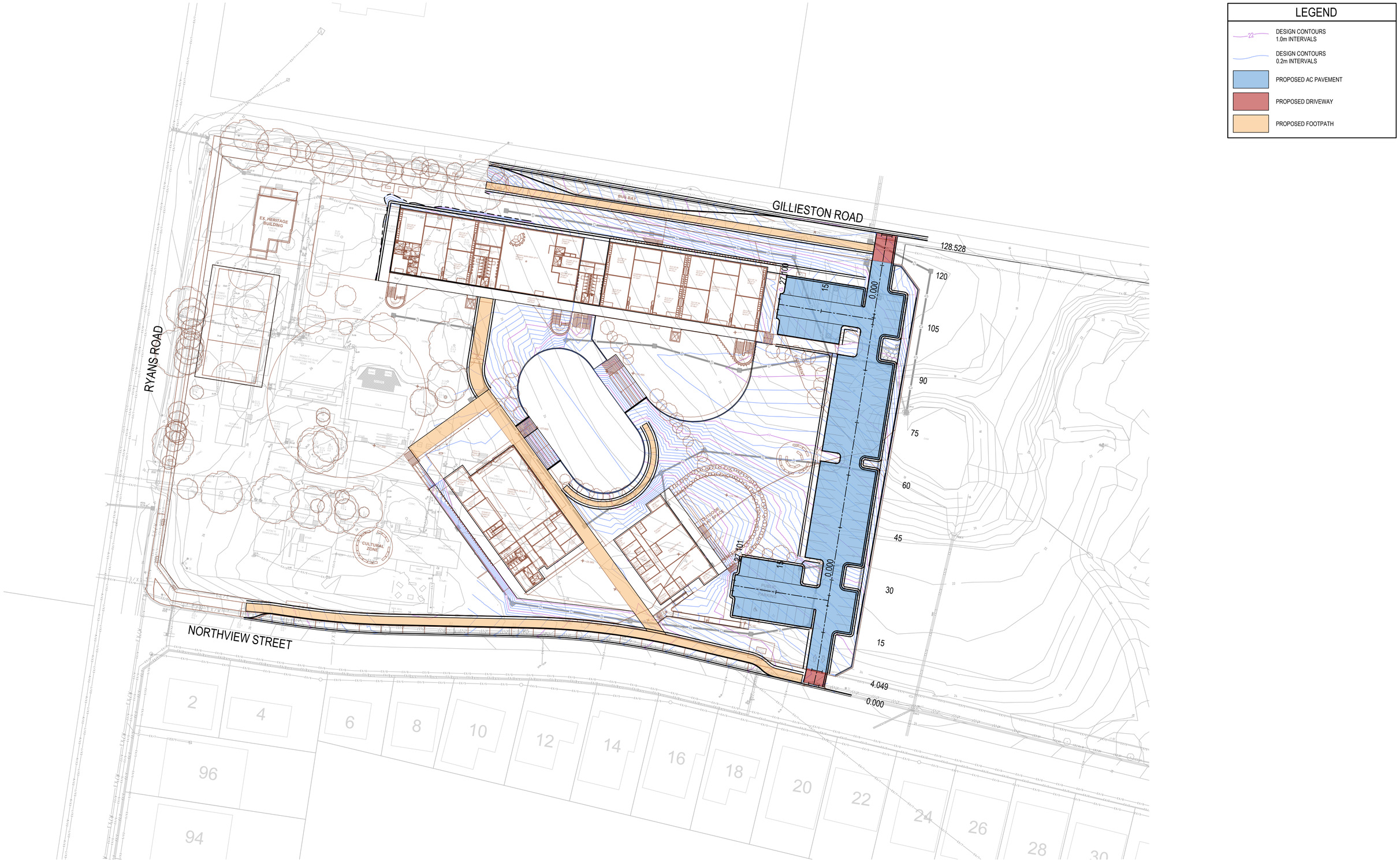
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MDM	SJO	JPR	29.08.24	N.T.S.

Project No.	Drawing No.	Issue
NS221454	GPS-ACOR-00-XX-DR-C-080501	A

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Aug 29, 2024 - 9:22am



DRAWING UNDER REVISION

Issue.	Description	Date	Drawn	Approved
A	DRAFT SCHEMATIC DESIGN	29.08.24	MDM	JPR

North

Scale
0 5 10 20 30m
SCALE BAR 1:500 @A1 1:1000 @A3

PRINT IN COLOUR

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Project
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GILLIESTON HEIGHTS, NSW, 2321

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Drawing Title
CIVIL SERVICES
PAVEMENT AND JOINTING PLAN

Drawn	Designed	Q.A. Check	Date	Scale @ A1
MDM	SJO	JPR	29.08.24	1:500

Project No.	Drawing No.	Issue
NS221454	GPS-ACOR-00-XX-DR-C-090001	A

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Aug 29, 2024 - 9:23am

CONCRETE NOTES

1. ALL WORKMANSHIP AND MATERIALS SHALL COMPLY WITH AS 3600, CURRENT EDITIONS WITH AMENDMENTS EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.

2. CONCRETE TO COMPLY WITH THE FOLLOWING:
   28 DAY COMPRESSIVE STRENGH - F'c = 32MPa
   28 DAY FLEXURAL STRENGTH F'ef = 4.5MPa
   MAX 28 DAY SHRINKAGE - 600 MICROSTRAIN

3. READYMIX CONCRETE SUPPLY SHALL COMPLY WITH AS1379.

4. PROJECT CONTROL TESTING SHALL BE CARRIED OUT IN ACCORDANCE WITH AS10120.

5. NO ADMIXTURES SHALL BE USED IN CONCRETE UNLESS APPROVED IN WRITING.

6. ALL REINFORCEMENT SHALL BE FIRMLY SUPPORTED ON MILD STEEL PLASTIC TIPPED CHAIRS, PLASTIC CHAIRS OR CONCRETE CHAIRS AT NOT GREATER THAN 1 METRE CENTRES BOTH WAYS. BARS SHALL BE TIED AT ALTERNATE INTERSECTIONS. IN EXPOSURE CONDITIONS GREATER THAN B1 USE ONLY PLASTIC CHAIRS.

7. CONCRETE SIZES SHOWN DO NOT INCLUDE THICKNESSES OF APPLIED FINISHES.

8. THE FINISHED CONCRETE SHALL BE A DENSE HOMOGENOUS MASS, COMPLETELY FILLING THE FORMWORK THOROUGHLY EMBEDDING THE REINFORCEMENT AND FREE OF STONE POCKETS. ALL CONCRETE INCLUDING SLABS ON GROUND AND FOOTINGS SHALL BE COMPACTED WITH MECHANICAL VIBRATORS.

9. CURING OF ALL CONCRETE IS TO BE ACHIEVED BY KEEPING SERVICES CONTINUOUSLY WET FOR A PERIOD OF 3 DAYS, AND PREVENTION OF LOSS OF MOISTURE FOR A TOTAL OF 7 DAYS FOLLOWED BY A GRADUAL DRYING OUT. APPROVED SPRAYED ON CURING COMPOUNDS THAT COMPLY WITH AS3799 MAY BE USED WHERE FINISHES WILL NOT BE AFFECTED (REFER MANUFACTURER'S SPECIFICATION). POLYHTENE SHEETING OR WET HESSIAN MAY BE USED TO RETAIN CONCRETE MOISTURE WHERE NOT PROTECTED FROM WIND AND TRAFFIC.

10. THE ENGINEER SHALL BE GIVEN 24 HOURS NOTICE FOR REINFORCEMENT INSPECTION AND CONCRETE SHALL NOT BE DELIVERED UNTIL FINAL APPROVAL OBTAINED.

11. REINFORCEMENT SYMBOLS:

    'R' DENOTES ROUND BAR, 250MPa GRADE, NORMAL DUCTILITY
    'SL' DENOTES SQUARE MESH, DEFORMED BAR, 500MPa GRADE, LOW DUCTILITY
    'RL' DENOTES RECTANGULAR MESH, DEFORMED BAR, 500MPa GRADE, LOW DUCTILITY

    NUMBER OF BARS IN GROUP — BAR GRADE AND TYPE
    17 N20 - 250
    NOMINAL BAR SIZE IN mm — SPACING IN mm

12. REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY AND NOT NECESSARILY IN TRUE PROJECTION.

13. FABRIC SHALL BE LAPPED 2 TRANSVERSE WIRES PLUS 50mm. BUNDLED BARS SHALL BE TIED TOGETHER AT 30 BAR DIAMETER CENTRES WITH 3 WRAPS OF THE WIRE.

JOINTING NOTES

1. ALL WORK IN ACCORDANCE WITH "GUIDE TO RESIDENTIAL STREETS AND PATHS" BY CEMENT & CONCRETE ASSOC. OF AUST.

2. SURFACE FINISH SHALL BE LIGHT BROOM OR HESSIAN BAG U.N.O. ISOLATION JOINTS AROUND S.W. PITS.

3. ISOLATION JOINTS AND N12 TRIMMER BARS AROUND S.W. PITS.

4. KERB AND PAVEMENT JOINTING TO ALIGN.

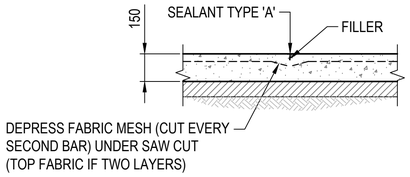
5. CONCRETE JOINTING AS SHOWN ON PLAN OR AT 5m MAX. CENTRES - TYPICAL ALL CONCRETE ROADS.

6. EXPANSION JOINTS (EJ) AS SHOWN ON PLAN OR AT 30m INTERVALS MAX.

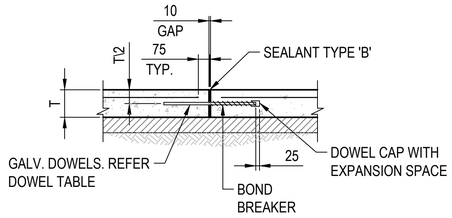
7. SEALANT TO BE POLYSULPHIDE OR EQUIVALENT INSTALLED TO MANUFACTURER'S SPECIFICATION.

8. FILLER TO BE ABLEFLEX OR EQUIVALENT INSTALLED TO MANUFACTURER'S SPECIFICATION.

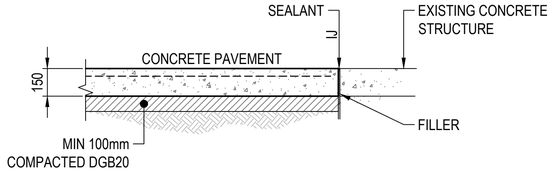
9. SAWCUTS TO BE CARRIED OUT WITHIN 24hrs OF POUR. UNLESS OTHERWISE APPROVED BY THE ENGINEER.



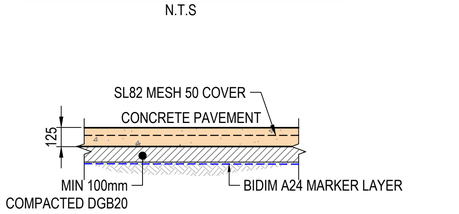
TYPICAL SAW CUT JOINT (SC) DETAIL
N.T.S



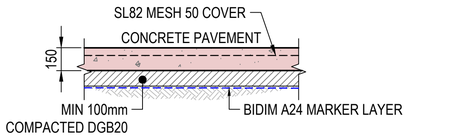
TYPICAL EXPANSION JOINT (EJ) DETAIL
N.T.S



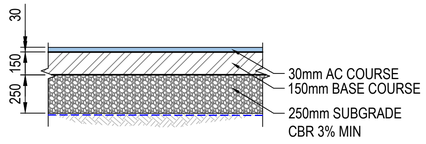
TYPICAL ISOLATION JOINT (IJ) DETAIL
N.T.S



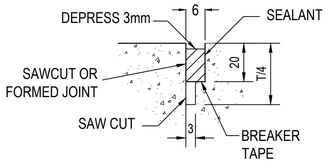
FOOTPATH PAVEMENT DETAIL
N.T.S



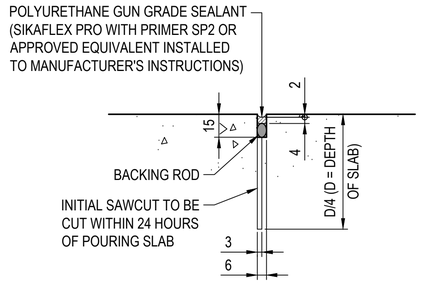
CONCRETE DRIVEWAY DETAIL
N.T.S



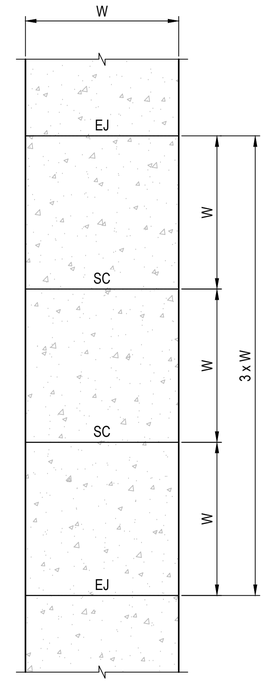
TYPICAL AC PAVEMENT DETAIL
N.T.S



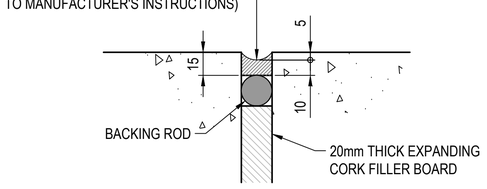
SEALANT DETAIL
NOT TO SCALE



TYPICAL JOINT SEALANT TYPE 'A' DETAIL
SCALE 1:2



TYPICAL PATH JOINTING PLAN
N.T.S
REFER LANDSCAPE ARCHITECT'S DRAWINGS FOR FURTHER DETAILS



TYPICAL JOINT SEALANT TYPE 'B' DETAIL
SCALE 1:2

DRAWING UNDER REVISION

Issue.	Description	Date	Drawn	Approved
A	DRAFT SCHEMATIC DESIGN	29.08.24	MDM	JPR

North

Scale

PRINT IN COLOUR

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NOT FOR CONSTRUCTION

Drawing Title
CIVIL SERVICES
PAVEMENT AND JOINTING DETAILS

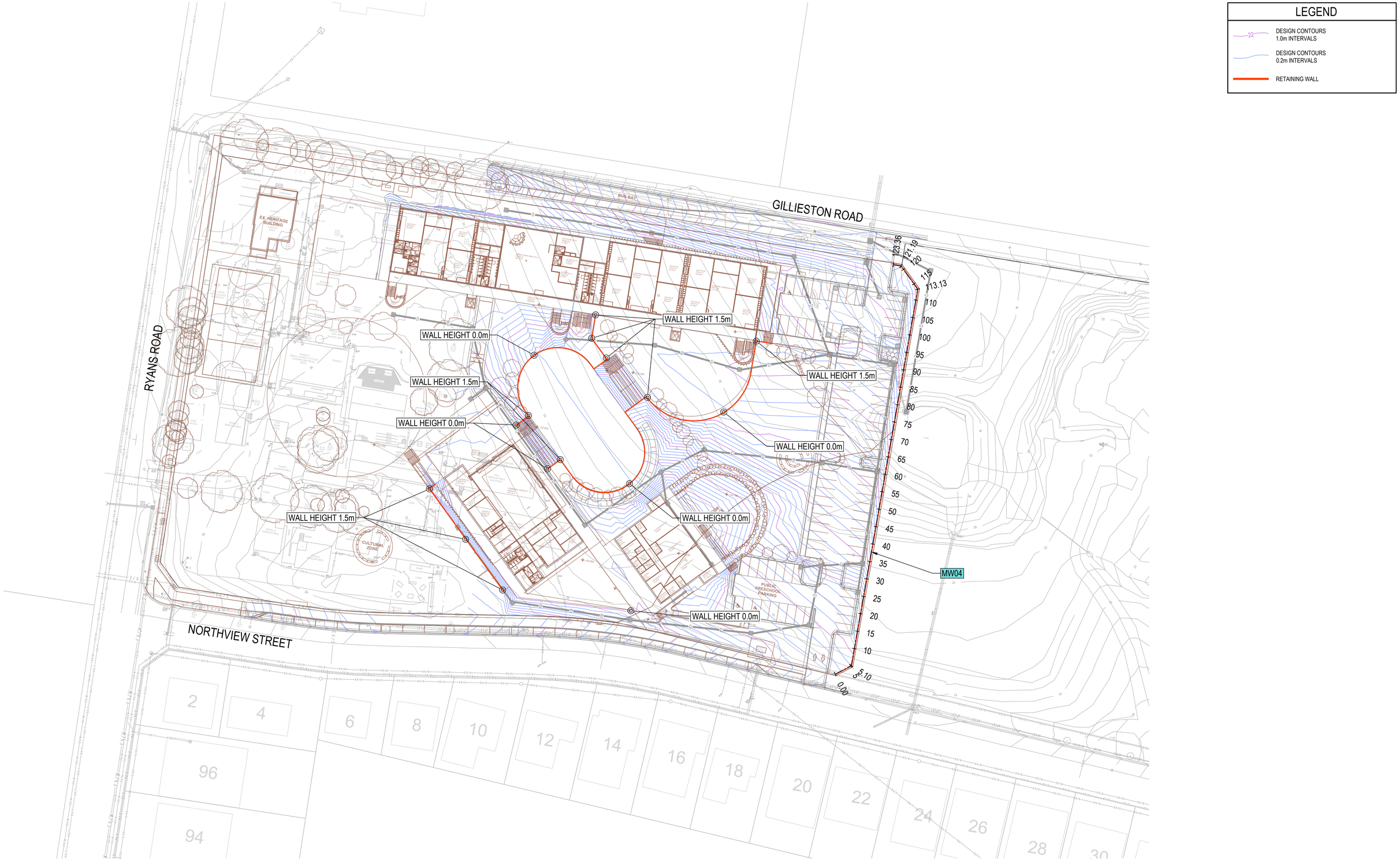
Drawn	Designed	Q.A. Check	Date	Scale @ A1
MDM	SJO	JPR	29.08.24	N.T.S.

Project No.	Drawing No.	Issue
NS221454	GPS-ACOR-00-XX-DR-C-090101	A

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Aug 29, 2024 - 9:23am



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Issue.	Description	Date	Drawn	Approved
A	DRAFT SCHEMATIC DESIGN	29.08.24	MDM	JPR

North

Scale

SCALE BAR 1:500 @A1 1:1000 @A3

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GILLIESTON PUBLIC SCHOOL
100 RYANS ROAD
GILLIESTON HEIGHTS, NSW, 2321

NOT FOR CONSTRUCTION

Drawing Title
CIVIL SERVICES
RETAINING WALL PLAN

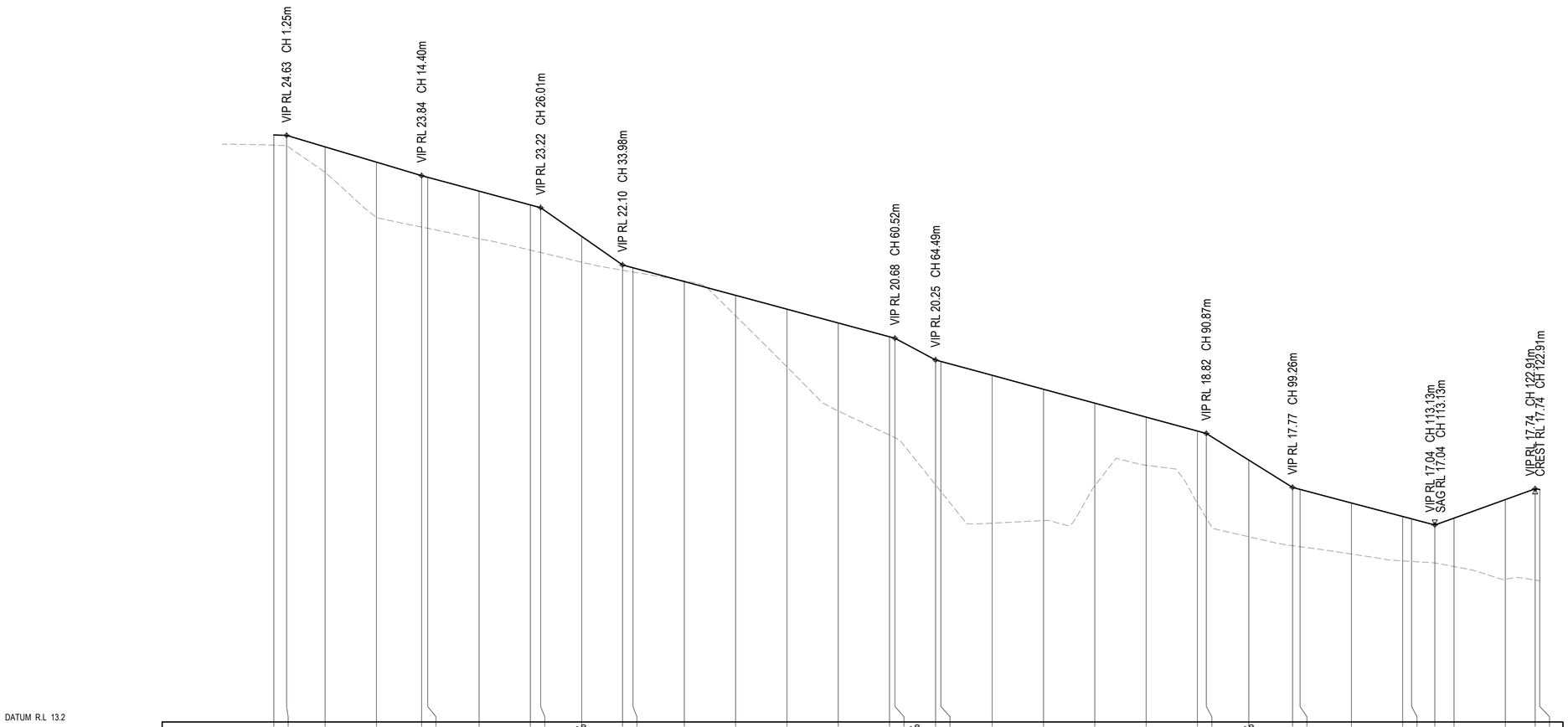
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MDM	SJO	JPR	29.08.24	1:500

Project No.	Drawing No.	Issue
NS221454	GPS-ACOR-00-XX-DR-C-100001	A

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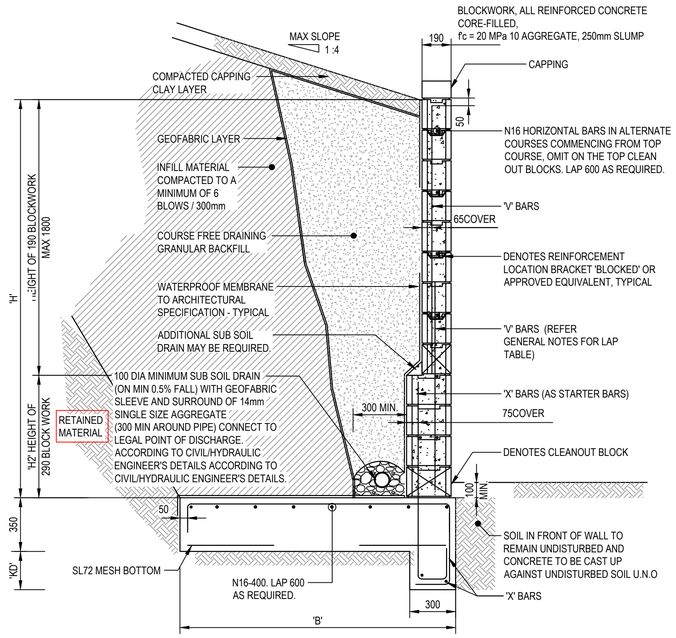
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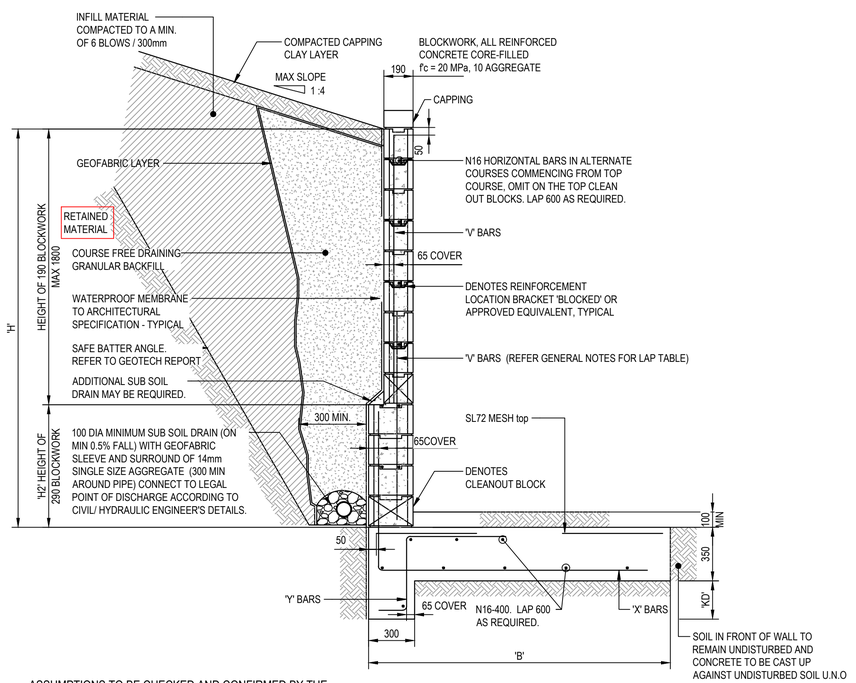
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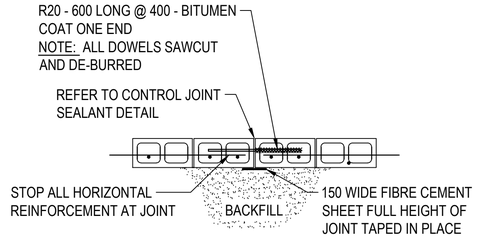

VIP RL 24.63 CH 1.25m
VIP RL 23.84 CH 14.40m
VIP RL 23.22 CH 26.01m
VIP RL 22.10 CH 33.98m
VIP RL 20.68 CH 60.52m
VIP RL 20.25 CH 64.49m
VIP RL 18.82 CH 90.87m
VIP RL 17.77 CH 99.26m
VIP RL 17.04 CH 113.13m
SAG RL 17.04 CH 113.13m
VIP RL 17.74 CH 122.91m
CREST RL 17.74 CH 122.91m

DATUM R.L 13.2

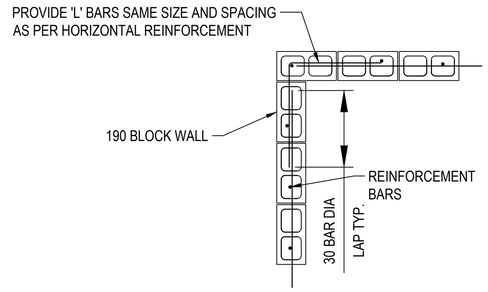
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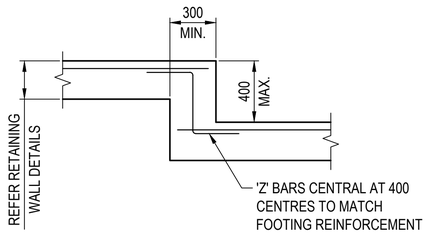




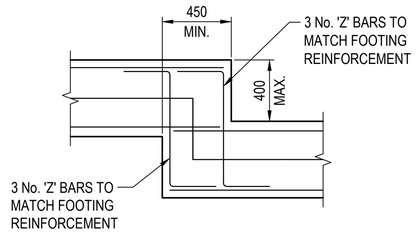
TYPICAL CONTROL JOINT DETAIL
SCALE 1:20



TYPICAL 190 BLOCKWORK CORNER DETAIL
SCALE 1:20



RETAINING WALL STEP DETAIL
SCALE 1:20



RETAINING WALL SHEAR KEY STEP DETAIL
SCALE 1:20

ASSUMPTIONS TO BE CHECKED AND CONFIRMED BY THE DESIGN ENGINEER

PROPERTIES AND COMPOSITION OF THE RETAINED MATERIAL AND INFILL MATERIAL MUST BE INSPECTED / CONFIRMED BY A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER AND ALL OTHER DESIGN ASSUMPTIONS CONFIRMED IN WRITING PRIOR TO CONSTRUCTION OF ANY RETAINING WALLS. WALL DESIGN ONLY APPLICABLE TO EARTHQUAKE DESIGN CATEGORY A AND B (AS4678), EQ DESIGN CATEGORY C TO E REQUIRES A SITE SPECIFIC DESIGN. WALL IS ASSUMED TO BE FULLY DRAINED, NO ALLOWANCE FOR HYDROSTATIC PRESSURE.

ASSUMED RETAINED MATERIAL - 150 kPa ALLOWABLE BEARING PRESSURE, INTERNAL FRICTION ANGLE ¢ = 35°, COHESION = 0
ASSUMED INFILL MATERIAL - CONTROLLED FILL CLASS 1, INTERNAL FRICTION ANGLE ¢ =3£oEXTERNAL FRICTION ANGLE ¢ = 0°, SOIL WEIGHT = 19kN/m3
DESIGN SURCHARGE - 5.0kPa
RISK CLASS - CLASS B: MODERATE DAMAGE AND LOSS OF SERVICE

RW2 RETAINING WALL SCHEDULE

WALL HEIGHT	290 BLOCK HEIGHT	BACKFILL CONDITION AT TOP OF WALL							
		NO SLOPE				MAX 1:4 SLOPE			
		FOOTING		REINFORCEMENT		FOOTING		REINFORCEMENT	
'H'	'H2'	'B'	'KD'	'V' BARS	'X' BARS	'B'	'KD'	'V' BARS	'X' BARS
1800	0	1300	200	N16-400	N16-400	1600	200	N16-400	N16-400
2200	600	1600	200	N16-400	N16-400	1800	200	N16-400	N16-400
2600	1000	1800	200	N16-400	N16-200	2000	200	N16-400	N16-200
3000	1400	2100	200	N16-400	N16-200	2400	300	N16-400	N16-200

TYPICAL RETAINING WALL DETAIL - RW2 (1601 to 3000 MAX)

SCALE: 1:20

NOTES:
PLEASE ADOPT THE FOLLOWING U.N.O:
- FOOTING CONCRETE COMPRESSIVE STRENGTH AS PER GENERAL NOTES, GRADE N25 MINIMUM.
- CONCRETE COVER AS SHOWN, WHERE NOT SPECIFICALLY SHOWN, CONCRETE EXPOSED TO SOIL SHALL HAVE 50mm MINIMUM COVER.
- WALL AND FOUNDATION IS ASSUMED TO HAVE A2 EXPOSURE CLASSIFICATION.
- ALL FOOTINGS TO BE FOUNDED ON WELL COMPACTED FIRM GROUND, 150kPa MINIMUM SOIL BEARING CAPACITY TO BE CONFIRMED ON SITE BY GEOTECHINCAL ENGINEER
- VERTICAL JOINT AT 6000mm CTS AS PER PROVIDED DETAIL.
- UNDERMINING EXISTING FOUNDATION IS NOT ALLOWED, STRUCTURAL ENGINEER TO BE CONSULTED IF ANY EXISTING STRUCTURE FOUNDED IN THE VICINITY OF THE RETAINING WALL FOUNDATION.
- BLOCKWALLS TO BE ADEQUATELY PROPPED DURING BACKFILLING AND SITE COMPACTION.
- REFER TO GENERAL CONCRETE, MASONRY, AND FOUNDATION GENERAL NOTES FOR FURTHER INFORMATION.

ASSUMPTIONS TO BE CHECKED AND CONFIRMED BY THE DESIGN ENGINEER

PROPERTIES AND COMPOSITION OF THE RETAINED MATERIAL AND INFILL MATERIAL MUST BE INSPECTED / CONFIRMED BY A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER AND ALL OTHER DESIGN ASSUMPTIONS CONFIRMED IN WRITING PRIOR TO CONSTRUCTION OF ANY RETAINING WALLS. WALL DESIGN ONLY APPLICABLE TO EARTHQUAKE DESIGN CATEGORY A AND B (AS4678), EQ DESIGN CATEGORY C TO E REQUIRES A SITE SPECIFIC DESIGN. WALL IS ASSUMED TO BE FULLY DRAINED, NO ALLOWANCE FOR HYDROSTATIC PRESSURE.

ASSUMED RETAINED MATERIAL - 150 kPa ALLOWABLE BEARING PRESSURE, INTERNAL FRICTION ANGLE ¢ = 35°, COHESION = 0
ASSUMED INFILL MATERIAL - CONTROLLED FILL CLASS 1, INTERNAL FRICTION ANGLE ¢ =3£oEXTERNAL FRICTION ANGLE ¢ = 0°, SOIL WEIGHT = 19kN/m3
DESIGN SURCHARGE - 5.0kPa
RISK CLASS - CLASS B: MODERATE DAMAGE AND LOSS OF SERVICE

RW1 RETAINING WALL SCHEDULE

WALL HEIGHT	290 BLOCK HEIGHT	BACKFILL CONDITION AT TOP OF WALL									
		NO SLOPE					MAX 1:4 SLOPE				
		FOOTING		REINFORCEMENT			FOOTING		REINFORCEMENT		
'H'	'H2'	'B'	'KD'	'V' BARS	'X' BARS	'Y' BARS	'B'	'KD'	'V' BARS	'X' BARS	'Y' BARS
1800	0	1600	350	N16-400	N16-400	N16-400	1800	400	N16-400	N16-400	N16-400
2200	600	2000	450	N16-400	N16-400	N16-400	2000	550	N16-400	N16-400	N16-400
2600	1000	2600	600	N16-400	N16-200	N16-400	2600	700	N16-400	N16-200	N16-400
3000	1400	2800	700	N16-400	N16-200	N16-400	3000	850	N16-400	N16-200	N16-400

TYPICAL RETAINING WALL DETAIL - RW1 (1601 to 3000 MAX)

SCALE: 1:20

NOTES:
PLEASE ADOPT THE FOLLOWING U.N.O:
- FOOTING CONCRETE COMPRESSIVE STRENGTH AS PER GENERAL NOTES, GRADE N25 MINIMUM.
- CONCRETE COVER AS SHOWN, WHERE NOT SPECIFICALLY SHOWN, CONCRETE EXPOSED TO SOIL SHALL HAVE 50mm MINIMUM COVER.
- WALL AND FOUNDATION IS ASSUMED TO HAVE A2 EXPOSURE CLASSIFICATION.
- ALL FOOTINGS TO BE FOUNDED ON WELL COMPACTED FIRM GROUND, 150kPa MINIMUM SOIL BEARING CAPACITY TO BE CONFIRMED ON SITE BY GEOTECHINCAL ENGINEER
- VERTICAL JOINT AT 6000mm CTS AS PER PROVIDED DETAIL.
- UNDERMINING EXISTING FOUNDATION IS NOT ALLOWED, STRUCTURAL ENGINEER TO BE CONSULTED IF ANY EXISTING STRUCTURE FOUNDED IN THE VICINITY OF THE RETAINING WALL FOUNDATION.
- BLOCKWALLS TO BE ADEQUATELY PROPPED DURING BACKFILLING AND SITE COMPACTION.
- REFER TO GENERAL CONCRETE, MASONRY, AND FOUNDATION GENERAL NOTES FOR FURTHER INFORMATION.

DRAWING UNDER REVISION

Issue.	Description	Date	Drawn	Approved
A	DRAFT SCHEMATIC DESIGN	29.08.24	MDM	JPR

North

Scale

PRINT IN COLOUR

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Drawing Title
CIVIL SERVICES
RETAINING WALL DETAILS

Drawn	Designed	Q.A. Check	Date	Scale @ A1
MDM	SJO	JPR	29.08.24	N.T.S.

Project No.	Drawing No.	Issue
NS221454	GPS-ACOR-00-XX-DR-C-100201	A

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Aug 29, 2024 - 9:20am

RETAINING WALL - REINFORCED CONCRETE BLOCKWORK

RW1. ALL WORKMANSHIP SHALL COMPLY WITH AS 4679 AND AS 3700.

RW2. RETAINING WALL FOOTINGS HAVE BEEN DESIGNED FOR AN ALLOWABLE BEARING PRESSURE AS NOTED ON DRAWINGS. THIS FOUNDATION MATERIAL SHALL BE UNIFORM AND BE APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO THE PLACEMENT OF ANY FOOTING REINFORCEMENT.

RW3. REFER TO "REINFORCED CONCRETE BLOCKWORK" NOTES FOR ADDITIONAL SPECIFICATIONS.

RW4. TEMPORARY BATTERS TO BE AS PER GEOTECHNICAL ENGINEERS REPORTS.

RW5. PROVIDE CLEAN-OUT BLOCKS AT THE BASE OF EACH POUR LIFT. REINFORCED CORES SHALL BE CLEANED OF MORTAR PROTRUSIONS BEFORE GROUTING

RW6. HORIZONTAL REINFORCEMENT IN WALLS IS TO BE SPLICED 600 AS REQUIRED.

RW7. REFER TO TYPICAL DETAILS FOR FOOTING STEPS, INTERSECTION / CORNER DETAILS, AND VERTICAL CONTROL JOINT DETAILS.

RW8. COVER TO REINFORCEMENT IN BLOCK RETAINING WALLS SHALL BE MAINTAINED BY THE USE OF PLASTIC "BLOCKAID" REINFORCEMENT LOCATION BRACKETS (OR APPROVED EQUIVALENT) AT THE INTERSECTION OF ALL HORIZONTAL AND VERTICAL REINFORCEMENT.

RW9. ALL CORES ARE TO BE FULLY GROUTED. GROUT SHALL BE IN ACCORDANCE WITH AS 3600 AND COMPLY WITH THE FOLLOWING :-
CHARACTERISTIC STRENGTH f'c = 20 MPa AT 28 DAYS.
MAXIMUM AGGREGATE SIZE = 10 mm.
SLUMP = 230 mm.

RW10. PROVIDE WATERPROOFING MEMBRANES AS REQUIRED BY ARCHITECTURAL SPECIFICATIONS. DESIGN, EXTENT AND CERTIFICATION OF MEMBRANE IS TO BE PROVIDED BY WATERPROOFING SPECIALIST.

RW11. RETAINING WALLS ARE DESIGNED BASED ON THE ASSUMPTION THAT A FUNCTIONING DRAINAGE SYSTEM IS EFFECTIVE IN REMOVING HYDRAULIC PRESSURE . PROVIDE CONTINUOUS AG DRAINS BEHIND THE ENTIRE EXTENT OF THE RETAINING WALL. THE DRAINAGE SYSTEM IS TO BE DESIGNED FOR LONG TERM PERFORMANCE EQUAL TO THAT OF THE DESIGN LIFE OF THE WALL. THE DESIGN AND DOCUMENTATION OF THIS SYSTEM IS BY OTHERS AND IS TO INCLUDE DETAILS OF EFFLUX POINTS FOR THE DRAINAGE AND ACCESS / MAINTENANCE POINTS.

RW12. BACKFILL BEHIND THE WALL IS TO BE CLASSIFIED AS FREE DRAINING GRANULAR MATERIAL. FREE DRAINING GRANULAR MATERIAL SHALL BE A NON-COHESIVE WELL GRADED GRANULAR MATERIAL COMPRISING SOUND STONE PARTICLES WHICH DO NOT BREAK DOWN UNDER COMPACTION, WETTING OR EXPOSURE TO AIR. THE MATERIAL PROPERTIES SHALL COMPLY WITH THOSE SPECIFIED IN TABLE BELOW.

FREE DRAINING GRANULAR MATERIAL PROPERTIES		
PROPERTY	LIMIT	VALUE
STONE SIZE	MAXIMUM	20 mm
% PASSING 0.15 mm SIEVE	MAXIMUM	5 %
PLASTICITY INDEX	MAXIMUM	8

RW13. PROVIDE GEOTEXTILE SEPARATION LAYER BETWEEN FREE DRAINING GRANULAR MATERIAL AND RETAINED FILL MATERIAL.

RW14. COMPACTION OF BACKFILL BEHIND WALLS - COMPACTION SHALL BE BY MECHANICAL PLATE VIBRATOR TO A MINIMUM OF 100% STANDARD COMPACTION. - BACKFILLING IS NOT TO TAKE PLACE UNTIL APPROVAL HAS BEEN GIVEN BY THE ENGINEER.

RW15. PROVIDE VERTICAL CONTROL JOINTS IN ALL WALLS AT A MAXIMUM OF 8000 mm CENTRES UNLESS INDICATED OTHERWISE ON THE STRUCTURAL DRAWINGS.

RW16. WHERE EVER POSSIBLE, SURFACE WATER SHALL BE DIRECTED AWAY FROM THE TOP OF THE WALL AND NOT BE ALLOWED TO POND BEHIND THE TOP OF THE WALL OR ENTER THE SUBSURFACE DRAINAGE SYSTEM.

REINFORCED CONCRETE BLOCKWORK

RB1. ALL WORKMANSHIP SHALL COMPLY WITH AS 3700, AND THE SPECIFICATIONS.

RB2. ALL BLOCKS SHALL CONFORM TO AS 2733.

RB3. THE DESIGN STRENGTH OF CONCRETE MASONRY SHALL BE AS FOLLOWS :-

ELEMENT	BLOCK STRENGTH GRADE	MORTAR MIX CEMENT:LIME:SAND
WALLS	15	M3 MORTAR (NORMAL) 1 : 1 : 6 M4 MORTAR (EXPOSURE GRADE) 1 : 0.5 : 4.5

RB4. LAY BOTTOM COURSE OF BLOCKS ON FULL MORTAR BED. ALL PERPENDS SHALL BE FULLY FILLED WITH MORTAR, EXCEPT WHERE REQUIRED FOR WEEPHOLES.

RB5. CLEAN OUT BLOCKS SHALL BE PROVIDED AT THE BASE OF ALL REINFORCED CORES. REINFORCED CORES SHALL BE CLEANED OF MORTAR PROTRUSIONS BEFORE GROUTING.

RB6. ALL REINFORCED CORES SHALL BE FILLED WITH GROUT. THE GROUT FILLING SHALL BE THOROUGHLY COMPACTED BY MECHANICAL VIBRATOR OR RODDING. UNREINFORCED CORES NEED NOT BE FILLED UNLESS OTHERWISE NOTED.

RB7. GROUT COVER TO REINFORCEMENT IN BLOCK RETAINING WALLS SHALL BE MAINTAINED BY THE USE OF PLASTIC "BLOCKAID" REINFORCEMENT LOCATION BRACKETS (OR APPROVED EQUIVALENT) AT THE INTERSECTION OF ALL HORIZONTAL AND VERTICAL REINFORCEMENT.

RB8. GROUT SHALL BE IN ACCORDANCE WITH AS 3600 AND COMPLY WITH THE FOLLOWING :-

CHARACTERISTIC STRENGTH f'c = 20 MPa AT 28 DAYS.
MAXIMUM AGGREGATE SIZE = 10 mm.
SLUMP = 230 mm.

RB9. MAXIMUM CONTINUOUS POUR HEIGHT SHALL BE 3600 mm, STOP POUR 50 mm BELOW TOP OF BLOCK TO PROVIDE KEY FOR THE FOLLOWING POUR.

RB10. BUILDER IS TO PROVIDE TEMPORARY PROPPING TO WALLS WHERE REQUIRED FOR STABILITY DURING CONSTRUCTION.

VERTICAL JOINTS

RB11. PROVIDE VERTICAL CONTROL JOINTS IN ALL WALLS AT A MAXIMUM OF 8000 mm CENTRES OR AT SLAB JOINTS UNLESS INDICATED OTHERWISE ON THE STRUCTURAL DRAWINGS

HORIZONTAL JOINTS

RB12. PROVIDE HORIZONTAL JOINT REINFORCEMENT EVERY THIRD COURSE FOR SOLID OR CORE FILLED BLOCKS

RB13. REFER TO TYPICAL "REINFORCED BLOCK WALL JUNCTION DETAILS" FOR REINFORCEMENT REQUIREMENTS AT CORNERS AND INTERSECTIONS.

RB14. REFER TO THE ARCHITECTS SPECIFICATIONS FOR ALL WATERPROOFING DETAILS OF WALLS AS REQUIRED.

RB15. REFER TO "RETAINING WALL NOTE" FOR ADDITIONAL INFORMATION ON BACKFILLING AND DRAINAGE SYSTEMS BEHIND RETAINING WALLS.

RB16. REFER TO TYPICAL DETAILS FOR BOND BEAM LINTELS.

RB17. MASONRY WALLS MUST NOT BE CONSTRUCTED ON SUSPENDED CONCRETE UNTIL ALL TEMPORARY SUPPORTS ARE REMOVED AND ALL MASONRY TO BE LAID HAS BEEN STACKED ADJACENT TO PROPOSED POSITION.

CONCRETE NOTES

C1. ALL WORKMANSHIP AND MATERIALS SHALL COMPLY WITH AS 3600 CURRENT EDITIONS WITH AMENDMENTS, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.

C2. ALL CONCRETE SUPPLY SHALL COMPLY WITH AS1379. CONCRETE PROPERTIES AND COVER TO REINFORCING.

ELEMENT		COVER (mm)		f'c (MPa) (28 DAYS)	MAX 56 DAY SHRINKAGE
SLAB ON GROUND	EXTERNAL	T 40	B 50	32	800
	INTERNAL	T 20	B 50	32	
STRIP FOOTINGS		50		40	800
PAD FOOTINGS		50		40	800
SUSPENDED SLABS AND BEAMS	EXTERNAL	T 40	B 40	40	650
	INTERNAL	T 20	B 20	40	
COLUMNS	EXTERNAL	40		40	800
	INTERNAL	40		40	
CONCRETE WALLS	EXTERNAL	40		40	800
	INTERNAL	20		40	

MAXIMUM AGGREGATE SIZE = 20
SLUMP DURING PLACEMENT = 80
EXPOSURE CLASSIFICATION = A1 INTERNAL
= B1 EXTERNAL

STRUCTURAL STEELWORK

S1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH STEEL STRUCTURE - AS 4100 AND WELDING - AS 1554 EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENT.

S2. STEEL COMPONENTS SHALL CONFORM TO THE FOLLOWING TABLE U.N.O.

COMPONENT	AUS. STAND.	GRADE
PLATE	3678	250
HOT ROLLED SECTIONS	3679	300
CHS > 80 mm DIA.	1163	C350
CHS < 80 mm DIA.	1163	C250
RHS & SHS	1163	C350
PURLINS & GIRTS	1397	450
WELDED BEAMS & COLUMNS	3679	300
FLAT BARS & RODS.	3679	250

S3. BOLT DESIGNATION

ALL BOLTS TO BE 8.8/S UNLESS NOTED OTHERWISE

4.6/S COMMERCIAL BOLTS OF GRADE 4.6 TO AS 1111 SNUG TIGHTENED.
8.8/S HIGH STRENGTH STRUCTURAL BOLTS OF GRADE 8.8 TO AS 1252 SNUG TIGHTENED.
8.8/TB HIGH STRENGTH BOLTS OF GRADE 8.8 TO AS 1252 FULLY TENSIONED TO AS 4100 AS A BEARING JOINT.
8.8/TF HIGH STRENGTH STRUCTURAL BOLTS OF GRADE 8.8 TO AS 1252 FULLY TENSIONED TO AS 4100 AS A FRICTION JOINT WITH CONTACT SURFACES LEFT UNCOATED.

S4. ALL BOLTS SHALL BE M20 GRADE 8.8/S U.N.O.
ALL STUDS SHALL BE M20 GRADE 4.6/S U.N.O.
NO STEEL TO STEEL CONNECTION TO HAVE LESS THAN 2 BOLTS.

S5. ALL PLATES TO BE 10 mm THICK U.N.O.

S6. UNLESS NOTED OTHERWISE, ALL FILLET WELDS SHALL BE
6mm CONTINUOUS FOR PLATES LESS THAN OR EQUAL TO 12 PL
8mm CONTINUOUS FOR 16 PL
10mm CONTINUOUS FOR 20 PL AND ABOVE.

ELEMENT	WELD CATEGORY
ALL	SP

ALL BUTT WELDS TO BE COMPLETE PENETRATION BUTT WELDS. ELECTRODES TO BE E48XX U.N.O. WELD CATEGORY AS TABULATED ABOVE.

S7. THE CONTRACTOR SHALL MAKE THE NECESSARY ALLOWANCES FOR COORDINATING ALL ARCHITECTURAL & STRUCTURAL ELEMENTS IN THE PREPARATION OF STRUCTURAL STEELWORK SHOP DRAWINGS & SUBSEQUENT FABRICATION & ERECTION. CONNECTION DETAILS SHOWN ON STRUCTURAL DRAWINGS ARE TYPICAL ONLY. WHERE A DETAIL IS NOT SHOWN THE FABRICATOR / SHOP DETAILER SHALL PREPARE DETAILS IN ACCORDANCE WITH AS4100 & THE AISC PUBLICATIONS `DESIGN OF STRUCTURAL CONNECTIONS' & `STANDARDISED STRUCTURAL CONNECTIONS'. THESE DETAILS SHALL TAKE DUE ACCOUNT OF ARCHITECTURAL & SERVICE REQUIREMENTS & SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. THE ENGINEER WILL SUPPLY LOADS AS REQUIRED. ALL COSTS & TIME IMPLICATIONS ASSOCIATED WITH THESE WORKS ARE TO BE ALLOWED FOR BY THE CONTRACTOR.

S8. STRUCTURAL STEELWORK SHALL HAVE THE FOLLOWING TREATMENT:-

ELEMENT	SURFACE PREPARATION	PROTECTIVE COATING
INTERIOR MEMBERS	BLAST CLEAN TO CLASS 2 (AS 1627)	ZINC PHOSPHATE PRIMER FILM THICKNESS 0.075mm
EXPOSED TO WEATHER INCLUDING ALL STIFFENERS	PICKLE (AS 1627 PART 5)	HOT DIP GALVANISED REFER TO SPECIFICATIONS.

DRAWING UNDER REVISION

Issue.	Description	Date	Drawn	Approved
A	DRAFT SCHEMATIC DESIGN	29.08.24	MDM	JPR

North

Scale

PRINT IN COLOUR

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Project
GILLIESTON PUBLIC SCHOOL
100 RYANS ROAD
GILLIESTON HEIGHTS, NSW, 2321

NOT FOR CONSTRUCTION

Drawing Title
CIVIL SERVICES
RETAINING WALL NOTES

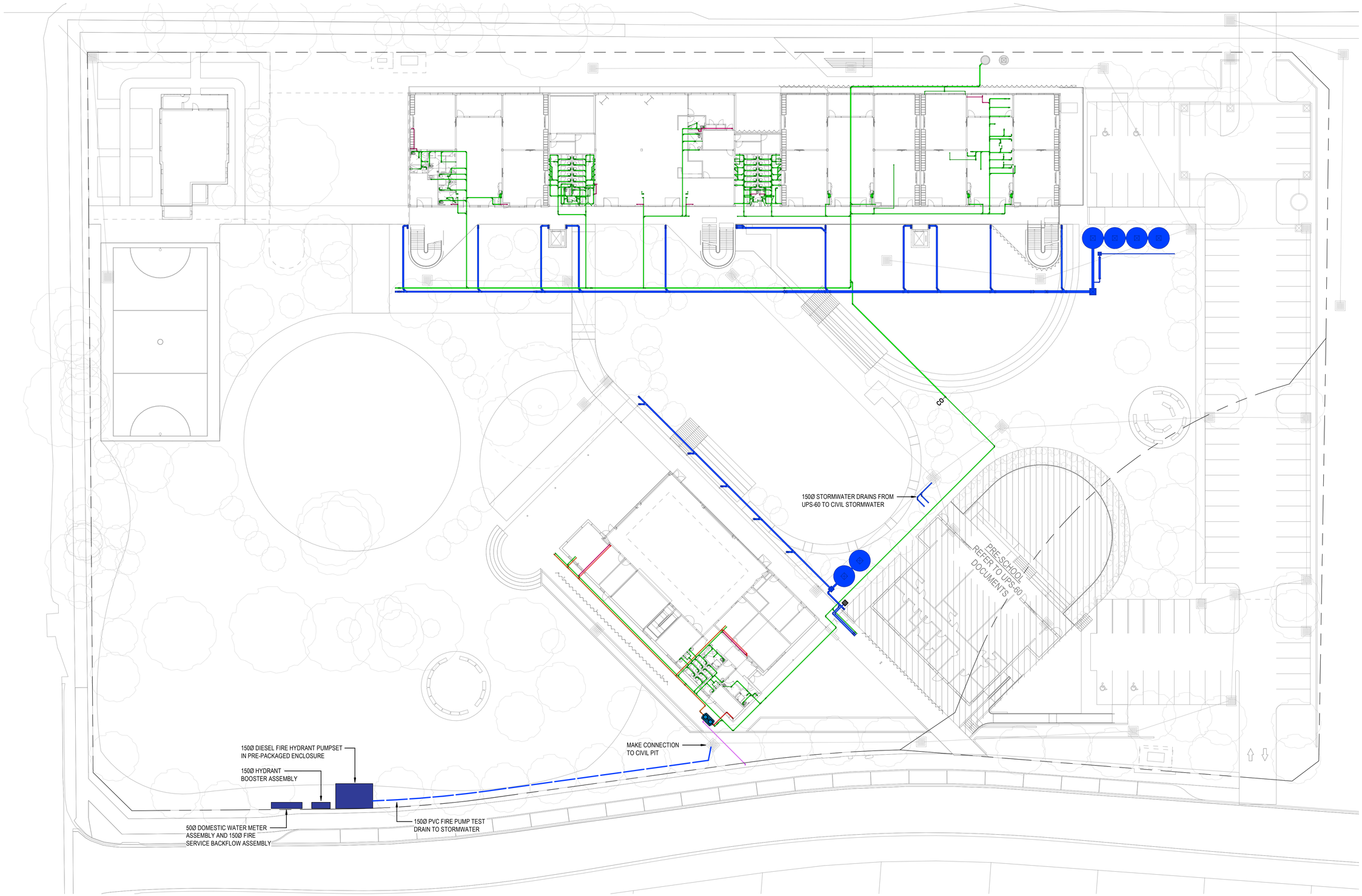
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MDM	SJO	JPR	29.08.24	N.T.S.

Project No. NS221454
Drawing No. GPS-ACOR-00-XX-DR-C-100202
Issue A

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Aug 29, 2024 - 2:20pm



Issue.	Description	Date	Drawn	Approved
A	DRAFT SCHEMATIC	27.08.24	AP	SW

North

Scale

5 0 5 10 15 20 25m

SCALE BAR 1:500

PRINT IN COLOUR

Client

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Architect

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Nominated Architect Justin Hamilton (6160) | ABN 32 131 564 846

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Project
GILLIESTON PUBLIC SCHOOL
NSW SCHOOL INFRASTRUCTURE
100 RYANS ROAD
GILLIESTON HEIGHTS

NOT FOR CONSTRUCTION

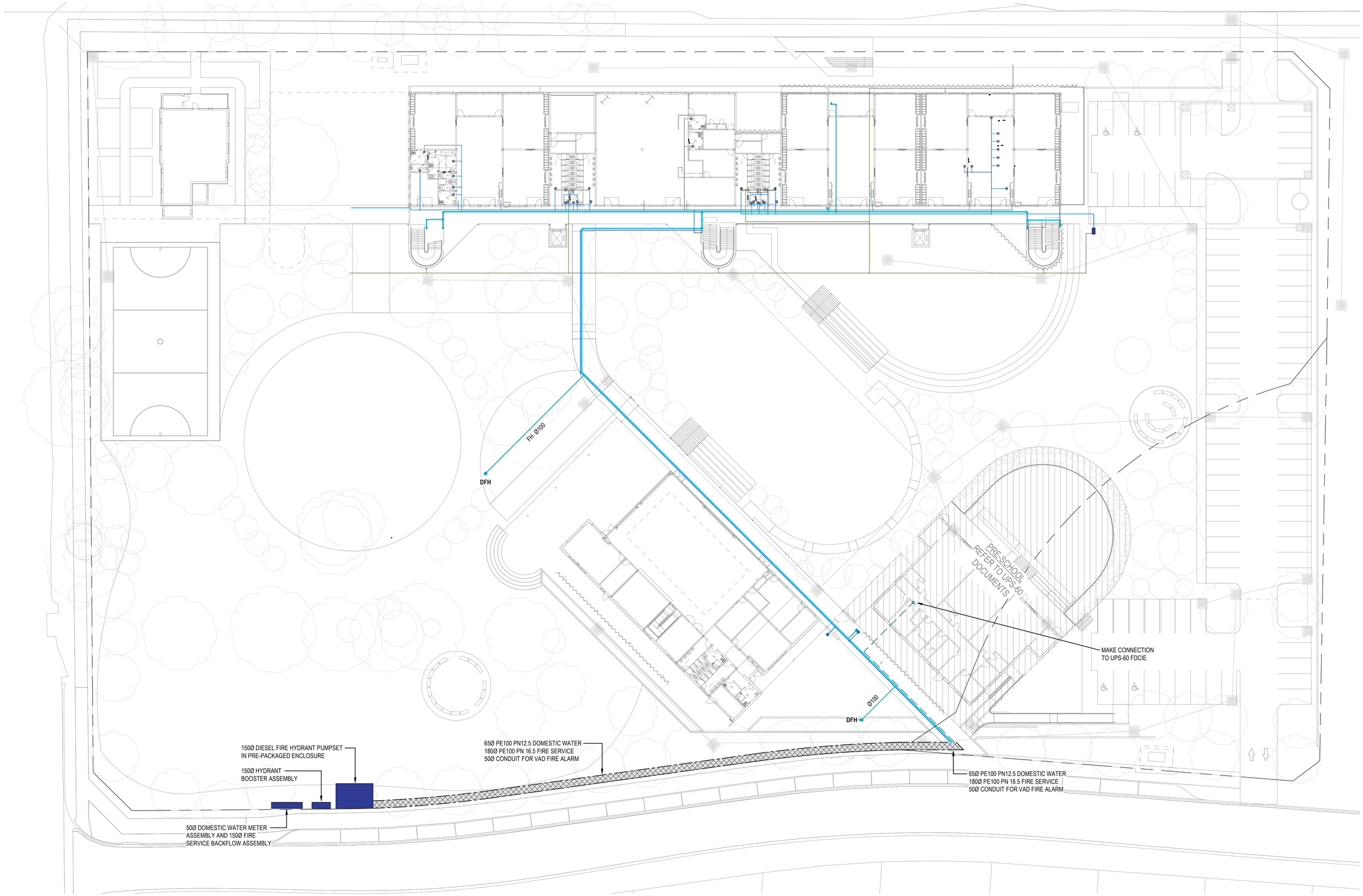
Drawing Title
HYDRAULIC SERVICES
DRAINAGE SITE PLAN

Drawn	Designed	Q.A. Check	Date	Scale @ A1
AP	AP	SW	27.10.2023	1 : 300

Project No.	Drawing No.	Issue
NS221454	GPS-ACOR-00-XX-DR-H-000051	A

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A	DRAFT SCHEMATIC	27.08.24	AP	SW

North

Scale

5 0 5 10 15 20 25m

SCALE BAR 1:500

PRINT IN COLOUR

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Project
GILLIESTON PUBLIC SCHOOL
NSW SCHOOL INFRASTRUCTURE
100 RYANS ROAD
GILLIESTON HEIGHTS

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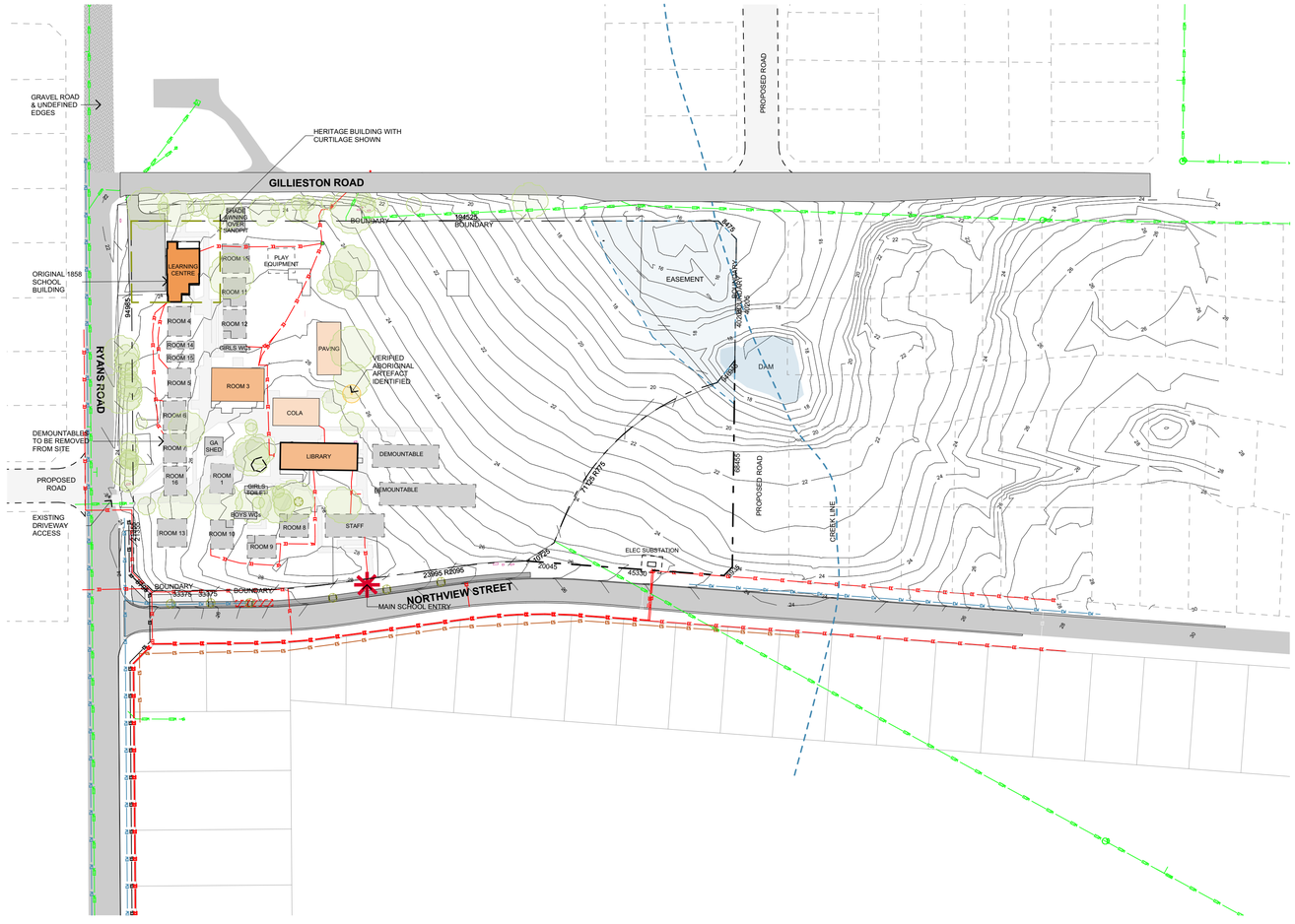
Drawing Title
HYDRAULIC SERVICES
WATER SITE PLAN

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AP	AP	SW	27.10.2023	1 : 300

Project No.	Drawing No.	Issue
NS221454	GPS-ACOR-00-XX-DR-H-000052	A

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AMENDMENTS

No	Drn	Chk	Date	Comment
A	tbc	tbc.	28.08.24	FOR INFORMATION
B	tbc	tbc.	17.09.24	SCHEMATIC

NOTES

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4. Bring any discrepancies to the attention of the proprietor & architect.

CLIENT NAME

NSW GOVERNMENT Education School Infrastructure

SINSW INFORMATION CONTAINER REF:

GPS-SHAC-ZZ-ZZ-M2-A-031001-Overall Site Plan

SCALE 1:1000 @A1 (0m 10 20 30 40 50)

PROJECT NAME AND ADDRESS

Gillieston Public School
100 Ryans Road

DRAWN **tbc** APPROVED **tbc.**

STATUS **SCHEMATIC**

DRAWING TITLE **Overall Site Plan**

PROJECT NO. **4814** DRAWING NO. **03 1001** REV. **B**

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GRAVEL ROAD & UNDEFINED EDGES

HERITAGE BUILDING WITH CURTILAGE SHOWN

GILLIESTON ROAD

PROPOSED ROAD

SHADE AWNING OVER SANDPIT

BOUNDARY

194525 BOUNDARY

3875

LEARNING CENTRE

ORIGINAL 1858 SCHOOL BUILDING

ROOM 15

PLAY EQUIPMENT

ROOM 11

ROOM 4

ROOM 12

ROOM 14

GIRLS WCs

ROOM 15

ROOM 5

ROOM 3

PAVING

VERIFIED ABORIGINAL ARTEFACT IDENTIFIED

COLA

ROOM 6

DEMOUNTABLES TO BE REMOVED FROM SITE

ROOM 7

GA SHED

LIBRARY

DEMOUNTABLE

ROOM 16

ROOM 1

GIRLS TOILET

DEMOUNTABLE

PROPOSED ROAD

BOYS WCs

EXISTING DRIVEWAY ACCESS

ROOM 13

ROOM 10

ROOM 8

STAFF

ROOM 9

RYANS ROAD

EASEMENT

DAM

BOUNDARY

40305

BOUNDARY

6495

6495

PROPOSED ROAD

CREEK LINE

ELEC SUBSTATION

20045

23995 R2095

45330

BOUNDARY

33875

33375

BOUNDARY

MAIN SCHOOL ENTRY

NORTHVIEW STREET

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AMENDMENTS

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B	tbc	tbc.	17.09.24	SCHEMATIC

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SINSW INFORMATION CONTAINER REF:
GPS-SHAC-ZZ-ZZ-M2-A-031002-Existing Site

CLIENT NAME
NSW Government Education School Infrastructure

SCALE 1:500 @A1
0m 5 10 15 20 25

PROJECT NAME AND ADDRESS
Gilliston Public School
100 Ryans Road

DRAWN **tbc** | APPROVED **tbc.**

STATUS
SCHEMATIC

DRAWING TITLE
Existing Site

PROJECT NO. **4814** | DRAWING NO. **03 1002** | REV. **B**

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GILLIESTON ROAD

PROPOSED ROAD

RYANS ROAD

PROPOSED ROAD

PROPOSED ROAD

NORTHVIEW STREET

GRAVEL ROAD & UNDEFINED EDGES

HERITAGE BUILDING WITH CURTILAGE SHOWN

ORIGINAL 1858 SCHOOL BUILDING

DEMOUNTABLES TO BE REMOVED FROM SITE

EXISTING DRIVEWAY ACCESS

MAIN SCHOOL ENTRY

VERIFIED ABORIGINAL ARTEFACT IDENTIFIED

SHADE AWNING OVER SANDPIT

LEARNING CENTRE

PLAY EQUIPMENT

ROOM 15

ROOM 11

ROOM 4

ROOM 12

ROOM 14

ROOM 15

GIRLS WCs

ROOM 5

ROOM 3

ROOM 6

ROOM 7

GA SHED

COLA

LIBRARY

DEMOUNTABLE

DEMOUNTABLE

ROOM 16

ROOM 1

GIRLS' TOILET

BOYS WCs

ROOM 13

ROOM 10

ROOM 8

ROOM 9

STAFF

PAVING

ELEC SUBSTATION

EASEMENT

DAM

BOUNDARY

194525 BOUNDARY

BOUNDARY

BOUNDARY

BOUNDARY

40205

40206

CREEK LINE

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AMENDMENTS

No	Drn	Chk	Date	Comment
A	tbc	tbc.	28.08.24	FOR INFORMATION
B	tbc	tbc.	17.09.24	SCHEMATIC

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SINSW INFORMATION CONTAINER REF:

GPS-SHAC-ZZ-ZZ-M2-A-031003-Demolition Site

CLIENT NAME

NSW Government Education School Infrastructure

SCALE

1:500 @A1

PROJECT NAME AND ADDRESS

Gillieston Public School
100 Ryans Road

DRAWN: **tbc**

APPROVED: **tbc.**

STATUS

SCHEMATIC

DRAWING TITLE

Demolition Site

PROJECT NO. **4814** | DRAWING NO. **03 1003** | REV. **B**

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Civil Engineering Report
Review of Environmental Factors

Gillieston Public School

Prepared for: Department of Education c/- Johnstaff

Document no: NA221454-GPS-ACOR-00-RP-C

Revision no: 01



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Revisions

Revision	Description	Date	Prepared by	Approved by
01	Preliminary	27.09.2024	JPR	UK

Review Panel

Division/ office	Name
NEWCASTLE	Josh Rhodes

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1 Executive summary

ACOR Consultants Pty Ltd (ACOR Consultants), in the capacity of the project Civil Services Engineering Consultant is currently reviewing and analysing the environmental and functional requirements as well as the performance standards to be met by the civil services.

This Civil Design Report has been prepared to set the basis for staged planning and delivery phases of the civil infrastructure requirements for the New Public School at Maitland (Gillieston). The list below captures identified key elements of the design progression thus far:

- Site Grading including building pads, playground areas, car park, driveways and internal footpaths
- Earthworks and retaining structures
- Stormwater Management including:
  - Conveyance
  - Stormwater Detention
  - Stormwater Quality
- Erosion and Sediment Control.
- External Road works including:
  - Bus bay on Gillieston Road
  - Kiss and Drop Allowance on Northview Street.
- Authority wastewater and potable water servicing the site.

2 Proposal

ACOR Consultants have been engaged by the Department of Education as the civil infrastructure engineering consultant on the Maitland (Gillieston) Public School.

The Gillieston Public School have been identified by the NSW Department of Education (DoE) as requiring redevelopment. The proposed redevelopment of Gillieston Public School is driven by service need including increase in expected student enrolments and the and removing demountable structure and replacement with permanent teaching spaces.

The redevelopment of Gillieston Public School comprises the following works:

- Demolition and removal of existing temporary structures.
- Site preparation works, including demolition, earthworks, tree removal.
- Construction of new:
    - 32 permanent general learning spaces and 3 support teaching spaces
    - Administration and staff hubs
    - Hall, canteen and library
    - Out of school hours care
    - Public preschool (standalone building for 60 places)
    - Covered Outdoor Learning Areas (COLAs)
    - Outdoor play areas, including games courts and yarning circle
    - New at-grade car parking
    - Extension of the existing drop-off / pick-up area and new bus bay
    - Realignment of the existing fencing
    - Associated stormwater infrastructure upgrades
    - Associated landscaping
    - Associated pedestrian and road upgrade works

2.1 Civil Engineering Infrastructure Scope

The civil engineering infrastructure for the project is as follows:

- Site Grading including:
    - building pads;
    - playground areas;
    - car park;
    - driveways and
    - internal footpaths.
- Earthworks and retaining structures
- Stormwater Management including:
    - Conveyance;
    - Stormwater Detention;
    - Stormwater Quality.
- Erosion and Sediment Control.
- External Road works including:
    - Bus bay on Gillieston Road

- Kiss and Drop Allowance on Northview Street.

3 Site Description

The Site is identified as 100 Ryans Road and 29 Northview Street, Gillieston Heights, legally described as Lot 51 DP 1162489 and Part Lot 213 DP 1186997.

The Site is located within the Maitland Local Government Area (LGA) and is zoned RU2 Rural Landscape and R1 General Residential zone under the provisions of the Maitland Local Environmental Plan 2011 (MLEP2011).

Existing attributes of the subject site are noted as follows:

- The subject site exhibits an area of approximately 23,385m² and is located in the suburb of Gillieston Heights;
- The subject site has a frontage to Ryans Road to the east, Gillieston Road to the north, and Northview Street to the south;
- In its existing state, the subject site comprises the existing Gillieston Public School. Existing school buildings are primarily located in the west portion of the subject site with a large area of open space situated in the eastern portion. There are limited permanent structures located on the subject site with thirteen (13) existing demountable classrooms currently occupying the subject site. Permanent buildings consist of the Main Administration Building, Original Brick Cottage, Library and GLS building located in the centre of the subject site; and
- Carparking is provided from Gillieston Road for staff. Pedestrian access is available via this main entrance from Gillieston Road and via a separate pedestrian-only access gates on Northview Street and Ryans Road.

The existing site context is shown in Figure 1 and Figure 2 below.

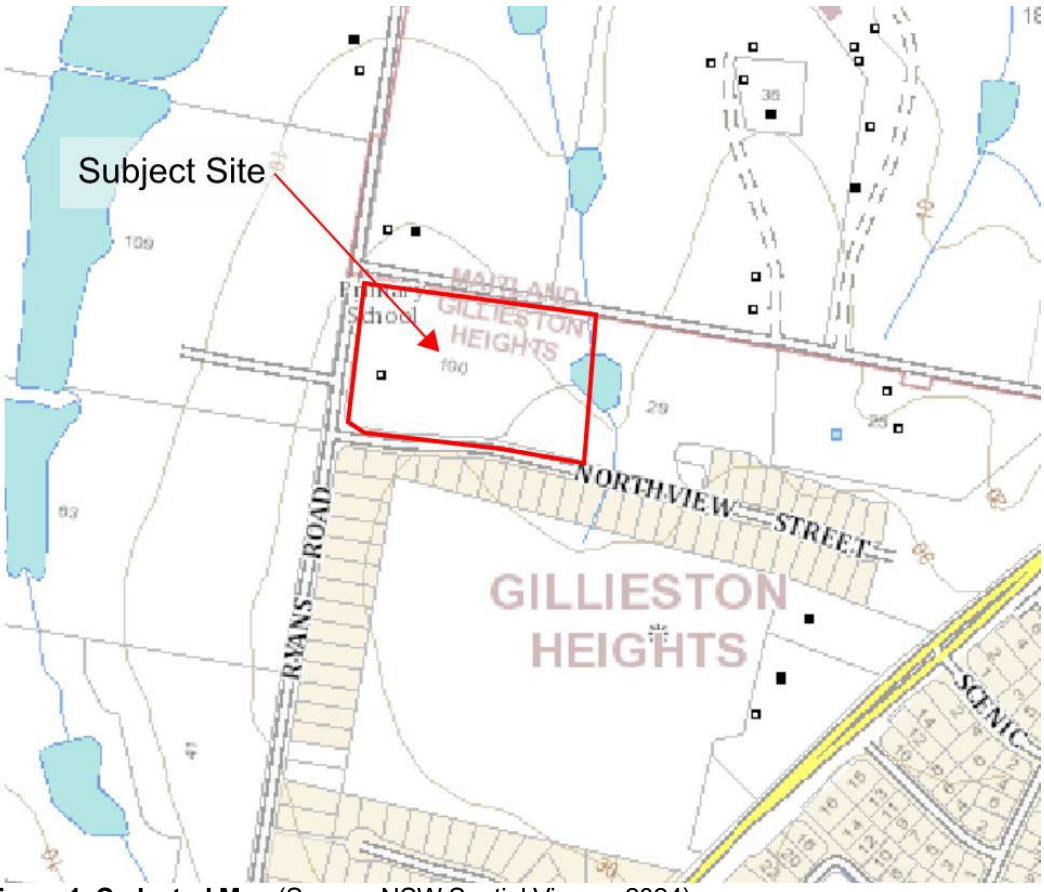


Figure 1. Cadastral Map (Source: NSW Spatial Viewer, 2024)



Figure 2. Aerial Map (Source: Near Map, 2024)

4 Background

Gillieston North is progressively being developed into an urban neighbourhood with areas surrounding the subject site being part of a greenfield land release. These new homes will place substantial demand for primary school student places in the area. The existing primary school does not have sufficient capacity to cater for the increase in demand. Accordingly, there is a need to respond to population growth in the area and otherwise there is the potential to lead to a decline in education outcomes. The proposed redevelopment of the existing school will ensure the growing primary school and pre-school educational needs of the incoming population are met.

5 Proposed Development

The proposed development seeks consent for the following:

- Demolition of select existing structures;
- Site preparation works, including demolition, earthworks, tree clearing;
- Increase the capacity of the School from approximately 339 to 1,012 students; and
- Construction of:
  - 32 general learning spaces and 3 support teaching spaces
  - administration and staff hubs
  - hall, canteen and out of school hours care
  - library
  - public preschool
  - covered Outdoor Learning Areas (COLAs)
  - outdoor play areas, including games courts and yarning circle
  - new at grade parking
  - extension of the existing drop-off / pick-up area and bus bay
  - realignment of the existing fencing
  - associated stormwater infrastructure
  - associated landscaping
  - pedestrian and associated road upgrade works to adjoining roads

6 Site Grading

6.1 Existing Site

The existing school site falls in two directions. The western catchment of the site, which has the majority of the existing development drains to the west to Ryans Road while the majority of the site drains to the east. The eastern draining catchment is where most of the proposed development will be located.

The existing site has demountable buildings on the western side with limited existing infrastructure to the east. The site falls steeply over approximately 13.5 m from a height of 28.5 m in the northwest to approximately 15 m in the northeast.

6.2 Proposed Site Grading

The western catchment of the site will generally remain the same with the removal of the demountable buildings and the existing car park.

Significant regrading is proposed on the eastern catchment including several retaining walls through the site as well as a wall on the eastern side of the proposed carpark. Walls internal to the site are a maximum of 2.0 m high with the walls on the eastern side of the carpark up to 3.0 m high.

Drawing C-050001 shows the proposed site grading of the new site. Drawings C-050001 and C-060001 to C-060004 show the proposed site sections.

6.3 Bulk Earthworks

Bulk earthworks volumes have been determined for the site based on the following assumptions:

- Design surface to existing.

The earthworks cut to fill volumes for the site are:

Cut:2,350 m^3

Fill: 14,950 m^3

Balance: 12,600 m^3

These volumes do not account for topsoil and unsuitable strip, building foundations, pavements, bulking of the soil, retaining wall volumes, or services trench volumes. Drawing C-040001 shows the current cut to fill isopach.

Volumes are currently indicative and subject to change as the design of the site progresses and additional geotechnical information is received.

6.4 Vehicle Access

The verge crossing (between the kerb line and the boundary) of both driveways will be designed in accordance with Maitland City Council (MCC) Specifications and Australian Standards (AS/NZS 2890) requirements to always provide two-way vehicle access in and out of the site. Sight lines from the driveway in accordance with AS/NZS 2890.1 will be achieved.

6.5 Carparking

An on-site car park with provision for 83 bays will be provided for the facility including 4accessible parking spaces. The car park will primarily be used by staff and parent drop off and will be designed in accordance with the requirements of AS/NZS 2890.1 – Off-Street Car Parking and AS2890.6 – Off-street Parking for People with Disabilities.

6.6 Footpaths and Pedestrian Access

A pedestrian pathway is proposed to link the new school building and the COLA/Preschool. Pathways through the school have been designed to be DDA compliant with maximum grades of 7%.

Remove any specific call to the number of car parking bays/spaces - please replace with car park has been designed in accordance to the Architect's design/report.

7 Stormwater Quantity Management

Stormwater quantity management for the development has been addressed covering both conveyance and detention.

7.1 Stormwater Conveyance

Minor system stormwater conveyance for the development will be via a traditional pit and pipe system. Stormwater will be collected from the site and discharged to water quality and detention facilities in the car park before discharging into the existing 900 mm diameter pipe under Gillieston Road.

The minor stormwater conveyance system through the development will consist of a pit and pipe network sized to convey the 5% Annual Exceedance Probability (AEP) (20-year Annual Recurrence Interval [ARI]) flows with a drainage design in accordance with the EFSG Guidelines, Maitland City Council standards and the requirements of AS/NZS 3500.3 Plumbing and drainage, Part 3: Stormwater drainage.

Major system stormwater conveyance for the proposed development will be via overland flow. This will be via the internal, car park, hardstand and landscaped areas. The major stormwater system will have the capacity to convey the peak flows from a 1% AEP storm event, containing flows within the site and providing freeboard to the buildings. In the event of pipe or pit blockages, overland flow paths will be detailed to convey surface runoff away from building openings and into the constructed external stormwater network.

Refer to Stormwater Management Plan C-080001 for the site stormwater layout.

7.2 Stormwater Detention

A DRAINS model was developed to compare the predeveloped and post developed peak flows leaving the site. The existing site has a fraction impervious of approximately 10%. The proposed development has a fraction impervious of 50%. The results of the DRAINS modelling comparing pre and post site peak flows without detention is shown in Table 1.

Table 1: Pre Developed vs Post developed (no Detention) Peak Flows

AEP	PreDev	Post Dev	Increase	Increase
(%)	(m^3/s)	(m^3/s)	(m^3/s)	
20%	0.272	0.358	0.086	32%
10%	0.374	0.456	0.082	22%
5%	0.452	0.567	0.115	25%
2%	0.595	0.683	0.088	15%
1%	0.721	0.85	0.129	18%

As can be seen from the results above, detention is required to reduce the peak flows from site to below the post developed peak flows.

An underground detention tank with a volume of 320 m³ and a 450 mm diameter outlet at RL 15.3 has been proposed for the development. The outlet from the detention tank will discharge into the existing 900 mm diameter pipe under Gillieston Road. The upstream invert of this pipe is RL15.08m.

The results of the predeveloped vs developed peak flows with detention are shown in Table 2.

Table 2: Pre Developed vs Post developed (with Detention) Peak Flows

AEP	PreDev	Post Dev	Reduction	Increase
(%)	(m^3/s)	(m^3/s)	(m^3/s)	
20%	0.272	0.265	-0.007	-3%
10%	0.374	0.309	-0.065	-17%
5%	0.452	0.358	-0.094	-21%
2%	0.595	0.52	-0.075	-13%
1%	0.721	0.71	-0.011	-2%

As can be seen from the results in Table 2, the proposed detention tank will reduce the peak flows from the site to below the predeveloped peak flows.

7.3 External Detention

Additional detention will be required in the eastern neighbouring property to offset the volume of storage lost due to the filling in the school site. Modelling is to be undertaken to determine the volume required and the extent of a temporary basin. ~~This will be undertaken prior to completion of the schematic design.~~

Remove

8 Stormwater Quality - Operational Phase

8.1 Objectives

The objectives of the stormwater quality management for the site are:

- Meet the water quality objectives of Maitland City Council for the operational phase of the site by using best practice stormwater treatment measures. The water quality reductions required by Maitland City Council are:
- % Reduction to the pollutants from the developed site of:
  - 80% reduction in Total Suspended Solids (TSS)
  - 45% reduction in Total Phosphorus (TP)
  - 45% reduction in Total Nitrogen (TN)
  - 90% reduction in litter/gross pollutants

8.2 Operational Phase Water Quality Management

The MUSIC model version 6 was used to assess the pollutant generation from the development and the performance of the stormwater quality treatment train. MUSIC modelling was undertaken in accordance with the Maitland City Council MUSIC Modelling Guidelines contained in Council's DCP and the NSW MUSIC Modelling Guidelines (WBM, 2015).

A treatment train consisting of rainwater reuse for irrigation on site, surface inlet pit baskets (Ocean Protect OceanGuard or equivalent) and Filter Cartridges (Ocean Protect Stormfilters or approved equivalent) has been adopted to meet the water quality objectives for the site. Details of the treatment measures are discussed below.

- Rainwater tanks. A rainwater tank is proposed to be installed to enable reuse of the roof runoff for toilet flushing inside the main building as well as irrigation. A rainwater tank with capacity of 34kL was adopted for the main school building, while a 34kL tank is proposed for the hall and preschool buildings together. Annual reuse for irrigation from both tanks was estimated to be 550 kL/year.
- Ocean Protect Ocean Guard Pit Filter baskets or approved equivalent. Ocean Guards capture gross pollutants, sediments and attached nutrients down to a size of 200 microns. The MUSIC node for the Ocean Guards was provided by Ocean Protect. Table 3 shows the removal efficiencies of Ocean Guard units.

Table 3: Ocean Guard Removal Efficiencies

Inflow (m^3/s)	Gross Pollutant removal (%)	TSS Removal	TP Removal (%)	TN Removal (%)
0.02	100	30	30	10

- Ocean Protect Stormfilters or approved equivalent. Ocean Protect StormFilter will be installed upstream of the detention tank, in a tank of their own. The Stormfilters are filter cartridges that remove TSS, TN and TP from the stormwater prior to leaving the tank. Ocen Protect provided the MUSIC treatment node for the filter cartridges. Table 4 shows the removal efficiencies of the Stormfilters.

Table 4: Stormfilter Removal Efficiencies

Inflow (m3/s)	Gross Pollutant removal (%)	TSS Removal	TP Removal (%)	TN Removal (%)
0.009	100	34	86.1	55.9

8.3 Stormwater Quality modelling Results

Table 5 shows the results from the MUSIC modelling.

Table 5 Water Quality Results

Pollutant	Source Load (kg/yr)	Residual Load (kg/yr)	Reduction	MCC Requirements	Compliant
	(m^3/s)	(m^3/s)	(%)	(%)	(Y/N)
TSS	1150	213	81.5	80	Y
TP	2.44	0.896	63.2	45	Y
TN%	19	10.1	46.6	45	Y
Gross Pollutants	195	0	100	90	Y

As can be seen from Table 3, the proposed stormwater treatment train of rainwater reuse, pit baskets and Stormfilters reduced the pollutants leaving the site to below the MCC requirements.

9 Stormwater Quality - Construction Phase

9.1 General

During the construction phase of the development, an Erosion and Sediment Control Plan will be implemented to minimise the water quality impacts. The erosion and sediment controls will be in accordance with Landcom's Managing Urban Stormwater: Soils and Construction Volume 1, 4th Edition (Landcom, 2004) and the requirements of Maitland City Council. Erosion and sediment controls will be required preconstruction, during construction and post construction until the site is stabilized. The expected erosion and sediment control measures will include stabilized site access, sediment fence, gully pit sediment barriers and a temporary sediment basin (if applicable).

9.2 Pre-Construction Erosion and Sediment Control

Due to the topography of the site, the preconstruction erosion and sediment controls will be limited to stabilized site access, sediment fence and a temporary sediment basin until the initial bulk earthworks is undertaken. The proposed detention tank may be used as a sediment basin while construction is being undertaken. Drawing C-030001 details the preliminary erosion and sediment control plans for the development.

9.3 During Construction Erosion and Sediment Control

During the construction phase of the development, the erosion and sediment controls will consist of installed sediment fence, a constructed sediment basin and gully pit sediment barriers.

Regular inspection and maintenance of the erosion and sediment controls is required during the construction process.

As the soils on site are clay, a sediment basin volume was calculated using the Blue Book for type F soils. During construction, if the soils are found to be dispersive, the contractor will need to provide a flocculating agent to ensure discharge from the basin meets the requirements of the Blue Book.

9.4 Post Construction Erosion and Sediment Control

The contractor/developer will be responsible for the maintenance of the erosion and sediment control devices from the practical completion of the works for a minimum of 6 months or until stabilization has occurred to the satisfaction of Maitland City Council.

Remove - don't want to be conditioning ourselves to do this.

10 Existing Authority Wastewater and Potable Water Infrastructure

10.1 Wastewater

ADW Johnston have design a site wastewater system consisting of 150mm gravity drainage for the existing school, DN1500 Pre-packaged Pumpstation, DN75 HDPE rising main and connection into existing HWC gravity sewer drainage system. Adjacent to the pre-packaged pumpstation, an 150mm capped stub connection is being installed for connection of the proposed Buildings A, B and C. It is assumed the size of the infrastructure and connecting pipelines are based on Equivalent Tenements whereas the internal drainage system sizing will be based on Australian Standards AS/NZS 3500.
It appears gravity fall is achievable for connection from the proposed building(s) internal fixtures to this point. Figure 3 shows the proposed wastewater system for the site by ADW Johnson.

A Section 50 Application to Developer Services has been applied for based on Hunter Water Advice Letter 09 July 2024 – HW Ref: HW2017- 1215/18/65. On completion of the construction hydraulic design documentation, this will need to be submitted for hydraulic assessment to HWC for their approval and allocation of water meters for the site.

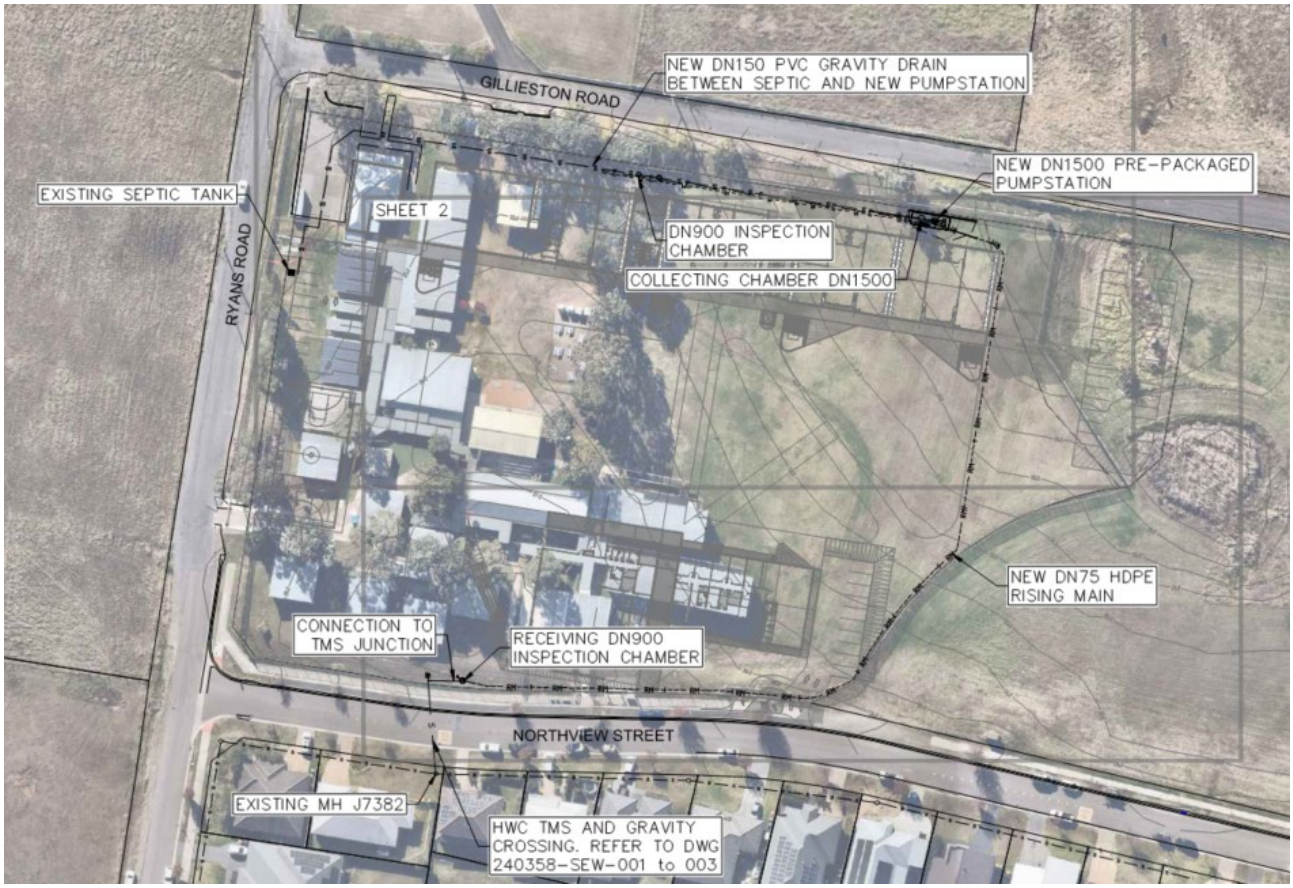


Figure 3 – ADW Johnson Proposed Wastewater connection

10.2 Potable Water Service

An existing 250mm diameter PVC -O service is located in Northview Street installed within the roadway as shown below in Figure 4 where previous enabling works have designed for the future residential community.

Based on the proposed location of the water meter assembly connections, connection shall be made to the services within Northview Street.

We have received confirmation by the local Authority the water main has suitable pressure and flow for connection to the proposed development; however, it appears from cursory investigations that although the existing water main size is sufficient to serve the proposed development, pumps will be required for the fire system. The design of these pumps will be undertaken during the proceeding design stages.

A Section 50 Application to Developer Services has been applied for based on Hunter Water Advice Letter 09 July 2024 – HW Ref: HW2017- 1215/18/65. On completion of the construction hydraulic design documentation, this will need to be submitted for hydraulic assessment to HWC for their approval and allocation of water meters for the site.

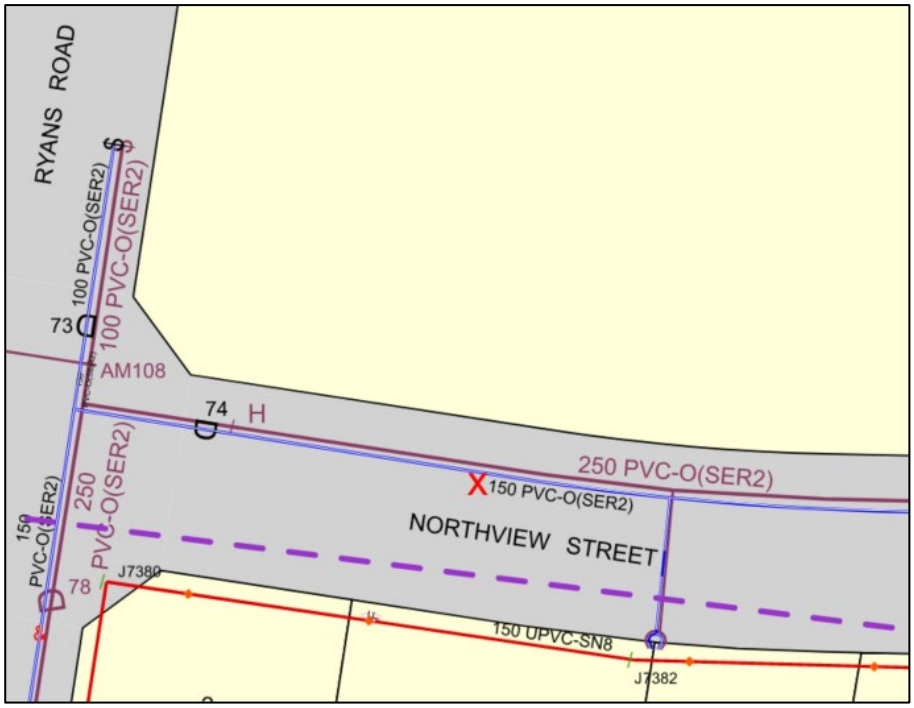


Figure 4 – Hunter Water – Water Supply Mains

Just need to add a column to specify what project stage as per the preamble

11 Mitigation Measures

This report discusses the civil engineering elements for the proposed new primary school at Gillieston, NSW. The table below summaries the civil engineering items and the mitigation measures to address these items.

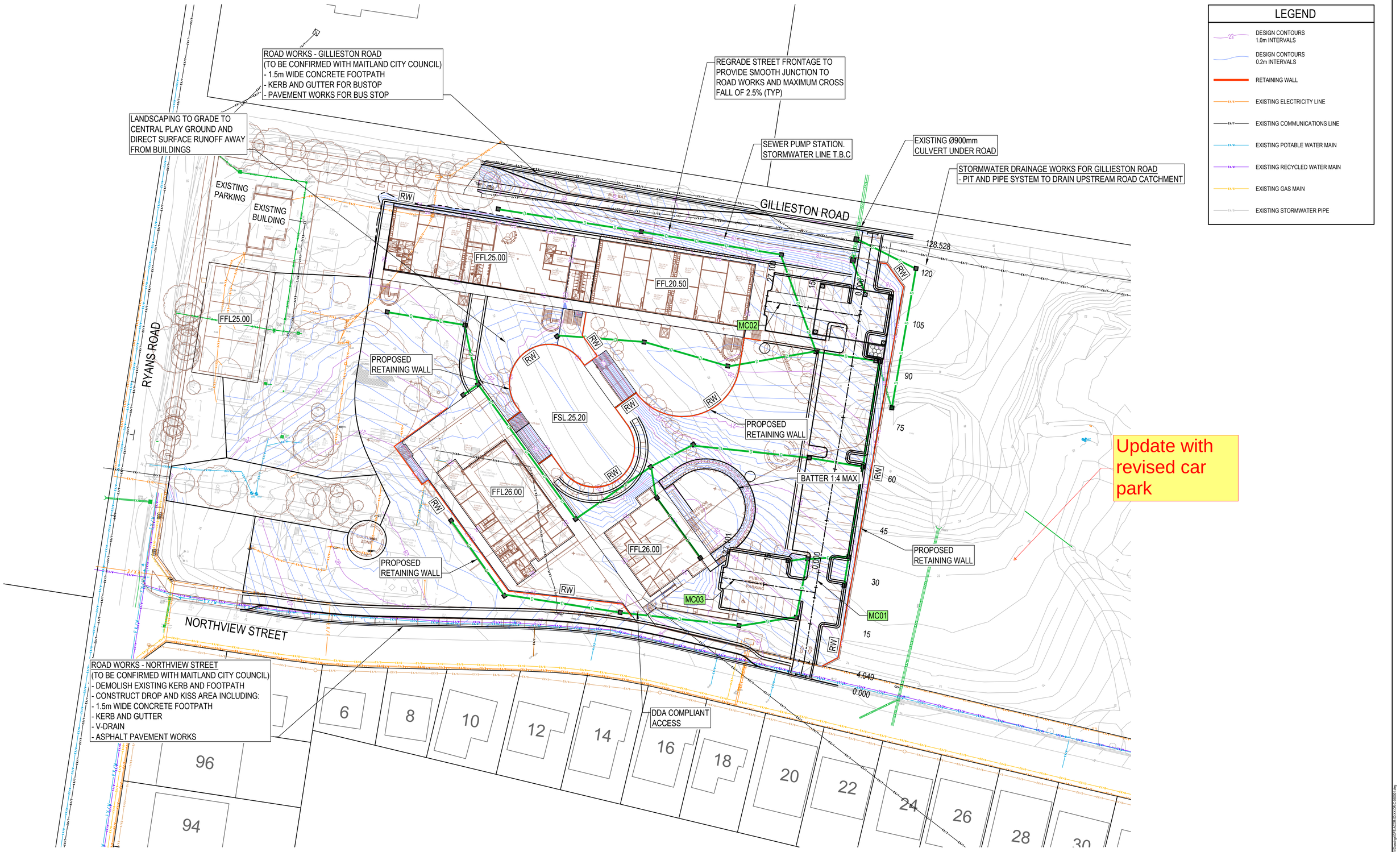
Item	Mitigation Measures	Relevant Section of Report
Bulk Earthworks and site grading	*The site has been graded to incorporate the building, playgrounds, paths and carparks*	*Section 6.2 and 6.3*
Carparking - Access	*Access has been provided from both Gillieston road and Northview Street in accordance with AS2890*	Section 6.4
Car parking	*The carpark has been graded to meet DDA requirements an AS2890.6*	Section 6.5
Footpaths and Pedestrian Access	*Footpaths around the site have been design in accordance with DDA with a maximum grade of 7%*	Section 6.6
Stormwater Conveyance	*A pit and pipe network to cater for the 5% AEP (20 year ARI) storm event has been designed. Major storms will be conveyed via overland flow.*	Section 7.1
Stormwater detention	*Stormwater detention has been provided to reduce the peak flows form the developed site to or below the predeveloped peak flows.*	S
External Detention	*Detention will be required in the eastern property. This will be confirmed with the land owner*	S
Stormwater Quality	*Stormwater quality treatment measures have been designed to meet the requirements of Maitland City Council*	Section 8.

Detention may not be on the eastern boundary.

Update
Detention requirements to be further developed with the adjoining neighbour, and where applicable Council.

Stormwater Quality – Construction Phase – Erosion and Sediment Control	*Construction phase water quality measures have been designed in accordance with Managing Urban Stormwater*	Section 9
Waste Water and Potable Water authority service	*An application has been lodged with hunter Water to confirm their requirements for waste water and potable water servicing for the site.*	Section 10

Appendix A REF Design Plans



DRAWING UNDER REVISION

Issue	Description	Date	Drawn	Approved
A	DRAFT SCHEMATIC DESIGN	27.09.24	MDM	JPR
A	DRAFT SCHEMATIC DESIGN	29.08.24	MDM	JPR

North

Scale: SCALE BAR 1:500 @A1 1:1000 @A3 (0, 5, 10, 20, 30m)

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Client: SCHOOLS INFRASTRUCTURE NSW
8/259 GEORGE STREET
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Architect: SHAC ARCHITECTS
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Project: GILLIESTON PUBLIC SCHOOL
100 RYANS ROAD
GILLIESTON HEIGHTS, NSW, 2321

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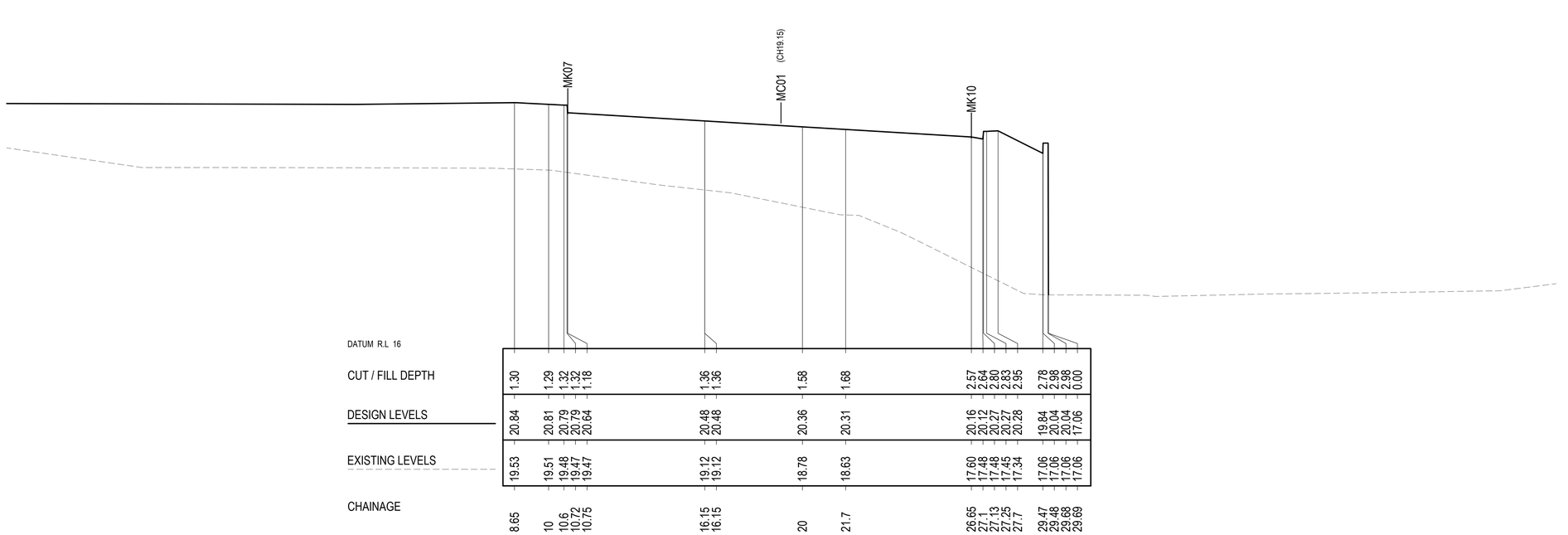
Drawing Title: CIVIL SERVICES
GENERAL ARRANGEMENT AND GRADING PLAN

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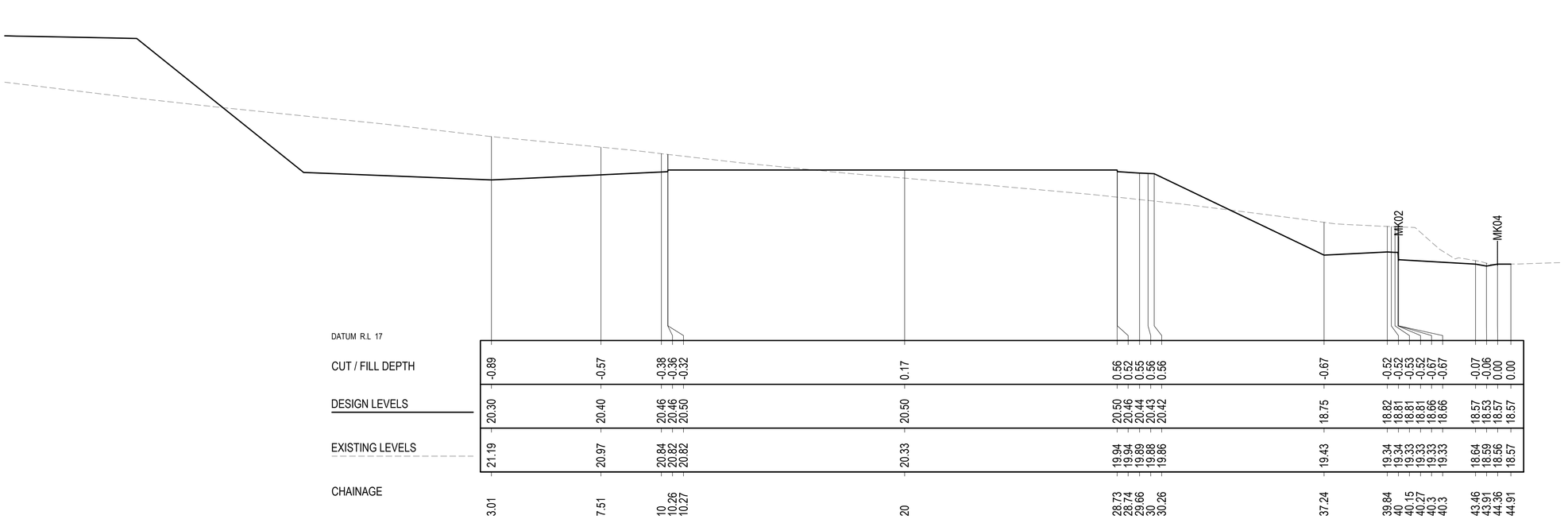
Project No.: NS221454
Drawing No.: GPS-ACOR-00-XX-DR-C-050001
Issue: A

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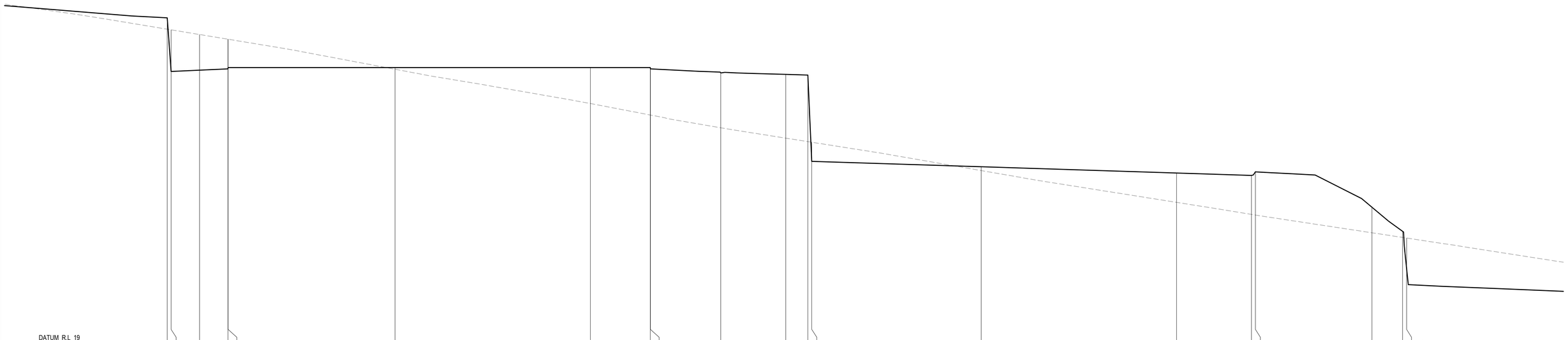
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MK07
MC01 (CH19.15)
MK10

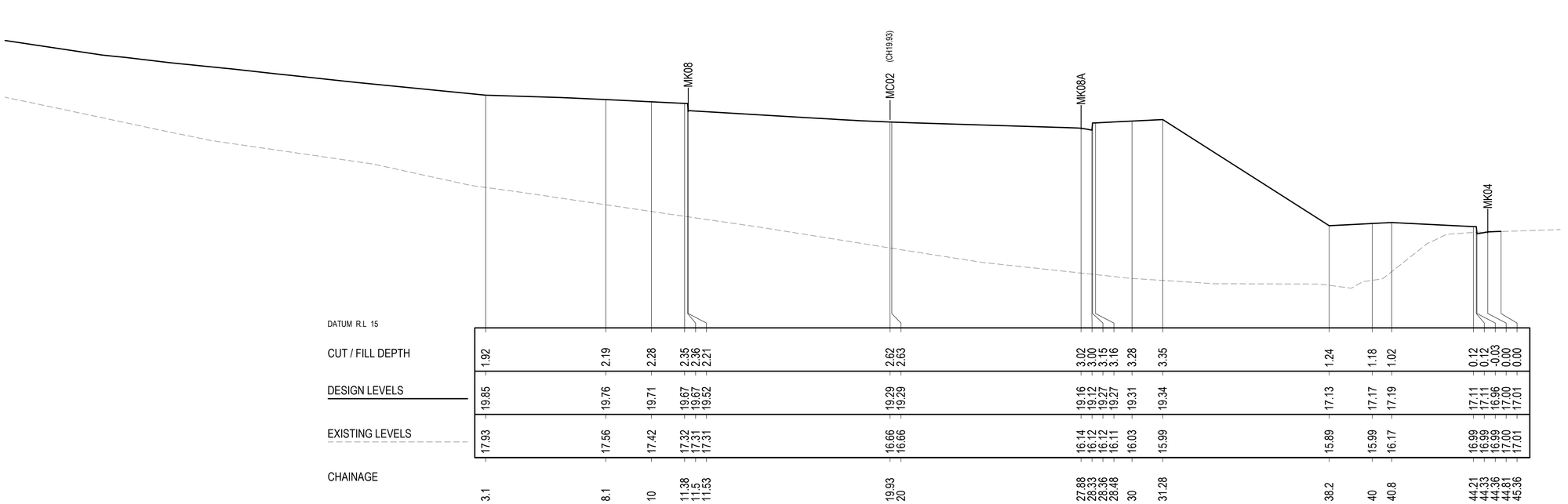
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MK02
MK04

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SECTION 4

A1 Horizontal Scale 1 : 100
A1 Vertical scale 1 : 50

DRAWING UNDER REVISION

Issue.	Description	Date	Drawn	Approved
A	DRAFT SCHEMATIC DESIGN	27.09.24	MDM	JPR
A	DRAFT SCHEMATIC DESIGN	29.08.24	MDM	JPR

North

Scale

SCALE BAR 1:100 @A1 1:200 @A3

SCALE BAR 1:50 @A1 1:100 @A3

PRINT IN COLOUR

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Project
GILLIESTON PUBLIC SCHOOL
100 RYANS ROAD
GILLIESTON HEIGHTS, NSW, 2321

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Drawing Title.
CIVIL SERVICES
SITE SECTIONS
SHEET 4

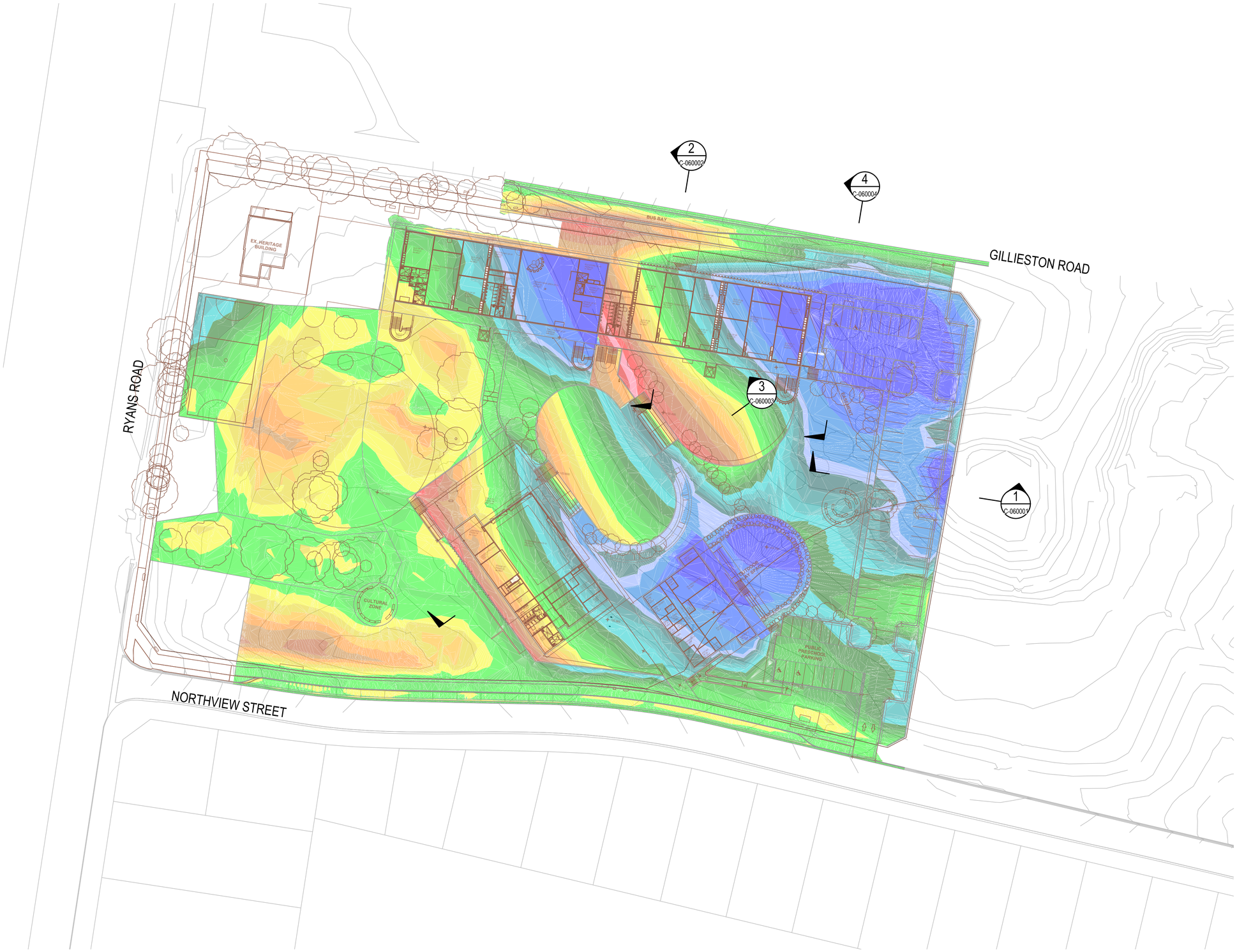
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MDM	SJO	JPR	27.09.24	AS SHOWN

Project No.	Drawing No.	Issue
NS221454	GPS-ACOR-00-XX-DR-C-060004	A

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Date: 27.09.24 - 5:53pm
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ESL STRIPPED TO FSL ISOPACH LOWER VALUE		UPPER VALUE		COLOUR
-999	to	-5	m	
-5	to	-2.5	m	
-2.5	to	-1.5	m	
-1.5	to	-1.35	m	
-1.35	to	-1.2	m	
-1.2	to	-1.05	m	
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0.6	to	0.75	m	
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0.9	to	1.05	m	
1.05	to	1.2	m	
1.2	to	1.35	m	
1.35	to	1.5	m	
1.5	to	2	m	
2	to	2.5	m	
2.5	to	5	m	
5	to	999	m	

EARTHWORKS QUANTITIES ARE AS FOLLOWS.

TOTAL CUT = -2,350 m³
TOTAL FILL = 16,460 m³
TOTAL FILL OVER CUT = 14,110 m³

NOTE - THESE VOLUMES ARE BETWEEN THE CURRENT DESIGN SURFACE LEVEL -200mm (FSL) AND EXISTING SURFACE LEVEL -300mm (ESL).

NO ALLOWANCE HAS BEEN MADE FOR BULKING, STRIPPING OF TOP SOIL, PAVEMENT THICKNESS, FOUNDATIONS AND FOOTINGS OR SERVICE TRENCHING

DRAWING UNDER REVISION

Issue.	Description	Date	Drawn	Approved
A	DRAFT SCHEMATIC DESIGN	27.09.24	MDM	JPR
A	DRAFT SCHEMATIC DESIGN	29.08.24	MDM	JPR

North

Scale
0 5 10 20 30m
SCALE BAR 1:500 @A1 1:1000 @A3

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100 RYANS ROAD
GILLIESTON HEIGHTS, NSW, 2321

NOT FOR CONSTRUCTION

Drawing Title
CIVIL SERVICES
ISOPACH PLAN

Drawn	Designed	Q.A. Check	Date	Scale @ A1
MDM	SJO	JPR	27.09.24	1:500

Project No.	Drawing No.	Issue
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Zero Damage - Zero Harm

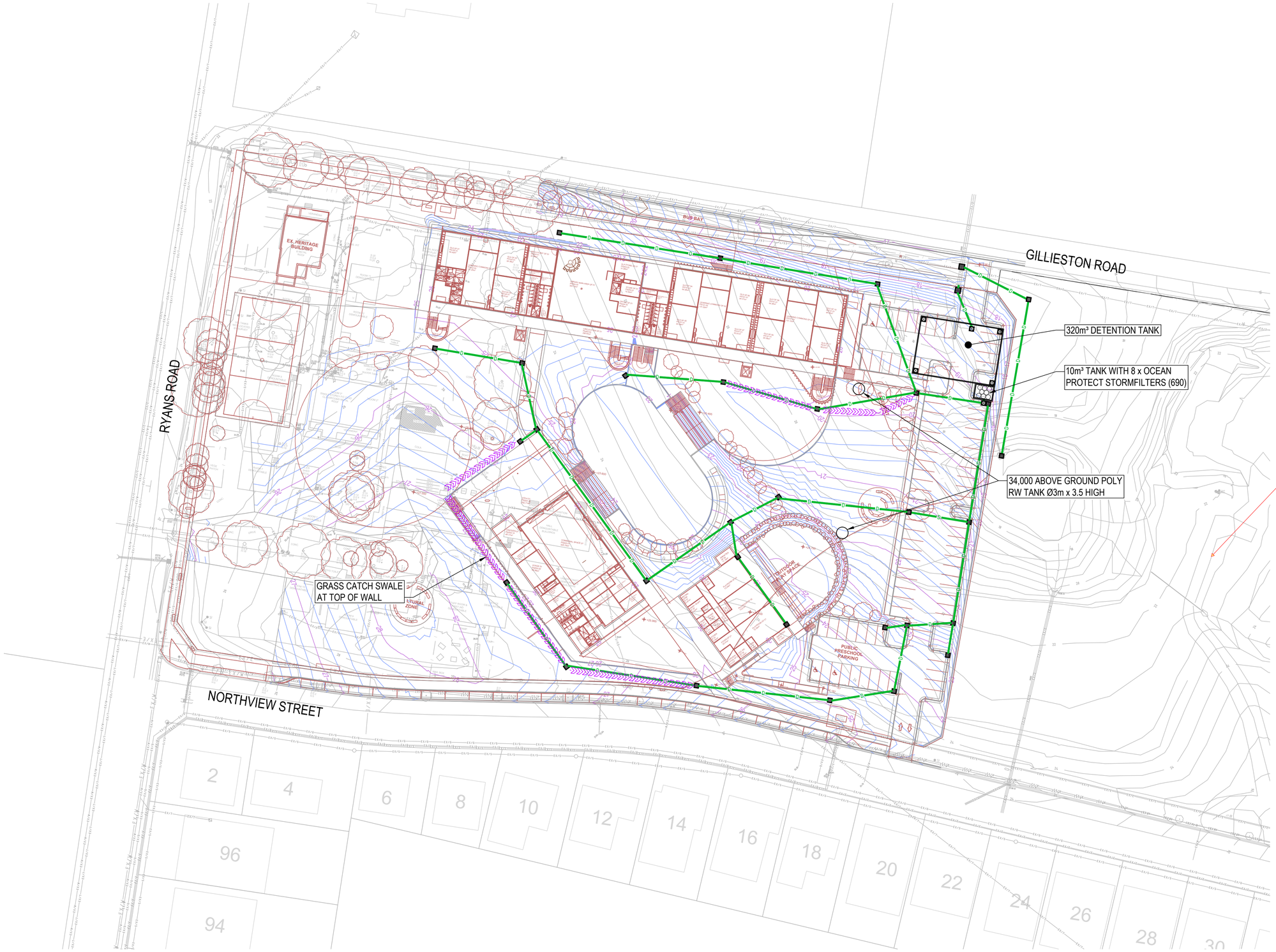
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Sep 27, 2024 - 5:12pm

LEGEND

- DESIGN CONTOURS 1.0m INTERVALS
- DESIGN CONTOURS 0.2m INTERVALS
- PROPOSED STORMWATER PIPE
- PROPOSED STORMWATER PIT
- PROPOSED STORMWATER SWALE

NOTE:
ALL PITS TO HAVE OCEAN PROTECT OCEAN GUARD OR APPROVED EQUIVALENT



Update with revised car park

BEFORE YOU DIG www.byda.com.au
Zero Damage - Zero Harm

DRAWING UNDER REVISION

Issue	Description	Date	Drawn	Approved
A	DRAFT SCHEMATIC DESIGN	27.09.24	MDM	JPR
A	DRAFT SCHEMATIC DESIGN	29.08.24	MDM	JPR

North

Scale
0 5 10 20 30m
SCALE BAR 1:500 @A1 1:1000 @A3
PRINT IN COLOUR

Client
SCHOOLS INFRASTRUCTURE NSW
8/259 GEORGE STREET
SYDNEY NSW 2000
PHONE : 1300 482 651

Architect
SHAC ARCHITECTS
224 MAITLAND ROAD
ISLINGTON, NSW 2296
PHONE : 4961 5888

ACOR CONSULTANTS
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Charlestown NSW 2290
T +61 2 4926 4811

Project
GILLIESTON PUBLIC SCHOOL
100 RYANS ROAD
GILLIESTON HEIGHTS, NSW, 2321

NOT FOR CONSTRUCTION

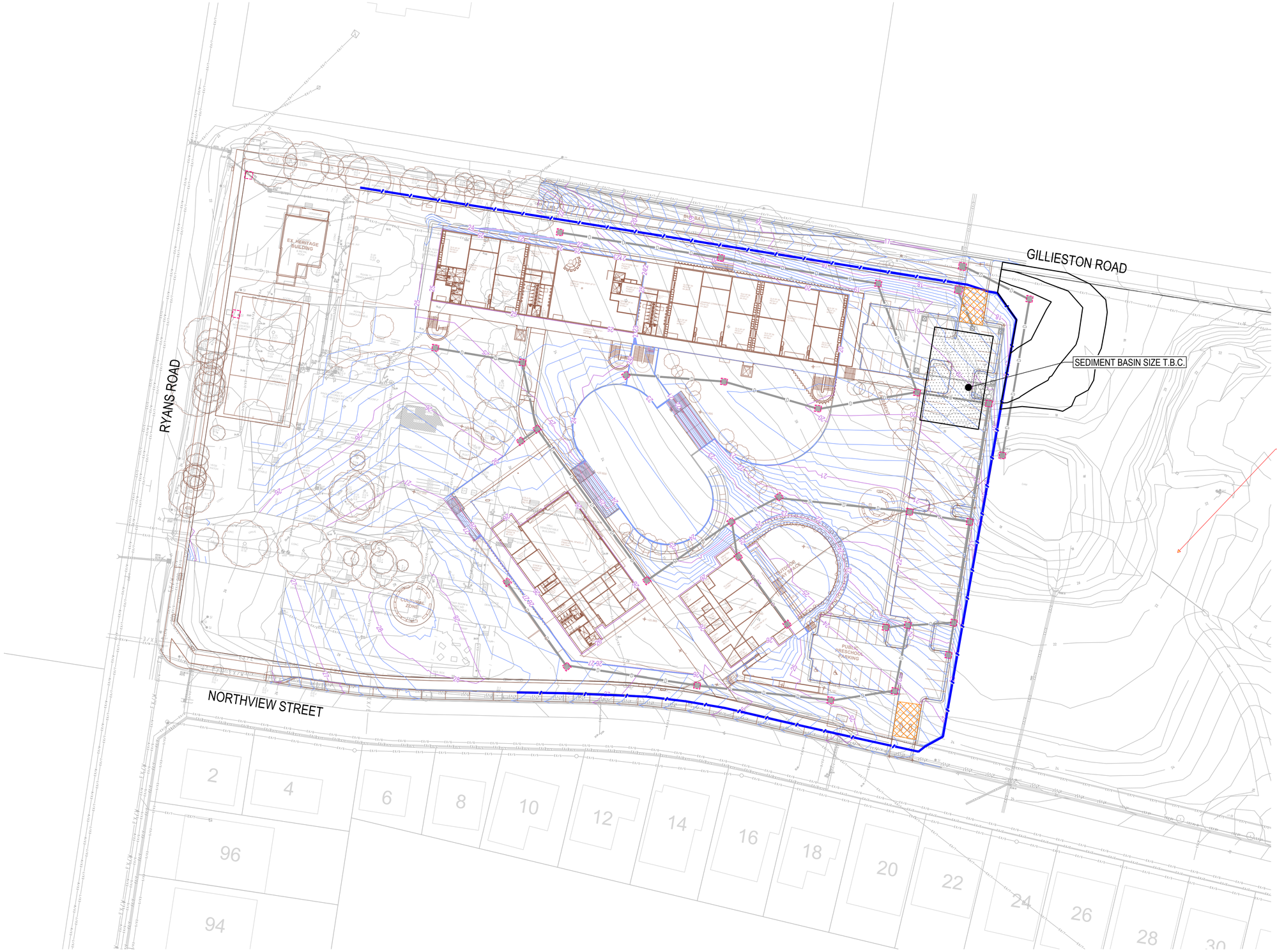
Drawing Title
CIVIL SERVICES
STORMWATER MANAGEMENT PLAN

Drawn	Designed	Q.A. Check	Date	Scale @ A1
MDM	SJO	JPR	27.09.24	1:500

Project No.	Drawing No.	Issue
NS221454	GPS-ACOR-00-XX-DR-C-080001	A

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Sep 27, 2024 - 5:12pm



DRAWING UNDER REVISION

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Issue.	Description	Date	Drawn	Approved
A	DRAFT SCHEMATIC DESIGN	27.09.24	MDM	JPR
A	DRAFT SCHEMATIC DESIGN	29.08.24	MDM	JPR

North

Scale
0 5 10 20 30m
SCALE BAR 1:500 @A1 1:1000 @A3

PRINT IN COLOUR

Client
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NOT FOR CONSTRUCTION

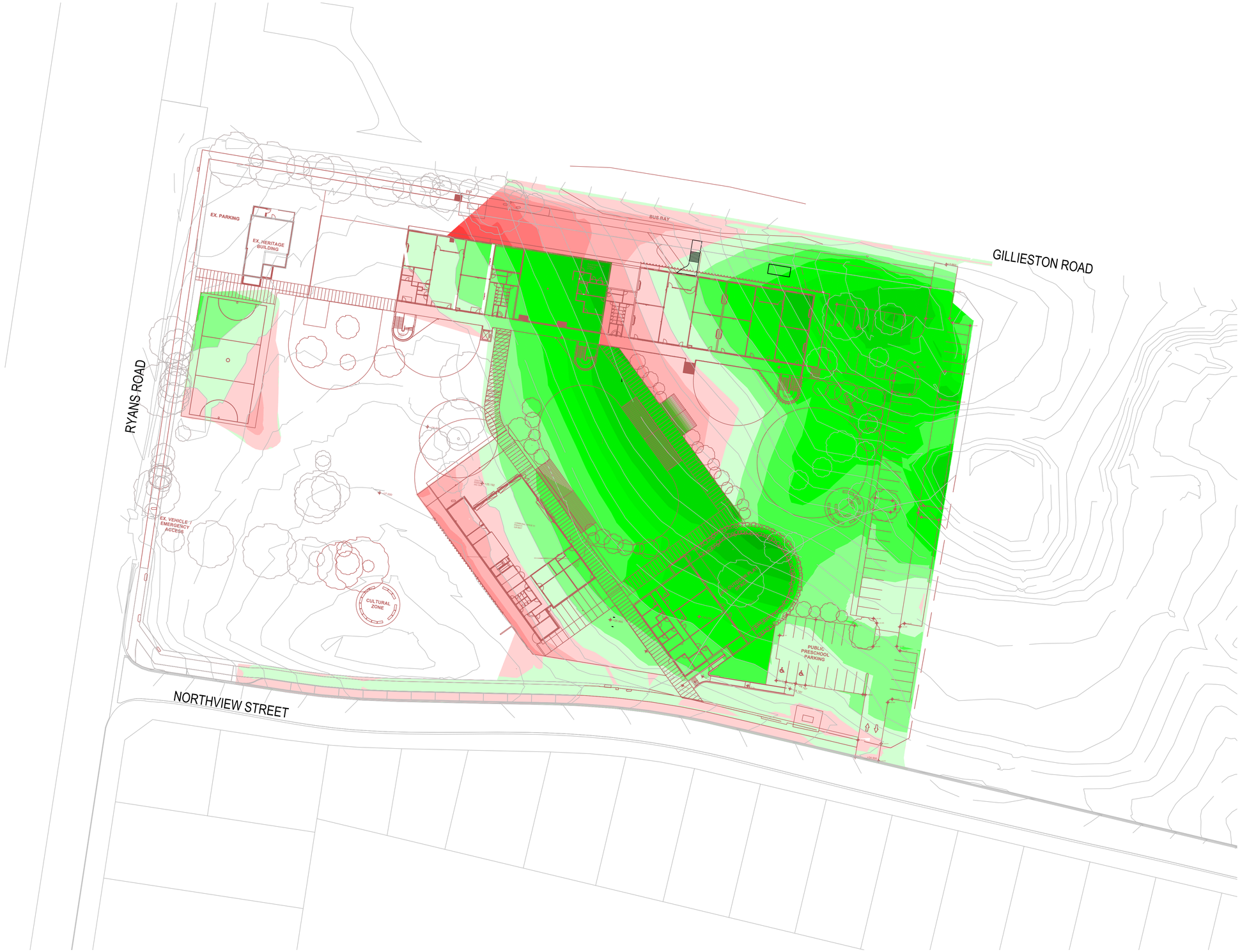
Drawing Title
CIVIL SERVICES
EROSION AND SEDIMENT CONTROL PLAN

Drawn	Designed	Q.A. Check	Date	Scale @ A1
MDM	SJO	JPR	27.09.24	1:500

Project No.	Drawing No.	Issue
NS221454	GPS-ACOR-00-XX-DR-C-030001	A

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EARTHWORKS CUT/ FILL ISOPACH				
Lower_value		Upper_value	Colour	
-999	to	-3.50	m	
-3.50	to	-3.00	m	
-3.00	to	-2.50	m	
-2.50	to	-2.00	m	
-2.00	to	-1.50	m	
-1.50	to	-1.00	m	
-1.00	to	-0.50	m	
-0.50	to	0.00	m	
0.00	to	0.50	m	
0.50	to	1.00	m	
1.00	to	1.50	m	
1.50	to	2.00	m	
2.00	to	2.50	m	
2.50	to	3.00	m	
3.00	to	3.50	m	
3.50	to	999	m	

EARTHWORKS QUANTITIES ARE AS FOLLOWS.

TOTAL CUT = 1,790 m³
TOTAL FILL = 17,875 m³
TOTAL FILL OVER CUT = 16,085 m³

NOTE - THESE VOLUMES ARE BETWEEN THE CURRENT DESIGN SURFACE LEVEL (FSL) AND EXISTING SURFACE LEVEL (ESL).

NO ALLOWANCE HAS BEEN MADE FOR BULKING, STRIPPING OF TOP SOIL, PAVEMENT THICKNESS, FOUNDATIONS AND FOOTINGS OR SERVICE TRENCHING

SCALE 1:500 @ A1
SCALE 1:1000 @ A3
0 5 10 20 30 40 50 metres

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Issue	Description	Date	Drawn	Approved
B	ISSUED FOR INFORMATION	14.08.24	JK	JR
A	ISSUED FOR CONCEPT DESIGN	22.09.23	MDM	UK

1cm at full size 10cm 20cm

North

Client
SCHOOLS INFRASTRUCTURE NSW
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SYDNEY NSW 2000
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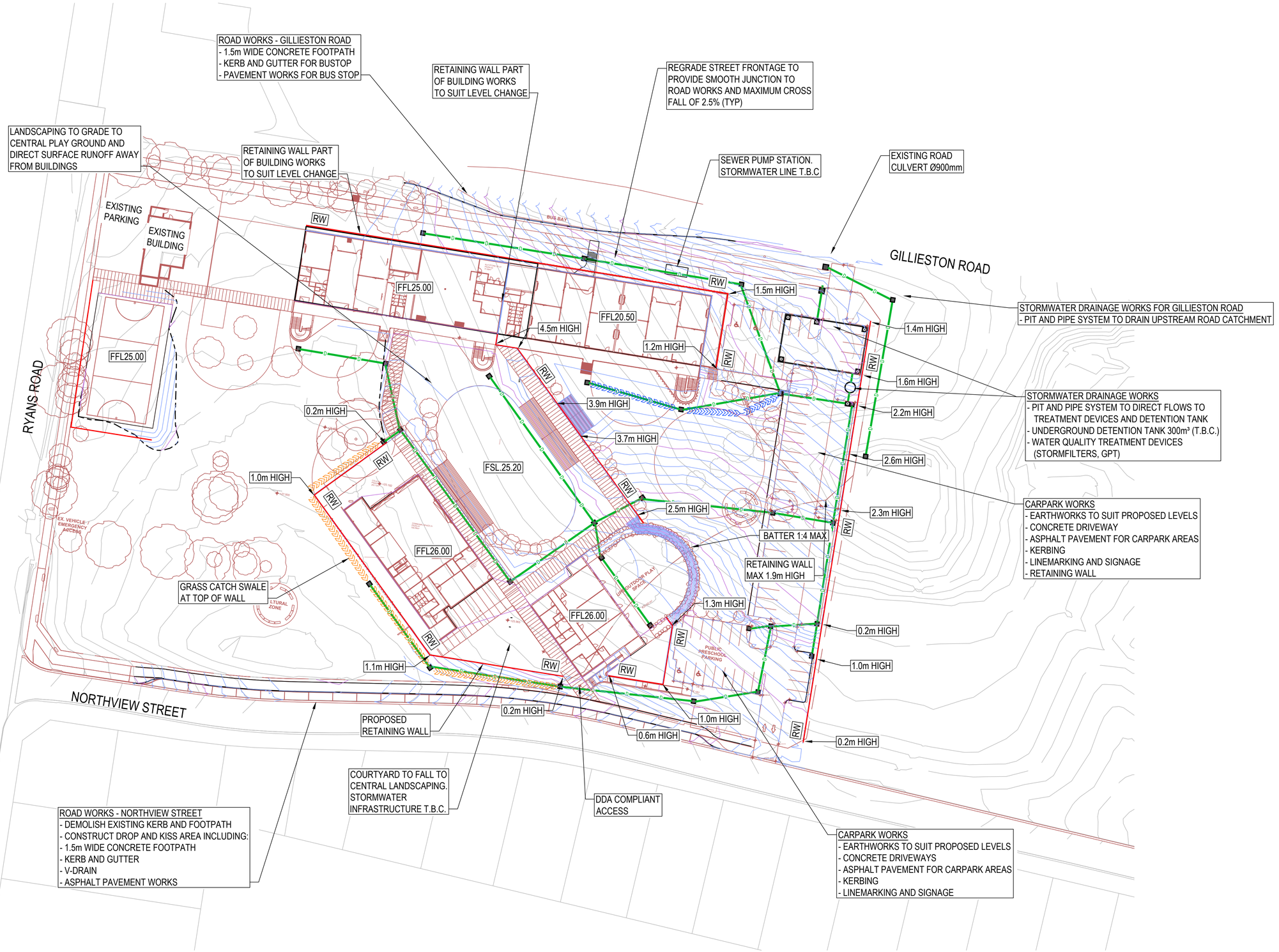
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ENGINEERS | MANAGERS | INFRASTRUCTURE PLANNERS | DEVELOPMENT CONSULTANTS

Project
GILLIESTON HEIGHTS PRIMARY SCHOOL
100 RYANS ROAD
GILLIESTON HEIGHTS, NSW, 2321

Drawing Title
BULK EARTHWORKS PLANS

Drawn	Date	Scale A1	Q.A. Check	Date
MDM	SEP 2023	1:500	UK	19.09.23
Designed	Project No.		Dwg. No.	Issue
SJO	NS221454		C04-001	B

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Aug 14, 2024 - 3:37pm



SCALE 1:500 @ A1
SCALE 1:1000 @ A3
0 5 10 20 30 40 50 metres

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NOT FOR CONSTRUCTION

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Issue	Description	Date	Drawn	Approved
B	ISSUED FOR INFORMATION	14.08.24	JK	JR
A	ISSUED FOR CONCEPT DESIGN	20.09.23	MDM	UK

1cm at full size 0 10cm 20cm

North

Client
SCHOOLS INFRASTRUCTURE NSW
8/259 GEORGE STREET
SYDNEY NSW 2000
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Architect
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224 MAITLAND ROAD
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Project
GILLIESTON HEIGHTS PRIMARY SCHOOL
100 RYANS ROAD
GILLIESTON HEIGHTS, NSW, 2321

Drawing Title
GENERAL ARRANGEMENT PLAN

Drawn	Date	Scale	A1	Q.A. Check	Date
MDM	SEP 2023	1:500		UK	19.09.23
Designed	Project No.			Dwg. No.	Issue
SJO	NS221454			C05-001	B

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Aug 14, 2024 - 9:43pm

Appendix D Laboratory Certificates

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2301736**	Page	: 1 of 4
Client	: **STS Geotechnics**	Laboratory	: Environmental Division Sydney
Contact	: Orlando Mendoza	Contact	: Customer Services ES
Address	: Unit 14/1 Cowpasture Place Wetherill Park 2164	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: 32110/7250D-L	Date Samples Received	: 19-Jan-2023 11:15
Order number	: 2023-023	Date Analysis Commenced	: 23-Jan-2023
C-O-C number	: ----	Issue Date	: 27-Jan-2023 12:25
Sampler	: ----		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 5		
No. of samples analysed	: 5		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- ED045G: LOR raised for Chloride on sample 5 due to sample matrix.
- ASS: EA029 (SPOCAS): Retained Acidity not required because pH KCl greater than or equal to 4.5
- ASS: EA029 (SPOCAS): Excess ANC not required because pH OX less than 6.5.
- ASS: EA029 (SPOCAS): Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime ($CaCO_3$) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from kg/t dry weight to kg/m3 in-situ soil, multiply reported results x wet bulk density of soil in t/m3.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	S4-BH7-1.0-1.5M	S7-BH12-0.2-0.5M	S9-BH18-0.5-1.0M	S14-BH25-0.9-1.3M	S16-BH26-1.0-1.5M
			Sampling date / time	18-Jan-2023 00:00	18-Jan-2023 00:00	18-Jan-2023 00:00	18-Jan-2023 00:00	18-Jan-2023 00:00
Compound	CAS Number	LOR	Unit	ES2301736-001	ES2301736-002	ES2301736-003	ES2301736-004	ES2301736-005
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	**6.0**	**6.0**	**5.8**	**5.9**	**5.9**
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	**39**	**28**	**34**	**32**	**30**
EA029-A: pH Measurements								
pH KCl (23A)	----	0.1	pH Unit	**4.9**	**5.3**	**5.3**	**5.3**	**5.1**
pH OX (23B)	----	0.1	pH Unit	**4.2**	**3.8**	**5.0**	**4.5**	**4.2**
EA029-B: Acidity Trail								
Titratable Actual Acidity (23F)	----	2	mole H+ / t	**25**	**14**	**12**	**27**	**21**
Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	**54**	**74**	**30**	**42**	**60**
Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	**29**	**59**	**19**	**14**	**39**
sulfidic - Titratable Actual Acidity (s-23F)	----	0.020	% pyrite S	**0.040**	**0.023**	<0.020	**0.044**	**0.034**
sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.020	% pyrite S	**0.086**	**0.118**	**0.049**	**0.067**	**0.096**
sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.020	% pyrite S	**0.046**	**0.095**	**0.030**	**0.023**	**0.063**
EA029-C: Sulfur Trail								
KCl Extractable Sulfur (23Ce)	----	0.020	% S	<0.020	<0.020	<0.020	<0.020	<0.020
Peroxide Sulfur (23De)	----	0.020	% S	<0.020	<0.020	<0.020	<0.020	<0.020
Peroxide Oxidisable Sulfur (23E)	----	0.020	% S	<0.020	<0.020	<0.020	<0.020	<0.020
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA029-D: Calcium Values								
KCl Extractable Calcium (23Vh)	----	0.020	% Ca	<0.020	**0.065**	<0.020	<0.020	<0.020
Peroxide Calcium (23Wh)	----	0.020	% Ca	<0.020	**0.067**	<0.020	<0.020	<0.020
Acid Reacted Calcium (23X)	----	0.020	% Ca	<0.020	<0.020	<0.020	<0.020	<0.020
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	<10	<10	<10	<10	<10
sulfidic - Acid Reacted Calcium (s-23X)	----	0.020	% S	<0.020	<0.020	<0.020	<0.020	<0.020
EA029-E: Magnesium Values								
KCl Extractable Magnesium (23Sm)	----	0.020	% Mg	**0.036**	<0.020	**0.048**	**0.038**	**0.034**
Peroxide Magnesium (23Tm)	----	0.020	% Mg	**0.040**	<0.020	**0.049**	**0.038**	**0.036**
Acid Reacted Magnesium (23U)	----	0.020	% Mg	<0.020	<0.020	<0.020	<0.020	<0.020
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	<10	<10	<10	<10	<10
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.020	% S	<0.020	<0.020	<0.020	<0.020	<0.020
EA029-H: Acid Base Accounting								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	S4-BH7-1.0-1.5M	S7-BH12-0.2-0.5M	S9-BH18-0.5-1.0M	S14-BH25-0.9-1.3M	S16-BH26-1.0-1.5M
			Sampling date / time	18-Jan-2023 00:00	18-Jan-2023 00:00	18-Jan-2023 00:00	18-Jan-2023 00:00	18-Jan-2023 00:00
Compound	CAS Number	LOR	Unit	ES2301736-001	ES2301736-002	ES2301736-003	ES2301736-004	ES2301736-005
				Result	Result	Result	Result	Result
EA029-H: Acid Base Accounting - Continued								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.04	0.02	<0.02	0.04	0.03
Net Acidity (acidity units)	----	10	mole H+ / t	25	14	12	27	21
Liming Rate	----	1	kg CaCO3/t	2	1	<1	2	2
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.04	0.02	<0.02	0.04	0.03
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	25	14	12	27	21
Liming Rate excluding ANC	----	1	kg CaCO3/t	2	1	<1	2	2
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	7.5	4.7	8.0	7.2	6.8
EA080: Resistivity								
Resistivity at 25°C	----	1	ohm cm	25600	35700	29400	31200	33300
ED040S: Soluble Major Anions								
Sulfate as SO4 2-	14808-79-8	10	mg/kg	40	<10	30	30	30
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	10	mg/kg	20	<10	10	20	<50

Inter-Laboratory Testing

Analysis conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818 (Chemistry) 18958 (Biology).

(SOIL) EA029-D: Calcium Values

(SOIL) EA029-E: Magnesium Values

(SOIL) EA029-F: Excess Acid Neutralising Capacity

(SOIL) EA029-H: Acid Base Accounting

(SOIL) EA029-G: Retained Acidity

(SOIL) EA029-A: pH Measurements

(SOIL) EA029-C: Sulfur Trail

(SOIL) EA029-B: Acidity Trail