Civil Engineering Design Report

New High School for Schofields and Tallawong

Prepared for NSW Department of Education / 31 January 2025

241460

TTW (NSW) PTY LTD (ACN 649 974 112)
(ABN 74 649 974 112) I Consulting Engineers
Level 6, 73 Miller Street, North Sydney NSW 2060

Your Partner in Engineering

Contents

1.0 Introduction 4
1.1 Guidance documents 4
2.0 Site Description 5
2.1 Existing Services 5
2.2 Geotechnical Conditions 6
3.0 Proposed Activity Description 7
4.0 Stormwater 8
4.1 Stormwater Quantity 8
4.1.1 Existing Stormwater 8
4.1.2 Proposed Stormwater Management: Internal Stormwater Network 9
4.1.3 Proposed Stormwater Management: Upstream Catchment Overland Flow 10
4.1.4 Onsite Stormwater Detention 11
4.2 Stormwater Quality 12
4.2.1 MUSIC Modelling 12
4.2.2 Proposed Treatment Train 13
4.2.3 Treatment Train Effectiveness 14
4.3 Erosion and Sediment Control 14
5.0 Civil Works 15
5.1 Pavement Design 15
5.2 Earthworks 15
5.2.1 Site Preparation 15
5.2.2 Excavation Works 16
5.2.3 Filling Works 16
5.2.4 Cut and Fill Volumes 16
5.3 Retaining Walls 16
5.4 Public Domain Works 17
6.0 Mitigation Measures 19
7.0 Consultation 21
8.0 Evaluation of Environmental Impacts 21
9.0 Conclusion 22
Appendix A 23
Appendix B 24

Rev	Date	Prepared By	Approved By	Remarks
0	15/11/2024	JL	CR	Schematic Design - Issued for Tender
1	22/11/2024	JL	CR	Final Draft – Issue for REF
2	29/11/2024	JL	CR	Final Draft – Issue for REF
3	10/01/2025	JL	CR	Final – Issue for REF
4	21/01/2025	JL	CR	Final – Issue for REF
5	31/01/2025	JL	CR	Final – Issue for REF

1.0 Introduction

This Civil Engineering Design Report has been prepared to support a Review of Environmental Factors (REF) for the NSW Department of Education (DoE) for the construction and operation of the new Schofields - Tallawong High School (the activity).

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

This document has been prepared in accordance with the *Guidelines for Division 5.1 assessments* (the Guidelines) by the Department of Planning, Housing and Infrastructure (DPHI).

1.1 Guidance documents

The following documents have been reviewed and referenced in preparing this report:

- Blacktown City Council (BCC) Development Control Plan (DCP), 2015;
- Blacktown City Council (BCC) Water Sensitive Urban Design (WSUD) Developer Handbook MUSIC Modelling and Design Guide, 2020;
- Blacktown City Council (BCC) Engineering Guide for Development (EGD), 2005;
- Upper Parramatta River Catchment Trust (UPRCT) On-Site Stormwater Detention Handbook Fourth Edition, December 2005;
- Blue Book – Managing Urban Stormwater Soils and Construction (Landcom NSW);
- NSW Department of Education Educational Facilities Standards and Guidelines;
- Australian Rainfall and Runoff 2019;
- Before You Dig Australia (BYDA) site investigation (Ref no. 3558608) dated 24 October 2024;

Design inputs by others:

- New High School for Schofields and Tallawong Geotechnical Investigation (Ref no. PSM4693-012L Rev4) by PSM dated 11 December 2024;
- Schofields Tallawong High School, Site 1, Guntawong Road Bulk Earthwork Specification (Ref no. PSM4693-013S DRAFT) by PSM dated 21 November 2024;
- Detailed Site Investigation Report, New High School for Schofields and Tallawong (Ref no. 67774-162496) by JBS&G dated 5 December 2024;
- Remedial Action Plan, Proposed Tallawong High School (Ref no. 67774-162922) by JBS&G dated 5 December 2024;
- Draft Preliminary Long Term Environmental Management Plan, Proposed Tallawong High School (Ref no. 67774-162926) by JBS&G dated 1 October 2024;
- 201 Guntawong Road, Tallawong Civil Engineering Report by Indesco dated 4 March 2024;
- 201 Guntawong Road, Tallawong NSW 2762 Data Gap Assessment by JBS&G dated 19 January 2024;
- Landcom Salinity Assessment and Management Plan by JBS&G dated 7 November 2022;
- Flood Impact and Risk Assessment by TTW dated 10 January 2025;
- Architectural Drawings by DJRD Architects;
- Landscape Drawings by Site Image.

2.0 Site Description

The site is known as 201 Guntawong Road, Tallawong, NSW, 2762 (the site), and is legally described as part of Lot 1 in Deposited Plan 1283186. The site is located at the corner of Guntawong Road and Clarke Street, Tallawong and is approximately 4 hectares in area. The site has an approximately 100-metre-long frontage to Guntawong Road along its northern boundary. Nirmal Street provides a partial frontage along the eastern boundary of the site with plans to extend Nirmal Street to provide a future connection to Guntawong Road.

The site is predominantly cleared land and consists of grassland with several patches of remnant native vegetation particularly within the northern portion of the site. As a result of precinct wide rezonings, the surrounding locality is currently transitioning from a semi-rural residential area to a highly urbanised area with new low to medium density residential development with supporting services. The site is located approximately 1.5km to the northwest of Tallawong Metro Station and is also serviced by an existing bus stop along Guntawong Road.

Figure 1 below provides an aerial image of the site.

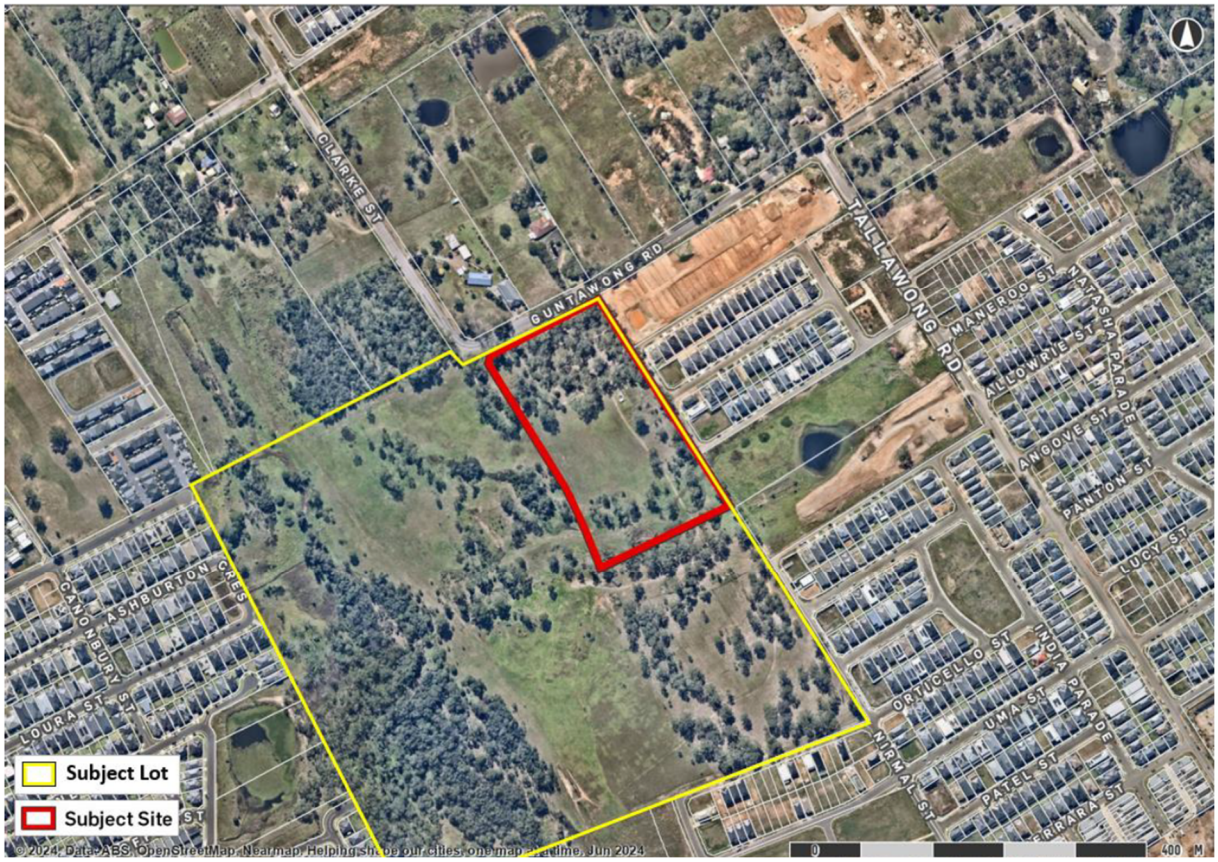


Figure 1: Aerial Photograph of Site (Source: Urbis, 2024)

2.1 Existing Services

Taylor Thomson Whitting has conducted a Before You Dig Australia (BYDA) enquiry as part of the master plan stage to identify known in-ground public assets that may impact the STHS works.

The site survey contains location of existing easements within the site, as well as existing water, sewer, electricity, gas and communications services surrounding the site. It is recommended that services be physically located prior to detailed design to identify any clash points with proposed in-ground infrastructure. The design must be progressed in accordance with the relevant services consultants' design advice and in consultation with all relevant statutory authorities.

2.2 Geotechnical Conditions

The geotechnical investigation by PSM was reviewed in preparing this report. Five boreholes were obtained at depths ranging from 8.66m to 11.1m to assess the general condition of the site. The subsurface conditions across the site were identified to have a depth of silty gravelly clay, gravelly sand and cobbles encountered ranging from 0.1-0.2m. It is underlain by natural soil of clay to gravelly clay trace sand of medium to high plasticity, which is in turn underlain by shale and laminate bedrock at depths ranging from 1.62-9.8m.

PSM recommends that for batters up to 3m in height that are above the groundwater table, design batter slopes are as shown in **Figure 2** below, subject to the following recommendations:

- The batters are to be protected from erosion.
- Permanent batters are to be drained.
- Temporary batters shall not be left unsupported for longer than 1 month without further advice. Batters should be inspected by a geotechnical engineer following significant rain events.
- Where loads are imposed or structures/services are located within on batter height of the crest of the batter, further advice should be sought

Table 11 – Design Batter Slope Angles

Unit	Temporary	Permanent
SOIL UNITS, e.g., ENGINEEERED FILL, NATURAL SOIL	2H : 1V	2.5H : 1V
BEDROCK A TO C	1H : 1V	1.5H : 1V

Figure 2: Design Batter Slopes (Source: PSM Geotechnical Investigation Report – Table 11)

Steeper batter slopes maybe be possible subject to further advice.

Pavement design advice and California Bearing Ratios (CBR) are covered in Section 5.1 of this report.

The following will also be required to inform the Civil design:

- Ground improvement specification if required for the site pending investigation results;
- Identify any project risks and suggested mitigation measures, e.g. inground obstructions;

Water table and potential impacts. Comment on suggested waterproofing systems for basements, e.g. tanked, drained, etc, if required for the site.

3.0 Proposed Activity Description

The proposed activity is for the construction and operation of a new high school known as Schofields - Tallawong High School. The new high school will accommodate up to 1,000 students. The school will provide 49 permanent teaching spaces (PTS), and 3 support teaching spaces (STS) across three buildings.

The buildings will be three-storey in height and will include teaching spaces, specialist learning hubs, a library, administrative areas and a staff hub. Additional core facilities are also proposed including a standalone school hall, a carpark, a pick up and drop off zone along Nirmal Street, two sports courts and a sports field.

Specifically, the proposal involves the following:

- Three learning hubs (three-storeys in height) accommodating 49 general teaching spaces and 3 support learning units (SLUs).
- Other core facilities including amenities, library, staff hub and administrative areas.
- Standalone school hall.
- Separate carpark with 72 spaces.
- Open play space including sports courts and sports field.
- Public Domain Works.

The proposed site access arrangements are as follows:

- Main pedestrian entrance to be located off Nirmal Street.
- Kiss and drop zone proposed along Nirmal Street.
- Onsite parking access via Nirmal Street.

In addition to the above, the proposed Civil works will include the construction of the following:

- Temporary OSD basin.
- Raingarden / bioretention basin.
- Stormwater pit and pipe network.
- Bulk Earthworks.
- Batter slopes and retaining walls.

Figure 3 provides an extract of the proposed architectural site plan.

Figure 3: Proposed Site Plan (Source: DJRD Architects, 2024)

It is noted that the future road to the south of the school site (also referred to as Road 4) is not included in the proposed works. Other road improvements including Hambledon Road extension to the west of the site and the intersection of that road with Guntawong Road are to be designed and delivered by others.

4.0 Stormwater

4.1 Stormwater Quantity

4.1.1 Existing Stormwater

The proposed school site of 4 hectares is located within a greenfield site with a total area of approximately 29 hectares. The site is gently sloped and drains in a westerly direction towards First Ponds Creek. For the purposes of stormwater assessment, the existing site is considered to be 100% pervious.

There are no formal stormwater pit and pipe network identified within the site area. The site drains towards first ponds creek currently conveyed via overland flow. The survey investigation identified two existing easements to drain water to the existing creek as shown in **Figure 4** below. One is a 4.40m wide to the west adjacent Ashburton Cres (which does not impact the school site) and another one just south of Nirmal and Marchant Street intersection which permits surface discharge of upstream catchments onto the school site and overland flows to First Pond Creek to the west. This easement affecting the site is further described in section 4.1.3 of this report.

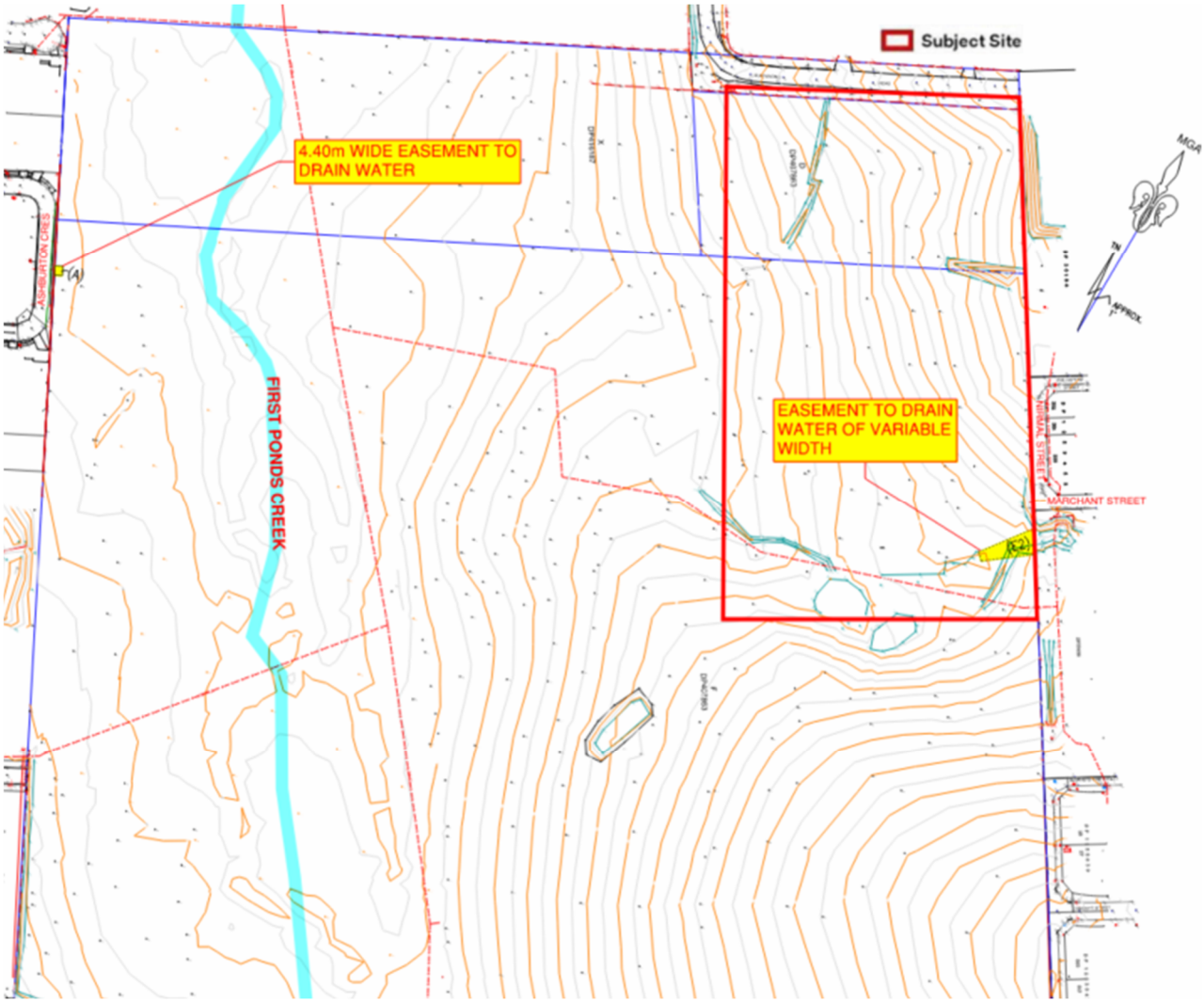


Figure 4: Site Survey Highlighting Existing Easements to Drain Water

There are two aspects to the stormwater management being the internal stormwater network and provisions for the upstream catchments which is diverted outside the school facility.

4.1.2 Proposed Stormwater Management: Internal Stormwater Network

The proposed stormwater design is to be in accordance with the relevant Australian Standards, Australian Rainfall and Runoff 2019 (ARR 2019), the Council's DCP, Council's Water Sensitive Urban Design (WSUD) handbook, Council's Engineering Guide for Development (EGD) and SINSW's EFSG requirements.

The site is classified as both an R2 and R3 zone. Sites within the R2 zone require a temporary On-site Detention (OSD) and water quality treatment, while those in the R3 zone must provide a temporary OSD and permanent water quality treatment. This is because the proposed external regional stormwater basin has not yet been installed and does not therefore currently provide water quality treatment for land in the R3 zone. The proposed stormwater design complies with the R2 and R3 requirements with the provision of an OSD and water quality treatment (bioretention basin). We note that the OSD basin and treatment relating to R2 can be removed once the precinct-wide detention basin has been constructed. Stormwater treatment for the R3 zone will need to be permanently managed on site.

Council has adopted a WSUD approach to integrate water cycle management into urban planning and design and reduce the impacts of new works on natural environment and waterways. This is proposed to be implemented for the site and is discussed in Section 4.1.3 and Section 4.2.

The stormwater design can be separated into two categories; roof stormwater and surface stormwater. All roof stormwater will be collected through the use of gutters and downpipes and directed to a series of rainwater tanks. The overflow from the rainwater tanks is to be conveyed to the in-ground systems discharging to the proposed OSD basin.

In-ground pipes shall convey stormwater to cater for the minor 20% AEP and major 1% AEP storm events as per EFSG. Where pipe capacity is exceeded, overland flow paths will convey the anticipated flows in the 1% AEP storm event.

4.1.3 Proposed Stormwater Management: Upstream Catchment Overland Flow

The additional existing overland flow from upstream shown in **Figure 5** is estimated to serve a catchment of approximately 20.20 hectares, which is estimated to discharge in excess of 9,000 L/s of water in the 1% AEP storm event. The point of discharged is proposed to be moved to the south of the school site (works by others) to align with the future road along the southern boundary. To prevent overland flows from impacting the school facilities a wall will be constructed along the southern site boundary adjacent to the proposed car park and the surface levels within the car park will be raised above the PMF level of the overland flow path – this is discussed further in the Flood Impact and Risk Assessment Report prepared by TTW. The future construction of Road 4 (by others) is understood to include provision for incorporating the existing overland flows in large culverts within the road corridor which will connect to the future Hambledon Road drainage system to the southwest of the school.

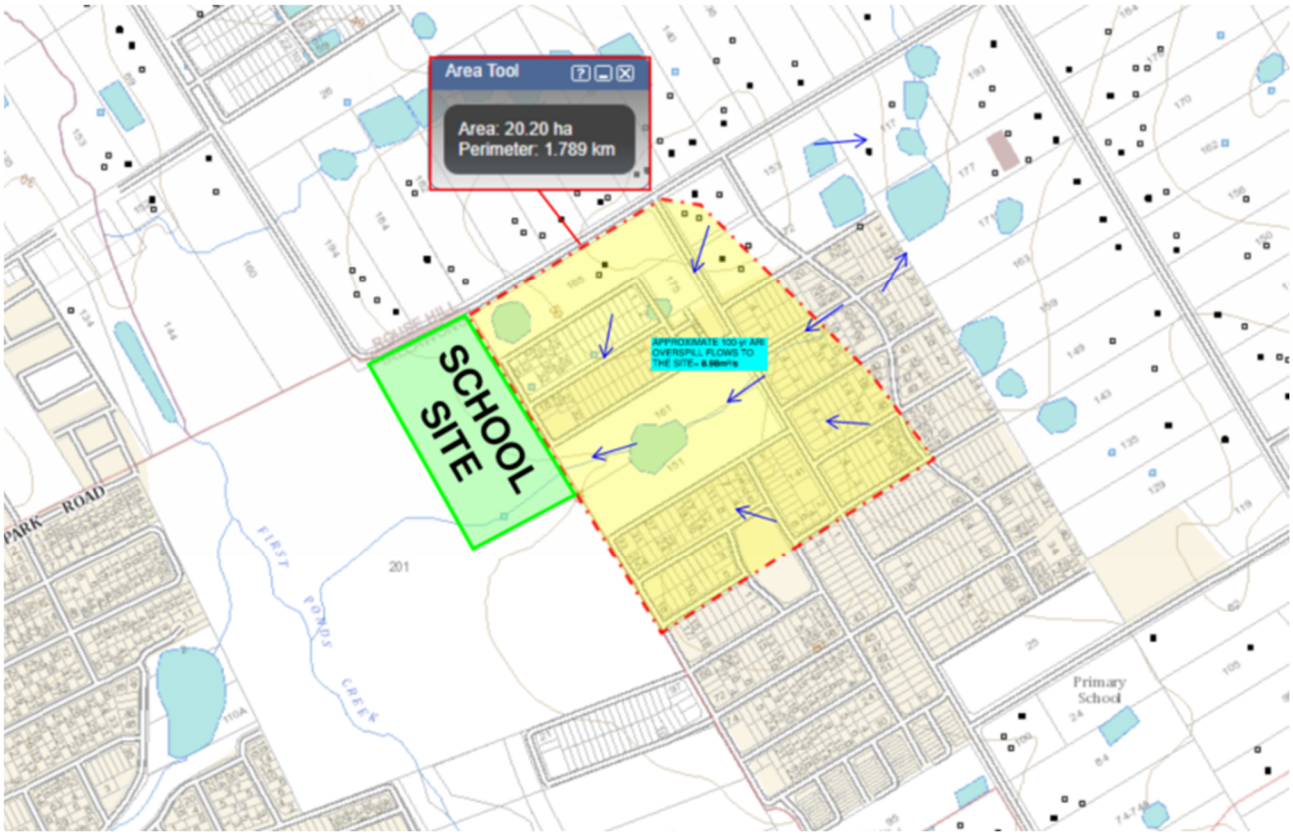


Figure 5: Approximate Catchment and Flows Draining to the Site (existing condition)

The proposed school site is not affected by backwater flooding by First Ponds Creek (Riverine Medium Flood Risk Precinct) in the 1% AEP and PMF storm events. Refer to the Flood Impact and Risk Assessment prepared by TTW for further details.

4.1.4 Onsite Stormwater Detention

Council's DCP Part J: Water Sensitive Urban Design and Integrated Water Cycle Management stipulates that OSD systems are generally required for "*all business and industrial development, excluding subdivisions, with a development footprint greater than 150m² and that is located within an on-site stormwater detention area as defined by Council's OSD map*". As per the map, the site is identified as a land zoned under north-west growth area which has separate OSD requirements.

Figure 6 below shows that the site location means that no permanent OSD is required for the site. It is understood that temporary OSD will be required for the proposed new school site until precinct wide permanent stormwater provisions have been constructed. Council have indicated that the permanent basin is planned for construction by 2026/27.

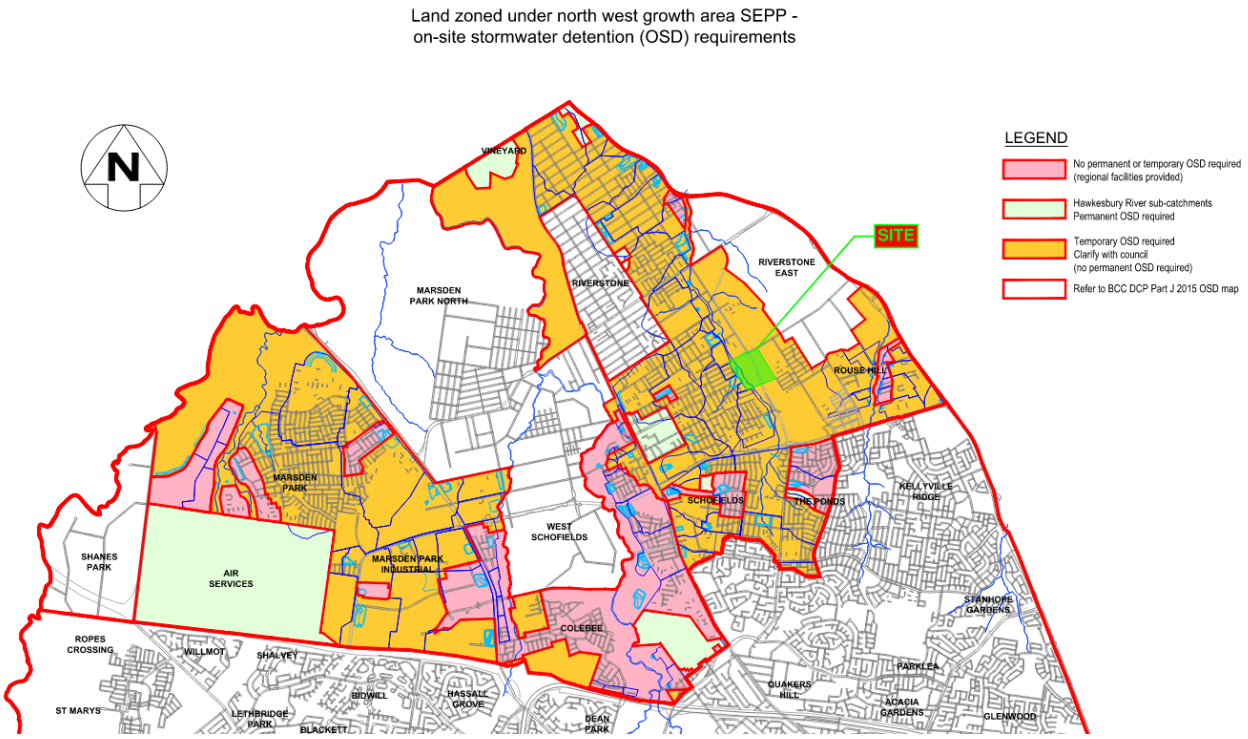


Figure 6: Land Zoned Under North West Growth Area SEPP – OSD Requirements (Source: BCC)

The temporary OSD basin will comply with Appendix B: OSD General Guidelines and Checklist of the BCC EGD. OSD is designed in line with the Council OSD spreadsheet and subject to the following requirements outlined in clause C of Section A.3, BCC EGD and provided in **Figure 7**.

c) The following OSD parameters and conditions apply:

i. As much as possible of the site area is to drain through the OSD system(s) with an absolute minimum of 85%.

ii. All systems shall use a minimum of two orifice plates to control flows. The 1.5 year orifice shall be designed to convey a maximum of 40 l/s. the 100 year orifice shall be designed to convey a maximum of 190 l/s. the minimum volume up to the 1.5 year weir level = 300m³/ha. The minimum volume up to the 100 year weir level = 455 m³/ha. For more detailed information see Council's WSUD Standard Drawing A(BS) 175M.

Figure 7: OSD Parameters and Conditions (Source: BCC EGD)

A preliminary temporary OSD volume of 1,820m³ has been calculated for the site which will be provided as an open basin. The basin will discharge to the western site boundary to match the existing situation. We

understand that the future Hambledon Road design allows for this discharge. Refer to drawing no. STHS-TTW-01-00-DR-C-04103 for details.

4.2 Stormwater Quality

Stormwater quality treatment is required to comply with the requirements outlined in Table 2 of Part J Section 4.2: Water Quality. Council requires all activity to achieve a minimum percentage reduction of the post works average annual load of pollutants shown in **Figure 8** below.

The Blacktown City Council developer handbook for Water Sensitive Urban Design (WSUD) also specifies that industrial or commercial developments with carparks or manoeuvring areas greater than 1,000m^2 must provide a device that specifically targets hydrocarbons from the treatment train. Council requires the post activity average annual load reduction of 90% total hydrocarbons.

Pollutant	% post works average annual load reduction
Gross pollutants	90
Total suspended solids	85
Total phosphorous	65
Total nitrogen	45
Total hydrocarbons	90

Figure 8: BCC Water Quality Targets (Source: BCC DCP 2015)

The proposed activity will ensure the implementation of appropriate water quality treatment for stormwater runoff to reduce the discharge of pollutants from paved and other impermeable surfaces into waterways and council drainage systems. Stormwater quality reduction targets and maintenance of treatment measures can also be met through a combination of the following treatment options:

- Silt arrestors and trash screens;
- Oil arrestors;
- Ocean Protect StormFilter Cartridges (or equivalent);
- Ocean Protect Oceanguard Pit Inserts (or equivalent);
- Rainwater reuse tanks;
- Swales, bioretention swales and buffer strips;
- Constructed Wetlands;
- Bioretention basins;
- Raingardens.

4.2.1 MUSIC Modelling

The proposed stormwater quality treatment train was modelled using the Model for Urban Stormwater Improvement Conceptualisation (MUSIC) to ensure pollutant load target reductions are met as required by the Blacktown City Council. The results of the modelling were compared to the reduction targets prescribed by the Blacktown City Council to determine the effectiveness of the proposed measures.

MUSIC simulates the performance of a group of stormwater management measures, configured in series or in parallel to form a “treatment train” against historic rainfall event data sets. It is the industry standard water quality modelling software developed by the MUSIC development team of the Cooperative Research Centre for Catchment Hydrology (CRCCH).

4.2.2 Proposed Treatment Train

Stormwater runoff on site is proposed to be treated by a raingarden/bioretention basin. Surface runoff from external areas will be captured and directed to the bioretention before it is detained in the temporary OSD basin. For modelling purposes, 75% of the roof catchment has been designed to be reticulated to the rainwater tanks and directed to the bioretention basin. Further, an initial volume of 10kL RWT per building has been assumed. This is to be further confirmed by the hydraulic engineer.

The MUSIC model layout is shown in **Figure 9** below.

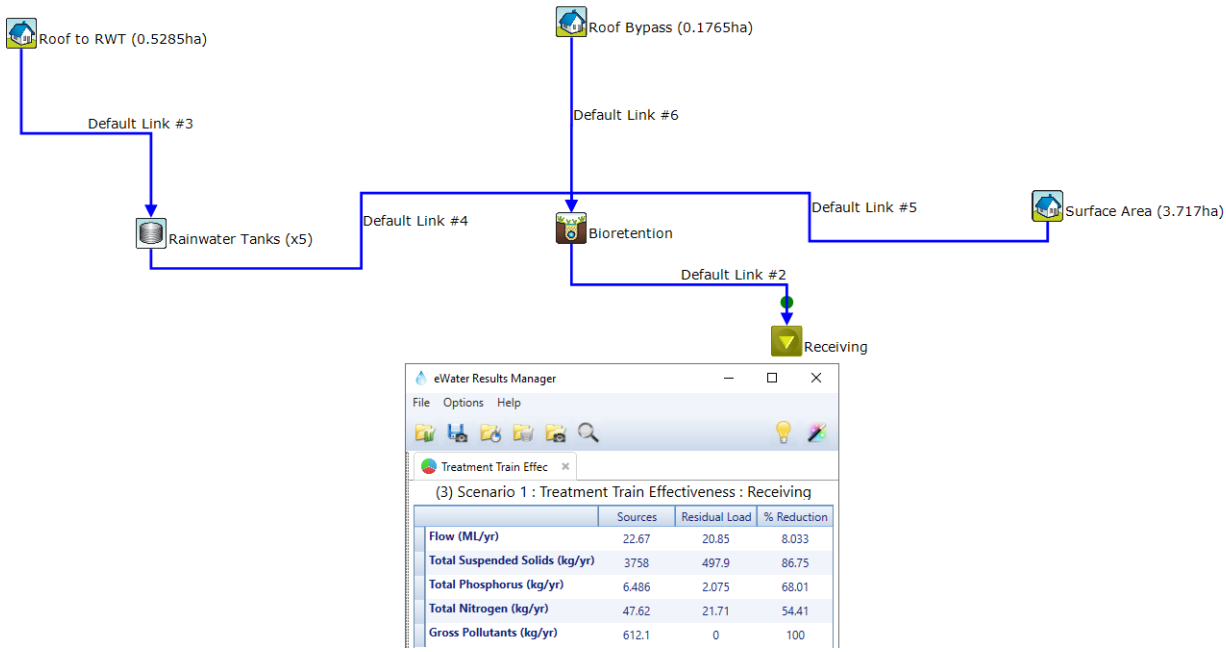


Figure 9 - Proposed Treatment Train

The details of each approximate catchment and treatment are tabulated below:

Table 1 – Catchment Details and Respective Treatments

Catchment	Area (m²)	Impervious Area (%)	Treatment
Roof (to RWT)	5,285	100	Rainwater tanks, Bioretention
Roof (Bypass)	1,765	100	Bioretention
Surface Area	37,170	50	Bioretention

The assumed impervious areas and catchment sizes are subject to adjustment following the further resolution of landscape design and the proposed treatment train updated accordingly.

4.2.3 Treatment Train Effectiveness

The results of the proposed treatment train compared to the council targets are tabulated below:

Table 2 – MUSIC Model Results

Pollutant	Min. Required Reduction (%)	Modelled Reduction (%)
Total Suspended Solids (TSS)	85	86.75
Total Phosphorus (TP)	65	68.01
Total Nitrogen (TN)	45	54.41
Gross Pollutants (GP)	90	100

As shown, the activity meets the Council requirements for pollutant reduction based on the proposed treatment train consisting of rainwater reuse, pit-insert filter baskets and filter cartridges.

4.3 Erosion and Sediment Control

An erosion and sediment control plan (ESCP) will be implemented during the construction stage to mitigate soil erosion and control the discharge of stormwater laden with sediment, nutrients and other pollutants to adjoining properties, bushland, roadways or receiving water bodies. Stormwater controls on site are detailed in ESCPs which are in accordance with Council's DCP and regulatory authority guidelines including Landcom NSW's Managing Urban Stormwater, Soils and Construction ("Blue Book").

The disturbance of the site during construction must be controlled through erosion prevention and sediment control measures. Typical provisions for a site of this type and scale would include:

- A sediment basin will be required at the lowest point of the site to capture runoff from the construction site and it is likely that this will be designed for future modification to the OSD basin.
- Silt fences to prevent silt and waste being washed into neighbouring sites and streets and may be integrated with safety fencing.
- Catch drains with hay bales to carry and treat site runoff
- Sedimentation basin(s) to be installed at the low point of site excavation.
- Shaker grids at the construction site entrance(s) to ensure that vehicles and machinery leave the site with clean wheels.
- Pits will have silt protection installed to prevent silt from entering the stormwater system during construction.

The proposed Erosion and Sediment Control Plan for the site is attached in **Appendix A**. Refer to drawing no. STHS-TTW-01-00-DR-C-02101 for details.

5.0 Civil Works

5.1 Pavement Design

The geotechnical report by PSM indicated a California Bearing Ratio (CBR) value of between 1.5% to 2.5%. The report recommended a design CBR of 2% is to be adopted for subgrade and fill formed in bulk earthworks. However, the pavement design is dependent on the material at the finished subgrade levels. It is further recommended that specific CBR testing be undertaken at subgrade level when pavement layouts are finalised and that CBR testing be undertaken for new imported material. The pavement design has adopted a minimum CBR of 3% with subgrade improvement to be provided at locations where this is not achieved.

Appropriate subgrade improvement may involve the placement of a select fill layer of good quality granular material below the pavement or lime stabilisation of the subgrade soils. This will be further updated in detailed design with the final Geotechnical recommendations.

Pavements with vehicular traffic are designed with capacity for the proposed design vehicle and vehicular movements and to cater for a minimum 25-year design life in accordance with the EFSG.

The proposed pavement plan for the site, subject to detailed design, is included in **Appendix A**. Refer to drawing nos. STHS-TTW-01-00-DR-C-7000s for details.

5.2 Earthworks

The geotechnical report and the draft bulk earthwork specification (BES) reports prepared by PSM were reviewed in preparing this report. Additionally, the salinity assessment and management plan (SAMP), detailed site investigation (DSI), data gap assessment (DGA), long term environmental management plan (LTEMP) and remediation action plan (RAP) reports prepared by JBS&G were also reviewed.

For further information, refer to the original reports by PSM and JBS&G.

Requirements for the removal of topsoil and any ground improvement will be dependent on the finalisation of geotechnical investigations of the site and the proposed finished level. It is anticipated that major earthworks will be required to accommodate the proposed school works.

5.2.1 Site Preparation

As noted in the BES report, the site preparation works will include the following:

- Removal of stockpiles and mounds.
- Clearing of the area including removal and disposal of all trees, stumps, roots, bush, other organic material, all vegetation both living and dead, all minor man-made structures (e.g. fences) and all rubbish.
- Grubbing operations shall be carried out to a minimum depth of 0.5m below the surface, where grubbing is required.
- Stripping of topsoil and stockpiling for potential blending with Engineered Fill (refer Section 3.3.2 of the BES).
- Demolition of structures as directed by the Principal. Extent of demolition works are not addressed by this Specification.
- Decommissioning the services from the pre-existing infrastructure. This is to include backfilling any voids such that they do not collapse or undergo excessive settlement under the weight of the filling and building loads. Backfilling is to be undertaken with one of the following materials:

  i. Cement stabilised sand (min. 3% cement) placed in accordance with the supplier requirements or

  ii. Mass concrete or grout as approved by PSM.

iii. Engineered fill placed in accordance with Clauses 3.5 and 3.6 of the of the BES.

5.2.2 Excavation Works

Site soils are considered to be sodic to highly-sodic. As such, the SAMP recommends that excavation be limited to a maximum of 1m to minimise exposure of more sodic soils. Any sodic soils would then need to either be used as fill at a suitable depth or disposed of appropriately off site. All excavated materials from the site will be reused if deemed suitable.

The DSI and DGA identified the presence of various contaminants that pose a risk to human health, including asbestos containing material (ACM) and lead. However, the risks associated with the contamination can be managed through the implementation of the remediation measures described in the RAP to make the land suitable for the proposed activity.

5.2.3 Filling Works

All engineered fill is advised to be placed on bedrock, natural insitu material of at least stiff consistency, engineered compacted fill placed in accordance with this or other approved specifications for which the Geotechnical Inspection and Testing Authority (GITA) has a Level 1 certificate certifying compliance with that approved specification and of at least stiff consistency or existing fill/ pavements/ slabs and other materials as approved by PSM.

Imported engineered fill is to conform to one of the following definitions as noted in the BES, while site won material shall comprise material won from excavations on site including natural and existing fill, including crushed concrete pavement on site. The engineered fill shall be approved by the GITA as suitable for use in a structural fill.

5.2.4 Cut and Fill Volumes

A cut and fill analysis has been conducted to determine the bulk earthworks volumes. Due to constraints where the school interfaces with proposed road levels and considerations to minimise the depth of cut, a greater amount of fill is required to achieve suitable site levels.

The assessment determined the following volumes:

TOTAL	Volume (m^3)
Cut	-6,723
Fill	12,446
Balance	5,723

A bulk earthworks plan has been designed in light of the above. This will be updated further in detailed design phase. Refer to drawing no. STHS-TTW-01-00-DR-C-03101.

5.3 Retaining Walls

As advised by the geotechnical report prepared by PSM, the following factors should be considered for the appropriate retaining wall design:

- Performance,
- Ground conditions (this is addressed with the design parameters);
- Groundwater;
- Surcharge loading;
- The proximity of structures, buildings, roads, etc.

- Cost to build and maintain and other constraints such as real estate, neighbouring site/boundary, aesthetics, legislation, etc.
- Proposed wall geometry;
- Effective strength parameters when assessing the earth pressure on retaining structures;
- Lateral earth pressures of soil units, and a lateral pressure of 10 kPa for vertical cuts in the bedrock units.
- Surcharge loads behind retention;
- Water pressure (depending on the type of structure).

Refer to **Figure 10** below for design batter slope angles for retaining wall.

Table 12 – Design Batter Slope Angles

Inferred Unit	Bulk Unit Weight (kN/m^3)	Poisson's Ratio	Lateral Earth Pressure Coefficient at Rest K_0	Active Lateral Earth Pressure Coefficient K_a	Passive Lateral Earth Pressure Coefficient K_p
ENGINEERED FILL / NATURAL SOIL	18	0.3	0.5	0.33	3

Figure 10: Design Batter Slopes (Source: PSM Geotechnical Investigation Report – Table 12)

For further information, refer to the original report by PSM.

5.4 Public Domain Works

The proposed public domain proposals include the following works as shown on the public domain civil drawings in **Appendix A**:

- Construction of Nirmal Street western half-road including kiss and drop and footpath along the boundary length of the Nirmal Street frontage (from Guntawong Road to the future Road 4 intersection);
- Construction of Nirmal Street Intersection. Assumed priority intersection with tie-in to existing Guntawong Road levels with allowance for the potential future upgrade to roundabout;
- Widening of Guntawong Road and provision of bus stops in dedicated bus lanes— subject to a separate approval;
- Provision of footpath on Nirmal Street;
- Installation of road drainage infrastructure in Nirmal Street;
- Signage and line marking in relation to above works;
- The public domain works on Nirmal Street will include any required relocation or augmentation of existing services (including power connection and street lighting as per the electrical design by others).

In order to reduce the risk of extensive reconstruction of roads surrounding the school in the future, the design for the above works is coordinated with the following design documentation by others:

- Hambledon Road Extension – Blacktown City Council (Tender Issue, November 2022)
    - The TTW design matches the proposed levels within Guntawong Road and is coordinated with the future stormwater network.
    - The kerb line of the proposed intersection of Guntawong Road and Nirmal Street is coordinated with the roundabout intersection alignment contained within this drawing set.
- 151 and 161 Tallawong Road – Bathla / Enspire (Subdivision Works cert, December 2024)

- The TTW design matches the proposed road horizontal and vertical alignment of Nirmal Street. It also adopts the amended upstream stormwater discharge point in Road 4.

- 165 Guntawong Road – Metro / C&M Consulting Engineers (S138 amended – September 2024)
  - The TTW design matches the proposed road horizontal and vertical alignment of Nirmal Street.
- 201 Guntawong Road – Landcom / Indesco (draft DA – February 2024)
  - The TTW design adopts the general principals of the proposed Landcom residential subdivision design, with the deletion of proposed internal site roads. Figure 11 shows an extract from Landcom Drawing 8553-DA-010 [B] with the school site highlighted yellow and the deleted sections of Road 6 (Blue) and Road 3 (Red) which are no longer required.

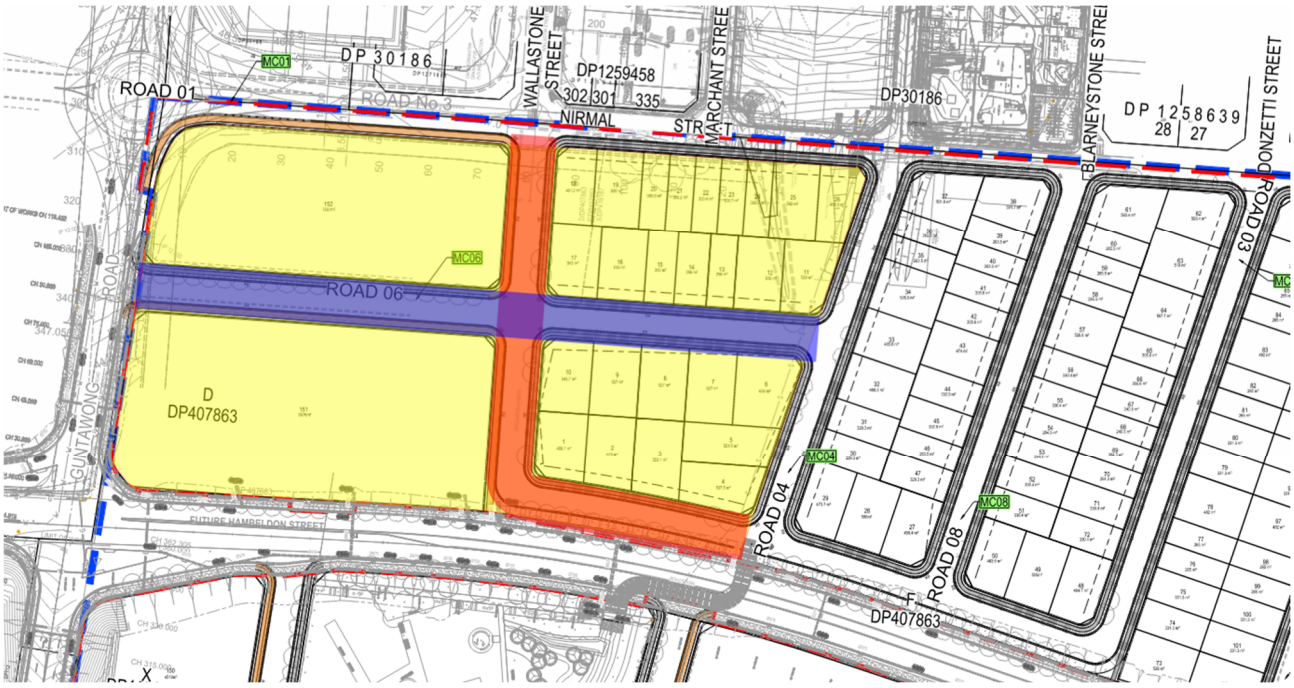


Figure 11: Design Batter Slopes (Source: PSM Geotechnical Investigation Report – Table 12)

For further information, refer to the original report by PSM.

6.0 Mitigation Measures

The following mitigation measures shown in **Table 3** below are to be implemented as outlined in this report.

Table 3 – Mitigation Measures

Mitigation Number/Name	Aspect/Section	Mitigation Measure	Reason for Mitigation Measure
Erosion and Sediment Control	Prior to commencement of any construction works and during construction works.	The proposed activity will implement measures as documented generally in accordance with NSW Department of Housing's Managing Urban Stormwater as shown in drawing no. STHS-TTW-01-00-DR-C-02101.	To ensure protection of downstream drainage lines, assets, ecosystems, or existing hydrological systems from silt, waste and sediment from the site.
Upstream catchment overland flow	Prior to commencement of operation.	The proposed activity will include measures to divert stormwater overland flow from upstream around the school facilities. A temporary wall at the edge of the carpark will be provided until the permanent stormwater works is completed in the future Road 4.	To divert the flow path from upstream catchments away from the school facility and to ensure that the site is protected against floodwaters for all events, including the Probable Maximum Flood (PMF) event.
Stormwater Peak Flows	Prior to commencement of operation.	The proposed activity will include provision of temporary OSD, in accordance with Council's OSD spreadsheet, until the precinct-wide permanent stormwater provisions have been constructed. Site overland flow path for stormwater in excess of the pipe system capacity will also be provided.	To ensure stormwater flows for all events up to and including the 1% ARI from the high school site will have no adverse impact upon the downstream properties and existing waterbodies.
Water Sensitive Urban Design	Following the removal of temporary water quality (erosion and sediment control) measures.	The proposed activity will include provision of water quality treatment measures as part of a water-sensitive urban design as documented in this report and on the Civil Engineering drawings attached in **Appendix A**. Refer to Hydraulic documentation for rainwater tank sizing and reuse strategy.	To ensure the proposed activity meets Council's requirements for pollutant reduction.
Public Domain Works	Prior to commencement of operation.	(1) Construct a zebra crossing on Guntawong Road and a wombat crossing on Nirmal Street prior to occupancy. (2) Construct a 3.5m shared path along	To ensure that students and the local community can walk along the footpaths and cross the

Mitigation Number/Name	Aspect/Section	Mitigation Measure	Reason for Mitigation Measure
		school frontage on Nirmal Street on the school frontage side only (western) prior to occupancy. (3) Construct a 3.5m shared path along school frontage on Guntawong Road along the school frontage and on the northern side of Guntawong Road from the bus stop to the zebra crossing prior to occupancy. (4) Construct two indented bus bays on Guntawong Road able to each accommodate two buses: - Eastbound bus bay: 40 metres long - Westbound bus bay: 60 metres long In the sections of Guntawong Road comprising four lanes the cross section of Guntawong road should match with the end-state cross section of Guntawong Road where possible and appropriate. The intersection of Guntawong Road and Nirmal Street should be designed as a “Give Way’ intersection with one lane on each approach. The design should provision for the future roundabout at Guntawong Road and Nirmal Street where possible and appropriate. (5) Construct Nirmal Street within the site boundary to a carriageway width of 19m from Guntawong Road along the full extent of the school frontage and dedicate it to Council prior to occupancy.	road safely. To ensure that Guntawong Road is wide enough for both the bus stops and through traffic. Nirmal Street is an incomplete road, with travel in the southbound direction only. With only this road infrastructure, there would be significant congestion and impacts on other road users.

Note: All mitigation measures indicated on Guntawong Road are subject to a separate approval process (not part of this REF).

7.0 Consultation

Consultation with Council has commenced in relation to the stormwater strategy and roadworks proposals for the proposed activity. A summary of these Council Consultation is provided below.

- 25 June 2024- TTW requested confirmation of stormwater requirements for the proposed activity.
- 30 July 2024- TSA meeting request with Blacktown Council.
- 08 August 2024- Meeting with Blacktown Council regarding stormwater and public domain works.
- 27 August 2024- Blacktown Council responses to queries following the meeting.
- 08 October 2024 -TTW follow-up on query.
- 11 October 2024 – Blacktown Council responded noting specific requirements for land zoning within the site, OSD sizing and water quality targets.
- 18 October 2024 – Pre-application meeting with Blacktown Council.
- 15 November 2024 – Meeting with Blacktown Council regarding project interface.
- 29 November 2024 – Follow-up meeting with Blacktown Council regarding project interface.

Refer to **Appendix B** for council correspondence regarding the stormwater requirements for the proposed activity.

8.0 Evaluation of Environmental Impacts

This report concludes that the proposed activity is suitable, will not result in unacceptable impact, and warrants approval subject to implementation of the following mitigation measures discussed in Section 6.0.

9.0 Conclusion

The site has been designed in accordance with the Blacktown Council DCP and all relevant supporting documents. The site does not require a permanent OSD system. However, temporary OSD with a minimum volume requirement of 1,820m³ will be necessary for the proposed new school site until permanent stormwater infrastructure (works by Council) is implemented across the precinct. Stormwater will be treated before it is discharged at the western boundary of the site. The proposed stormwater treatment meets the Council's pollutant reduction targets via proposed rainwater tanks and raingarden/bioretention basin. A temporary wall will be required to contain water up to the PMF event until Road 4 and associated stormwater system is constructed. Erosion and sediment control measures have been proposed for the site during construction in accordance with the NSW Department of Housing Managing Urban Stormwater ('Blue Book').

A public domain design has been completed which is coordinated with other roadworks designs by others adjacent to the site.

Based on the above, the proposed civil and stormwater works complies with the Council's DCP requirements, as well as other relevant Australian standards. We recommend the stormwater system for the proposed activity be generally in accordance with the Civil Engineering drawings attached in **Appendix A**.

The findings in this statement are based on current available information, regulations and correspondence undertaken at the time of writing.

Prepared by
TTW (NSW) PTY LTD

JEMA LOPEZ
Engineer

Authorised By
TTW (NSW) PTY LTD

COLIN ROPE
Associate Director

P:\2024\2414\241460\Reports\TTW\Civil\REF Reports\250131 Final\250131_Civil Engineering Design Report.docx

Appendix A

Civil Engineering Drawings

NOT FOR CONSTRUCTION

NEW HIGH SCHOOL FOR SCHOFIELDS AND TALLAWONG

SCHOFIELDS, NSW 2762

NUMBER	DRAWING TITLE
GENERAL-00000	
STHS-TTW-01-00-DR-C-00001	GENERAL COVER SHEET
STHS-TTW-01-00-DR-C-00003	GENERAL NOTES AND LEGEND SHEET 1
STHS-TTW-01-00-DR-C-00101	GENERAL KEY PLAN
STHS-TTW-01-00-DR-C-00401	GENERAL ARRANGEMENT PLAN SHEET 1
STHS-TTW-01-00-DR-C-00402	GENERAL ARRANGEMENT PLAN SHEET 2
STHS-TTW-01-00-DR-C-00403	GENERAL ARRANGEMENT PLAN SHEET 3
STHS-TTW-01-00-DR-C-00404	GENERAL ARRANGEMENT PLAN SHEET 4
ROADWORKS-01000	
STHS-TTW-01-00-DR-C-01001	GUNTAWONG ROAD SITEWORKS AND STORMWATER PLAN
STHS-TTW-01-00-DR-C-01002	NIRMAL STREET SITEWORKS AND STORMWATER PLAN SHEET 1
STHS-TTW-01-00-DR-C-01003	NIRMAL STREET SITEWORKS AND STORMWATER PLAN SHEET 2
STHS-TTW-01-00-DR-C-01201	ROAD LONGITUDINAL SECTION - GUNTAWONG ROAD
STHS-TTW-01-00-DR-C-01202	ROAD LONGITUDINAL SECTION - NIRMAL STREET
STHS-TTW-01-00-DR-C-01301	ROAD CROSS SECTIONS - GUNTAWONG ROAD
STHS-TTW-01-00-DR-C-01302	ROAD CROSS SECTIONS - NIRMAL STREET SHEET 1
STHS-TTW-01-00-DR-C-01303	ROAD CROSS SECTIONS - NIRMAL STREET SHEET 2
STHS-TTW-01-00-DR-C-01401	ROAD TYPICAL SECTIONS SHEET 1
STHS-TTW-01-00-DR-C-01402	ROAD TYPICAL SECTIONS SHEET 2
STHS-TTW-01-00-DR-C-01501	SWEPT PATH PLAN
EROSION AND SEDIMENT CONTROL-02000	
STHS-TTW-01-00-DR-C-02001	EROSION AND SEDIMENT CONTROL NOTES AND LEGEND SHEET 1
STHS-TTW-01-00-DR-C-02101	EROSION AND SEDIMENT CONTROL PLAN
EARTHWORKS-03000	
STHS-TTW-01-00-DR-C-03101	EARTHWORKS CUT AND FILL VOLUMES PLAN
STORMWATER-04000	
STHS-TTW-01-00-DR-C-04001	STORMWATER NOTES AND LEGEND SHEET 1
STHS-TTW-01-00-DR-C-04101	STORMWATER AND SUBSOIL DRAINAGE PLAN SHEET 1
STHS-TTW-01-00-DR-C-04102	STORMWATER AND SUBSOIL DRAINAGE PLAN SHEET 2
STHS-TTW-01-00-DR-C-04103	STORMWATER AND SUBSOIL DRAINAGE PLAN SHEET 3
STHS-TTW-01-00-DR-C-04104	STORMWATER AND SUBSOIL DRAINAGE PLAN SHEET 4
STHS-TTW-01-00-DR-C-04501	STORMWATER DETAILS
RETAINING WALLS-6000	
STHS-TTW-01-00-DR-C-06101	RETAINING WALL PLAN SHEET 1
STHS-TTW-01-00-DR-C-06102	RETAINING WALL PLAN SHEET 2
PAVEMENT-07000	
STHS-TTW-01-00-DR-C-07001	PAVEMENT NOTES AND LEGEND
STHS-TTW-01-00-DR-C-07101	PAVEMENT PLAN
STHS-TTW-01-00-DR-C-07501	PAVEMENT DETAILS SHEET 1
STHS-TTW-01-00-DR-C-07502	PAVEMENT DETAILS SHEET 2
STHS-TTW-01-00-DR-C-07503	PAVEMENT DETAILS SHEET 3
STHS-TTW-01-00-DR-C-07504	PAVEMENT DETAILS SHEET 4
STHS-TTW-01-00-DR-C-07505	PAVEMENT DETAILS SHEET 5
STHS-TTW-01-00-DR-C-07506	PAVEMENT DETAILS SHEET 6
SIGNAGE AND LINEMARKING-08000	
STHS-TTW-01-00-DR-C-08121	SIGNAGE AND LINEMARKING PLAN (PUBLIC DOMAIN) SHEET 1
STHS-TTW-01-00-DR-C-08122	SIGNAGE AND LINEMARKING PLAN (PUBLIC DOMAIN) SHEET 2
STHS-TTW-01-00-DR-C-08123	SIGNAGE AND LINEMARKING PLAN (PUBLIC DOMAIN) SHEET 3

NOTE: PUBLIC DOMAIN DRAWINGS LISTED IN RED

Z:\jobs\24\2414460\civil\sheets\110\2414460-TTW-10-DR-CI-00001.dwg

Rev	Description	Eng Draft	Date
3	SCHEMATIC DESIGN FOR REF	JL	ES 10.01.2025
2	SCHEMATIC DESIGN FOR REF	JL	ES 06.12.2024
1	FINAL DRAFT ISSUE FOR REF	JL	ES 21.11.2024

Client: School Infrastructure NSW

Engineer: TTW www.ttwengineers.com

Project: NEW HIGH SCHOOL FOR SCHOFIELDS TALLAWONG

Drawing Title: GENERAL COVER SHEET

Scale at A1	Drawn	Designed	Approved
	ES	AW	CR

Project No	Originator	Type	Role	Sheet No.	Rev
STHS-TTW-01-00-DR-C-00001-3					

10.01.2025 3:09 PM

NOT FOR CONSTRUCTION

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT NOTES AND LEGENDS

GENERAL

1. CONTRACTOR MUST VERIFY ALL DIMENSIONS AND EXISTING LEVELS ON SITE PRIOR TO COMMENCEMENT OF WORKS. ANY DISCREPANCIES TO BE REPORTED TO THE SUPERINTENDENT.
2. STRIP ALL TOPSOIL FROM THE CONSTRUCTION AREA. ALL STRIPPED TOPSOIL SHALL BE DISPOSED OF OFF-SITE UNLESS DIRECTED OTHERWISE.
3. MAKE SMOOTH CONNECTION WITH ALL EXISTING WORKS.
4. COMPACT SUBGRADE UNDER BUILDINGS AND PAVEMENTS TO MINIMUM 98% STANDARD MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289 5.1.1. COMPACTION UNDER BUILDINGS TO EXTEND 2M MINIMUM BEYOND BUILDING FOOTPRINT.
5. ALL WORK ON PUBLIC PROPERTY, PROPERTY WHICH IS TO BECOME PUBLIC PROPERTY, OR ANY WORK WHICH IS TO COME UNDER THE CONTROL OF THE STATUTORY AUTHORITY; THE CONTRACTOR IS TO ENSURE THAT THE DRAWINGS USED FOR CONSTRUCTION HAVE BEEN APPROVED BY ALL RELEVANT AUTHORITIES PRIOR TO COMMENCEMENT SITE.
6. ALL WORK ON PUBLIC PROPERTY, PROPERTY WHICH IS TO BECOME PUBLIC PROPERTY, OR ANY WORK WHICH IS TO COME UNDER THE CONTROL OF THE STATUTORY AUTHORITY IS TO BE CARRIED OUT IN ACCORDANCE WITH THE REQUIREMENTS OF THE RELEVANT AUTHORITY. THE CONTRACTOR SHALL OBTAIN THESE REQUIREMENTS FROM THE AUTHORITY. WHERE THE REQUIREMENTS OF THE AUTHORITY ARE DIFFERENT TO THE DRAWINGS AND SPECIFICATIONS, THE REQUIREMENTS OF THE AUTHORITY SHALL BE APPLICABLE.
7. FOR ALL TEMPORARY BATTERS REFER TO GEOTECHNICAL RECOMMENDATIONS.

REFERENCE DRAWINGS

1. THESE DRAWINGS HAVE BEEN BASED FROM, AND TO BE READ IN CONJUNCTION WITH THE FOLLOWING CONSULTANTS DRAWINGS. ANY CONFLICT TO THE DRAWINGS MUST BE NOTIFIED IMMEDIATELY TO THE ENGINEER.

CONSULTANT	DRAWING TITLE	DRAWING NUMBER	REVISION	DATE
DJRD	ARCH	STHS-DJRD-00-00-REF-A-0251	03	22.11.2024
SDG	SURVEY		A	09.10.2024
DJRD	TREE RETENTION PLAN	STHS-DJRD-00-00-REF-A-0111	03	22.11.2024
GCC	HAMBLEDON ROAD EXTENSION - RIVERSONE ROAD & DRAINAGE DESIGN	STHS-DJRD-00-00-DR-A-0300	P02	01.11.2024
C & M CONSULTING ENGINEERS	165 GUNTAWONG ROAD, ROUSE HILL	02706_S138-201	G	12.09.2024
ENSPIRE	151& 161 TALLAWONG ROAD, ROUSE HILL	220093-DA-C05.01	5	16.12.2022

BOUNDARIES AND EASEMENTS

1. THE PROPERTY BOUNDARY AND EASEMENT LOCATIONS SHOWN ON TAYLOR THOMSON WHITTING DRAWING'S HAVE BEEN BASED ON INFORMATION RECEIVED FROM : SURVEYOR
2. TAYLOR THOMSON WHITTING MAKES NO GUARANTEES THAT THE BOUNDARY OR EASEMENT INFORMATION SHOWN IS CORRECT. TAYLOR THOMSON WHITTING WILL ACCEPT NO LIABILITIES FOR BOUNDARY INACCURACIES. THE CONTRACTOR/BUILDER IS ADVISED TO CHECK/CONFIRM ALL BOUNDARIES IN RELATION TO ALL PROPOSED WORK PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. BOUNDARY INACCURACIES FOUND ARE TO BE REPORTED TO THE SUPERINTENDENT PRIOR TO CONSTRUCTION STARTING.

SURVEY

ORIGIN OF LEVELS:	PM 43374 RL 38.274
DATUM OF LEVELS:	AHD
COORDINATE SYSTEM:	GDA 2020
SURVEY PREPARED BY:	PROJECT SURVEYORS
SETOUT POINTS:	CONTACT SURVEYOR

1. TAYLOR THOMSON WHITTING DOES NOT GUARANTEE THAT THE SURVEY INFORMATION SHOWN ON THESE DRAWINGS IS ACCURATE AND WILL ACCEPT NO LIABILITY FOR ANY INACCURACIES IN THE SURVEY INFORMATION PROVIDED TO US FROM ANY CAUSE WHATSOEVER.

UNDERGROUND SERVICES - WARNING

1. THE LOCATIONS OF UNDERGROUND SERVICES SHOWN ON TAYLOR THOMSON WHITTINGS DRAWINGS HAVE BEEN PLOTTED FROM DIAGRAMS PROVIDED BY SERVICE AUTHORITIES. THIS INFORMATION HAS BEEN PREPARED SOLELY FOR THE AUTHORITIES OWN USE AND MAY NOT NECESSARILY BE UPDATED OR ACCURATE.
2. THE POSITION OF SERVICES AS RECORDED BY THE AUTHORITY AT THE TIME OF INSTALLATION MAY NOT REFLECT CHANGES IN THE PHYSICAL ENVIRONMENT SUBSEQUENT TO INSTALLATION.
3. THE CONTRACTOR MUST CONFIRM THE EXACT LOCATION AND EXTENT OF SERVICES PRIOR TO CONSTRUCTION AND NOTIFY ANY CONFLICT WITH THE DRAWINGS IMMEDIATELY TO THE ENGINEER/SUPERINTENDENT.
4. THE CONTRACTOR IS TO GET APPROVAL FROM THE RELEVANT STATE SURVEY DEPARTMENT, TO REMOVE/ADJUST ANY SURVEY MARK. THIS INCLUDES BUT IS NOT LIMITED TO; STATE SURVEY MARKS (SSM), PERMANENT MARKS (PM), CADASTRAL REFERENCE MARKS OR ANY OTHER SURVEY MARK WHICH IS TO BE REMOVED OR ADJUSTED IN ANY WAY.
5. TAYLOR THOMSON WHITTING PLANS DO NOT INDICATE THE PRESENCE OF ANY SURVEY MARK. THE CONTRACTOR IS TO UNDERTAKE THEIR OWN SEARCH.

BEFORE YOU DIG AUSTRALIA (BYDA)

1. PUBLIC SERVICE UTILITY INFORMATION SHOWN ON PLAN HAS BEEN COMPLIED FROM INFORMATION RECEIVED FROM DIAL BEFORE YOU DIG INQUIRY, REFERENCE NUMBER No. 37862101 OBTAINED ON 21.10.2024 UNLESS SPECIFICALLY SHOWN OTHERWISE, THIS LOCATION AND DEPTH OF SERVICES SHOWN ON THIS PLAN HAVE NOT BEEN VERIFIED.
2. THE LOCATION OF SERVICES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED AS ACCURATELY AS POSSIBLE FROM DIAGRAMS PROVIDED BY SERVICE AUTHORITIES AND SHOULD BE CONFIRMED BY SITE INSPECTION."

SITE WORKS

1. ALL BASECOURSE MATERIAL TO COMPLY WITH RMS SPECIFICATION NO 3051 AND COMPACTED TO MINIMUM 98% MODIFIED MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289 5.2.1.
2. ALL TRENCH BACKFILL MATERIAL SHALL BE COMPACTED TO THE SAME DENSITY AS THE ADJACENT MATERIAL.
3. ALL SERVICE TRENCHES UNDER VEHICULAR PAVEMENTS SHALL BE BACKFILLED WITH AN APPROVED SELECT MATERIAL AND COMPACTED TO A MINIMUM 98% MODIFIED MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289 5.2.1

PUBLIC DOMAIN WORKS

1. PUBLIC DOMAIN WORKS ARE NOT TO COMMENCE UNTIL THESE DRAWINGS ARE STAMPED AS APPROVED.

TENDER DOCUMENTATION

1. THESE DRAWINGS ARE PRELIMINARY DRAWINGS ISSUED FOR TENDER AS AN INDICATION OF THE EXTENT OF WORKS ONLY. THEY ARE NOT A COMPLETE CONSTRUCTION SET OF DRAWINGS.
2. TO DETERMINE THE FULL EXTENT OF WORK, THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE ARCHITECTURAL DRAWINGS AND OTHER CONTRACT DOCUMENTS. ALLOW FOR ALL ITEMS SHOWN ON ARCHITECTURAL AND OTHER DRAWINGS AS NOT ALL ITEMS ARE SHOWN ON THE STRUCTURAL/CIVIL WORKS DRAWINGS.
3. SHOULD ANY AMBIGUITY, ERROR, OMISSIONS, DISCREPANCY, INCONSISTENCY OR OTHER FAULT EXIST OR SEEM TO EXIST IN THE DOCUMENTS, IMMEDIATELY NOTIFY IN WRITING TO THE SUPERINTENDENT.
4. RATES SHOWN ON THE DRAWINGS ARE FOR THE FINAL STRUCTURE/CIVIL WORKS IN PLACE AND DO NOT ALLOW FOR ANY WASTAGE, ROLLING MARGINS, OVER SUPPLY OR FABRICATION REQUIREMENTS. ETC.

DESIGN AND CONSTRUCT DOCUMENTATION

1. THE LEVEL OF DETAIL / DESIGN REFLECTED IN THESE DOCUMENTS IS BASED ON THE UNDERSTANDING THIS WILL BE BUILT AS PART OF A DESIGN & CONSTRUCT CONTRACT.
2. THE CONTRACTOR SHALL RETAIN THE RESPONSIBILITY TO UNDERTAKE DETAILED DESIGN, CONFIRM COMPLIANCE WITH RELEVANT STANDARDS, CONSENT CONDITIONS & THE SPECIFICATION.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THE FINAL DESIGN IS CO-ORDINATED FULLY WITH OTHER CONSULTANTS.
4. NO VARIATION WILL BE ACCEPTED FOR DESIGN AMENDMENTS REQUIRED TO MEET THE FUNCTIONAL OBJECTIVE OF THIS DOCUMENTATION.

SAFETY IN DESIGN

CONTRACTOR TO REFER TO APPENDIX B OF THE CIVIL SPECIFICATION FOR THE CIVIL RISK AND SOLUTIONS REGISTER.

1. EXISTING SERVICES
   CONTRACTOR TO BE AWARE EXISTING SERVICES ARE LOCATED WITHIN THE SITE. LOCATION OF ALL SERVICES TO BE VERIFIED BY THE CONTRACTOR PRIOR TO COMMENCING WORKS. CONTRACTOR TO CONFIRM WITH RELEVANT AUTHORITY REGARDING MEASURES TO BE TAKEN TO ENSURE SERVICES ARE PROTECTED OR PROCEDURES ARE IN PLACE TO DEMOLISH AND/OR RELOCATE.
2. EXISTING STRUCTURES
   CONTRACTOR TO BE AWARE EXISTING STRUCTURES MAY EXIST WITHIN THE SITE. TO PREVENT DAMAGE TO EXISTING STRUCTURE(S) AND/OR PERSONNEL, SITE WORKS TO BE CARRIED OUT AS FAR AS PRACTICABLY POSSIBLE FROM EXISTING STRUCTURE(S).
3. EXISTING TREES
   CONTRACTOR TO BE AWARE EXISTING TREES EXIST WITHIN THE SITE WHICH NEED TO BE PROTECTED. TO PREVENT DAMAGE TO TREES AND/OR PERSONNEL, SITE WORKS TO BE CARRIED OUT AS FAR AS PRACTICABLY POSSIBLE FROM EXISTING TREES. ADVICE NEEDS TO BE SOUGHT FROM ARBORIST AND/OR LANDSCAPE ARCHITECT ON MEASURES REQUIRED TO PROTECT TREES.
4. GROUNDWATER
   CONTRACTOR TO BE AWARE GROUND WATER LEVELS ARE CLOSE TO EXISTING SURFACE LEVEL. TEMPORARY DE-WATERING MAY BE REQUIRED DURING CONSTRUCTION WORKS.
5. EXCAVATIONS
   DEEP EXCAVATIONS DUE TO STORMWATER DRAINAGE WORKS IS REQUIRED. CONTRACTOR TO ENSURE SAFE WORKING PROCEDURES ARE IN PLACE FOR WORKS. ALL EXCAVATIONS TO BE FENCED OFF AND BATTERS ADEQUATELY SUPPORTED TO APPROVAL OF GEOTECHNICAL ENGINEER.
6. GROUND CONDITIONS
   CONTRACTOR TO BE AWARE OF THE SITE GEOTECHNICAL CONDITIONS. REFER TO GEOTECHNICAL REPORT BY
   - PSM
   - SCHOFIELDS TALLAWONG HIGH SCHOOL SITE 1 GUNTAWING ROAD GEOTECHNICAL INVESTIGATION (REF PSM4693-012L) DATED 21 OCTOBER 2024)
   - JBS&G
   - DETAILED SITE INVESTIGATION REPORT, PROPOSED TALLAWONG HIGH SCHOOL (REF 67774/162496 DATED 1 OCTOBER
7. HAZARDOUS MATERIALS
   EXISTING ASBESTOS PRODUCTS & CONTAMINATED MATERIAL MAY BE PRESENT ON SITE. CONTRACTOR TO ENSURE ALL HAZARDOUS MATERIALS ARE IDENTIFIED PRIOR TO COMMENCING WORKS. SAFE WORKING PRACTICES AS PER RELEVANT AUTHORITY TO BE ADOPTED AND APPROPRIATE PPE TO BE USED WHEN HANDLING ALL HAZARDOUS MATERIALS. REFER TO GEOTECHNICAL/ENVIRONMENTAL REPORT BY
   - JBS&G
   - REMEDIAL ACTION PLAN, PROPOSED TALLAWONG HIGH SCHOOL (REF 67774/162922) DATED 1 OCTOBER 2024
   - LONG TERM ENVIRONMENTAL MANAGEMENT PLAN, PROPOSED TALLAWONG HIGH SCHOOL (REF 67774 /162926 DATED 1 OCTOBER 2024
8. CONFINED SPACES
   CONTRACTOR TO BE AWARE OF POTENTIAL HAZARDS DUE TO WORKING IN CONFINED SPACES SUCH AS STORMWATER PITS, TRENCHES AND/OR TANKS. CONTRACTOR TO PROVIDE SAFE WORKING METHODS AND USE APPROPRIATE PPE WHEN ENTERING CONFINED SPACES.
9. MANUAL HANDLING
   CONTRACTOR TO BE AWARE MANUAL HANDLING MAY BE REQUIRED DURING CONSTRUCTION. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ENSURE MANUAL HANDLING PROCEDURES AND ASSESSMENTS ARE IN PLACE PRIOR TO COMMENCING WORKS.
10. WATER POLLUTION
    CONTRACTOR TO ENSURE APPROPRIATE MEASURES ARE TAKEN TO PREVENT POLLUTANTS FROM CONSTRUCTION WORKS CONTAMINATING THE SURROUNDING ENVIRONMENT.
11. SITE ACCESS/EGRESS
    CONTRACTOR TO BE AWARE SITE WORKS OCCUR IN CLOSE PROXIMITY TO FOOTPATHS AND ROADWAYS. CONTRACTOR TO ERECT APPROPRIATE BARRIERS AND SIGNAGE TO PROTECT SITE PERSONNEL AND PUBLIC.
12. VEHICLE MOVEMENT
    CONTRACTOR TO SUPPLY AND COMPLY WITH TRAFFIC MANAGEMENT PLAN AND PROVIDE ADEQUATE SITE TRAFFIC CONTROL INCLUDING A CERTIFIED TRAFFIC MARSHALL TO SUPERVISE VEHICLE MOVEMENTS WHERE NECESSARY.

CIVIL INSPECTION CERTIFICATES

THE FOLLOWING MUST BE PROVIDED BY THE CONTRACTOR A MINIMUM 2 WEEKS PRIOR TO THE REQUESTED DATE OF A CIVIL INSPECTION CERTIFICATE FOR OCCUPATION CERTIFICATE. SUBMISSIONS MUST BE PROVIDED PROGRESSIVELY AS WORKS ARE COMPLETED IN ACCORDANCE WITH THE CIVIL SPECIFICATION. THE PROGRAM MUST ALLOW ADEQUATE TIME FOR DEFECTS TO BE RECTIFIED SHOULD THIS BE REQUIRED.

1. NOTIFICATION THAT ALL CIVIL WORKS TO BE CERTIFIED HAVE BEEN COMPLETED TO ALLOW A FINAL INSPECTION TO BE UNDERTAKEN.
2. 2.WRITTEN CONFIRMATION FROM THE CONTRACTOR THAT ALL CIVIL SITE INSPECTION REPORTS HAVE BEEN CLOSED OUT.
3. 3.CCTV (INCLUDING WINCAN LOG OR EQUIVALENT) OF ALL CIVIL STORMWATER WORKS TO BE CERTIFIED.
4. 4.WAE FROM A REGISTERED SURVEYOR (PDF & DWG) FOR ALL CIVIL STORMWATER TO BE CERTIFIED.
5. 5.WAE FROM A REGISTERED SURVEYOR (PDF, DWG & 3D TIN) FOR ALL EXTERNAL CIVIL LEVELS TO BE CERTIFIED.
6. 6.HEAD CONTRACTORS STATEMENT OF CONSTRUCTION COMPLIANCE.
7. 7.HYDRAULIC CONTRACTORS INSTALLATION CERTIFICATE.
8. 8.3RD PARTY INSTALLATION CERTIFICATES FOR PROPRIETARY PRODUCTS AND/OR D&C ELEMENTS.
9. 9.COMPACTION TEST RESULTS IN ACCORDANCE WITH THE CIVIL SPECIFICATION.
10. 10.MATERIALS CERTIFICATES PRIOR TO INSTALLATION IN ACCORDANCE WITH THE CIVIL SPECIFICATION.
11. 11.WRITTEN CONFIRMATION FROM TFNSW AND/OR COUNCIL CONFIRMING COMPLETION AND ACCEPTANCE OF S138 WORKS IF APPLICABLE.

BOUNDARIES

EXISTING	REMOVED	PROPOSED	
			BLOCK BOUNDARY

BUILDINGS

EXISTING	REMOVED	PROPOSED	
			BUILDING ENVELOPE
			FUTURE BUILDING ENVELOPE

LANDSCAPE

EXISTING TREES TO BE REMOVED

EXISTING TREE TO BE RETAINED

EXISTING SERVICES

cSW Ø150	STORMWATER
cLV cLV	ELECTRICAL
cG Ø50 cG Ø50	GAS
cCOMM cCOMM	TELECOMMUNICATIONS
cS Ø150 cS Ø150	SEWER
cW Ø150 cW Ø150	WATER
cSW Ø150	SERVICE TO BE DEMOLISHED

CLASSIFICATION OF EXISTING UTILITY INFORMATION

A - SIGHTED, MUST BE LOCATED, THEN POTHOLED. UTILITY MUST BE PHYSICALLY SIGHTED AND MEASURED.

B - ELECTRONICALLY DETECTED AND LOCATED ON SITE USING VARIOUS TRACING METHODS.

C - ALIGNED FROM SURFACE FEATURES AND DIGITISED DATA.

D - DIGITISED DATA (DIAL BEFORE YOU DIG).

NOTE

1. BELOW GROUND SERVICES CAN BE REPRESENTED AS GREY FOR EXISTING AND BLACK FOR PROPOSED DEPENDING ON THE PLAN.
2. EXISTING SERVICES PITS, STRUCTURES AND COLUMNS ARE ILLUSTRATED AS PER THE ORIGINAL SURVEY.

Rev	Description	Eng	Draft	Date
3	SCHEMATIC DESIGN FOR REF	JL	ES	10.01.2025
2	SCHEMATIC DESIGN FOR REF	JL	ES	06.12.2024
1	FINAL DRAFT ISSUE FOR REF	JL	ES	21.11.2024

Client: NSW GOVERNMENT School Infrastructure NSW

Engineer: TTW www.ttwengineers.com

Project: NEW HIGH SCHOOL FOR SCHOFIELDS TALLAWONG

Drawing Title: GENERAL NOTES AND LEGEND SHEET 1

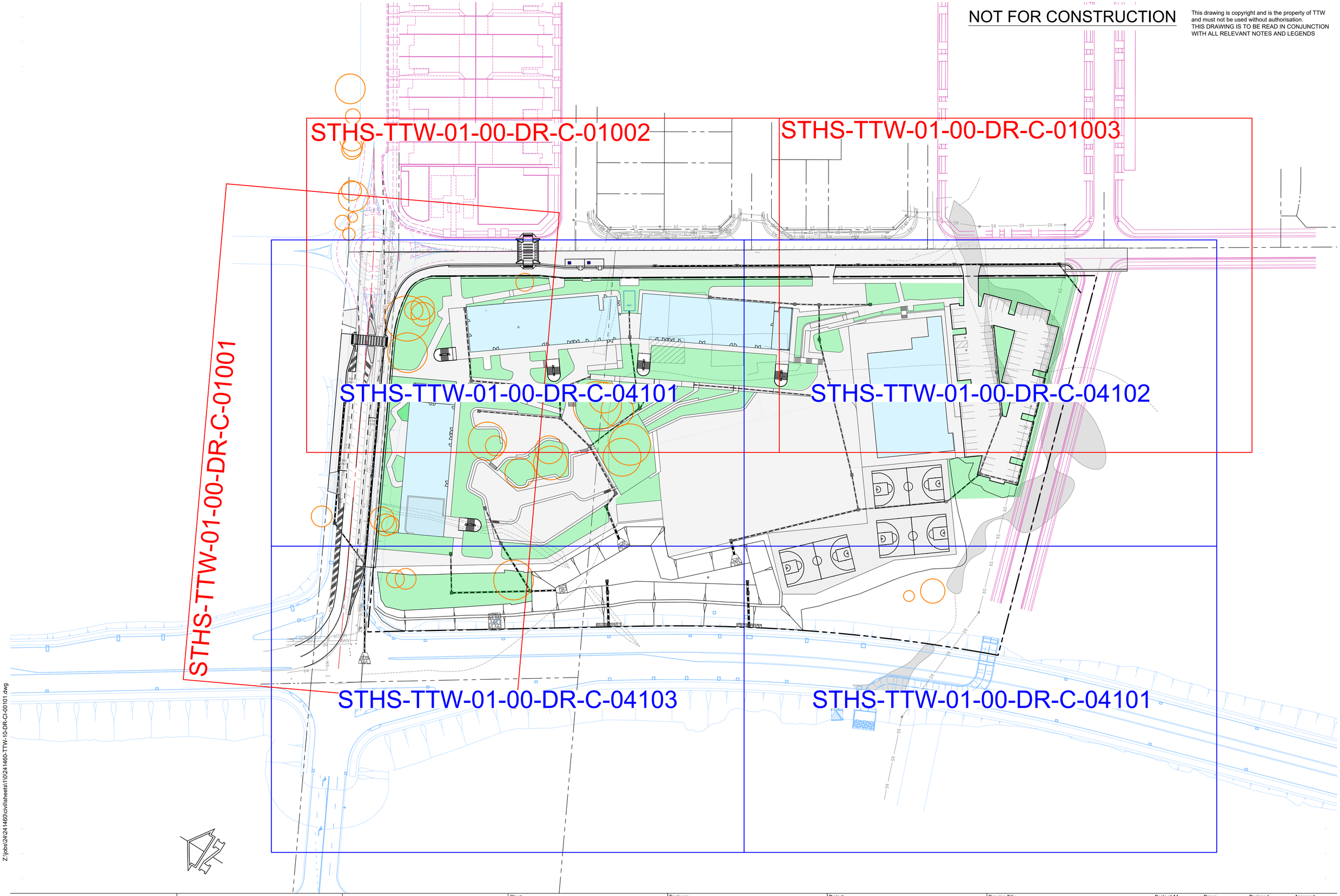
Scale at A1	Drawn	Designed	Approved
	ES	AW	CR

Project No	Originator	Type	Role	Sheet No.	Rev
STHS-TTW-01-00-DR-C-00003-3					

10.01.2025 3:09 PM

Z:\jobs\241241460\civil\sheets\10\241460-TTW-10-DR-CI-00003.dwg

NOT FOR CONSTRUCTION



Z:\jobs\24\2414460\civil\sheets\1\0\2414460-TTW-10-DR-CI-00101.dwg

Rev	Description	Eng	Draft	Date
4	SCHEMATIC DESIGN FOR REF	JL	ES	22.01.2025
3	SCHEMATIC DESIGN FOR REF	JL	ES	10.01.2025
2	SCHEMATIC DESIGN FOR REF	JL	ES	06.12.2024
1	FINAL DRAFT ISSUE FOR REF	JL	ES	21.11.2024

Client: NSW GOVERNMENT School Infrastructure NSW

Engineer: TTW www.ttwengineers.com

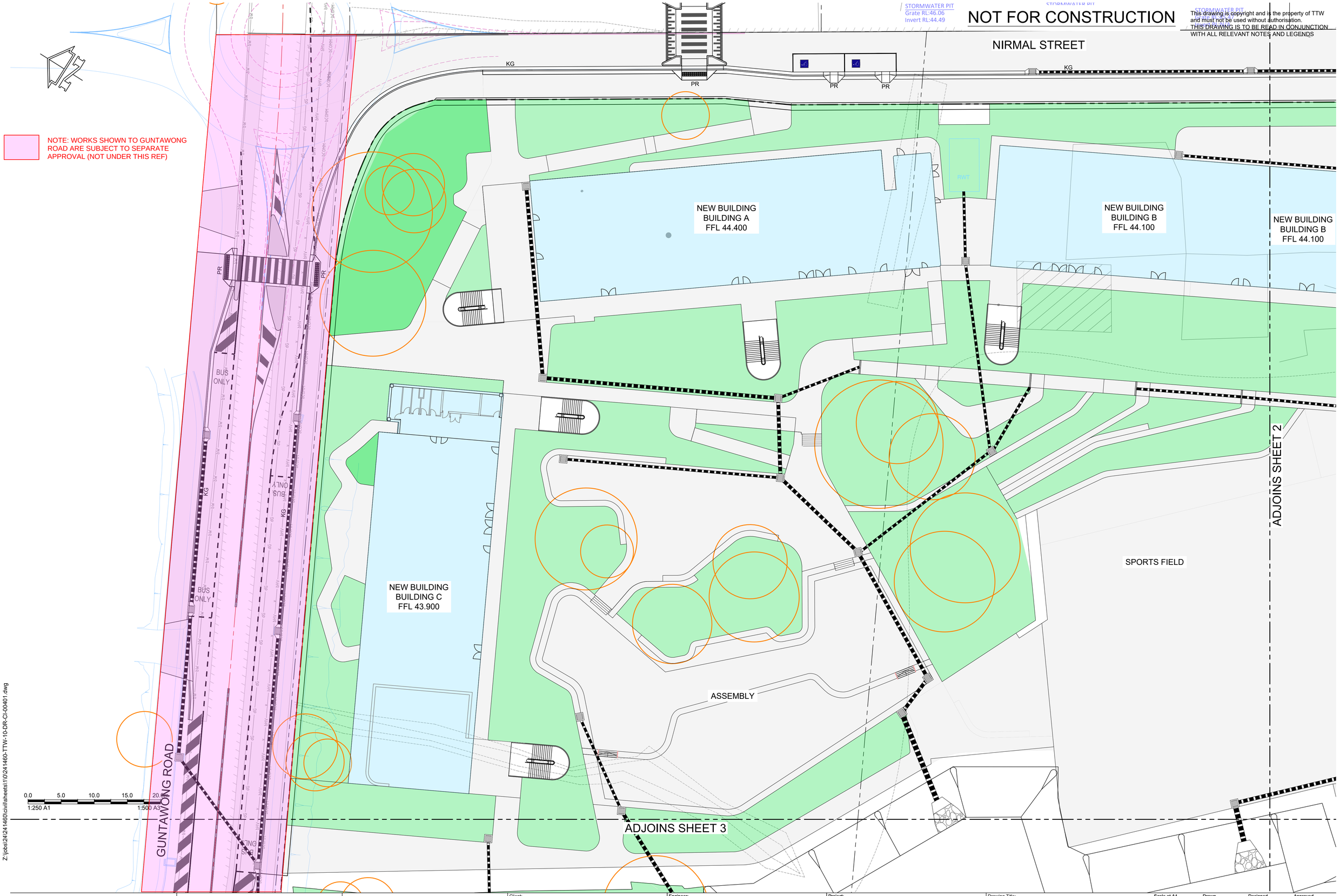
Project: NEW HIGH SCHOOL FOR SCHOFIELDS TALLAWONG

Drawing Title: GENERAL KEY PLAN

Scale at A1	Drawn	Designed	Approved
NTS	ES	AW	CR

Project No	Originator	Type	Role	Sheet No.	Rev
STHS-TTW-01-00-DR-C-00101-4					

22.01.2025 11:55 AM



Z:\jobs\241\2414160\civil\sheets\110\2414160-TTW-10-DR-CI-00401.dwg

Rev	Description	Eng Draft	Date
3	SCHEMATIC DESIGN FOR REF	JL ES	10.01.2025
2	SCHEMATIC DESIGN FOR REF	JL ES	06.12.2024
1	FINAL DRAFT ISSUE FOR REF	JL ES	21.11.2024

Client: NSW GOVERNMENT School Infrastructure NSW

Engineer: TTW www.ttwengineers.com

Project: NEW HIGH SCHOOL FOR SCHOFIELDS TALLAWONG

Drawing Title: GENERAL ARRANGEMENT PLAN SHEET 1

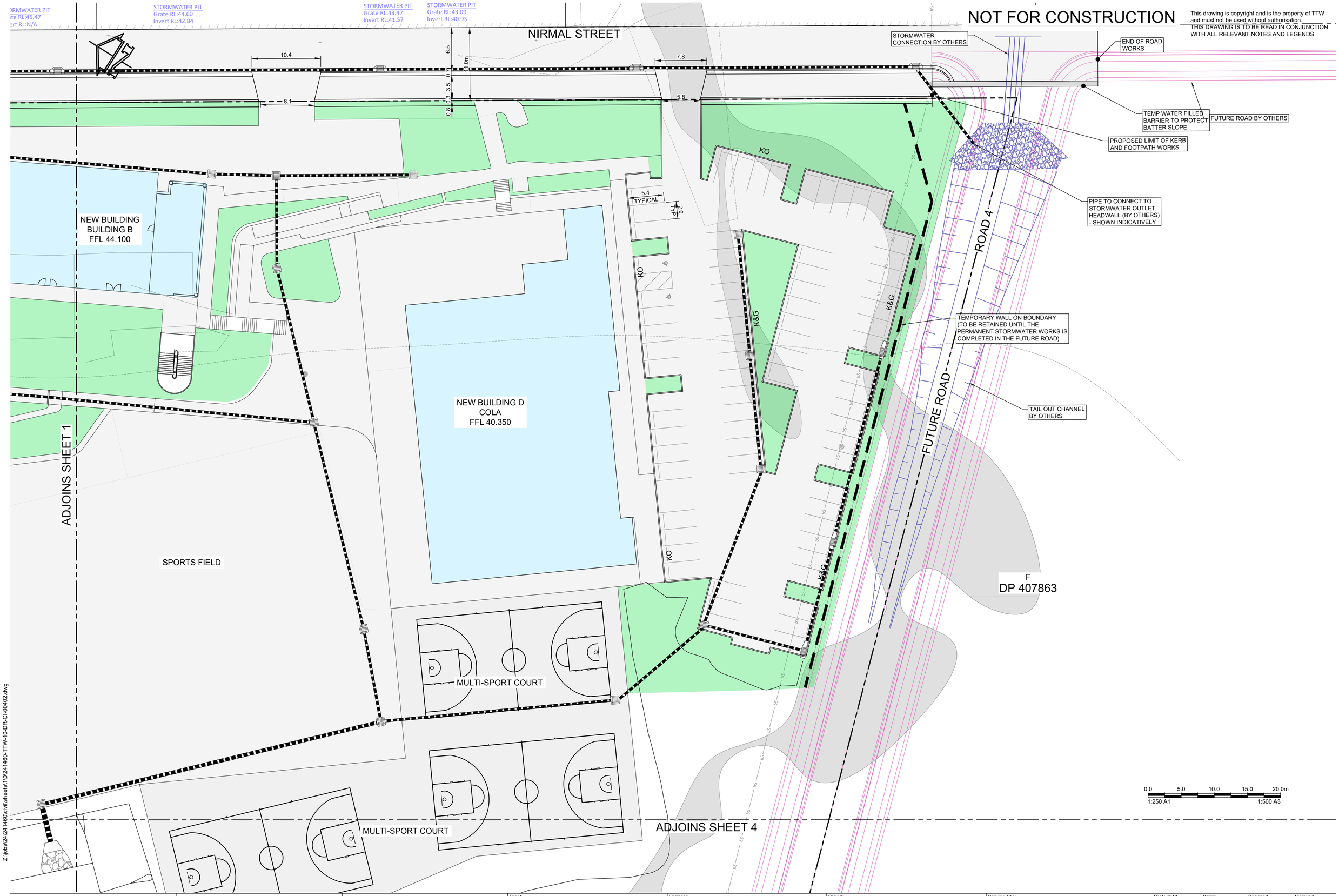
Scale at A1	Drawn	Designed	Approved
1:250	ES	AW	CR

Project No	Originator	Type	Role	Sheet No.	Rev
STHS	TTW	01	00	DR-C-00401-3	

10.01.2025 3:10 PM

NOT FOR CONSTRUCTION

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT NOTES AND LEGENDS



Z:\jobs\241241460\civil\sheets\10\241460-TTW-10-DR-CI-00402.dwg

Rev	Description	Eng	Draft	Date
4	SCHEMATIC DESIGN FOR REF	JL	ES	22.01.2025
3	SCHEMATIC DESIGN FOR REF	JL	ES	10.01.2025
2	SCHEMATIC DESIGN FOR REF	JL	ES	06.12.2024
1	FINAL DRAFT ISSUE FOR REF	JL	ES	21.11.2024

Client: School Infrastructure NSW

Engineer: TTW www.ttwengineers.com

Project: NEW HIGH SCHOOL FOR SCHOFIELDS TALLAWONG

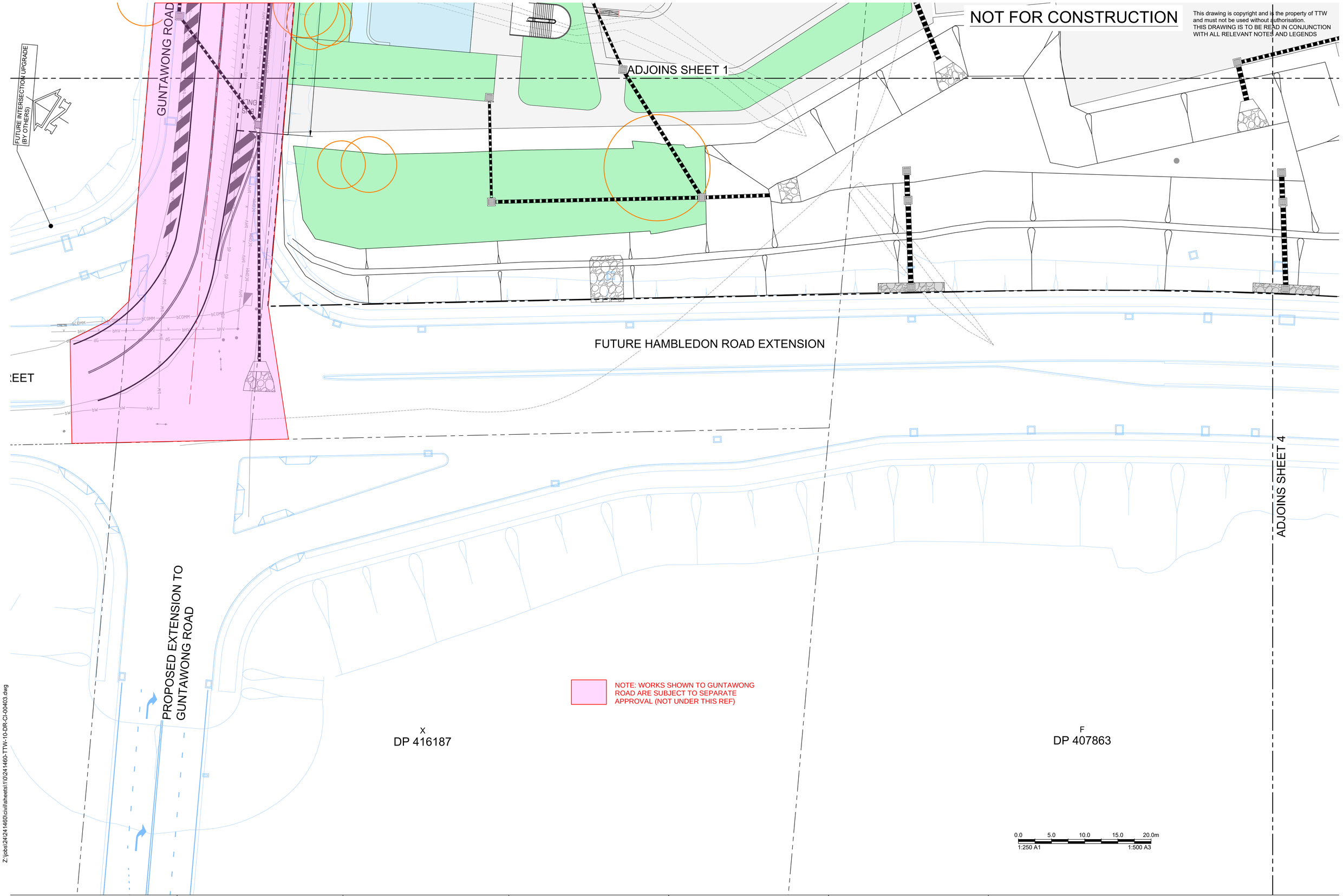
Drawing Title: GENERAL ARRANGEMENT PLAN SHEET 2

Scale at A1	Drawn	Designed	Approved
1:250	ES	AW	CR

Project No	Originator	Type	Role	Sheet No.	Rev
STHS	TTW	01	00	DR-C-00402	4

22.01.2025 2:29 PM

NOT FOR CONSTRUCTION



Z:\jobs\241\2414160\civil\sheets\10\2414160-TTW-10-DR-CI-00403.dwg

Rev	Description	Eng	Draft	Date
4	SCHEMATIC DESIGN FOR REF	JL	ES	22.01.2025
3	SCHEMATIC DESIGN FOR REF	JL	ES	10.01.2025
2	SCHEMATIC DESIGN FOR REF	JL	ES	06.12.2024
1	FINAL DRAFT ISSUE FOR REF	JL	ES	21.11.2024

Client: School Infrastructure NSW

Engineer: TTW www.ttwengineers.com

Project: NEW HIGH SCHOOL FOR SCHOFIELDS TALLAWONG

Drawing Title: GENERAL ARRANGEMENT PLAN SHEET 3

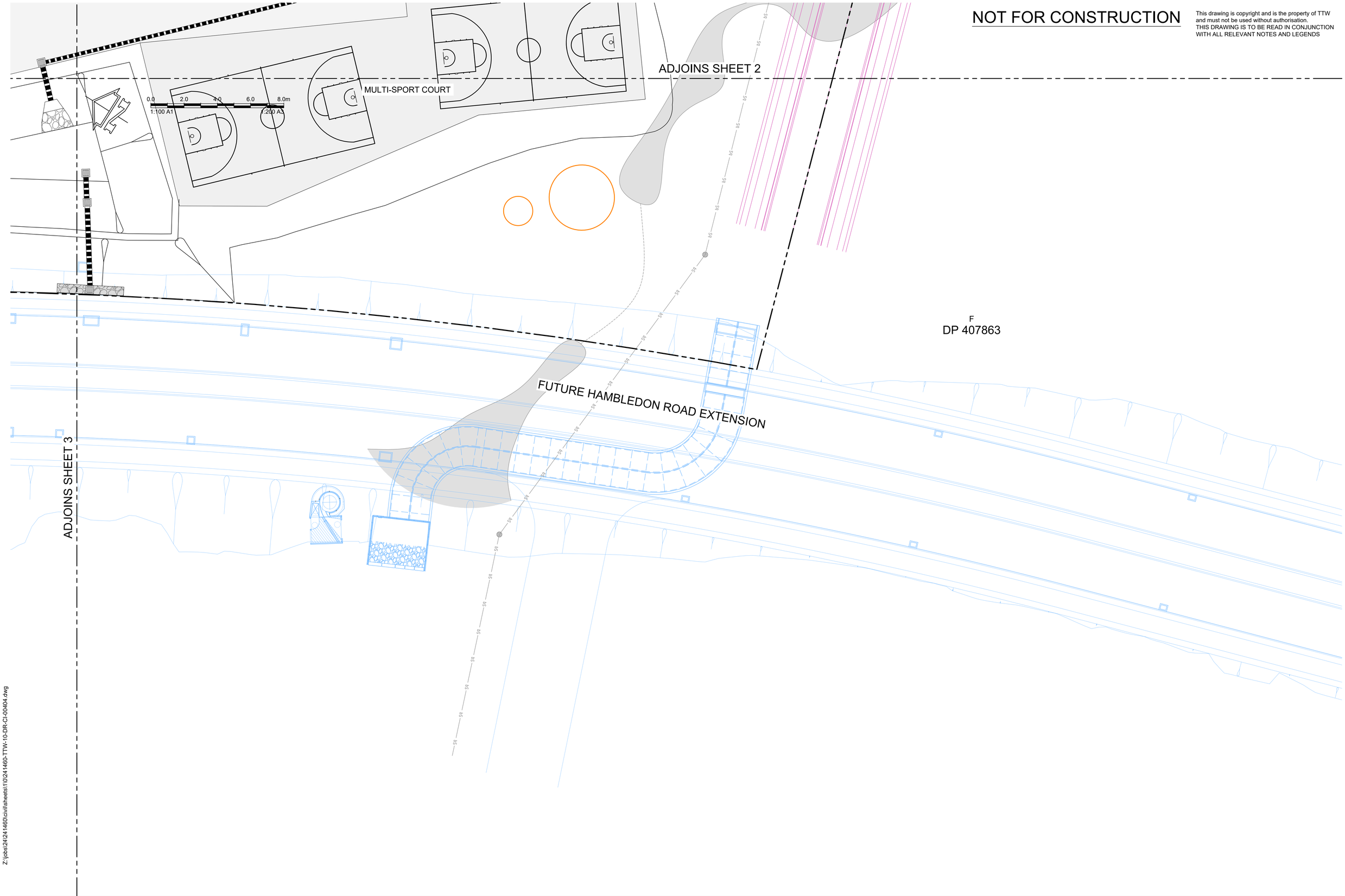
Scale at A1	Drawn	Designed	Approved
1:250	ES	AW	CR

Project No Originator Type Role Sheet No. Rev

STHS-TTW-01-00-DR-C-00403-4

22.01.2025 11:50 AM

NOT FOR CONSTRUCTION



Z:\jobs\241241460\civil\sheets\110\241460-TTW-10-DR-CI-00404.dwg

Rev	Description	Eng	Draft	Date
4	SCHEMATIC DESIGN FOR REF	JL	ES	22.01.2025
3	SCHEMATIC DESIGN FOR REF	JL	ES	10.01.2025
2	SCHEMATIC DESIGN FOR REF	JL	ES	06.12.2024
1	FINAL DRAFT ISSUE FOR REF	JL	ES	21.11.2024

Client: NSW GOVERNMENT School Infrastructure NSW

Engineer: TTW www.ttwengineers.com

Project: NEW HIGH SCHOOL FOR SCHOFIELDS TALLAWONG

Drawing Title: GENERAL ARRANGEMENT PLAN SHEET 4

Scale at A1	Drawn	Designed	Approved
1:250	ES	AW	CR

Project No	Originator	Type	Role	Sheet No.	Rev
STHS	TTW	01	00	DR-C-00404	4

22.01.2025 11:51 AM

NOT FOR CONSTRUCTION

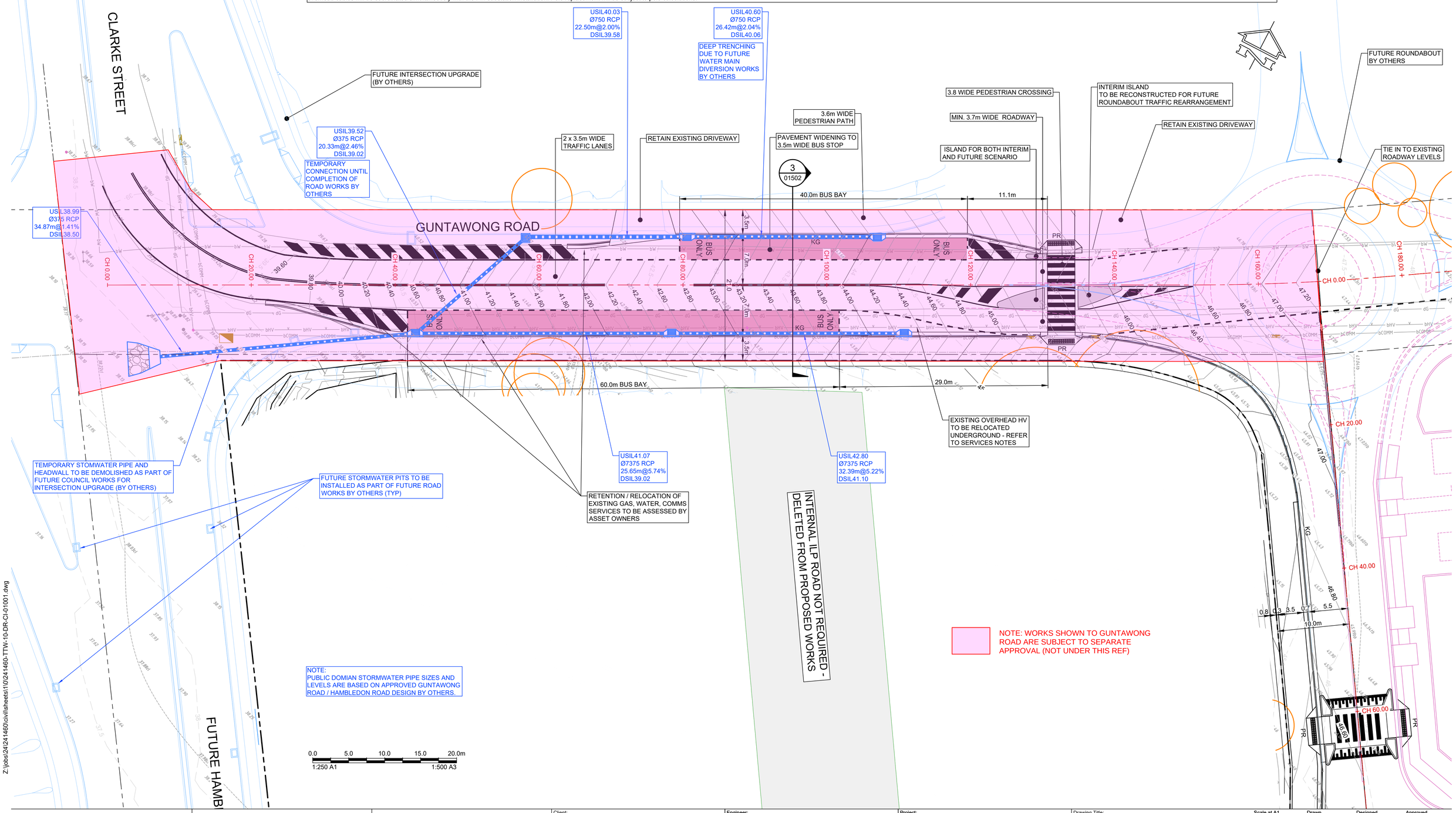
SERVICES NOTES:

Trenching for Endeavour Cables and Conduits:
The trenching for Endeavour cables and conduits will occur within a 0–1200mm range from the property boundary. While trenching is generally expected to occur 650mm from the boundary, the L1 ASP will conduct a trial hole to determine the most suitable alignment within the 1200mm range. The exact quantity of HV/LV cables and conduits will be coordinated and confirmed during the design stage, as Endeavour will inform us of the number of conduits they require for installation. Should Endeavour request more conduits than are needed for this project, you can expect reimbursement. This will ensure that, if necessary, additional conduits can be installed for future nearby works without the need to dig up the footpath again.

Jemena High-Pressure Gas:
The Jemena high-pressure gas pipeline appears to be situated far from the Endeavour trenching allocation. As long as the gap between the gas mains and Endeavour cables is at least 500mm, this should be safe. At this distance, fault currents from the Endeavour cables will not be transmitted to the gas pipe, ensuring safety.

Streetlight Column Installation:
The final placement of the streetlight columns will be determined during the design stage. The council has provided the categories for both Guntawong Road and Nirimal Street. Guntawong Road has been categorized as a V category for main roads and vehicles, meaning the columns will be installed from the back of the kerb, with the exact distance to be confirmed once the lighting design is finalised. Nirimal Street, categorized as a P category for pedestrians, will have columns installed 350mm from the property boundary to the center of the column. The number of columns for both streets will be assessed according to Australian standards to ensure compliance. The streetlight design will be developed in conjunction with Endeavour Energy's power design.

Removal of HV/LV Overhead Mains and Installation of PM Substation:
The removal of HV/LV overhead mains on Guntawong Road and the installation of a PM substation are part of this project and will be coordinated during the design phase. The PM substation will be designed to comply with Endeavour Energy's standards, including easement and restriction zone requirements. The undergrounding of the HV/LV overhead cables will be coordinated simultaneously with the PM substation installation. Pole replacement will be subject to pole calculations.



Z:\jobs\241\2414460\civil\sheets\10\2414460-TTW-10-DR-CI-01001.dwg

Rev	Description	Eng Draft	Date
3	SCHEMATIC DESIGN FOR REF	JL ES	10.01.2025
2	SCHEMATIC DESIGN FOR REF	JL ES	06.12.2024
1	FINAL DRAFT ISSUE FOR REF	JL ES	21.11.2024

Client: School Infrastructure NSW

Engineer: TTW www.ttwengineers.com

Project: NEW HIGH SCHOOL FOR SCHOFIELDS TALLAWONG

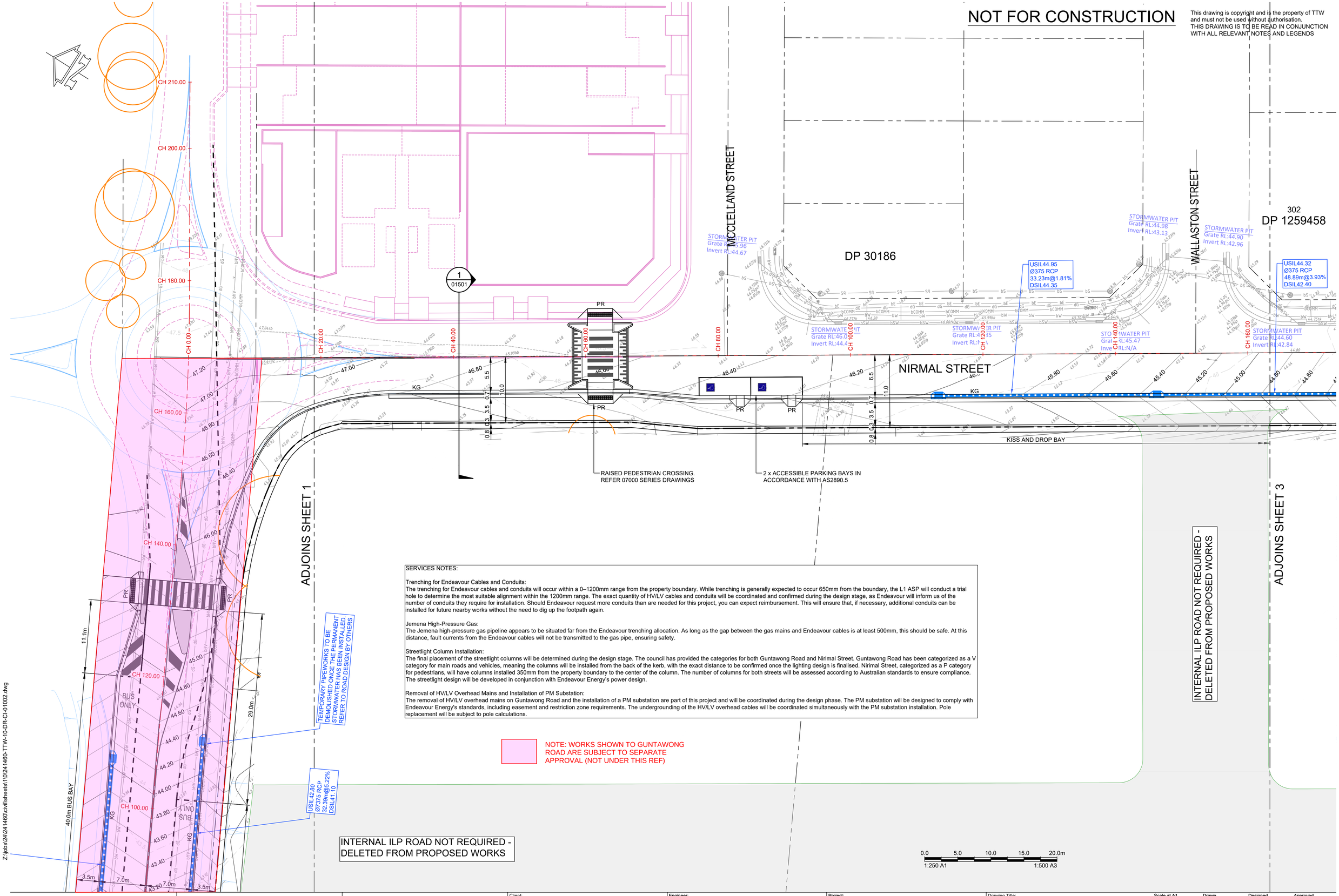
Drawing Title: GUNTAWONG ROAD ROADWORKS AND STORMWATER PLAN

Scale at A1	Drawn	Designed	Approved
1:250	ES	AW	CR

Project No	Originator	Type	Role	Sheet No.	Rev
STHS	TTW	01	00	DR-C-01001-3	

22.01.2025 2:31 PM

NOT FOR CONSTRUCTION



SERVICES NOTES:

Trenching for Endeavour Cables and Conduits:
The trenching for Endeavour cables and conduits will occur within a 0–1200mm range from the property boundary. While trenching is generally expected to occur 650mm from the boundary, the L1 ASP will conduct a trial hole to determine the most suitable alignment within the 1200mm range. The exact quantity of HV/LV cables and conduits will be coordinated and confirmed during the design stage, as Endeavour will inform us of the number of conduits they require for installation. Should Endeavour request more conduits than are needed for this project, you can expect reimbursement. This will ensure that, if necessary, additional conduits can be installed for future nearby works without the need to dig up the footpath again.

Jemena High-Pressure Gas:
The Jemena high-pressure gas pipeline appears to be situated far from the Endeavour trenching allocation. As long as the gap between the gas mains and Endeavour cables is at least 500mm, this should be safe. At this distance, fault currents from the Endeavour cables will not be transmitted to the gas pipe, ensuring safety.

Streetlight Column Installation:
The final placement of the streetlight columns will be determined during the design stage. The council has provided the categories for both Guntawong Road and Nirimal Street. Guntawong Road has been categorized as a V category for main roads and vehicles, meaning the columns will be installed from the back of the kerb, with the exact distance to be confirmed once the lighting design is finalised. Nirimal Street, categorized as a P category for pedestrians, will have columns installed 350mm from the property boundary to the center of the column. The number of columns for both streets will be assessed according to Australian standards to ensure compliance. The streetlight design will be developed in conjunction with Endeavour Energy's power design.

Removal of HV/LV Overhead Mains and Installation of PM Substation:
The removal of HV/LV overhead mains on Guntawong Road and the installation of a PM substation are part of this project and will be coordinated during the design phase. The PM substation will be designed to comply with Endeavour Energy's standards, including easement and restriction zone requirements. The undergrounding of the HV/LV overhead cables will be coordinated simultaneously with the PM substation installation. Pole replacement will be subject to pole calculations.

Z:\jobs\241241460\civil\sheets\110241460-TTW-10-DR-CI-01002.dwg

Rev	Description	Eng	Draft	Date
3	SCHEMATIC DESIGN FOR REF	JL	ES	10.01.2025
2	SCHEMATIC DESIGN FOR REF	JL	ES	06.12.2024
1	FINAL DRAFT ISSUE FOR REF	JL	ES	21.11.2024

Client: School Infrastructure NSW

Engineer: TTW www.ttwengineers.com

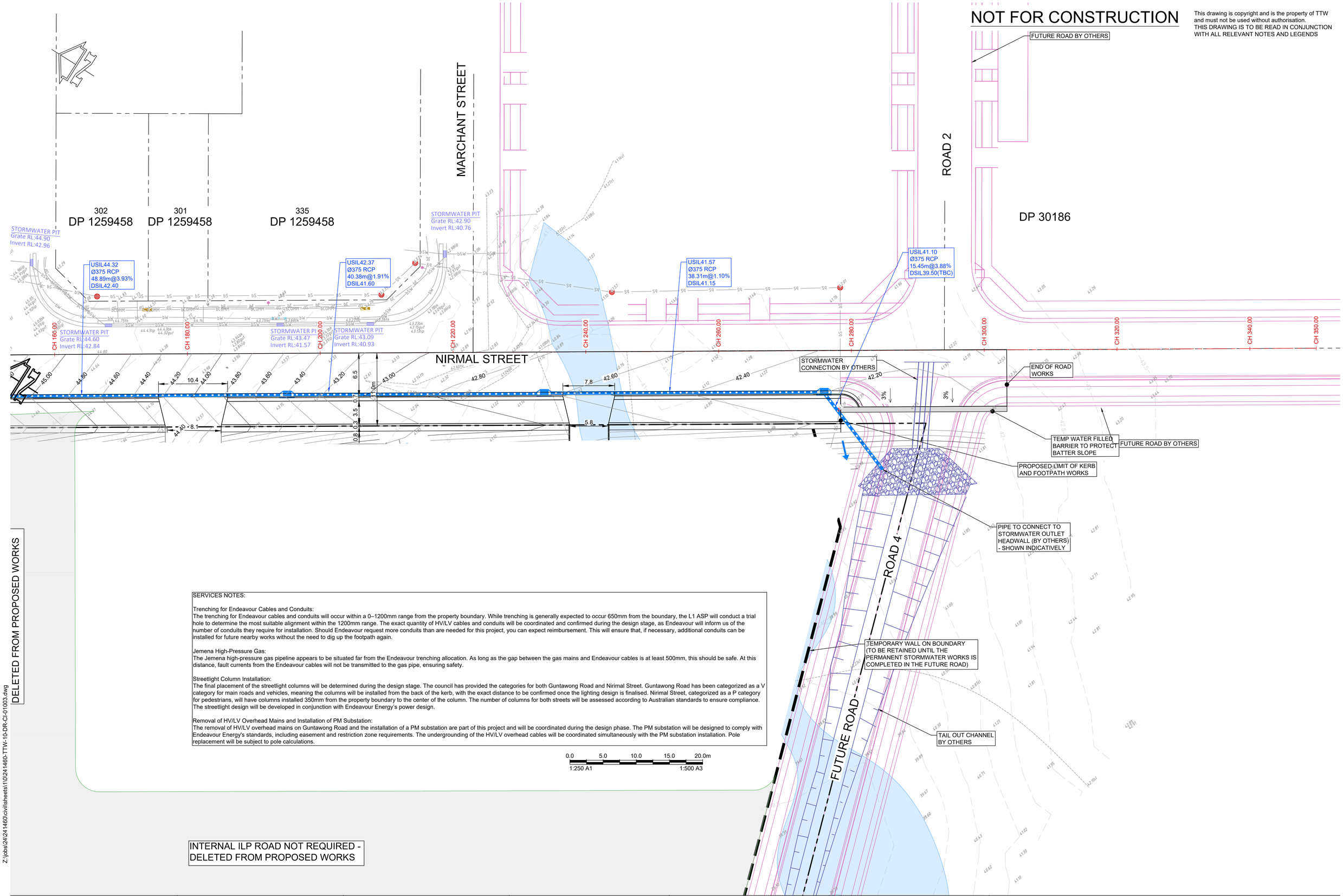
Project: NEW HIGH SCHOOL FOR SCHOFIELDS TALLAWONG

Drawing Title: NIRMAL STREET ROADWORKS AND STORMWATER PLAN SHEET1

Scale at A1	Drawn	Designed	Approved
1:250	ES	AW	CR

Project No Originator Type Role Sheet No. Rev
STHS-TTW-01-00-DR-C-01002-3
10.01.2025 3:14 PM

NOT FOR CONSTRUCTION



DELETED FROM PROPOSED WORKS

SERVICES NOTES:

Trenching for Endeavour Cables and Conduits:
The trenching for Endeavour cables and conduits will occur within a 0–1200mm range from the property boundary. While trenching is generally expected to occur 650mm from the boundary, the L1 ASP will conduct a trial hole to determine the most suitable alignment within the 1200mm range. The exact quantity of HV/LV cables and conduits will be coordinated and confirmed during the design stage, as Endeavour will inform us of the number of conduits they require for installation. Should Endeavour request more conduits than are needed for this project, you can expect reimbursement. This will ensure that, if necessary, additional conduits can be installed for future nearby works without the need to dig up the footpath again.

Jemena High-Pressure Gas:
The Jemena high-pressure gas pipeline appears to be situated far from the Endeavour trenching allocation. As long as the gap between the gas mains and Endeavour cables is at least 500mm, this should be safe. At this distance, fault currents from the Endeavour cables will not be transmitted to the gas pipe, ensuring safety.

Streetlight Column Installation:
The final placement of the streetlight columns will be determined during the design stage. The council has provided the categories for both Guntawong Road and Nirimal Street. Guntawong Road has been categorized as a V category for main roads and vehicles, meaning the columns will be installed from the back of the kerb, with the exact distance to be confirmed once the lighting design is finalised. Nirimal Street, categorized as a P category for pedestrians, will have columns installed 350mm from the property boundary to the center of the column. The number of columns for both streets will be assessed according to Australian standards to ensure compliance. The streetlight design will be developed in conjunction with Endeavour Energy's power design.

Removal of HV/LV Overhead Mains and Installation of PM Substation:
The removal of HV/LV overhead mains on Guntawong Road and the installation of a PM substation are part of this project and will be coordinated during the design phase. The PM substation will be designed to comply with Endeavour Energy's standards, including easement and restriction zone requirements. The undergrounding of the HV/LV overhead cables will be coordinated simultaneously with the PM substation installation. Pole replacement will be subject to pole calculations.

0.0 5.0 10.0 15.0 20.0m
1:250 A1 1:500 A3

INTERNAL ILP ROAD NOT REQUIRED - DELETED FROM PROPOSED WORKS

Z:\jobs\24\2414460\civil\sheets\1\0\2414460-TTW-10-DR-CI-01003.dwg

Rev	Description	Eng	Draft	Date
3	SCHEMATIC DESIGN FOR REF	JL	ES	10.01.2025
2	SCHEMATIC DESIGN FOR REF	JL	ES	06.12.2024
1	FINAL DRAFT ISSUE FOR REF	JL	ES	21.11.2024

Client: School Infrastructure NSW

Engineer: TTW www.ttwengineers.com

Project: NEW HIGH SCHOOL FOR SCHOFIELDS TALLAWONG

Drawing Title: NIRMAL STREET ROADWORKS AND STORMWATER PLAN SHEET2

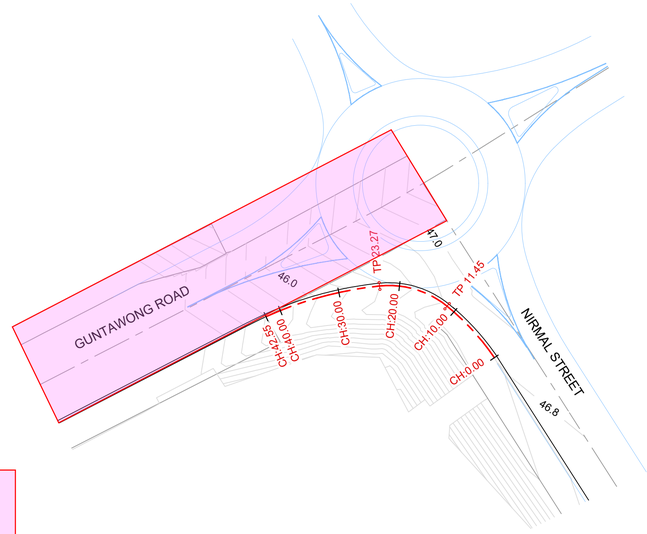
Scale at A1	Drawn	Designed	Approved
1:250	ES	AW	CR

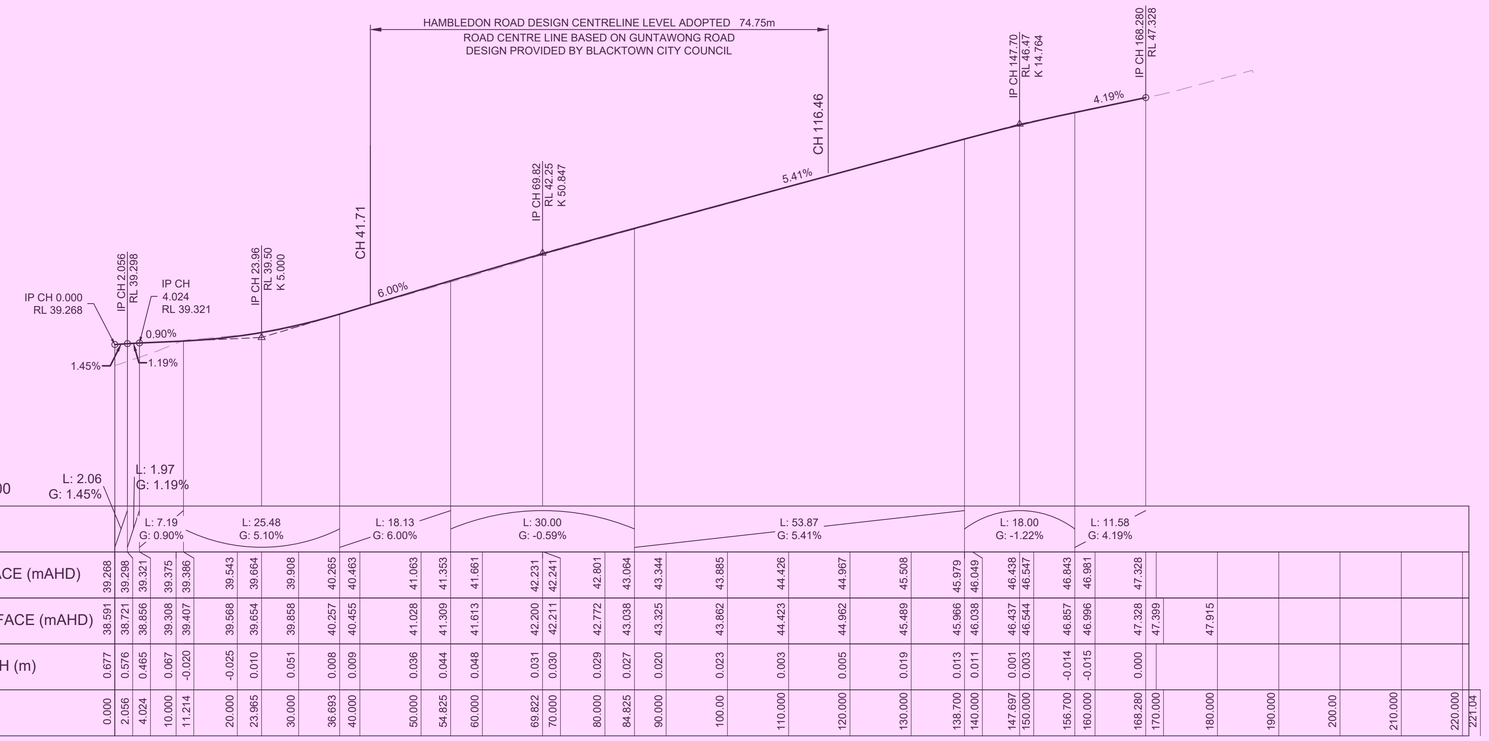
Project No	Originator	Type	Role	Sheet No.	Rev
STHS	TTW	01	00	DR-C-01003	3

10.01.2025 3:15 PM

NOT FOR CONSTRUCTION

NOTE: WORKS SHOWN TO GUNTAWONG ROAD ARE SUBJECT TO SEPARATE APPROVAL (NOT UNDER THIS REF)



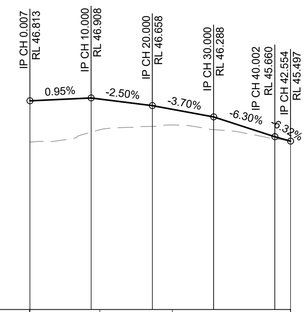


GUNTAWONG ROAD CENTRE LINE LONGITUDINAL SECTION

SCALES: HORIZONTAL 1:500 VERTICAL 1:100

KERB RETURN PLAN

SCALES: 1:500



KERB RETURN INVERT OF KERB LONGITUDINAL SECTION

SCALES: HORIZONTAL 1:500 VERTICAL 1:100

0.0 10.0 20.0 30.0 40.0m
1:500 A1 1:1000 A3

0.0 2.0 4.0 6.0 8.0m
1:100 A1 1:200 A3

Z:\jobs\241\2414\60\civil\sheets\110\2414\60-TTW-10-DR-CI-01201.dwg

Rev	Description	Eng	Draft	Date
3	SCHEMATIC DESIGN FOR REF	JL	ES	10.01.2025
2	SCHEMATIC DESIGN FOR REF	JL	ES	06.12.2024
1	FINAL DRAFT ISSUE FOR REF	JL	ES	21.11.2024

Client: NSW GOVERNMENT School Infrastructure NSW

Engineer: TTW www.ttwengineers.com

Project: NEW HIGH SCHOOL FOR SCHOFIELDS TALLAWONG

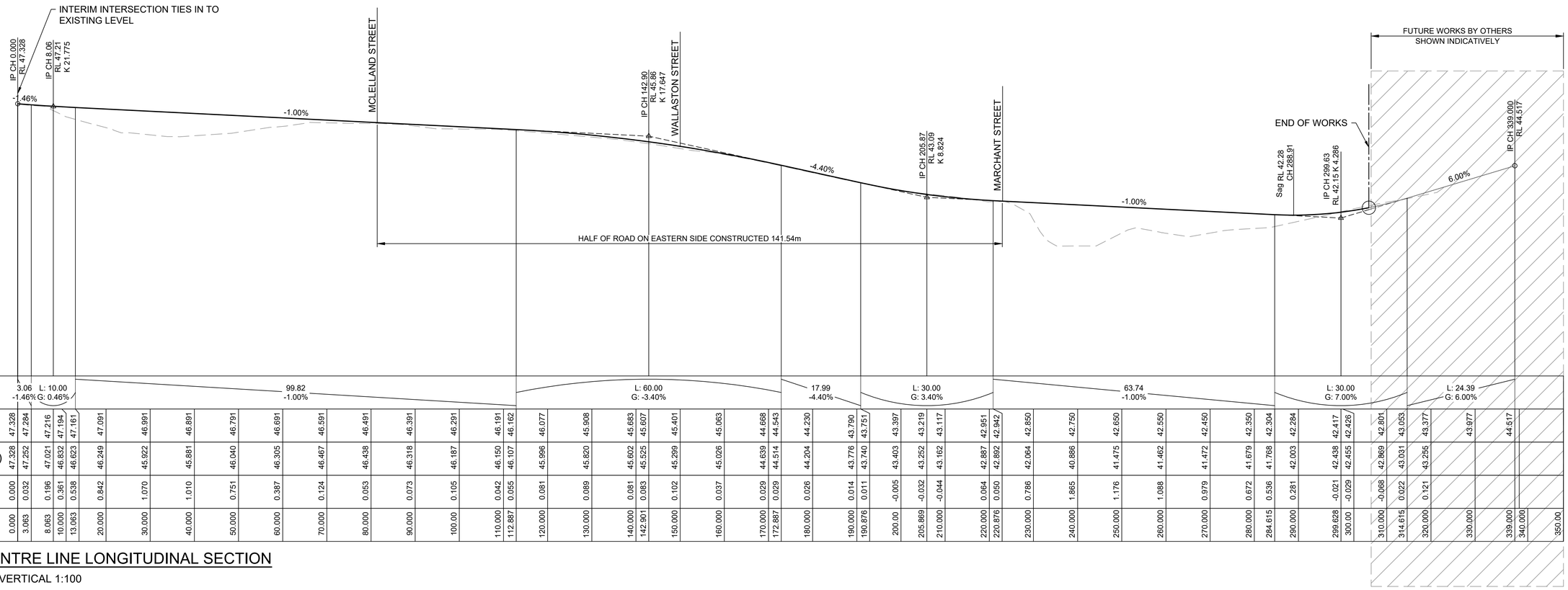
Drawing Title: ROAD LONGITUDINAL SECTION GUNTAWONG ROAD

Scale at A1	Drawn	Designed	Approved
	ES	AW	CR

Project No	Originator	Type	Role	Sheet No.	Rev
STHS-TTW-01-00-DR-C-01201-3					

10.01.2025 3:16 PM

NOT FOR CONSTRUCTION



VERTICAL GEOMETRY: 3.06 -1.46% | L: 10.00 G: 0.46% | 99.82 -1.00% | L: 60.00 G: -3.40% | 17.99 -4.40% | L: 30.00 G: 3.40% | 63.74 -1.00% | L: 30.00 G: 7.00% | L: 24.39 G: 6.00%

CHAINAGE (m)	DESIGN SURFACE (mAHD)	EXISTING SURFACE (mAHD)	CUT/FILL DEPTH (m)
0.000	47.328	47.328	0.000
3.063	47.284	47.252	0.032
8.063	47.216	47.021	0.196
10.000	47.194	46.832	0.361
13.063	47.161	46.623	0.538
20.000	47.091	46.249	0.842
30.000	46.991	45.922	1.070
40.000	46.891	45.881	1.010
50.000	46.791	46.040	0.751
60.000	46.691	46.305	0.387
70.000	46.591	46.467	0.124
80.000	46.491	46.438	0.053
90.000	46.391	46.318	0.073
100.00	46.291	46.187	0.105
110.000	46.191	46.150	0.042
112.887	46.162	46.107	0.055
120.000	46.077	45.996	0.081
130.000	45.908	45.820	0.089
140.000	45.683	45.602	0.081
142.901	45.607	45.525	0.083
150.000	45.401	45.299	0.102
160.000	45.063	45.026	0.037
170.000	44.668	44.639	0.029
172.887	44.543	44.514	0.029
180.000	44.230	44.204	0.026
190.000	43.790	43.776	0.014
190.876	43.751	43.740	0.011
200.00	43.397	43.403	-0.005
205.869	43.219	43.252	-0.032
210.000	43.117	43.162	-0.044
220.000	42.951	42.887	0.064
220.876	42.942	42.892	0.050
230.000	42.850	42.064	0.786
240.000	42.750	40.886	1.865
250.000	42.650	41.475	1.176
260.000	42.550	41.462	1.088
270.000	42.450	41.472	0.979
280.000	42.350	41.679	0.672
284.615	42.304	41.768	0.536
290.000	42.284	42.003	0.281
299.628	42.417	42.438	-0.021
300.00	42.426	42.455	-0.029
310.000	42.801	42.869	-0.068
314.615	43.053	43.031	0.022
320.000	43.377	43.256	0.121
330.000	43.977		
339.000	44.517		
340.000			
350.00			

NIRMAL STREET CENTRE LINE LONGITUDINAL SECTION

SCALES: HORIZONTAL 1:500 VERTICAL 1:100

0.0 10.0 20.0 30.0 40.0m
1:500 A1 1:1000 A3

0.0 2.0 4.0 6.0 8.0m
1:100 A1 1:200 A3

Z:\jobs\241\2414460\civil\sheets\10\2414460-TTW-10-DR-CI-01202.dwg

Rev	Description	Eng	Draft	Date
3	SCHEMATIC DESIGN FOR REF	JL	ES	10.01.2025
2	SCHEMATIC DESIGN FOR REF	JL	ES	06.12.2024
1	FINAL DRAFT ISSUE FOR REF	JL	ES	21.11.2024

Client: School Infrastructure NSW

Engineer: TTW www.ttwengineers.com

Project: NEW HIGH SCHOOL FOR SCHOFIELDS TALLAWONG

Drawing Title: ROAD LONGITUDINAL SECTION NIRMAL STREET

Scale at A1	Drawn	Designed	Approved
	ES	AW	CR

Project No	Originator	Type	Role	Sheet No.	Rev
STHS-TTW-01-00-DR-C-01202-3					

10.01.2025 3:16 PM

NOT FOR CONSTRUCTION

FUTURE HAMBLEDON ROAD INTERSECTION DESIGN LEVEL

EXISTING ROAD SURFACE TO BE RETAINED

DATUM R.L. 38.00

DESIGN SURFACE (mAHD)	
EXISTING SURFACE (mAHD)	
LEVEL DIFFERENCE (m)	
OFFSET (m)	

CH 20.00

LEVELS TO MATCH BCC DESIGN

SITE LEVEL

4.0% -3.0% -3.0% 4.0%

DATUM R.L. 42.00

DESIGN SURFACE (mAHD)	44.018	43.662	43.689	43.885	43.689	43.662	44.019	43.995	43.884	43.878	
EXISTING SURFACE (mAHD)				43.862	43.629	43.605	43.413	43.380	43.359	43.358	
LEVEL DIFFERENCE (m)				0.023	0.060	0.057	0.606	0.616	0.525	0.520	
OFFSET (m)	-10.461	-7.000	-6.550	0.000	6.550	7.000	10.500	11.300	11.806	11.832	

CH 100.00

EXISTING ROAD SURFACE TO BE RETAINED

DATUM R.L. 46.00

DESIGN SURFACE (mAHD)	
EXISTING SURFACE (mAHD)	
LEVEL DIFFERENCE (m)	
OFFSET (m)	

CH 180.00

-2.7% -2.9% -2.0% -2.0% -2.5%

DATUM R.L. 40.00

DESIGN SURFACE (mAHD)	40.359	40.415	40.455	40.397	40.342	40.321	40.284	40.404	40.345	40.311
EXISTING SURFACE (mAHD)	40.359	40.420	40.455	40.379	40.331	40.324	40.321	40.317	40.313	40.311
LEVEL DIFFERENCE (m)	0.000	-0.005	0.000	0.018	0.011	-0.003	-0.036	0.087	0.033	0.000
OFFSET (m)	-3.485	-1.379	0.000	2.832	5.615	6.440	6.891	7.417	7.937	8.163

CH 40.00

LEVELS TO MATCH BCC DESIGN

ENTRY TO SCHOOL

4.0% -3.0% -3.0% 4.0%

DATUM R.L. 44.00

DESIGN SURFACE (mAHD)	45.107	44.747	44.774	44.967	44.771	44.744	45.101	45.097	
EXISTING SURFACE (mAHD)				44.962	44.686	44.660	44.456	44.448	
LEVEL DIFFERENCE (m)				0.005	0.085	0.084	0.646	0.650	
OFFSET (m)	-10.454	-6.890	-6.440	0.000	6.550	7.000	10.500	10.633	

CH 120.00

HALF ROAD TO MATCH BCC DESIGN LEVELS

-3.3% -3.0% 4.0% -20.7%

DATUM R.L. 40.00

DESIGN SURFACE (mAHD)	41.510	41.521	41.603	41.622	41.661	41.464	41.437	41.795	41.771	41.391	41.201	41.200
EXISTING SURFACE (mAHD)	41.486	41.521	41.574	41.592	41.613	41.374	41.362	41.263	41.240	41.157	41.157	41.157
LEVEL DIFFERENCE (m)	0.025	0.000	0.029	0.030	0.048	0.090	0.076	0.532	0.531	0.234	0.044	0.044
OFFSET (m)	-4.641	-3.497	-1.773	-1.187	0.000	6.550	7.000	10.500	11.300	13.138	13.988	13.991

CH 60.00

-3.0% -3.0% 5.3% -24.9%

DATUM R.L. 44.00

DESIGN SURFACE (mAHD)	45.905	45.899	46.049	45.839	45.963	46.151	46.149	46.117	45.096
EXISTING SURFACE (mAHD)		45.915	46.038	45.677	45.639	45.411	45.392	45.364	45.054
LEVEL DIFFERENCE (m)		-0.016	0.011	0.162	0.324	0.740	0.757	0.753	0.042
OFFSET (m)	-5.056	-4.998	0.000	7.000	7.554	10.918	11.446	11.906	16.000

CH 140.00

NOTE: WORKS SHOWN TO GUNTAWONG ROAD ARE SUBJECT TO SEPARATE APPROVAL (NOT UNDER THIS REF)

LEVELS TO MATCH BCC DESIGN

SITE LEVEL

4.0% -3.0% -3.0% 4.0% -3.0%

DATUM R.L. 42.00

DESIGN SURFACE (mAHD)	42.934	42.578	42.605	42.801	42.605	42.578	42.935	42.911	42.525	
EXISTING SURFACE (mAHD)				42.772	42.519	42.501	42.353	42.314	42.234	
LEVEL DIFFERENCE (m)				0.029	0.086	0.077	0.582	0.597	0.291	
OFFSET (m)	-10.467	-7.000	-6.550	0.000	6.550	7.000	10.500	11.300	12.953	

CH 80.00

NIRMAL STREET INTERSECTION

-3.0% -3.0% -2.7% -0.9%

DATUM R.L. 46.00

DESIGN SURFACE (mAHD)	46.830	46.825	46.981	46.772	46.716	46.693	46.682	46.671	46.669	
EXISTING SURFACE (mAHD)		46.876	46.996	46.629	46.436	46.340	46.219	46.132	46.062	
LEVEL DIFFERENCE (m)		-0.051	-0.015	0.143	0.280	0.353	0.463	0.539	0.607	
OFFSET (m)	-5.350	-5.228	0.000	6.971	9.024	10.150	11.641	12.825	13.906	

CH 160.00

NOTE:
DESIGN LEVELS CH 41.41 TO CH 116.46 ARE BASED ON GUNTAWONG ROAD DESIGN PROVIDED BY BLACKTOWN CITY COUNCIL.

Z:\jobs\241\241460\civil\sheets\110\241460-TTW-10-DR-CI-01301.dwg

0.0 4.0 8.0 12.0 16.0m
1:200 A1 1:400 A3

Rev	Description	Eng	Draft	Date
3	SCHEMATIC DESIGN FOR REF	JL	ES	10.01.2025
2	SCHEMATIC DESIGN FOR REF	JL	ES	06.12.2024
1	FINAL DRAFT ISSUE FOR REF	JL	ES	21.11.2024

Client: NSW GOVERNMENT School Infrastructure NSW

Engineer: TTW www.ttwengineers.com

Project: NEW HIGH SCHOOL FOR SCHOFIELDS TALLAWONG

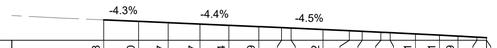
Drawing Title: CROSS SECTIONS GUNTAWONG ROAD

Scale at A1	Drawn	Designed	Approved
1:200	ES	AW	CR

Project No Originator Type Role Sheet No. Rev
STHS-TTW-01-00-DR-C-01301-3

10.01.2025 3:16 PM

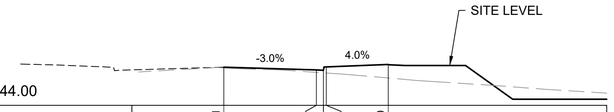
NOT FOR CONSTRUCTION



DATUM R.L. 46.00

DESIGN SURFACE (mAHD)	47.328	47.230	47.147	47.057	46.974	46.889	46.824	46.798	46.702	46.621	46.582	46.523	46.493	46.411	46.331	46.269	46.204	46.170
EXISTING SURFACE (mAHD)	47.328	47.231	47.149	47.061	46.981	46.898	46.827	46.797	46.696	46.610	46.569	46.508	46.478	46.395	46.317	46.256	46.188	46.154
LEVEL DIFFERENCE (m)	0.000	-0.001	-0.003	-0.005	-0.007	-0.009	-0.003	-0.001	0.006	0.011	0.013	0.015	0.016	0.016	0.014	0.013	0.015	0.016
OFFSET (m)	0.000	2.281	4.215	6.288	8.176	10.126	11.608	12.241	14.323	16.043	16.877	18.098	18.703	20.355	21.923	23.134	24.372	25.000

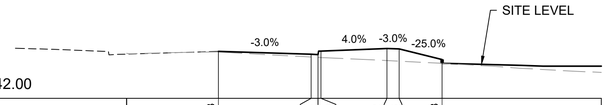
CH 0.00



DATUM R.L. 44.00

DESIGN SURFACE (mAHD)	46.491	46.310	46.283	46.508	46.670	
EXISTING SURFACE (mAHD)	46.438	46.149	46.119	46.106	45.782	
LEVEL DIFFERENCE (m)	0.053	0.161	0.164	0.402	0.887	
OFFSET (m)	0.000	6.050	6.500	6.692	10.734	

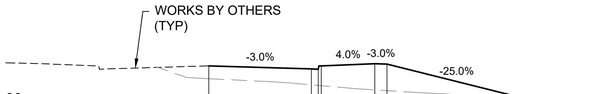
CH 80.00



DATUM R.L. 42.00

DESIGN SURFACE (mAHD)	45.063	44.881	44.854	45.079	45.252	45.228	44.528	
EXISTING SURFACE (mAHD)	45.026	44.695	44.671	44.661	44.463	44.422	44.280	
LEVEL DIFFERENCE (m)	0.037	0.186	0.183	0.418	0.789	0.805	0.248	
OFFSET (m)	0.000	6.050	6.500	6.692	11.000	11.800	14.600	

CH 160.00



DATUM R.L. 44.00

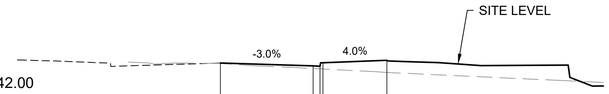
DESIGN SURFACE (mAHD)	47.091	46.891	46.864	47.089	47.228	47.204	44.934	44.907	44.904
EXISTING SURFACE (mAHD)	46.249	45.854	45.816	45.799	45.525	45.473	44.934	44.909	44.906
LEVEL DIFFERENCE (m)	0.842	1.036	1.048	1.289	1.704	1.731	0.000	-0.002	-0.002
OFFSET (m)	0.000	6.695	7.145	7.337	10.835	11.635	20.716	21.341	21.409

CH 20.00

DATUM R.L. 44.00

DESIGN SURFACE (mAHD)	46.291	46.110	46.083	46.308	46.480	46.456	45.493	
EXISTING SURFACE (mAHD)	46.187	45.877	45.845	45.832	45.640	45.600	45.410	
LEVEL DIFFERENCE (m)	0.105	0.233	0.237	0.476	0.840	0.856	0.084	
OFFSET (m)	0.000	6.050	6.500	6.692	11.000	11.800	15.651	

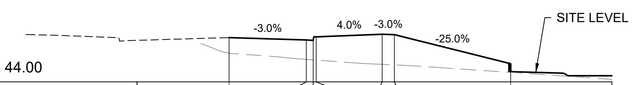
CH 100.00



DATUM R.L. 42.00

DESIGN SURFACE (mAHD)	44.230	44.049	44.022	44.247	44.414	
EXISTING SURFACE (mAHD)	44.204	43.876	43.852	43.842	43.615	
LEVEL DIFFERENCE (m)	0.026	0.173	0.169	0.404	0.799	
OFFSET (m)	0.000	6.050	6.500	6.692	10.870	

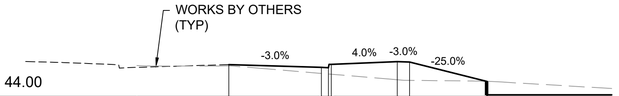
CH 180.00



DATUM R.L. 44.00

DESIGN SURFACE (mAHD)	46.891	46.740	46.713	46.938	47.110	47.086	45.188
EXISTING SURFACE (mAHD)	45.881	45.471	45.437	45.423	45.145	45.110	44.616
LEVEL DIFFERENCE (m)	1.010	1.269	1.275	1.515	1.965	1.976	0.572
OFFSET (m)	0.000	5.050	5.500	5.692	10.000	10.800	18.393

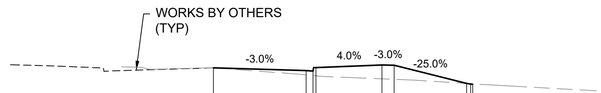
CH 40.00



DATUM R.L. 44.00

DESIGN SURFACE (mAHD)	46.077	45.896	45.869	46.094	46.266	46.242	44.984	44.970	
EXISTING SURFACE (mAHD)	45.996	45.502	45.464	45.448	45.087	45.048	44.984	44.983	
LEVEL DIFFERENCE (m)	0.081	0.394	0.405	0.646	1.179	1.193	0.000	-0.012	
OFFSET (m)	0.000	6.050	6.500	6.692	11.000	11.800	16.831	16.880	

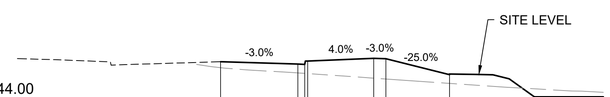
CH 120.00



DATUM R.L. 40.00

DESIGN SURFACE (mAHD)	43.397	43.216	43.189	43.414	43.586	43.562	42.379	42.341	42.323
EXISTING SURFACE (mAHD)	43.403	42.936	42.895	42.878	42.680	42.648	42.379	42.362	42.354
LEVEL DIFFERENCE (m)	-0.005	0.280	0.294	0.536	0.906	0.914	0.000	-0.021	-0.031
OFFSET (m)	0.000	6.050	6.500	6.692	11.000	11.800	16.533	16.796	16.926

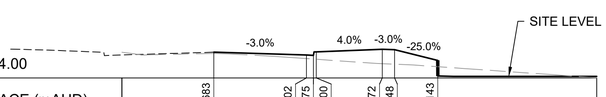
CH 200.00



DATUM R.L. 44.00

DESIGN SURFACE (mAHD)	46.691	46.540	46.513	46.738	46.910	46.886	45.847
EXISTING SURFACE (mAHD)	46.305	45.962	45.931	45.918	45.621	45.566	45.280
LEVEL DIFFERENCE (m)	0.387	0.578	0.582	0.820	1.289	1.320	0.567
OFFSET (m)	0.000	5.050	5.500	5.692	10.000	10.800	14.957

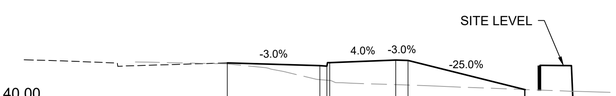
CH 60.00



DATUM R.L. 44.00

DESIGN SURFACE (mAHD)	45.683	45.502	45.475	45.700	45.872	45.848	45.143	
EXISTING SURFACE (mAHD)	45.602	45.264	45.233	45.220	44.935	44.900	44.735	
LEVEL DIFFERENCE (m)	0.081	0.238	0.241	0.479	0.937	0.948	0.408	
OFFSET (m)	0.000	6.050	6.500	6.692	11.000	11.800	14.621	

CH 140.00



DATUM R.L. 40.00

DESIGN SURFACE (mAHD)	42.951	42.769	42.742	42.967	43.140	43.116	41.214	41.207	
EXISTING SURFACE (mAHD)	42.887	41.856	41.820	41.805	41.531	41.505	41.214	41.213	
LEVEL DIFFERENCE (m)	0.064	0.913	0.922	1.163	1.609	1.611	0.000	-0.006	
OFFSET (m)	0.000	6.050	6.500	6.692	11.000	11.800	19.406	19.445	

CH 220.00

Z:\jobs\24\2414460\civil\sheets\110\2414460-TTW-10-DR-CI-01302.dwg

0.0 4.0 8.0 12.0 16.0m
1:200 A1 1:400 A3

Rev	Description	Eng Draft	Date
3	SCHEMATIC DESIGN FOR REF	JL ES	10.01.2025
2	SCHEMATIC DESIGN FOR REF	JL ES	06.12.2024
1	FINAL DRAFT ISSUE FOR REF	JL ES	21.11.2024

Client: NSW GOVERNMENT School Infrastructure NSW

Engineer: TTW www.ttwengineers.com

Project: NEW HIGH SCHOOL FOR SCHOFIELDS TALLAWONG

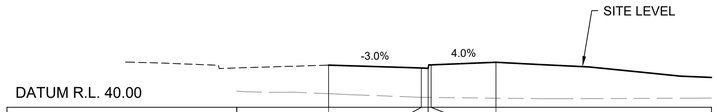
Drawing Title: CROSS SECTIONS NIRMAL STREET SHEET1

Scale at A1	Drawn	Designed	Approved
1:200	ES	AW	CR

Project No	Originator	Type	Role	Sheet No.	Rev
STHS-TTW-01-00-DR-C-01302-3					

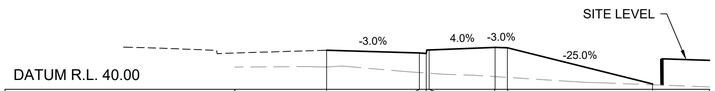
10.01.2025 3:16 PM

NOT FOR CONSTRUCTION



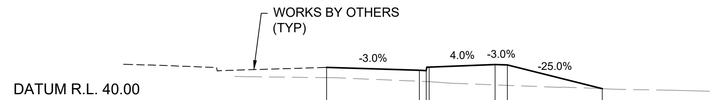
DESIGN SURFACE (mAHD)	42.750	42.569	42.542	42.767	42.936	
EXISTING SURFACE (mAHD)	40.886	40.653	40.648	40.646	40.596	
LEVEL DIFFERENCE (m)	1.865	1.916	1.894	2.121	2.341	
OFFSET (m)	0.000	6.050	6.500	6.692	10.925	

CH 240.00



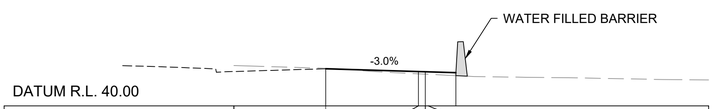
DESIGN SURFACE (mAHD)	42.550	42.369	42.342	42.567	42.739	42.715	40.345	
EXISTING SURFACE (mAHD)	41.462	41.094	41.063	41.050	40.828	40.777	40.297	
LEVEL DIFFERENCE (m)	1.088	1.275	1.279	1.517	1.911	1.938	0.048	
OFFSET (m)	0.000	6.050	6.500	6.692	11.000	11.800	21.281	

CH 260.00



DESIGN SURFACE (mAHD)	42.350	42.169	42.142	42.367	42.539	42.515	40.966	
EXISTING SURFACE (mAHD)	41.679	41.446	41.427	41.419	41.208	41.178	40.966	
LEVEL DIFFERENCE (m)	0.672	0.723	0.715	0.948	1.331	1.337	0.000	
OFFSET (m)	0.000	6.050	6.500	6.692	11.000	11.800	17.996	

CH 280.00



DESIGN SURFACE (mAHD)	42.426	42.245	42.218	42.443
EXISTING SURFACE (mAHD)	42.455	42.097	42.074	42.064
LEVEL DIFFERENCE (m)	-0.029	0.148	0.144	0.378
OFFSET (m)	0.000	6.050	6.500	6.692

CH 300.00

0.0 4.0 8.0 12.0 16.0m
1:200 A1 1:400 A3

Z:\jobs\24\241460\civil\sheets\10\241460-TTW-10-DR-CI-01303.dwg

Rev	Description	Eng	Draft	Date
3	SCHEMATIC DESIGN FOR REF	JL	ES	10.01.2025
2	SCHEMATIC DESIGN FOR REF	JL	ES	06.12.2024
1	FINAL DRAFT ISSUE FOR REF	JL	ES	21.11.2024

Client: School Infrastructure NSW

Engineer: TTW www.ttwengineers.com

Project: NEW HIGH SCHOOL FOR SCHOFIELDS TALLAWONG

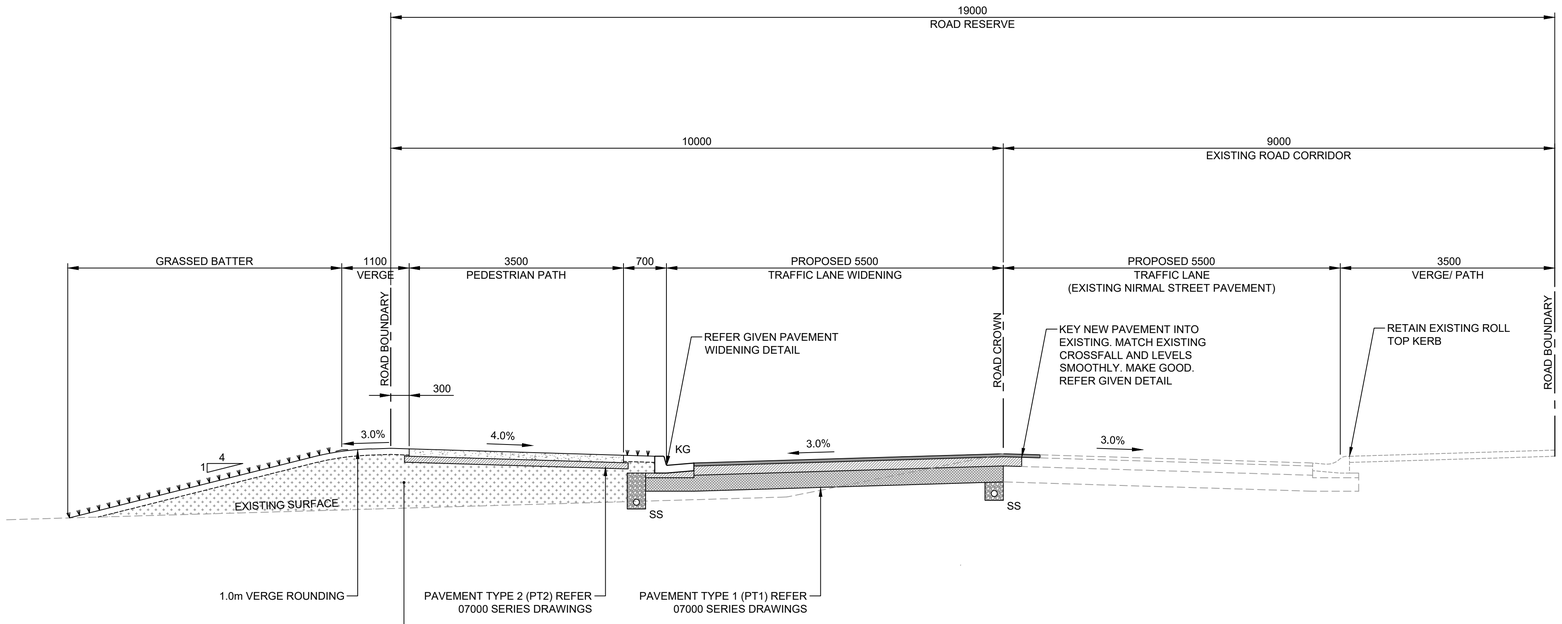
Drawing Title: CROSS SECTIONS NIRMAL STREET SHEET2

Scale at A1	Drawn	Designed	Approved
1:200	ES	AW	CR

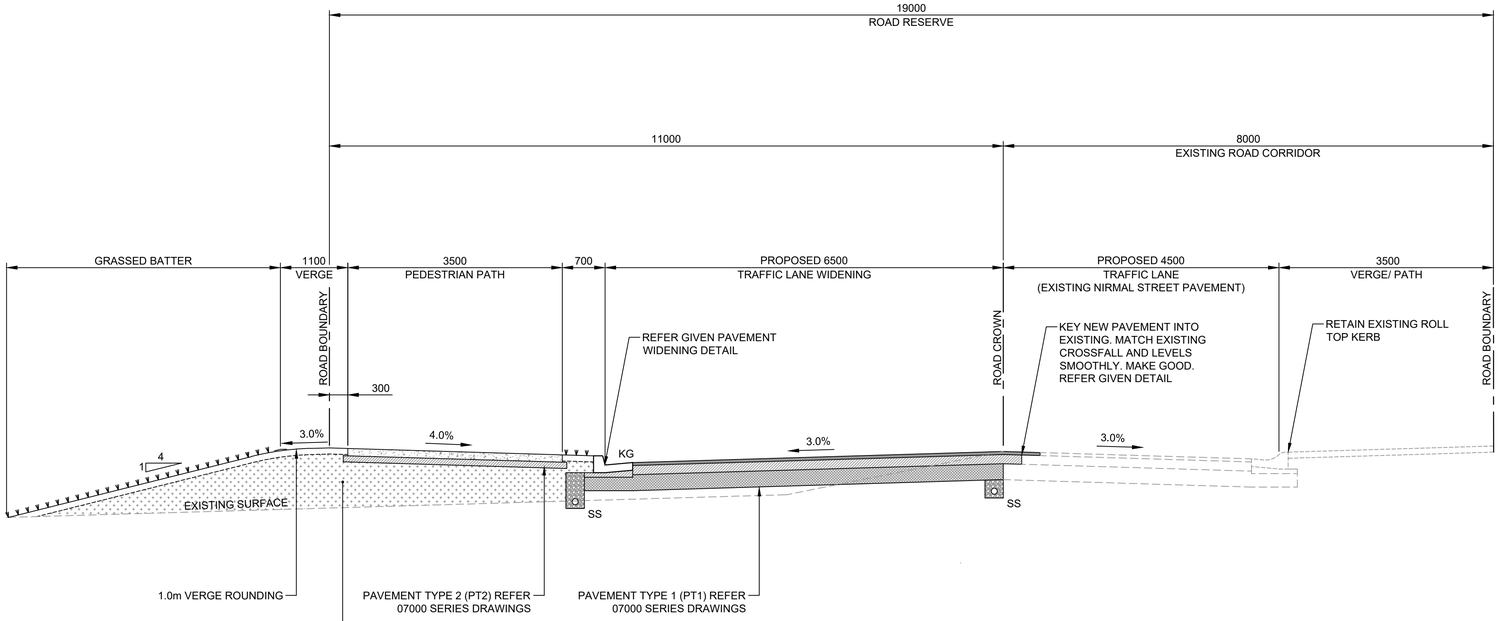
Project No STHS Originator TTW Type 01 Role 00 Sheet No. DR-C-01303 Rev 3

10.01.2025 3:17 PM

NOT FOR CONSTRUCTION



SECTION 1 (00422) 5.5m LANE WIDENING (NIRMAL STREET)
SCALE 1:50



SECTION 2 (00423) 6.5m LANE WIDENING (NIRMAL STREET)
SCALE 1:50

NOTE:
ROAD AND FOOTPATH CROSSFALLS TO BE IN ACCORDANCE WITH BLACKTOWN CITY COUNCIL'S REQUIREMENTS.

0.0 1000 2000 3000 4000mm
1:50 A1 1:100 A3

Z:\jobs\24\2414460\civil\sheets\1\0\2414460-TTW-10-DR-CI-01401.dwg

Rev	Description	Eng	Draft	Date
3	SCHEMATIC DESIGN FOR REF	JL	ES	10.01.2025
2	SCHEMATIC DESIGN FOR REF	JL	ES	06.12.2024
1	FINAL DRAFT ISSUE FOR REF	JL	ES	21.11.2024

Client: NSW GOVERNMENT School Infrastructure NSW

Engineer: TTW www.ttwengineers.com

Project: NEW HIGH SCHOOL FOR SCHOFIELDS TALLAWONG

Drawing Title: TYPICAL SECTIONS SHEET 1

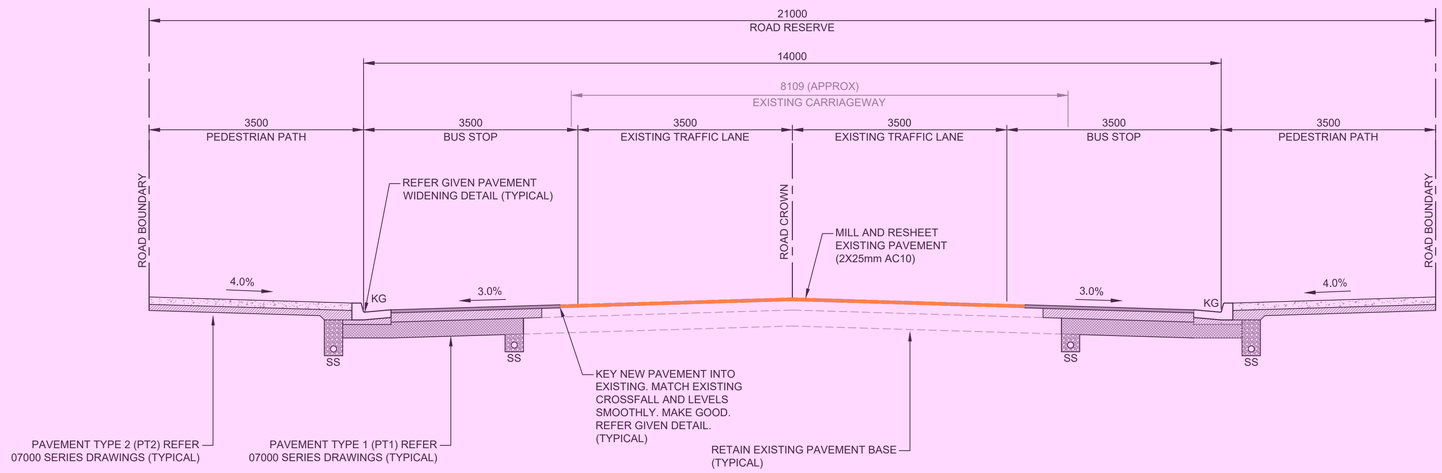
Scale at A1	Drawn	Designed	Approved
1:50	ES	AW	CR

Project No	Originator	Type	Role	Sheet No.	Rev
STHS	TTW	01	00	DR-C-01401	3

10.01.2025 3:17 PM

NOT FOR CONSTRUCTION

NOTE: WORKS SHOWN TO GUNTAWONG ROAD ARE SUBJECT TO SEPARATE APPROVAL (NOT UNDER THIS REF)



SECTION 3 / 00421 — 3.5m BUS STOPS (GUNTAWONG STREET)

SCALE 1:50

NOTE:
DESIGN LEVEL CH 41.71 TO CH 116.46 ARE BASED ON GUNTAWONG ROAD DESIGN PROVIDED BY BLACKTOWN CITY COUNCIL.

NOTE:
ROAD AND FOOTPATH CROSSFALLS TO BE IN ACCORDANCE WITH BLACKTOWN CITY COUNCIL'S REQUIREMENTS.

Z:\jobs\241\241460\civil\sheets\110\241460-TTW-10-DR-CI-01402.dwg

0.0 1000 2000 3000 4000mm
1:50 A1 1:100 A3

Rev	Description	Eng	Draft	Date
3	SCHEMATIC DESIGN FOR REF	JL	ES	10.01.2025
2	SCHEMATIC DESIGN FOR REF	JL	ES	06.12.2024
1	FINAL DRAFT ISSUE FOR REF	JL	ES	21.11.2024

Client: NSW GOVERNMENT School Infrastructure NSW

Engineer: TTW www.ttwengineers.com

Project: NEW HIGH SCHOOL FOR SCHOFIELDS TALLAWONG

Drawing Title: TYPICAL SECTIONS SHEET 2

Scale at A1	Drawn	Designed	Approved
1:50	ES	AW	CR

Project No Originator Type Role Sheet No. Rev
STHS-TTW-01-00-DR-C-01402-3
10.01.2025 3:17 PM

NOT FOR CONSTRUCTION

HRV

	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 36.7

NOTE: WORKS SHOWN TO GUNTAWONG ROAD ARE SUBJECT TO SEPARATE APPROVAL (NOT UNDER THIS REF)

NOTE: 600mm CLEARANCE IN ACCORDANCE WITH AS2890.2

0.0 5.0 10.0 15.0 20.0m
1:250 A1 1:500 A3

Z:\jobs\241241460\civil\sheets\10\241460-TTW-10-DR-CI-01501.dwg

Rev	Description	Eng	Draft	Date
3	SCHEMATIC DESIGN FOR REF	JL	ES	10.01.2025
2	SCHEMATIC DESIGN FOR REF	JL	ES	06.12.2024
1	FINAL DRAFT ISSUE FOR REF	JL	ES	21.11.2024

Client: NSW GOVERNMENT School Infrastructure NSW

Engineer: TTW www.ttwengineers.com

Project: NEW HIGH SCHOOL FOR SCHOFIELDS TALLAWONG

Drawing Title: SWEPT PATH PLAN

Scale at A1	Drawn	Designed	Approved
1:250	ES	AW	CR

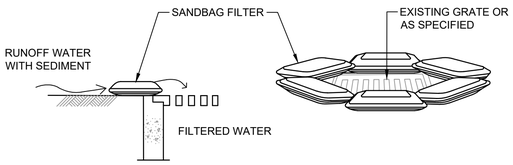
Project No	Originator	Type	Role	Sheet No.	Rev
STHS-TTW-01-00-DR-C-01501-3					

10.01.2025 3:18 PM

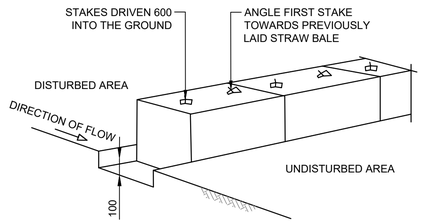
NOT FOR CONSTRUCTION

EROSION AND SEDIMENT CONTROL PUMP OUT NOTES

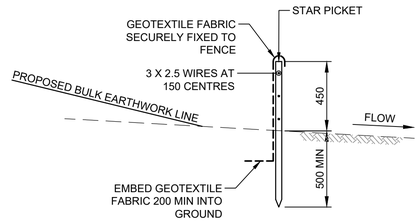
ANY ACCUMULATED WATER CONTAMINATED WITH SEDIMENT, FROM A SEDIMENT BASIN OR EXCAVATION PIT, IS TO BE FLOCCULATED OR FILTERED IN ORDER TO LOWER THE SUSPENDED SOLID LOAD TO LESS THAN 50MG PER LITRE GYPSUM GAS OR OTHER APPROVED FLOCCULANT SHOULD BE APPLIED WITHIN 24 HOURS OF THE END OF THE STORM EVENT. THE GYPSUM MUST BE SPREAD EVENLY OVER THE ENTIRE WATER SURFACE. PUMPING IS NOT TO OCCUR FOR AT LEAST 36 HOURS AND PREFERABLY 48 HOURS AFTER APPLICATION. CLEAN WATER IS TO BE DISCHARGED TO THE WATER TABLE VIA A HALE BAIL SEDIMENT FILTER IN A WAY THAT DOES NOT PICK UP SEDIMENT THAT HAS DROPPED TO THE BOTTOM.
NOTE: GYPSUM IS A HYDRATED FORM OF CALCIUM SULPHATE AND IS AVAILABLE AT MANY SWIMMING POOL SHOPS AND HARDWARE STORES.



SANDBAG KERB SEDIMENT TRAP
NTS

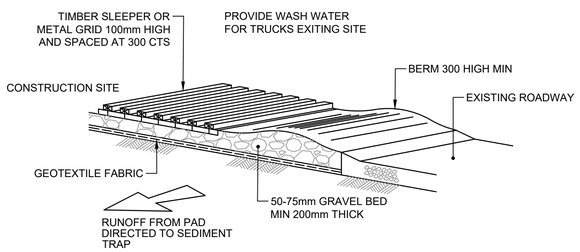


HAY BALE SEDIMENT FILTER
NTS
NOTE: STAKE TO BE EITHER TAR COATED STAR OR 50 x 50 HARDWOOD

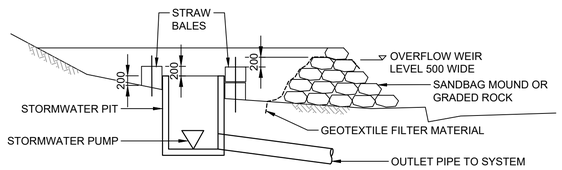


NOTE
ENDS OF SILTATION FENCE TO RETURNED UP SLOPE TO PREVENT RUNOFF

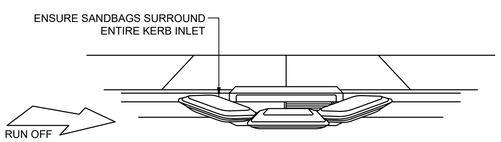
SILTATION FENCE DETAIL
SCALE 1:20



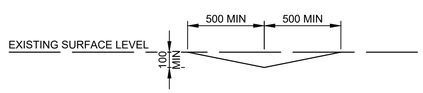
TEMPORARY CONSTRUCTION VEHICLE EXIT
NTS



SEDIMENTATION TRAP
NTS



SANDBAG KERB INLET SEDIMENT TRAP
NTS



TYPICAL SECTION THROUGH CATCH DRAIN
SCALE 1:20

Z:\jobs\24\241460\civil\sheets\10\241460-TTW-10-DR-CI-02001.dwg

Rev	Description	Eng	Draft	Date
3	SCHEMATIC DESIGN FOR REF	JL	ES	10.01.2025
2	SCHEMATIC DESIGN FOR REF	JL	ES	06.12.2024
1	FINAL DRAFT ISSUE FOR REF	JL	ES	21.11.2024

Client: School Infrastructure NSW

Engineer: TTW www.ttwengineers.com

Project: NEW HIGH SCHOOL FOR SCHOFIELDS TALLAWONG

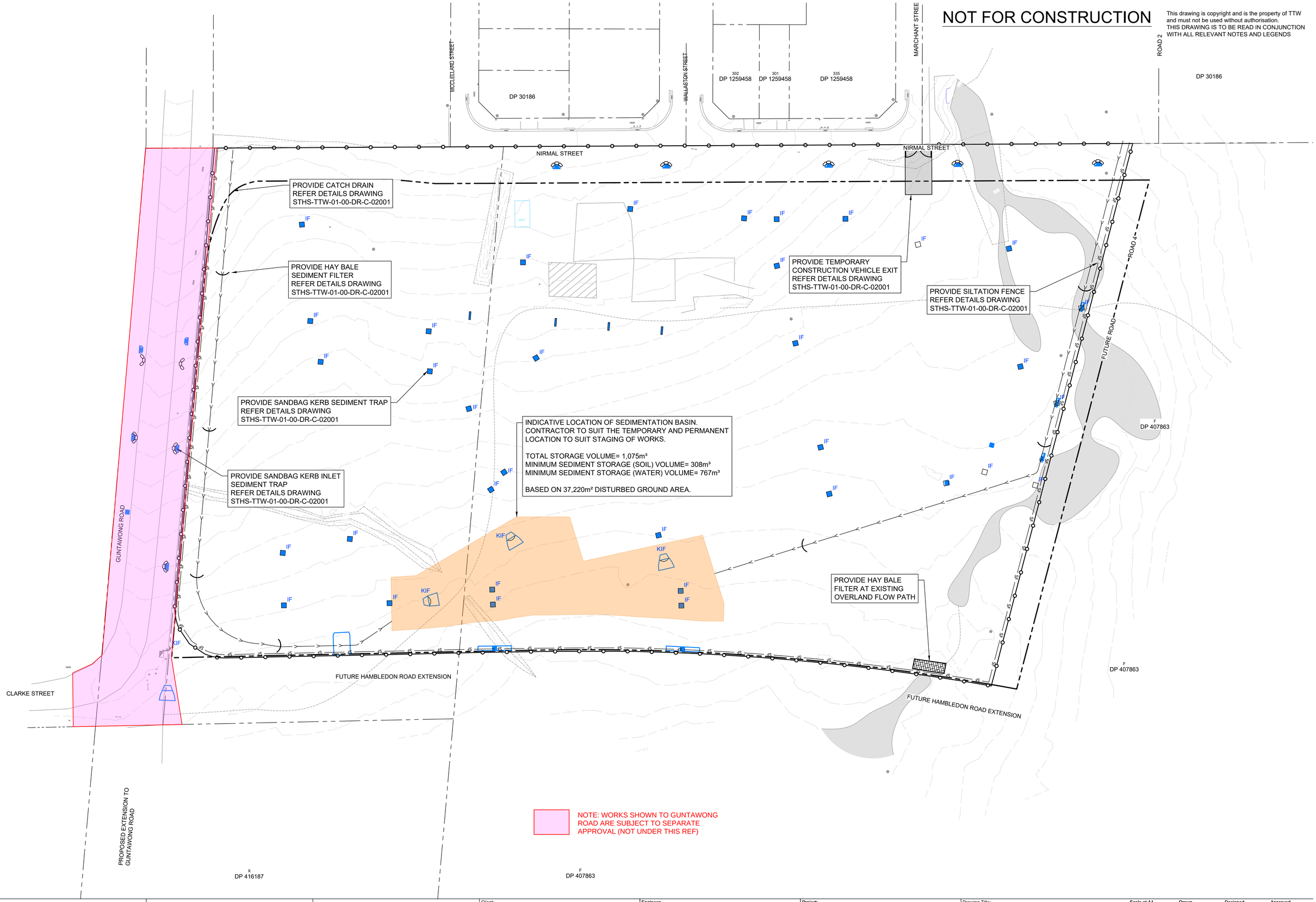
Drawing Title: EROSION AND SEDIMENT CONTROL NOTES AND LEGEND

Scale at A1	Drawn	Designed	Approved
	ES	AW	CR

Project No	Originator	Type	Role	Sheet No.	Rev
STHS-TTW-01-00-DR-C-02001-3					

10.01.2025 3:18 PM

NOT FOR CONSTRUCTION



Z:\jobs\241\2414460\civil\sheets\10\2414460-TTW-10-DR-CI-02101.dwg

Rev	Description	Eng	Draft	Date
3	SCHEMATIC DESIGN FOR REF	JL	ES	10.01.2025
2	SCHEMATIC DESIGN FOR REF	JL	ES	06.12.2024
1	FINAL DRAFT ISSUE FOR REF	JL	ES	21.11.2024

Client: NSW GOVERNMENT School Infrastructure NSW

Engineer: TTW www.ttwengineers.com

Project: NEW HIGH SCHOOL FOR SCHOFIELDS TALLAWONG

Drawing Title: EROSION AND SEDIMENT CONTROL PLAN

Scale at A1	Drawn	Designed	Approved
1:500	ES	AW	CR

Project No	Originator	Type	Role	Sheet No.	Rev
STHS-TTW-01-00-DR-C-02101-3					

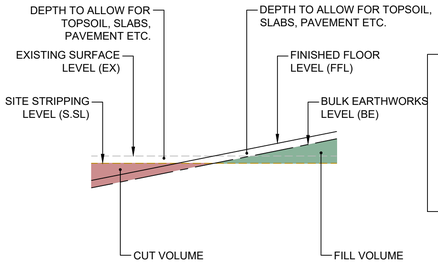
22.01.2025 11:56 AM

BULK EARTHWORKS NOTES

1. All bulk earthworks setout from grid lines U.N.O.
2. All batters at a slope of 2 (H) : 1 (V) U.N.O.
3. Excavated material may be used as structural fill provided,
   (i) it complies with the specification requirements for fill material,
   (ii) the placement moisture content complies with the Geotechnical Consultants requirements, and allows filling to be placed and proofrolled in accordance with the specification. Where necessary the Contractor must moisture condition the excavated material to meet these requirements.
4. Compact fill areas and subgrade to not less than:

Location	Standard dry density (AS 1289 5.1.1.)	Moisture (OMC)
Under building slabs on ground:	98%	±2%
Under roads and carparks:	98%	±2%
Landscaped areas:	95%	±2%

5. Before placing fill, proof roll exposed subgrade with a 12 tonne minimum roller to test subgrade and then remove soft spots(areas with more than 3mm movement under roller). Soft spots to be replaced with granular fill U.N.O.
6. Contractor shall place safety barriers around excavations in accordance with relevant safety regulations.
7. For interpretation of bulk earthworks foot print line shown on the bulk earthworks drawings refer to the bulk earthworks construction legend.
8. Bulk earthwork drawings are not to be used for detailed excavation.
9. Refer to Geotechnical Report
10. Detailed earthworks such as piling, pile caps, ground beams, lift pits, service trenching & landscape mounding etc is excluded.
11. The following allowances have been adopted in the bulk earthworks quantity calculations:
    Site stripping level = 150mm below existing surface level, and site strip volume is 4563m^3.
    Bulk earthworks level
    a. 500mm below finished floor level (buildings)
    b. 365mm below finished pavement level (car park)
    c. 300mm below final surface (turfed landscape and pedestrian pavement)
12. Bulk earthworks does not consider detailed excavation including excavation for footings, beams, services trenching and slab falls. No allowance for bulking factors made
13. Contractor to locate all existing services prior to commencement of work
14. Contractor to make their own assessment of cut and fill volumes
15. All bulk earthworks in accordance with AS3798-2007 Guidelines on earthworks for commercial and residential development.



EARTHWORKS TYPICAL SECTION

NOT FOR CONSTRUCTION

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT NOTES AND LEGENDS

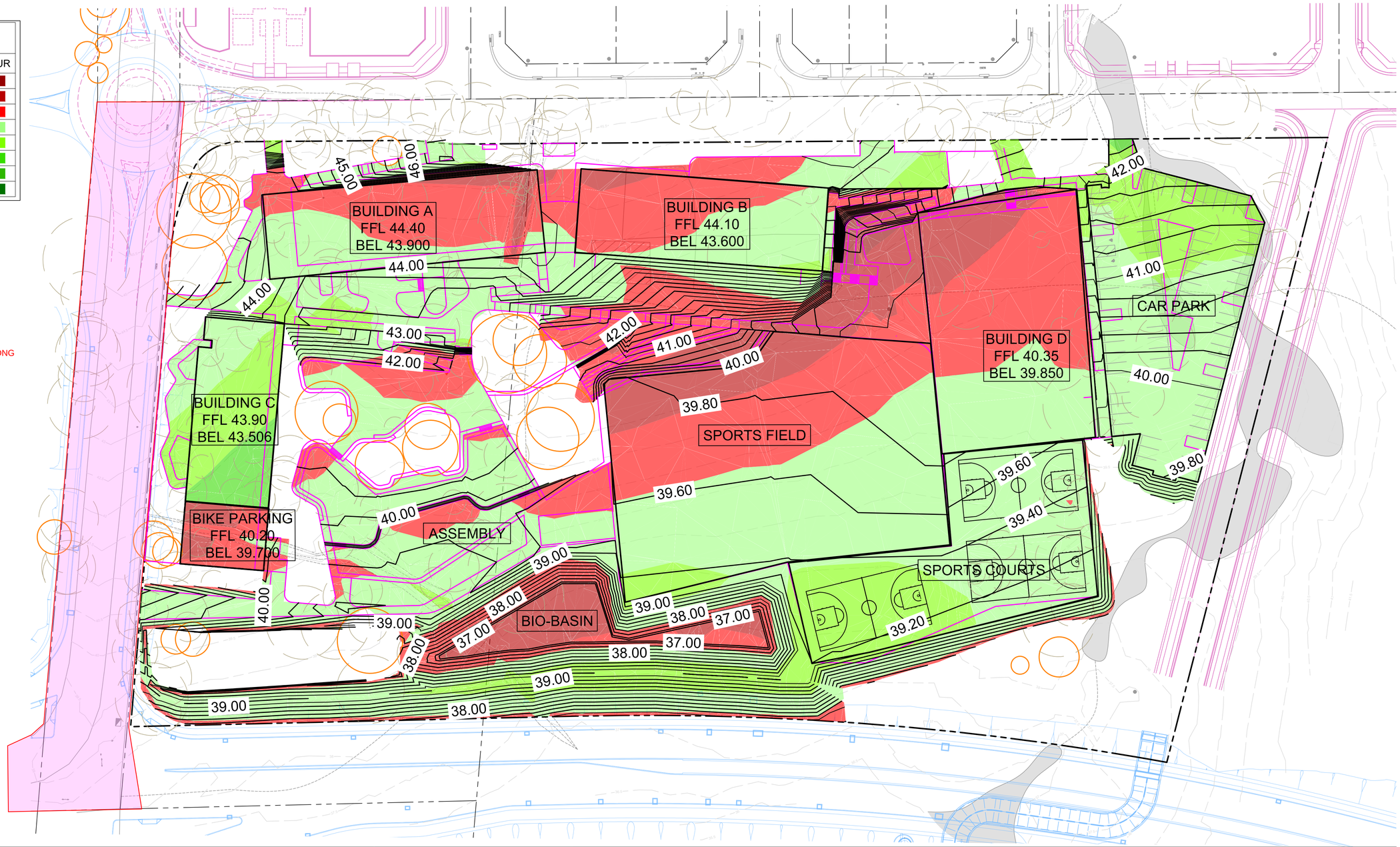
Cut/Fill Summary

Name	Cut Factor	Fill Factor	2d Area	Cut	Fill	Net
CUT AND FILL	1.000	1.000	30424sq.m	6723 Cu. M.	12446 Cu. M.	5723 Cu. M.<Fill>

LEVELS TABLE

No.	FROM LEVEL (m)	TO LEVEL (m)	COLOUR
1	-3.00	-2.00	
2	-2.00	-1.00	
3	-1.00	0.00	
4	0.00	1.00	
5	1.00	2.00	
6	2.00	3.00	
7	3.00	4.00	
8	4.00	5.00	

NOTE: WORKS SHOWN TO GUNTAWONG ROAD ARE SUBJECT TO SEPARATE APPROVAL (NOT UNDER THIS REF)



Z:\jobs\24\241460\civil\sheets\110\241460-TTW-10-DR-CI-03101.dwg

Rev	Description	Eng	Draft	Date
4	SCHEMATIC DESIGN FOR REF	JL	ES	22.01.2025
3	SCHEMATIC DESIGN FOR REF	JL	ES	10.01.2025
2	SCHEMATIC DESIGN FOR REF	JL	ES	06.12.2024
1	FINAL DRAFT ISSUE FOR REF	JL	ES	21.11.2024

Client: NSW GOVERNMENT School Infrastructure NSW

Engineer: TTW www.ttwengineers.com

Project: NEW HIGH SCHOOL FOR SCHOFIELDS TALLAWONG

Drawing Title: EARTHWORKS CUT AND FILL VOLUMES PLAN

Scale at A1	Drawn	Designed	Approved
1:500	ES	AW	CR

Project No | Originator | Type | Role | Sheet No. | Rev
STHS-TTW-01-00-DR-C-03101-4

22.01.2025 11:49 AM

NOT FOR CONSTRUCTION

STORMWATER DRAINAGE

1. STORMWATER DESIGN CRITERIA

   (A) AVERAGE EXCEEDANCE PROBABILITY: -
   - 1% AEP FOR ROOF DRAINAGE TO FIRST EXTERNAL PIT
   - 5% AEP FOR PAVED AND LANDSCAPED AREAS

   (B) RAINFALL INTENSITIES : -
   - TIME OF CONCENTRATION: 5 MINUTES
   - 1% AEP = 235mm/hr
   - 5% AEP = 177mm/hr

   (C) RAINFALL LOSSES: -
   - IMPERVIOUS AREAS: IL = 1.5mm CL = 0mm/hr
   - PERVIOUS AREAS: IL = 28mm CL = 1.2mm/hr

2. PIPES 300 DIA AND LARGER TO BE REINFORCED CONCRETE CLASS "4" APPROVED SPIGOT AND SOCKET WITH RUBBER RING JOINTS U.N.O.
3. PIPES UP TO 300 DIA MAY BE SEWER GRADE UPVC WITH SOLVENT WELDED JOINTS, SUBJECT TO APPROVAL BY THE ENGINEER
4. EQUIVALENT STRENGTH VCP OR FRP PIPES MAY BE USED SUBJECT TO APPROVAL.
5. PRECAST PITS MAY BE USED EXTERNAL TO THE BUILDING SUBJECT TO APPROVAL BY ENGINEER.
6. ENLARGERS, CONNECTIONS AND JUNCTIONS TO BE MANUFACTURED FITTINGS WHERE PIPES ARE LESS THAN 300 DIA.
7. WHERE SUBSOIL DRAINS PASS UNDER FLOOR SLABS AND VEHICULAR PAVEMENTS, UNSLOTTED UPVC SEWER GRADE PIPE IS TO BE USED.
8. GRATES AND COVERS SHALL CONFORM WITH AS 3996-2006, AND AS 1428.1 FOR ACCESS REQUIREMENTS.
9. PIPES ARE TO BE INSTALLED IN ACCORDANCE WITH AS 3725. ALL BEDDING TO BE TYPE H2 U.N.O.
10. CARE IS TO BE TAKEN WITH INVERT LEVELS OF STORMWATER LINES. GRADES SHOWN ARE NOT TO BE REDUCED WITHOUT APPROVAL.
11. ALL STORMWATER PIPES TO BE 150 DIA AT 1.0% MIN FALL U.N.O.
12. SUBSOIL DRAINS TO BE SLOTTED FLEXIBLE UPVC U.N.O.
13. ADOPT INVERT LEVELS FOR PIPE INSTALLATION (GRADES SHOWN ARE ONLY NOMINAL).

STORMWATER PIPE INFORMATION

PIPE INFORMATION

USIL	UPSTREAM INVERT LEVEL
Ø000	PIPE INTERNAL DIAMETER
--- '-'	PIPE MATERIAL AND CLASS
0.0m	PIPE LENGTH
0.0 m/s	HYDRAULIC FLOW RATE
%0.0	PIPE GRADE
DSIL	DOWNSTREAM INVERT LEVEL

TIE INFORMATION

SW	
L 10.0m	TIE LENGTH
D 1.0m	TIE DEPTH
Ø150	TIE DIAMETER

STORMWATER STRUCTURE IDENTIFICATION

SW1-2 — LINE NUMBER 1 - STRUCTURE NUMBER 2

SUBSOIL DRAINAGE

1. ALL SUBSOIL DRAINAGE WORKS ARE TO BE COMPLETED IN ACCORDANCE WITH THE RELEVANT STANDARDS AND SPECIFICATIONS OUTLINED IN THE PROJECT SPECIFICATION.
2. WHERE SUBSOIL DRAINS PASS UNDER FLOOR SLABS AND VEHICULAR PAVEMENTS UNSLOTTED uPVC SEWER GRADE PIPE IS TO BE USED.
3. SUBSOIL DRAINS TO BE Ø100 SLOTTED FLEXIBLE uPVC UNLESS NOTED OTHERWISE.
4. ALL SUBSOIL DRAINS ARE TO BE AT MINIMUM 1% GRADE UNLESS NOTED OTHERWISE.
5. ALL SUBSOIL DRAINS TO BE RODDED PRIOR TO THE PLACEMENT OF ASPHALT.
6. ALL SUBSOIL DRAINS ARE DRAWN DIAGRAMMATICALLY FOR CLARITY. REFER TO TYPICAL DETAIL FOR SUBSOIL SETOUT.

STORMWATER LEGEND

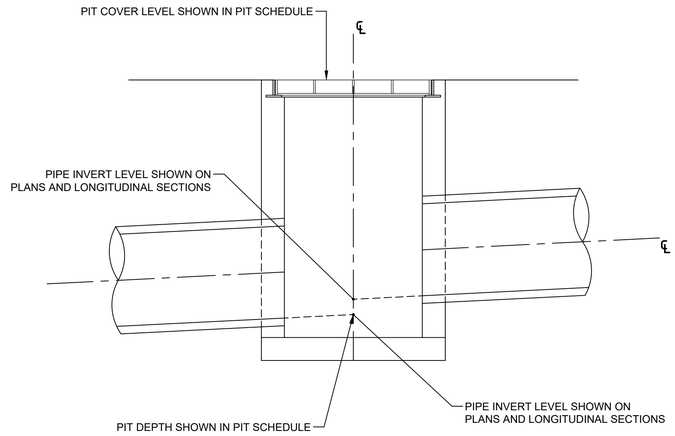
	STORMWATER PIPE
DP	DOWN PIPE
RP	RODDING POINT
PO	PLANTER OUTLET
RO	RAINWATER OUTLET
GPT	GROSS POLLUTANT TRAP
	OVERLAND FLOW ARROW
	CONCRETE INCASED PIPE
	SWALE DRAIN

STORMWATER ANNOTATIONS

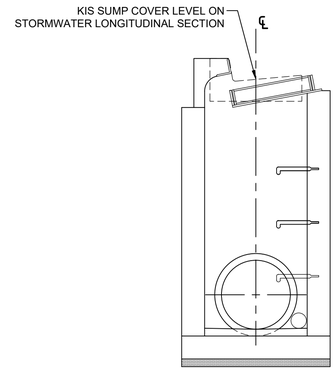
IL	PIPE INVERT LEVEL
OL	PIPE OBVERT LEVEL
CL	PIT COVER LEVEL
WL	WATER LEVEL

NOTE

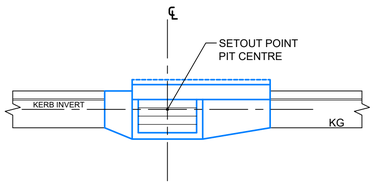
STORMWATER DRAINAGE NOTES AND LEGEND IS TO READ IN CONJUNCTION WITH GENERAL NOTES AND LEGEND. REFER DRAWING No. 00002



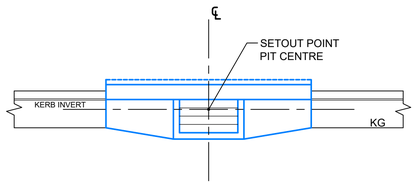
DESIGN INVERT LEVELS AT STORMWATER STRUCTURES
SCALE 1:20



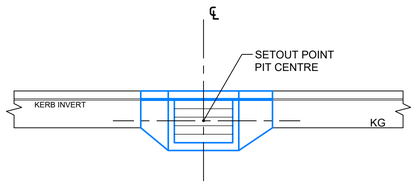
KERB INLET STRUCTURE (KIS) COVER LEVEL FOR KIS IN ROAD
SCALE 1:20



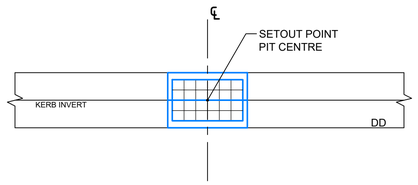
KERB INLET SUMP (KIS) ON GRADE
SCALE 1:50



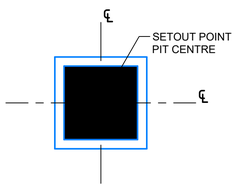
KERB INLET SUMP (KIS) IN SAG
SCALE 1:50



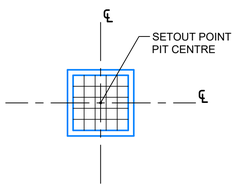
KERB GRATED INLET SUMP (KGI)
SCALE 1:50



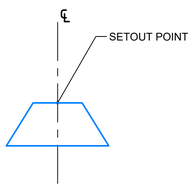
DISH DRAIN GRATED INLET SUMP (DDI)
SCALE 1:50



JUNCTION PIT
SCALE 1:50



GRATED INLET SUMP
SCALE 1:50



HEADWALL
SCALE 1:50

Z:\jobs\24\241460\civil\sheets\10\241460-TTW-10-DR-CI-04001.dwg

Rev	Description	Eng Draft	Date
3	SCHEMATIC DESIGN FOR REF	JL ES	10.01.2025
2	SCHEMATIC DESIGN FOR REF	JL ES	06.12.2024
1	FINAL DRAFT ISSUE FOR REF	JL ES	21.11.2024

Client: NSW GOVERNMENT School Infrastructure NSW

Engineer: TTW www.ttwengineers.com

Project: NEW HIGH SCHOOL FOR SCHOFIELDS TALLAWONG

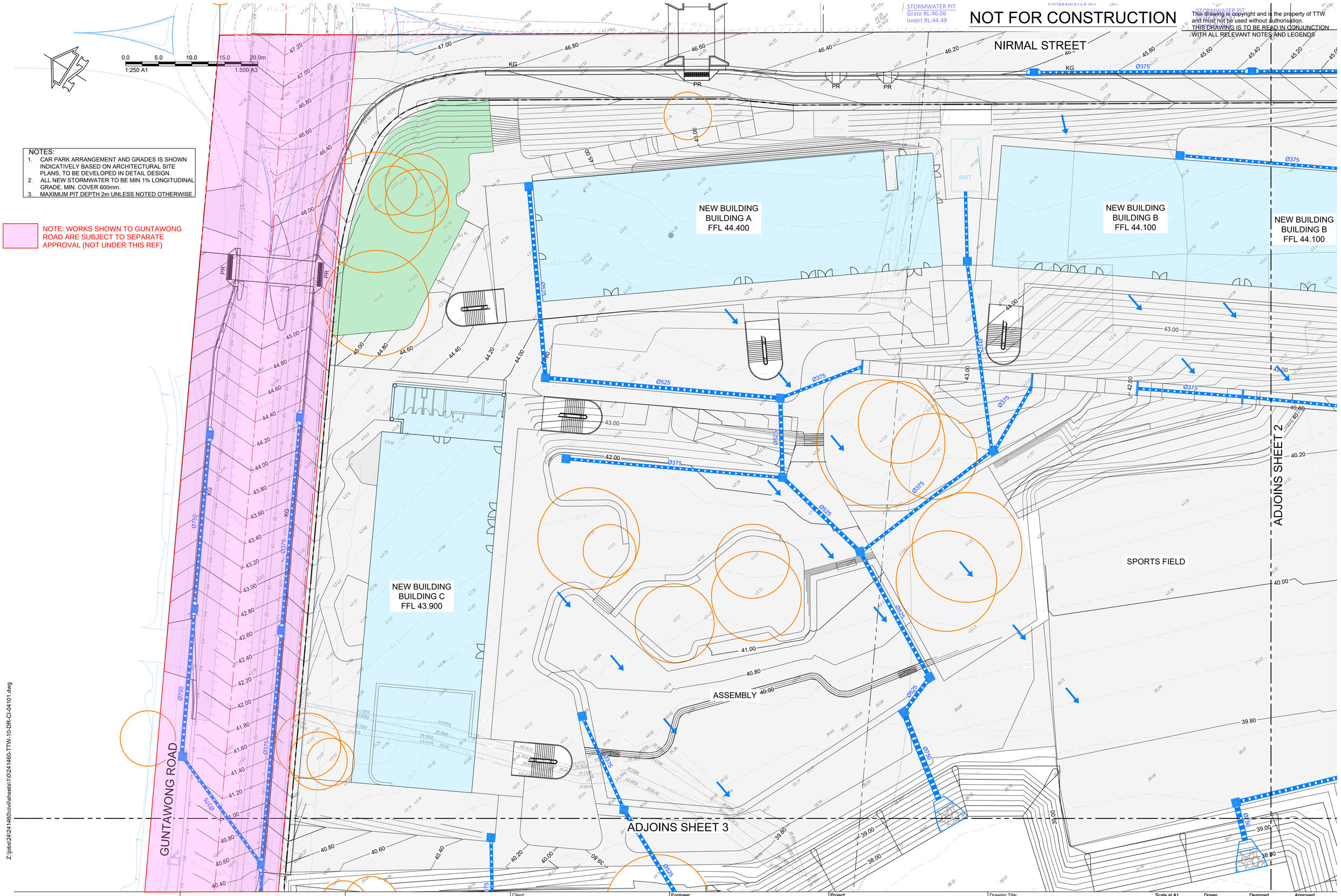
Drawing Title: STORMWATER NOTES AND LEGEND SHEET 1

Scale at A1	Drawn	Designed	Approved
	ES	AW	CR

Project No	Originator	Type	Role	Sheet No.	Rev
STHS-TTW-01-00-DR-C-04001-3					

10.01.2025 3:19 PM

NOT FOR CONSTRUCTION



NOTES:
1. CAR PARK ARRANGEMENT AND GRADES IS SHOWN INDICATIVELY BASED ON ARCHITECTURAL SITE PLANS, TO BE DEVELOPED IN DETAIL DESIGN.
2. ALL NEW STORMWATER TO BE MIN 1% LONGITUDINAL GRADE, MIN. COVER 600mm.
3. MAXIMUM PIT DEPTH 2m UNLESS NOTED OTHERWISE.

NOTE: WORKS SHOWN TO GUNTAWONG ROAD ARE SUBJECT TO SEPARATE APPROVAL (NOT UNDER THIS REF)

Z:\jobs\241\2414600\civil\sheets\110\2414600-TTW-10-DR-CI-04101.dwg

Rev	Description	Eng	Draft	Date
3	SCHEMATIC DESIGN FOR REF	JL	ES	10.01.2025
2	SCHEMATIC DESIGN FOR REF	JL	ES	06.12.2024
1	FINAL DRAFT ISSUE FOR REF	JL	ES	21.11.2024

Client: NSW GOVERNMENT School Infrastructure NSW

Engineer: TTW www.ttwengineers.com

Project: NEW HIGH SCHOOL FOR SCHOFIELDS TALLAWONG

Drawing Title: STORMWATER AND SUBSOIL DRAINAGE PLAN SHEET 1

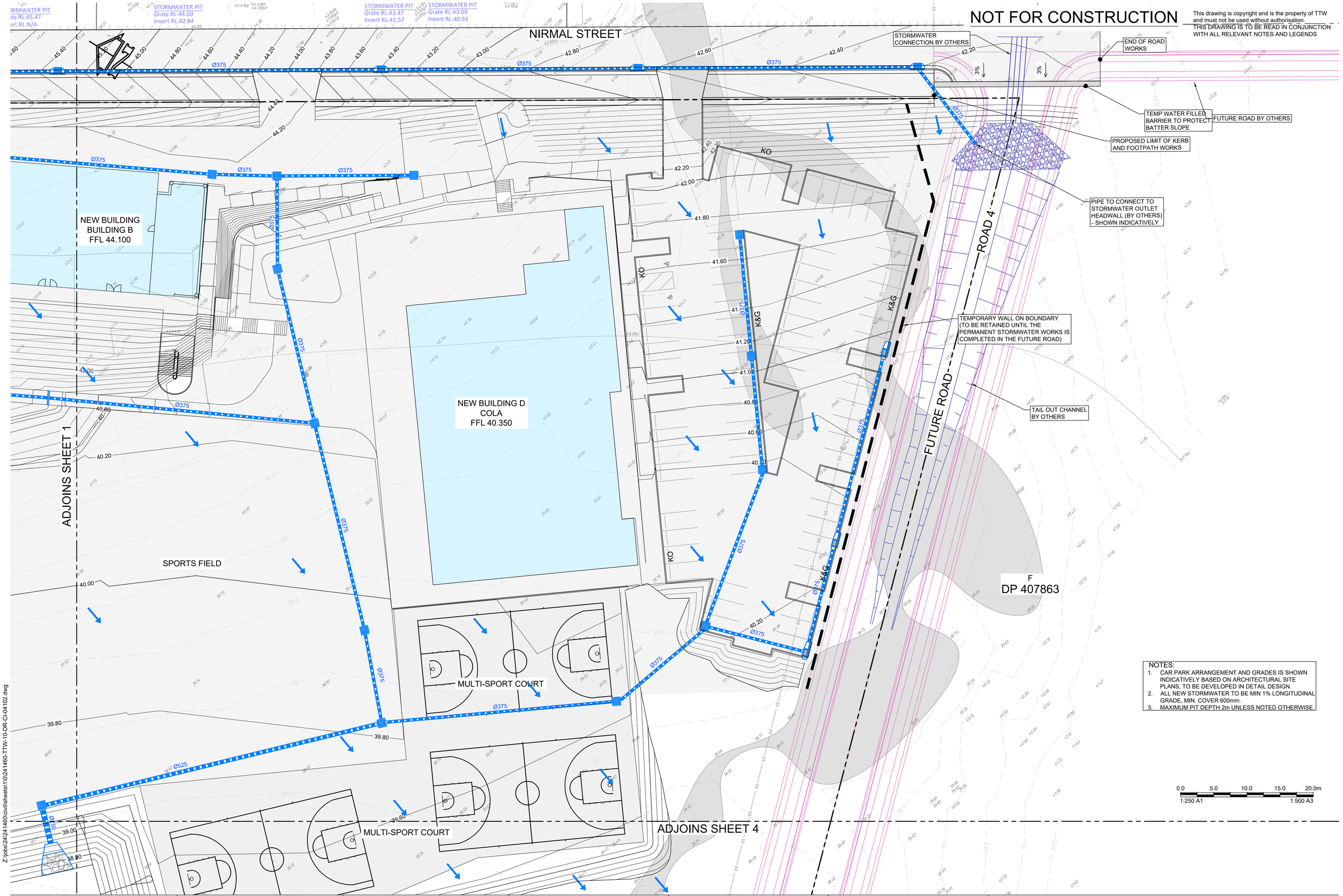
Scale at A1	Drawn	Designed	Approved
1:250	ES	AW	CR

Project No	Originator	Type	Role	Sheet No.	Rev
STHS-TTW-01-00-DR-C-04101-3					

10.01.2025 3:20 PM

NOT FOR CONSTRUCTION

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT NOTES AND LEGENDS



NOTES:
1. CAR PARK ARRANGEMENT AND GRADES IS SHOWN INDICATIVELY BASED ON ARCHITECTURAL SITE PLANS, TO BE DEVELOPED IN DETAIL DESIGN.
2. ALL NEW STORMWATER TO BE MIN 1% LONGITUDINAL GRADE, MIN. COVER 600mm.
3. MAXIMUM PIT DEPTH 2m UNLESS NOTED OTHERWISE.

Z:\jobs\242\241460\civil\sheets\10\241460-TTW-10-DR-CI-04102.dwg

Rev	Description	Eng	Draft	Date
3	SCHEMATIC DESIGN FOR REF	JL	ES	10.01.2025
2	SCHEMATIC DESIGN FOR REF	JL	ES	06.12.2024
1	FINAL DRAFT ISSUE FOR REF	JL	ES	21.11.2024

Client: NSW GOVERNMENT School Infrastructure NSW

Engineer: TTW www.ttwengineers.com

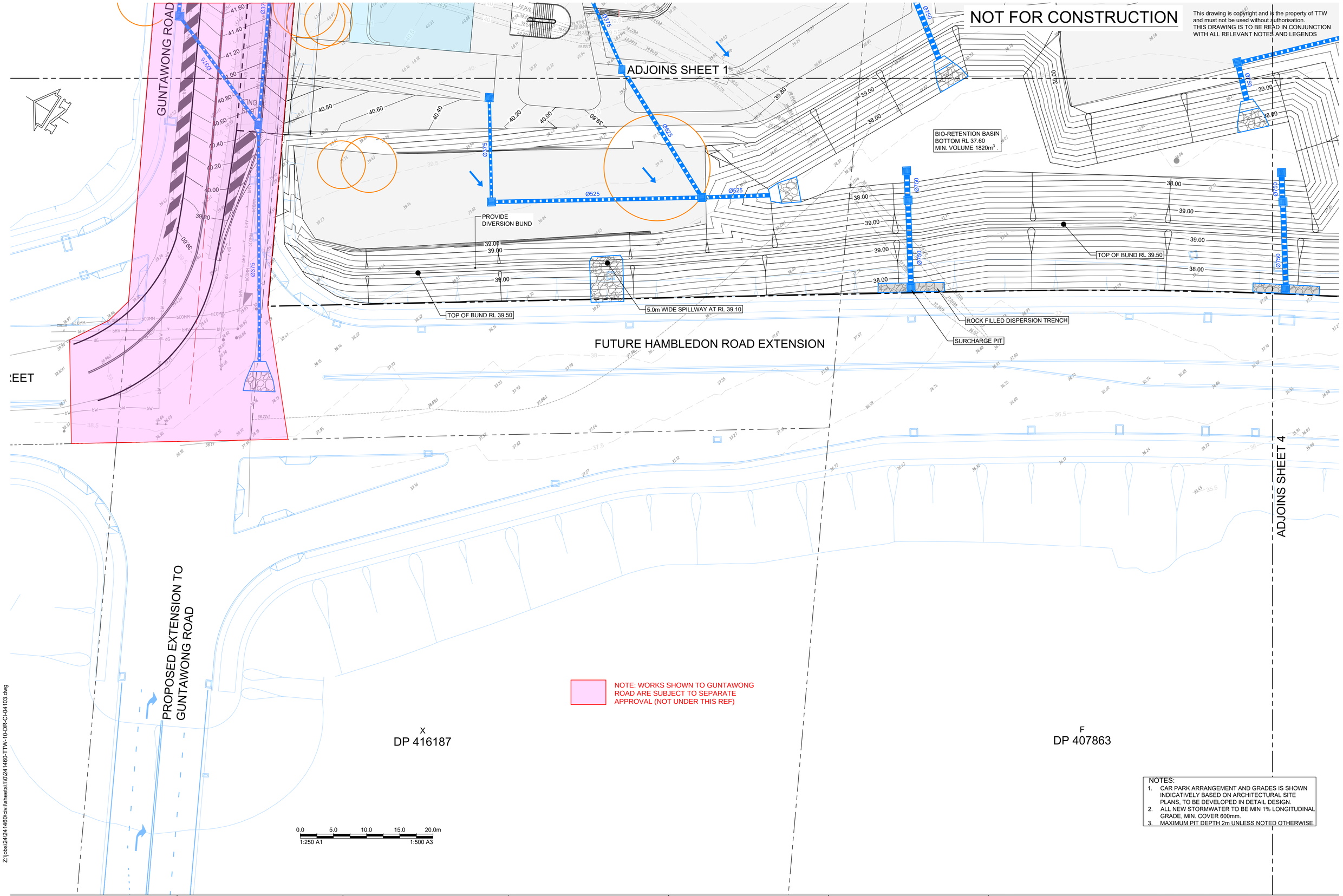
Project: NEW HIGH SCHOOL FOR SCHOFIELDS TALLAWONG

Drawing Title: STORMWATER AND SUBSOIL DRAINAGE PLAN SHEET 2

Scale at A1	Drawn	Designed	Approved
1:250	ES	AW	CR

Project No	Originator	Type	Role	Sheet No.	Rev
STHS	TTW	01	00	DR-C-04102	3

22.01.2025 2:30 PM



NOTES:
1. CAR PARK ARRANGEMENT AND GRADES IS SHOWN INDICATIVELY BASED ON ARCHITECTURAL SITE PLANS, TO BE DEVELOPED IN DETAIL DESIGN.
2. ALL NEW STORMWATER TO BE MIN 1% LONGITUDINAL GRADE, MIN. COVER 600mm.
3. MAXIMUM PIT DEPTH 2m UNLESS NOTED OTHERWISE.

Z:\jobs\241\241460\civil\sheets\10\241460-TTW-10-DR-CI-04103.dwg

Rev	Description	Eng	Draft	Date
4	SCHEMATIC DESIGN FOR REF	JL	ES	22.01.2025
3	SCHEMATIC DESIGN FOR REF	JL	ES	10.01.2025
2	SCHEMATIC DESIGN FOR REF	JL	ES	06.12.2024
1	FINAL DRAFT ISSUE FOR REF	JL	ES	21.11.2024

Client: NSW GOVERNMENT School Infrastructure NSW

Engineer: TTW www.ttwengineers.com

Project: NEW HIGH SCHOOL FOR SCHOFIELDS TALLAWONG

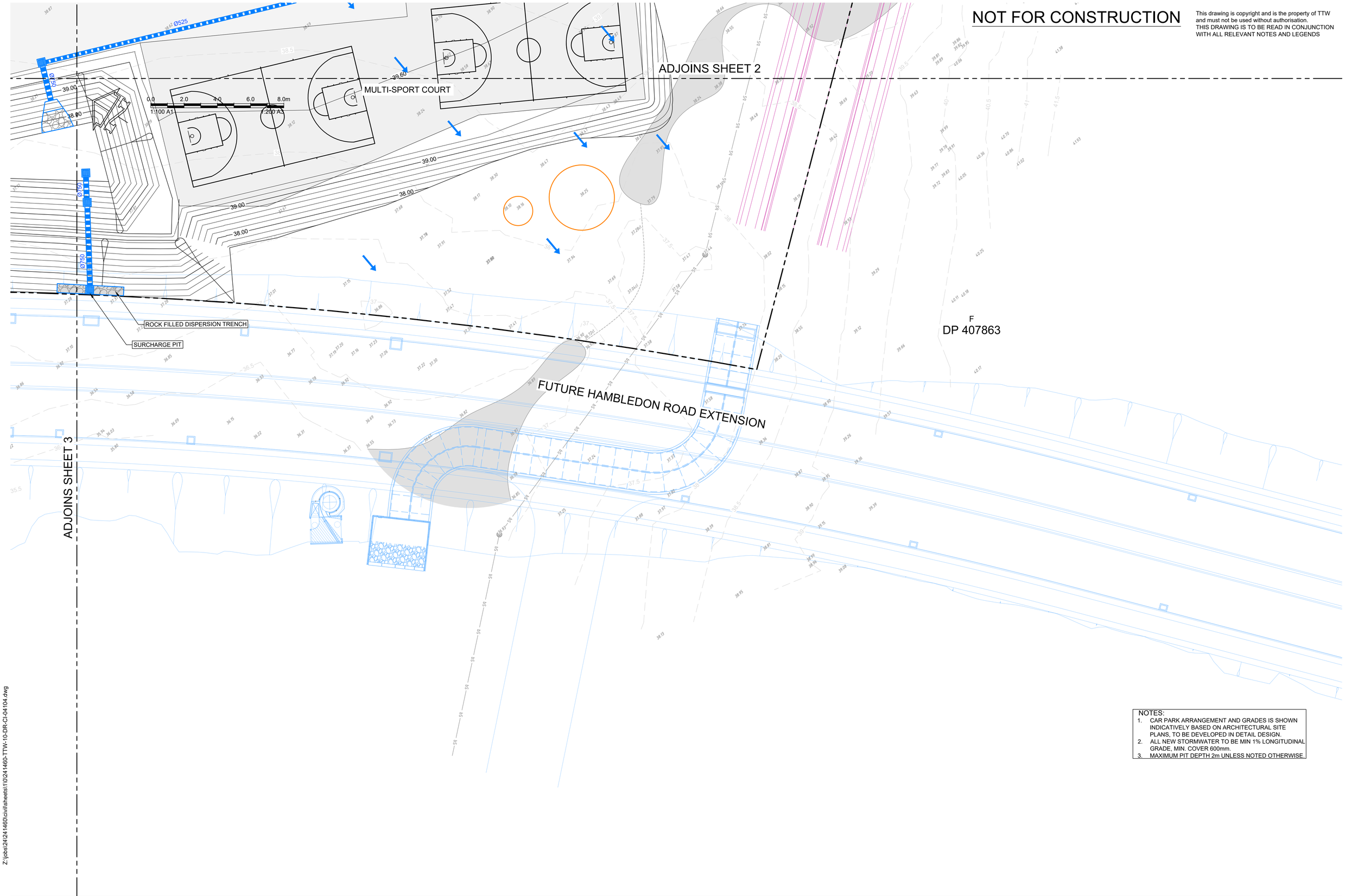
Drawing Title: STORMWATER AND SUBSOIL DRAINAGE PLAN SHEET 3

Scale at A1	Drawn	Designed	Approved
1:250	ES	AW	CR

Project No	Originator	Type	Role	Sheet No.	Rev
STHS-TTW-01-00-DR-C-04103-4					

22.01.2025 11:44 AM

NOT FOR CONSTRUCTION



NOTES:
1. CAR PARK ARRANGEMENT AND GRADES IS SHOWN INDICATIVELY BASED ON ARCHITECTURAL SITE PLANS, TO BE DEVELOPED IN DETAIL DESIGN.
2. ALL NEW STORMWATER TO BE MIN 1% LONGITUDINAL GRADE, MIN. COVER 600mm.
3. MAXIMUM PIT DEPTH 2m UNLESS NOTED OTHERWISE.

Z:\jobs\241241460\civil\sheets\110\241460-TTW-10-DR-CI-04104.dwg

Rev	Description	Eng	Draft	Date
4	SCHEMATIC DESIGN FOR REF	JL	ES	22.01.2025
3	SCHEMATIC DESIGN FOR REF	JL	ES	10.01.2025
2	SCHEMATIC DESIGN FOR REF	JL	ES	06.12.2024
1	FINAL DRAFT ISSUE FOR REF	JL	ES	21.11.2024

Client:

Engineer: TTW www.ttwengineers.com

Project: NEW HIGH SCHOOL FOR SCHOFIELDS TALLAWONG

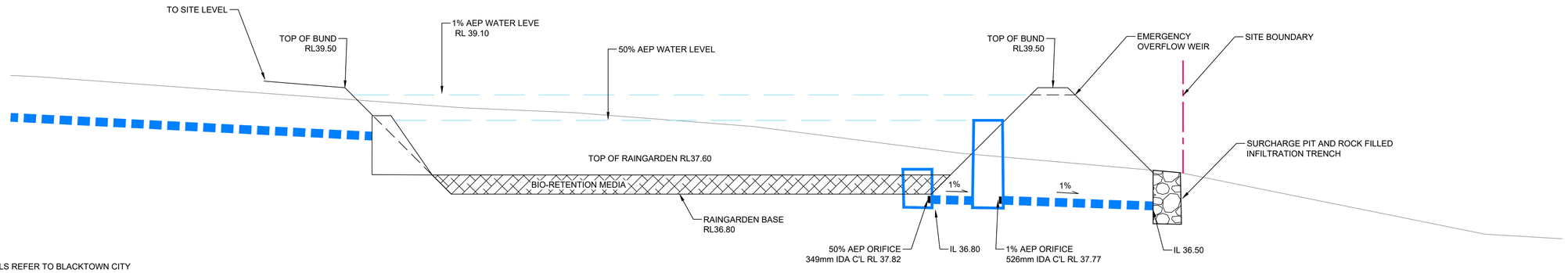
Drawing Title: STORMWATER AND SUBSOIL DRAINAGE PLAN SHEET 4

Scale at A1	Drawn	Designed	Approved
1:250	ES	AW	CR

Project No	Originator	Type	Role	Sheet No.	Rev
STHS-TTW-01-00-DR-C-04104-4					

22.01.2025 11:46 AM

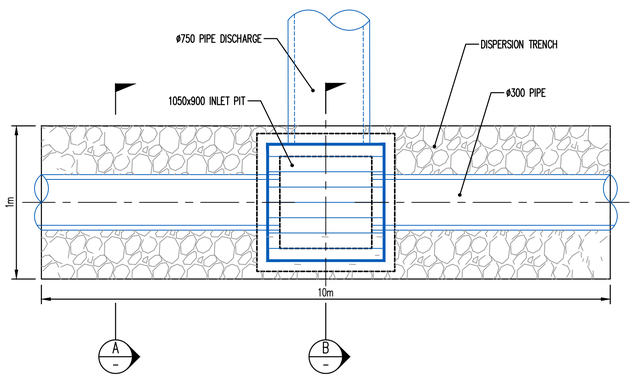
NOT FOR CONSTRUCTION



NOTE:
FOR MORE DETAILS REFER TO BLACKTOWN CITY COUNCIL'S WSUD STANDARD DRAWINGS.

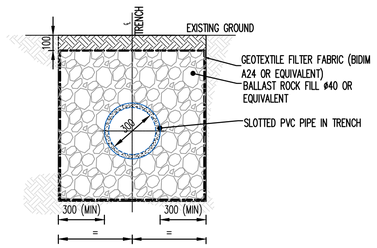
BIO RETENTION BASIN SECTION

SCALE: NTS



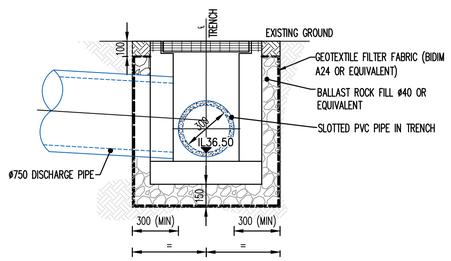
DISPERSION TRENCH PLAN

SCALE 1:20



DISPERSION TRENCH DETAIL SECTION A

SCALE 1:20



DISPERSION TRENCH DETAIL - SECTION B

SCALE 1:20

Z:\jobs\241241460\civil\sheets\110\241460-TTW-10-DR-CI-04501.dwg

Rev	Description	Eng	Draft	Date
4	SCHEMATIC DESIGN FOR REF	JL	ES	22.01.2025
3	SCHEMATIC DESIGN FOR REF	JL	ES	10.01.2025
2	SCHEMATIC DESIGN FOR REF	JL	ES	06.12.2024
1	FINAL DRAFT ISSUE FOR REF	JL	ES	21.11.2024

Client: NSW GOVERNMENT School Infrastructure NSW

Engineer: TTW www.ttwengineers.com

Project: NEW HIGH SCHOOL FOR SCHOFIELDS TALLAWONG

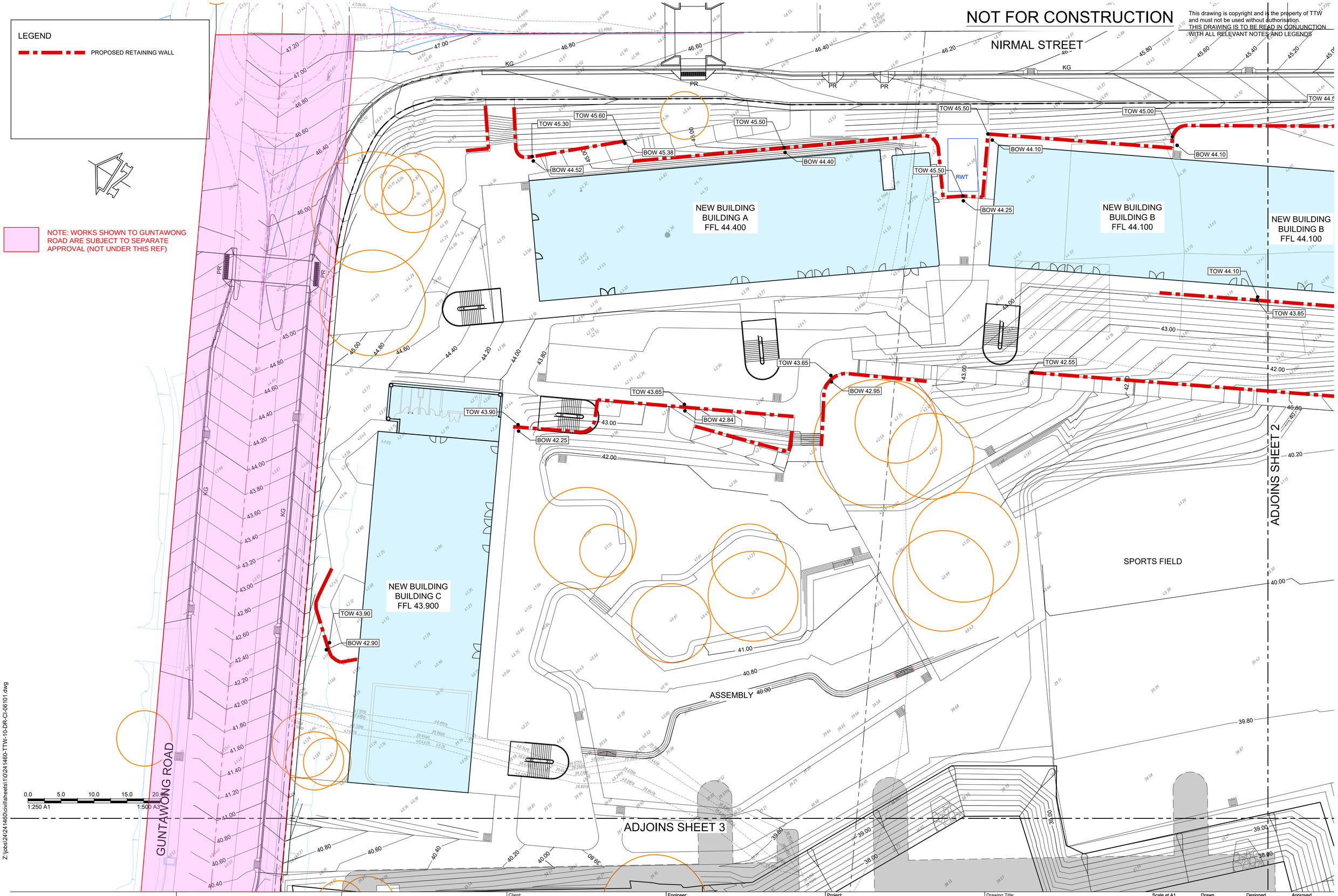
Drawing Title: STORMWATER DETAILS

Scale at A1	Drawn	Designed	Approved
AS SHOWN	ES	AW	CR

Project No	Originator	Type	Role	Sheet No.	Rev
STHS-TTW-01-00-DR-C-04501-4					

22.01.2025 11:42 AM

NOT FOR CONSTRUCTION



Z:\jobs\241\2414\60\civil\sheets\110\2414\60-TTW-10-DR-CI-06101.dwg

Rev	Description	Eng Draft	Date
3	SCHEMATIC DESIGN FOR REF	JL ES	10.01.2025
2	SCHEMATIC DESIGN FOR REF	JL ES	06.12.2024
1	FINAL DRAFT ISSUE FOR REF	JL ES	21.11.2024

Rev Description Eng Draft Date | Rev Description Eng Draft Date

Client: NSW GOVERNMENT School Infrastructure NSW

Engineer: TTW www.ttwengineers.com

Project: NEW HIGH SCHOOL FOR SCHOFIELDS TALLAWONG

Drawing Title: RETAINING WALL PLAN SHEET 1

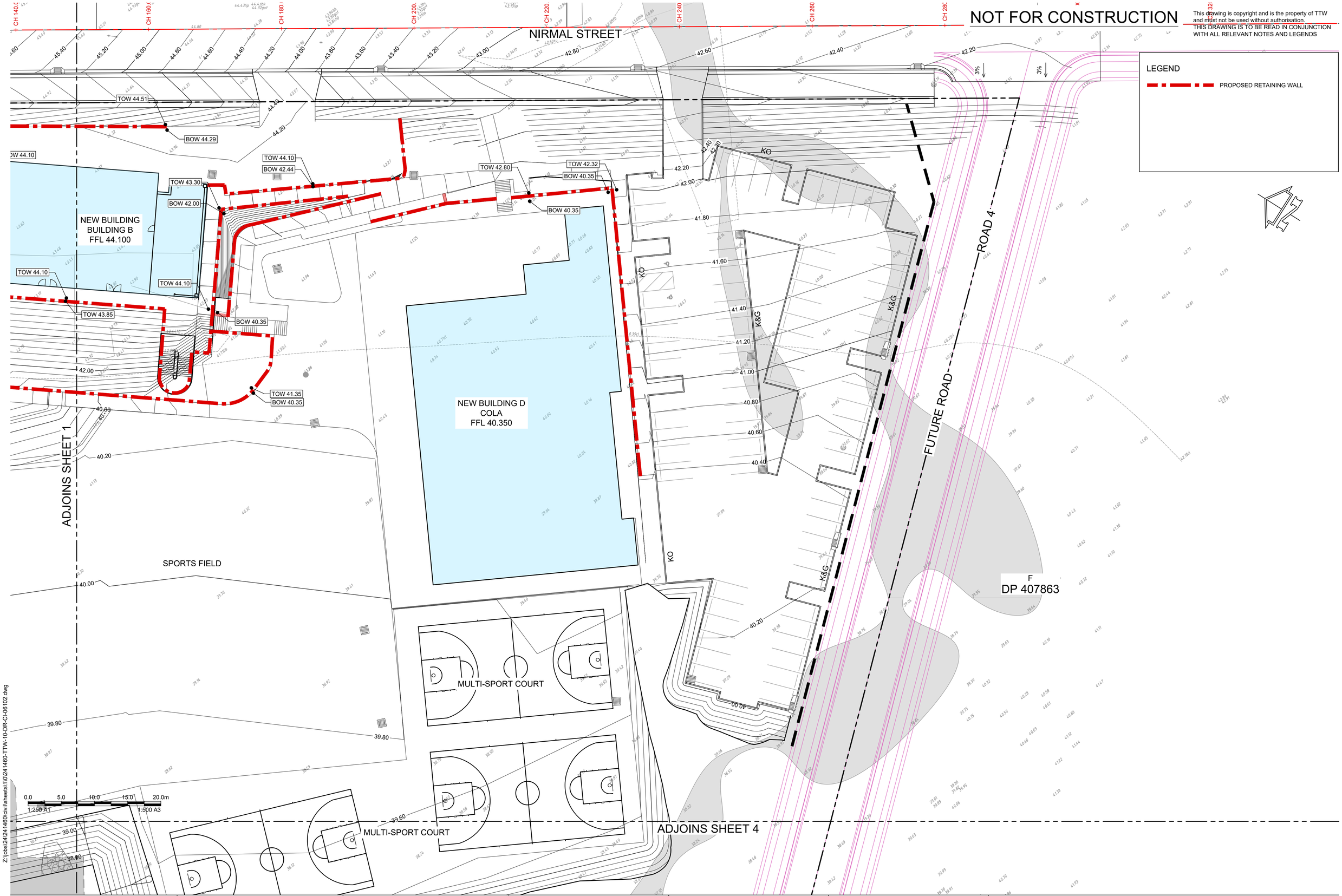
Scale at A1	Drawn	Designed	Approved
	ES		CR

Project No	Originator	Type	Role	Sheet No.	Rev
STHS	TTW	01	00	DR-C-06101-3	

10.01.2025 3:24 PM

NOT FOR CONSTRUCTION

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT NOTES AND LEGENDS



Z:\jobs\241\241460\civil\sheets\10\241460-TTW-10-DR-CI-06102.dwg

Rev	Description	Eng	Draft	Date
3	SCHEMATIC DESIGN FOR REF	JL	ES	10.01.2025
2	SCHEMATIC DESIGN FOR REF	JL	ES	06.12.2024
1	FINAL DRAFT ISSUE FOR REF	JL	ES	21.11.2024

Client: NSW GOVERNMENT School Infrastructure NSW

Engineer: TTW www.ttwengineers.com

Project: NEW HIGH SCHOOL FOR SCHOFIELDS TALLAWONG

Drawing Title: RETAINING WALL PLAN SHEET 2

Scale at A1	Drawn	Designed	Approved
	ES		CR

Project No	Originator	Type	Role	Sheet No.	Rev
STHS-TTW-01-00-DR-C-06102-3					

10.01.2025 3:25 PM

NOTE: RETAINING WALLS ARE SHOWN INDICATIVELY AND ARE SUBJECT TO DETAILED DESIGN

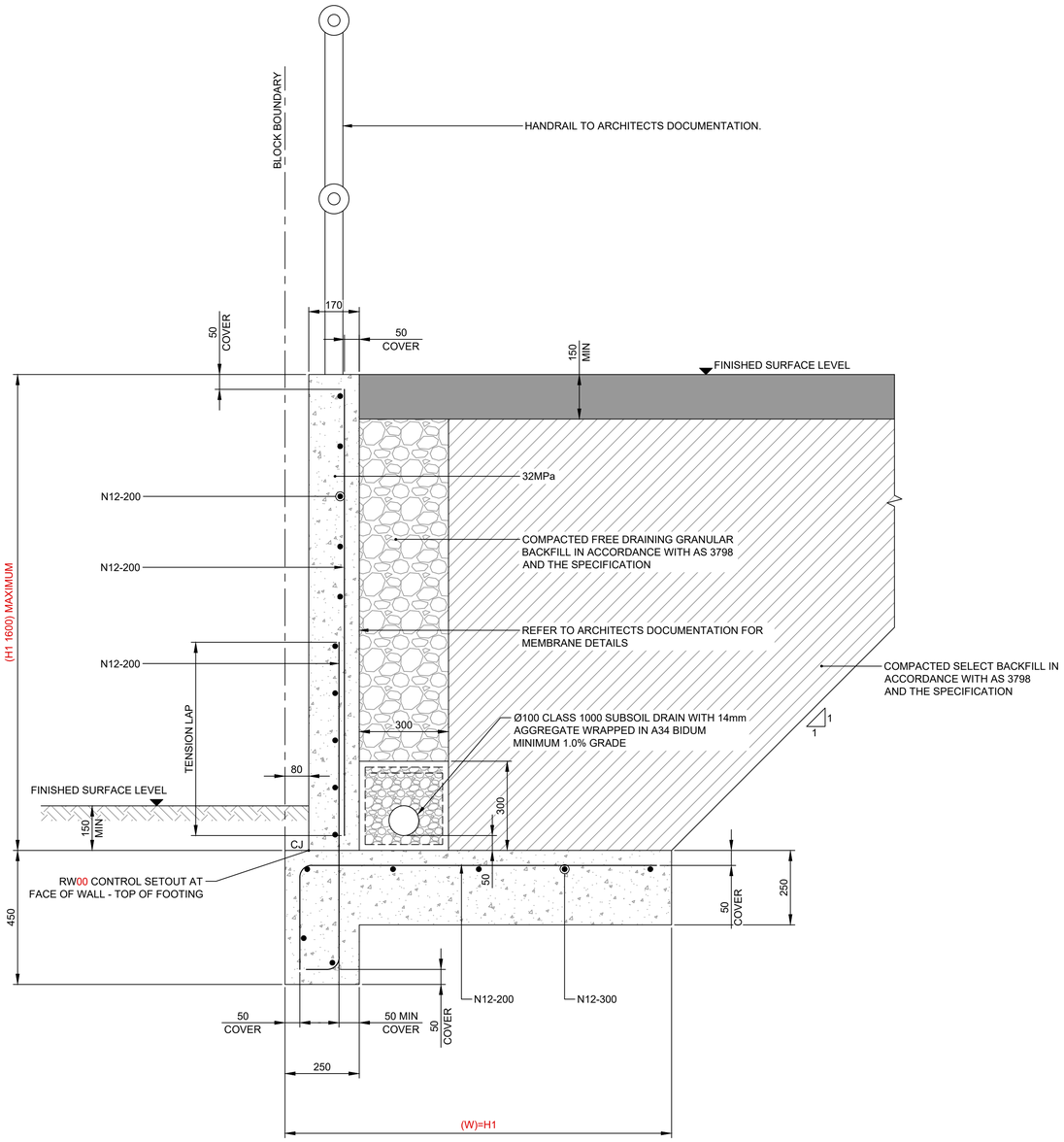
NOT FOR CONSTRUCTION

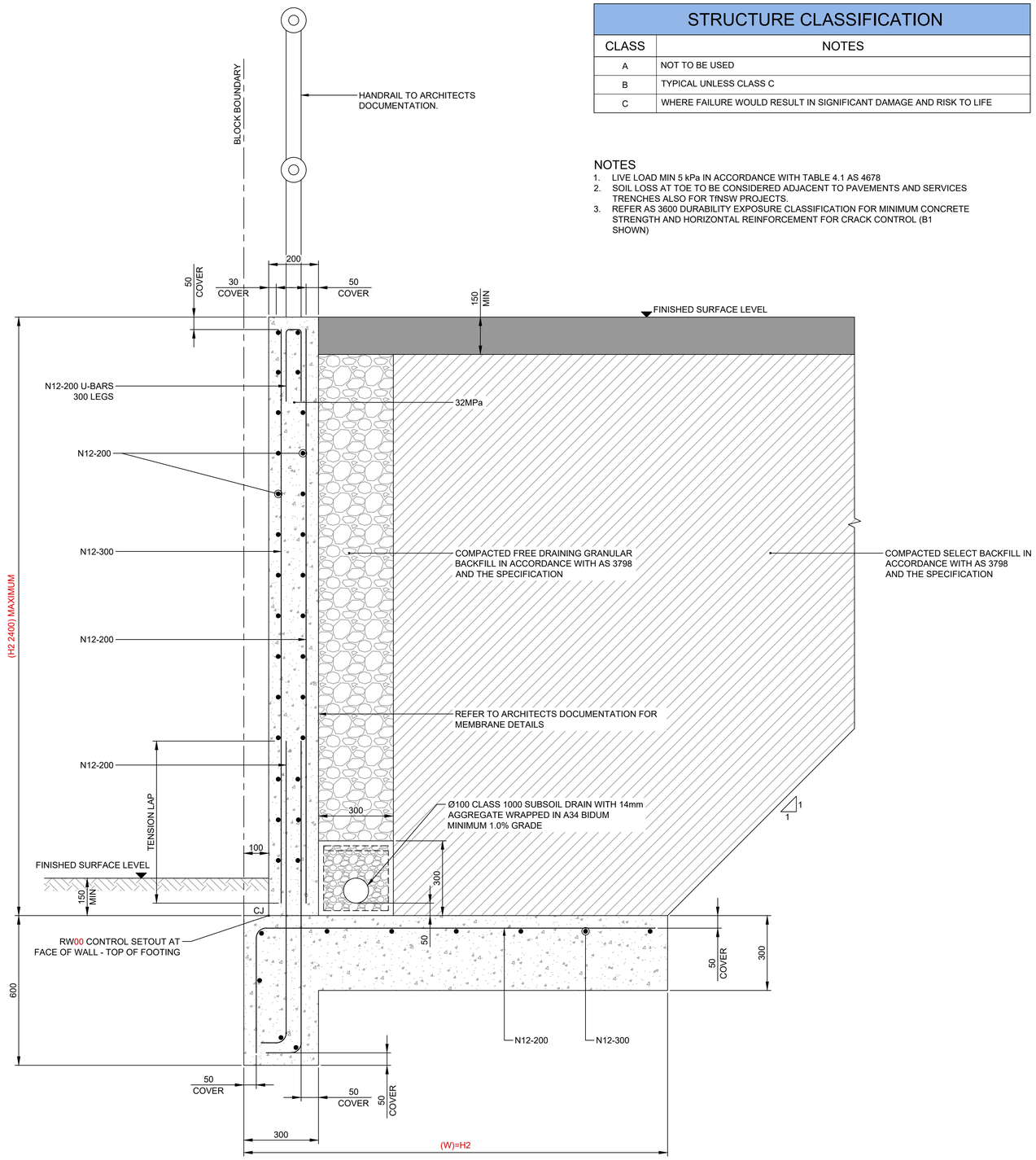
THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT NOTES AND LEGENDS

STRUCTURE CLASSIFICATION	
CLASS	NOTES
A	NOT TO BE USED
B	TYPICAL UNLESS CLASS C
C	WHERE FAILURE WOULD RESULT IN SIGNIFICANT DAMAGE AND RISK TO LIFE

NOTES

1. LIVE LOAD MIN 5 kPa IN ACCORDANCE WITH TABLE 4.1 AS 4678
2. SOIL LOSS AT TOE TO BE CONSIDERED ADJACENT TO PAVEMENTS AND SERVICES TRENCHES ALSO FOR TfNSW PROJECTS.
3. REFER AS 3600 DURABILITY EXPOSURE CLASSIFICATION FOR MINIMUM CONCRETE STRENGTH AND HORIZONTAL REINFORCEMENT FOR CRACK CONTROL (B1 SHOWN)





0 200 400 600 800mm
1:10 A1 1:20 A3

RETAINING WALL TYPE - 1
170 THICK REINFORCED CONCRETE
SCALE 1:10

RETAINING WALL TYPE - 2
200 THICK REINFORCED CONCRETE
SCALE 1:10

Z:\jobs\24\241460\civil\sheets\10\241460-TTW-10-DR-CI-06501.dwg

Rev	Description	Eng	Draft	Date
3	SCHEMATIC DESIGN FOR REF	JL	ES	10.01.2025
2	SCHEMATIC DESIGN FOR REF	JL	ES	06.12.2024
1	FINAL DRAFT ISSUE FOR REF	JL	ES	21.11.2024

Client: NSW GOVERNMENT School Infrastructure NSW

Engineer: TTW www.ttwengineers.com

Project: NEW HIGH SCHOOL FOR SCHOFIELDS TALLAWONG

Drawing Title: RETAINING WALLS DETAILS

Scale at A1	Drawn	Designed	Approved
	ES	AW	CR

Project No	Originator	Type	Role	Sheet No.	Rev
STHS-TTW-01-00-DR-C-06501-3					

10.01.2025 3:25 PM

NOT FOR CONSTRUCTION

CONCRETE

1. PLACE CONCRETE OF THE FOLLOWING CHARACTERISTIC COMPRESSIVE STRENGTH f'c IN ACCORDANCE WITH AS 1379.
2.

LOCATION	f'c MPa (28 DAYS)	SPECIFIED SLUMP	NOMINAL AGG. SIZE
KERBS	S20	80	20
RETAINING WALL FOOTINGS	S40	80	20

3. USE TYPE 'GP' CEMENT, UNLESS OTHERWISE SPECIFIED.
4. ALL CONCRETE SHALL BE SUBJECT TO PROJECT ASSESSMENT AND TESTING TO AS 1379.
5. CONSOLIDATE BY MECHANICAL VIBRATION. CURE ALL CONCRETE SURFACES AS DIRECTED IN THE SPECIFICATION.
6. FOR ALL FALLS IN SLAB, DRIP GROOVES, REGLETS, CHAMFERS ETC. REFER TO ARCHITECTS DRAWINGS AND SPECIFICATIONS.
7. UNLESS SHOWN ON THE DRAWINGS, THE LOCATION OF ALL CONSTRUCTION JOINTS SHALL BE SUBMITTED TO ENGINEER FOR REVIEW.
8. NO HOLES OR CHASES SHALL BE MADE IN THE SLAB WITHOUT THE APPROVAL OF THE ENGINEER.
9. CONDUITS AND PIPES ARE TO BE FIXED TO THE UNDERSIDE OF THE TOP REINFORCEMENT LAYER.
10. SLURRY USED TO LUBRICATE CONCRETE PUMP LINES IS NOT TO BE USED IN ANY STRUCTURAL MEMBERS.
11. ALL SLABS CAST ON GROUND REQUIRE SAND BLINDING WITH A CONCRETE UNDERLAY

CONCRETE FINISHING

1. ALL EXPOSED CONCRETE PAVEMENTS ARE TO BE BROOMED FINISHED.
2. ALL EDGES OF THE CONCRETE PAVEMENT INCLUDING KEYED AND DOWELLED JOINTS ARE TO BE FINISHED WITH AN EDGING TOOL.
3. CONCRETE PAVEMENTS WITH GRADES GREATER THAN 10 % SHALL BE HEAVILY BROOMED FINISHED.
4. CARBORUNDUM TO BE ADDED TO ALL STAIR TREADS AND RAMPED CROSSINGS U.N.O.

FORMWORK

1. THE DESIGN, CERTIFICATION, CONSTRUCTION AND PERFORMANCE OF THE FORMWORK, FALSEWORK AND BACKPROPPING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. PROPOSED METHOD OF INSTALLATION AND REMOVAL OF FORMWORK IS TO BE SUBMITTED TO THE SUPERINTENDENT FOR COMMENT PRIOR TO WORK BEING CARRIED OUT.

PAVEMENT LEGEND

PT1 — CONCRETE BLEACHERS

PT2 — INTERNAL PEDESTRIAN PAVING
120mm THICK CONCRETE SLAB (25MPa) WITH SL72 MESH (40 COVER)
150mm THICK COMPACTED FINE CRUSHED ROCK (DGB20)
REFER TO LANDSCAPE ARCHITECTS DOCUMENTATION FOR COLOUR TREATMENT

PT3 — CARPARK AND DELIVERY ZONE
40mm COMPACTED THICKNESS AC14 WEARING COURSE ON
150mm COMPACTED THICKNESS DGB20 CLASS 1 BASE TO 98% MMDD AT ±2% OMC ON
175mm COMPACTED THICKNESS DGS20 SUBBASE TO 98% MMDD AT ±2% OMC ON
SUBGRADE MIN. CBR 4% COMPACTED TO 98% SMDD AT ±2% OMC

PT4 — MULTI SPORTS COURTS
TO LANDSCAPE ARCHITECT'S DOCUMENTATION

PT5 — SPORTS FIELD
TO LANDSCAPE ARCHITECT'S DOCUMENTATION

PT6 — INTERNAL PEDESTRIAN PAVING
120mm THICK CONCRETE SLAB (25MPa) WITH SL72 MESH (40 COVER)
150mm THICK COMPACTED FINE CRUSHED ROCK (DGB20)
REFER TO LANDSCAPE ARCHITECTS DOCUMENTATION FOR COLOUR TREATMENT

PT8 — PUBLIC DOMAIN REINFORCED CONCRETE DRIVEWAY
150 THICK S32 CONCRETE
150 THICK DGB20 COMPACTED TO 98% MMDD

PT20 — PUBLIC DOMAIN ROAD MILL AND RESHEET
2x25mm THICK WEARING COURSE AC10
PRIME AC00
EXISTING PAVEMENT

PT21 — PUBLIC DOMAIN ROAD PAVEMENT
REFER DRAWING 07501

PT22 — PUBLIC DOMAIN FOOTPATH
125mm THICK CONCRETE SLAB (25MPa) WITH SL72 MESH (40 COVER)
150mm THICK COMPACTED FINE CRUSHED ROCK (DGB20)

LANDSCAPING
REFER TO LANDSCAPE ARCHITECT'S DOCUMENTATION

NOTES:

1. PAVEMENT BUILDUPS ARE INDICATIVE AND TO BE DEVELOPED IN DETAILED DESIGN.
2. ADOPTED DESIGN PARAMETERS:
DESIGN TRAFFIC $5x10^5$ ESA, SUBGRADE 4% CBR MIN.

CONCRETE REINFORCEMENT

1. FIX REINFORCEMENT AS SHOWN ON DRAWINGS. THE TYPE AND GRADE IS INDICATED BY A SYMBOL AS SHOWN BELOW. ON THE DRAWINGS THIS IS FOLLOWED BY A NUMERAL WHICH INDICATES THE SIZE IN MILLIMETRES OF THE REINFORCEMENT.

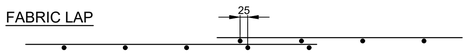
SYMBOL	TYPE	GRADE
N	HOT ROLLED RIBBED BAR	DN500N
R	PLAIN ROUND BAR	R250N
SL	SQUARE MESH	500L
RL	RECTANGULAR MESH	500L

2. PROVIDE BAR SUPPORTS OR SPACERS TO GIVE THE FOLLOWING CONCRETE COVER TO ALL REINFORCEMENT UNLESS OTHERWISE NOTED ON DRAWINGS.

LOCATION	COVER (MM)
FOOTINGS	50
WALLS	30

3. COVER TO REINFORCEMENT ENDS TO BE 50 mm U.N.O.
4. PROVIDE N12-450 SUPPORT BARS TO TOP REINFORCEMENT AS REQUIRED, LAP 500 U.N.O.
5. MAINTAIN COVER TO ALL PIPES, CONDUITS, REGLETS, DRIP GROOVES ETC
6. ALL COGS TO BE STANDARD COGS UNLESS NOTED OTHERWISE.
7. FABRIC END AND SIDE LAPS ARE TO BE PLACED STRICTLY IN ACCORDANCE WITH THE MANUFACTURERS REQUIREMENTS TO ACHIEVE A FULL TENSILE LAP. FABRIC SHALL BE LAID SO THAT THERE IS A MAXIMUM OF 3 LAYERS AT ANY LOCATION.

FABRIC LAP



8. LAPS IN REINFORCEMENT SHALL BE MADE ONLY WHERE SHOWN ON THE DRAWINGS UNLESS OTHERWISE APPROVED. LAP LENGTHS AS PER TABLE BELOW.

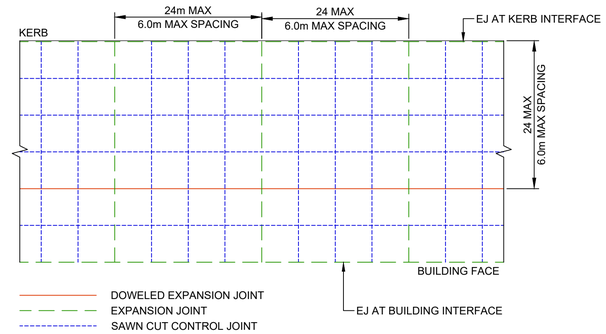
TENSION LAPS		
BAR SIZE	TOP BARS IN BANDS AND BEAMS	ALL OTHER BARS
N12	570	480
N16	800	700
N20	1150	950
N24	1500	1250
N28	1850	1500
N32	2250	1800
N36	2700	2100

COMPRESSION LAPS	
BAR SIZE	
N16	640
N20	800
N24	960
N28	1120
N32	1280
N36	1440

ASSUMPTIONS:
1. TOP BARS IN BANDS AND BEAMS:
MORE THAN 300mm OF CONCRETE BELOW THE BAR.
2. MINIMUM COVER OF 25mm AND MINIMUM STIRRUP SIZE OF N12 GIVING Cd=37mm; THEREFORE MINIMUM CLEAR SPACING BETWEEN BARS = 2 X Cd = 74mm. MINIMUM COVER IS BASED ON THE NEW A2 EXPOSURE CLASSIFICATION FOR INTERIOR, NON-RESIDENTIAL WHICH REQUIRES 25mm COVER FOR 32Mpa CONCRETE,
3. f'c = 32Mpa
ALL OTHER BARS:
1. LESS THAN 300mm OF CONCRETE BELOW THE BAR.
2. MINIMUM COVER OF 25mm GIVING Cd = 25mm; THEREFORE MINIMUM CLEAR SPACING BETWEEN BARS = 2 X Cd = 50mm.
3. f'c = 32Mpa.
COLUMNS:
1. COVER TO COLUMNS = 40mm (30+10)k7 = 1.25
2. COVERS FOR FIRE RATING ARE TO BE DESIGNED BY THE ENGINEER.

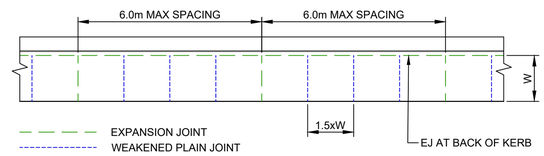
VEHICULAR PAVEMENT JOINTING (03000 SERIES DRAWINGS)

1. ALL VEHICULAR PAVEMENTS TO BE JOINTED AS SHOWN ON DRAWINGS.
2. DOWEL BARS ARE TO BE IN ACCORDANCE WITH GIVEN DETAIL. REFER 03000 SERIES DRAWINGS.
3. DOWELED EXPANSION JOINTS SHOULD GENERALLY BE LOCATED AT A MAXIMUM OF 24.0M CENTRES.
4. SAWN JOINTS SHOULD GENERALLY BE LOCATED AT A MAXIMUM OF 6.0M CENTRES OR 1.5 X THE SPACING OF PERPENDICULAR SAWN JOINTS.
5. PROVIDE 10mm WIDE FULL DEPTH EXPANSION JOINTS BETWEEN BUILDINGS/STRUCTURES AND ALL CONCRETE OR UNIT PAVERS.
6. THE TIMING OF THE SAW CUT IS TO BE CONFIRMED BY THE CONTRACTOR ON SITE. SITE CONDITIONS WILL DETERMINE HOW MANY HOURS AFTER THE CONCRETE POUR BEFORE THE SAW CUTS ARE COMMENCED. REFER TO THE SPECIFICATION FOR WEATHER CONDITIONS AND TEMPERATURES REQUIRED.
7. VEHICULAR PAVEMENT JOINTING AS FOLLOWS.



PEDESTRIAN PATH JOINTING (03000 SERIES DRAWINGS)

1. EXPANSION JOINTS ARE TO BE LOCATED WHERE POSSIBLE AT TANGENT POINTS OF CURVES AND ELSEWHERE AT MAX 6.0M CENTRES.
2. WEAKENED PLANE JOINTS ARE TO BE LOCATED AT A MAX 1.5 X WIDTH OF THE PAVEMENT.
3. WHERE POSSIBLE JOINTS SHOULD BE LOCATED TO MATCH KERBING AND / OR ADJACENT PAVEMENT JOINTS.
4. ALL PEDESTRIAN FOOTPATH JOINTING AS FOLLOWS (UNO).



KERBING

INCLUDES ALL KERBS, GUTTERS, DISH DRAINS, CROSSINGS AND EDGES.

1. ALL KERBS, GUTTERS, DISH DRAINS AND CROSSINGS TO BE CONSTRUCTED ON MINIMUM 75mm GRANULAR BASECOURSE COMPACTED TO MINIMUM 98% MODIFIED MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289 5.2.1.
2. EXPANSION JOINTS (EJ) TO BE FORMED FROM 10mm COMPRESSIBLE CORK FILLER BOARD FOR THE FULL DEPTH OF THE SECTION AND CUT TO PROFILE. EXPANSION JOINTS TO BE LOCATED AT DRAINAGE PITS, ON TANGENT POINTS OF CURVES AND ELSEWHERE AT 12M CENTRES EXCEPT FOR INTEGRAL KERBS WHERE THE EXPANSION JOINTS ARE TO MATCH THE JOINT LOCATIONS IN SLABS.
3. WEAKENED PLANE JOINTS TO BE MIN 3mm WIDE AND LOCATED AT 3M CENTRES EXCEPT FOR INTEGRAL KERBS WHERE WEAKENED PLANE JOINTS ARE TO MATCH THE JOINT LOCATIONS IN SLABS.
4. BROOMED FINISHED TO ALL RAMPED AND VEHICULAR CROSSINGS, ALL OTHER KERBING OR DISH DRAINS TO BE STEEL FLOAT FINISHED.
5. IN THE REPLACEMENT OF KERBS - EXISTING ROAD PAVEMENT IS TO BE SAWCUT 900mm FROM LIP OF GUTTER. UPON COMPLETION OF NEW KERBS, NEW BASE COURSE AND SURFACE IS TO BE LAID 900mm WIDE TO MATCH EXISTING MATERIALS AND THICKNESSES. EXISTING ALLOTMENT DRAINAGE PIPES ARE TO BE BUILT INTO THE NEW KERB WITH A 100mm DIA HOLE. EXISTING KERBS ARE TO BE COMPLETELY REMOVED WHERE NEW KERBS ARE SHOWN.

Z:\jobs\241\241460\civil\sheets\10\241460-TTW-10-DR-CI-07001.dwg

Rev	Description	Eng Draft	Date
3	SCHEMATIC DESIGN FOR REF	JL ES	10.01.2025
2	SCHEMATIC DESIGN FOR REF	JL ES	06.12.2024
1	FINAL DRAFT ISSUE FOR REF	JL ES	21.11.2024

Client: School Infrastructure NSW

Engineer: TTW www.ttwengineers.com

Project: NEW HIGH SCHOOL FOR SCHOFIELDS TALLAWONG

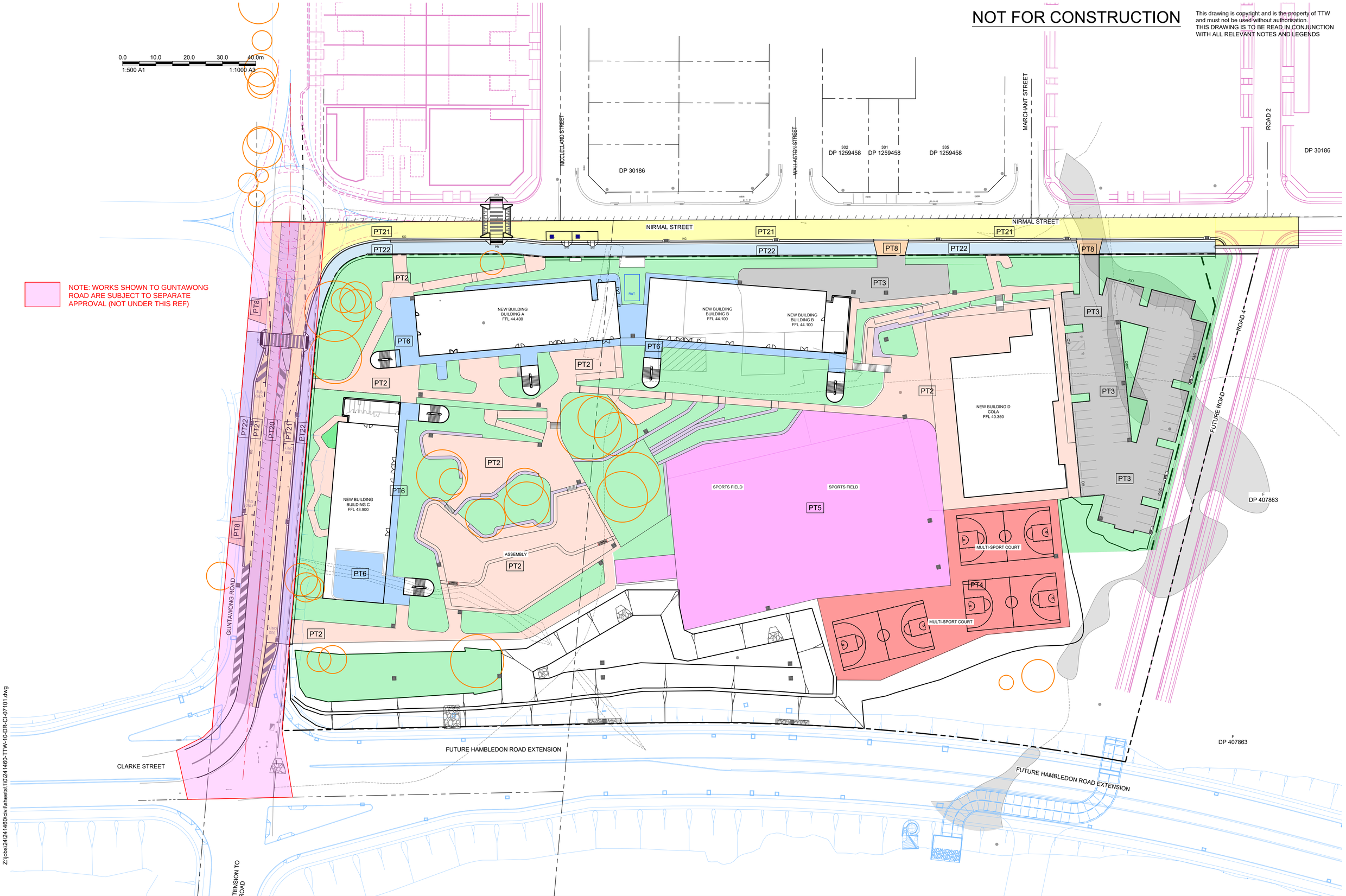
Drawing Title: PAVEMENT NOTES AND LEGEND

Scale at A1	Drawn	Designed	Approved
	ES	AW	CR

Project No	Originator	Type	Role	Sheet No.	Rev
STHS-TTW-01-00-DR-C-07001-3					

10.01.2025 3:25 PM

NOT FOR CONSTRUCTION



Z:\jobs\24\241460\civil\sheets\10\241460-TTW-10-DR-CI-07101.dwg

Rev	Description	Eng	Draft	Date
4	SCHEMATIC DESIGN FOR REF	JL	ES	22.01.2025
3	SCHEMATIC DESIGN FOR REF	JL	ES	10.01.2025
2	SCHEMATIC DESIGN FOR REF	JL	ES	06.12.2024
1	FINAL DRAFT ISSUE FOR REF	JL	ES	21.11.2024

Client: NSW GOVERNMENT School Infrastructure NSW

Engineer: TTW www.ttwengineers.com

Project: NEW HIGH SCHOOL FOR SCHOFIELDS TALLAWONG

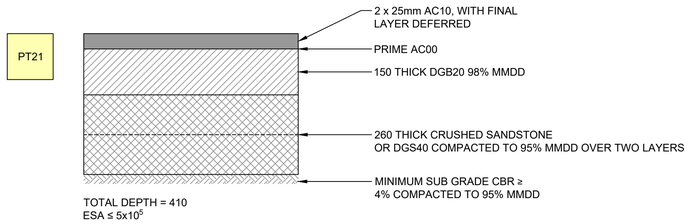
Drawing Title: PAVEMENT PLAN

Scale at A1	Drawn	Designed	Approved
1:250	ES	AW	CR

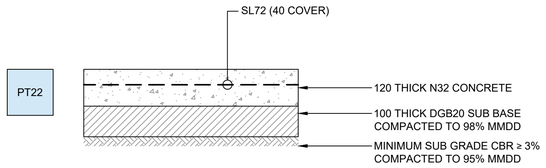
Project No	Originator	Type	Role	Sheet No.	Rev
STHS-TTW-01-00-DR-C-07101-4					

22.01.2025 2:28 PM

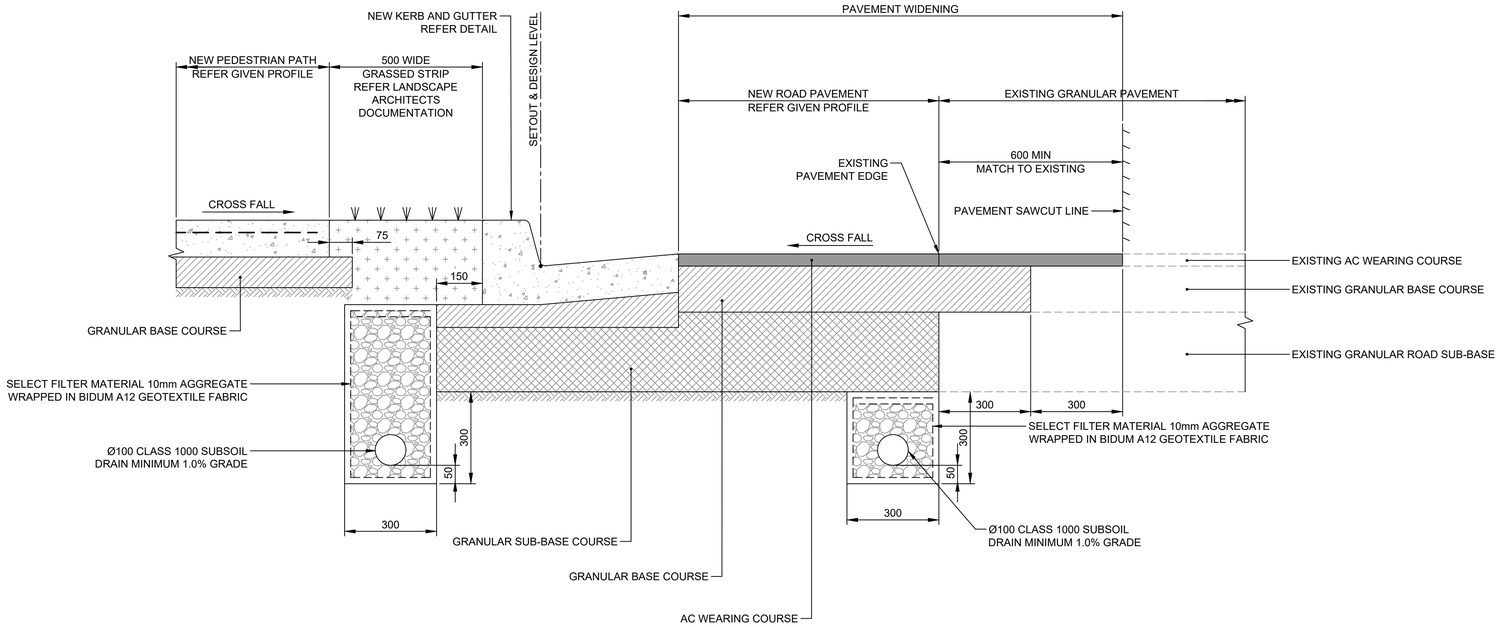
NOT FOR CONSTRUCTION



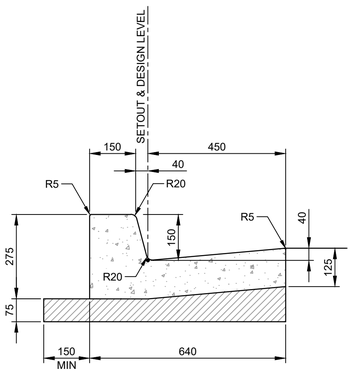
PAVEMENT TYPE 21 (PT21)
EXTERNAL ROAD PAVEMENT
SCALE 1:10



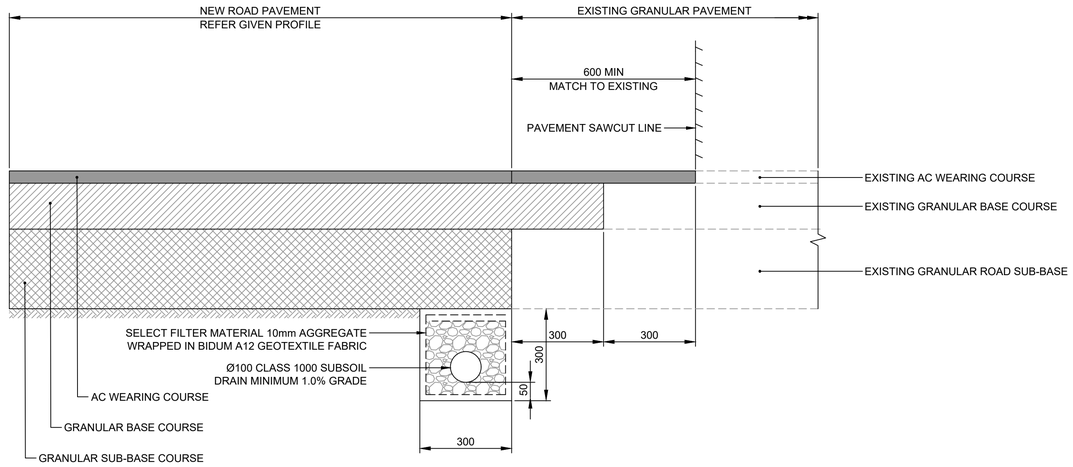
PAVEMENT TYPE 22 (PT22)
REINFORCED CONCRETE PEDESTRIAN PAVEMENT
SCALE 1:10



PAVEMENT WIDENING
KEYED INTO EXISTING PAVEMENT
SCALE 1:10



KERB AND GUTTER (KG)
SCALE 1:10



PAVEMENT TRANSVERSE
KEYED INTO EXISTING PAVEMENT
SCALE 1:10

0 200 400 600 800mm
1:10 A1 1:20 A3

Z:\jobs\24\2414460\civil\sheets\1\0\2414460-TTW-10-DR-CI-07501.dwg

Rev	Description	Eng Draft	Date
3	SCHEMATIC DESIGN FOR REF	JL	ES 10.01.2025
2	SCHEMATIC DESIGN FOR REF	JL	ES 06.12.2024
1	FINAL DRAFT ISSUE FOR REF	JL	ES 21.11.2024

Client:

Engineer: TTW www.ttwengineers.com

Project: NEW HIGH SCHOOL FOR SCHOFIELDS TALLAWONG

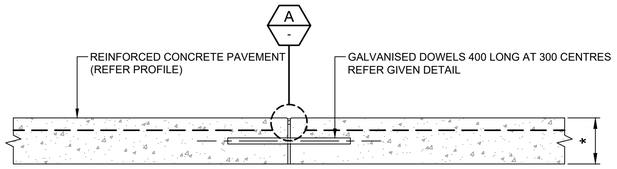
Drawing Title: PAVEMENT DETAILS SHEET 1

Scale at A1	Drawn	Designed	Approved
AS SHOWN	ES	AW	CR

Project No	Originator	Type	Role	Sheet No.	Rev
STHS	TTW	01	00	DR-C-07501-3	

10.01.2025 3:26 PM

NOT FOR CONSTRUCTION

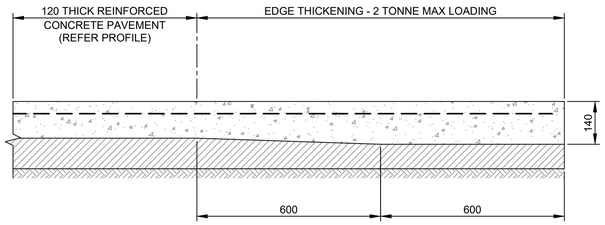


* REFER PAVEMENT PROFILES

NOTE
1. CONNOLLY EXPANSION JOINT ACCEPTED OR APPROVED EQUIVALENT
2. PROVIDE 50mm COVER EITHER SIDE OF JOINT

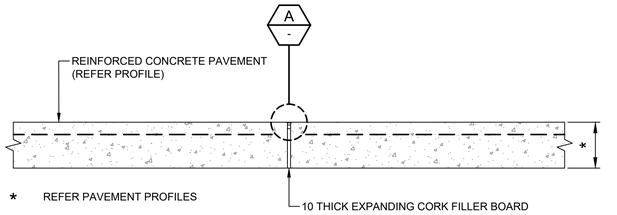
DOWELED EXPANSION JOINT (DEJ)

SCALE 1:10



120 THICK REINFORCED CONCRETE PAVEMENT EDGE THICKENING - 2 TONNE MAX LOADING

SCALE 1:10

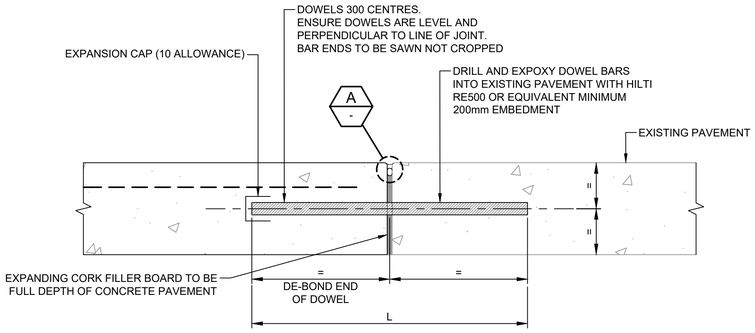


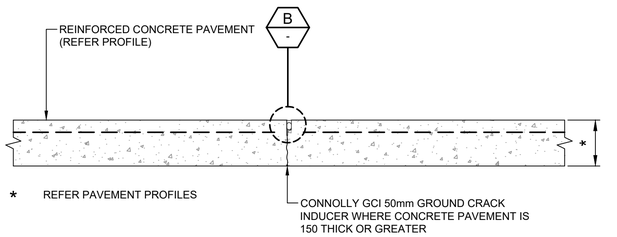
* REFER PAVEMENT PROFILES

NOTE
1. CONNOLLY EXPANSION JOINT ACCEPTED OR APPROVED EQUIVALENT
2. PROVIDE 50mm COVER EITHER SIDE OF JOINT

EXPANSION JOINT (EJ)

SCALE 1:10



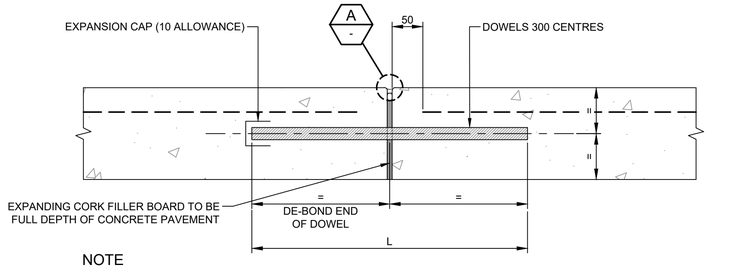


* REFER PAVEMENT PROFILES

NOTE
1. CONNOLLY CRACK INDUCED JOINT ACCEPTED OR APPROVED EQUIVALENT
2. PROVIDE 50mm COVER EITHER SIDE OF JOINT

WEAKENED PLANE JOINT (WPJ)

SCALE 1:10



NOTE
DOWEL BARS TO BE PLAIN ROUND STEEL AND OF GRADE 250N

CONCRETE THICKNESS	DOWEL SIZE	DOWEL LENGTH (L)
150 - 190	Ø20	450
200 - 240	Ø24	450
250 - 270	Ø30	450
280 - 340	Ø33	450
>340	Ø36	500

DOWEL JOINT DETAIL

SCALE 1:5

0 100 200 300 400mm
1:5 A1 1:10 A3

0 200 400 600 800mm
1:10 A1 1:20 A3

Z:\jobs\24\2414460\civil\sheets\1\0\2414460-TTW-10-DR-CI-07502.dwg

Rev	Description	Eng	Draft	Date
3	SCHEMATIC DESIGN FOR REF	JL	ES	10.01.2025
2	SCHEMATIC DESIGN FOR REF	JL	ES	06.12.2024
1	FINAL DRAFT ISSUE FOR REF	JL	ES	21.11.2024

Client: NSW GOVERNMENT School Infrastructure NSW

Engineer: TTW www.ttwengineers.com

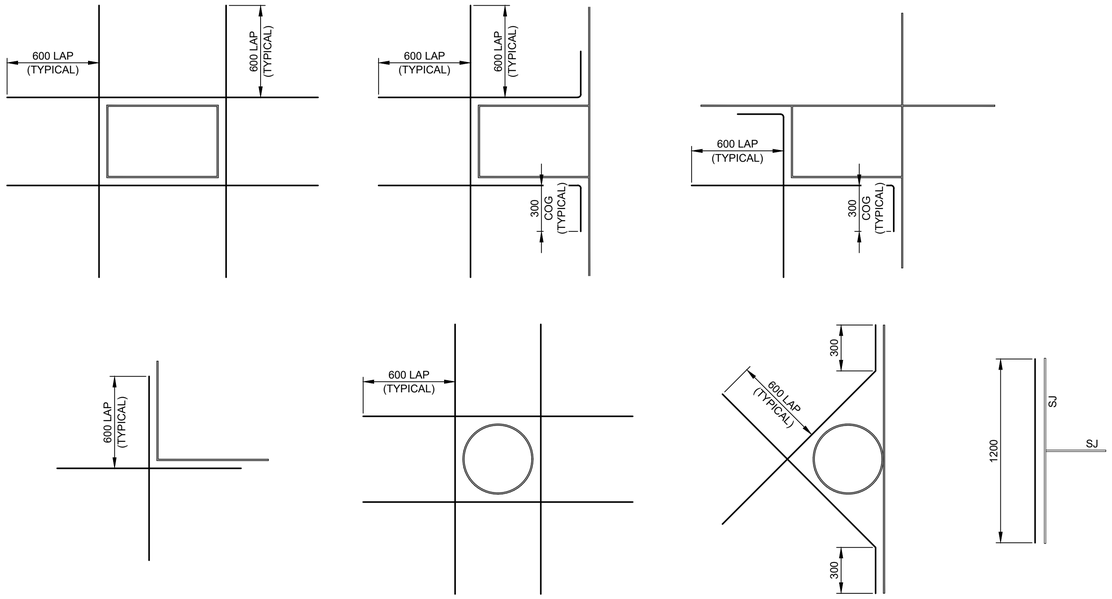
Project: NEW HIGH SCHOOL FOR SCHOFIELDS TALLAWONG

Drawing Title: PAVEMENT DETAILS SHEET 2

Scale at A1	Drawn	Designed	Approved
AS SHOWN	ES	AW	CR

Project No Originator Type Role Sheet No. Rev
STHS-TTW-01-00-DR-C-07502-3
10.01.2025 3:27 PM

NOT FOR CONSTRUCTION

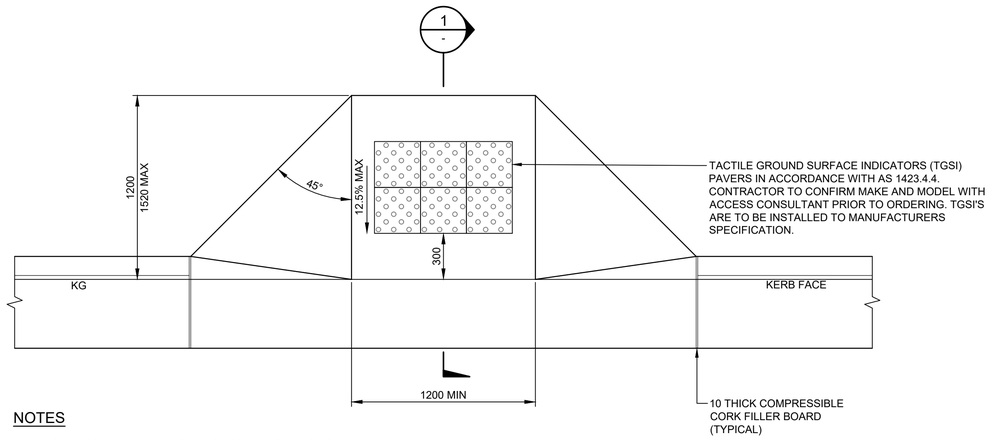


NOTES

1. PROVIDE TRIMMER BARS AT SLAB PENETRATIONS (COLUMNS, WALLS, PITS ETC).
2. ALL TRIMMER BARS TO BE 1N16 U.N.O
3. PROVIDE 50 COVER EACH FACE U.N.O
4. TRIMMER DETAILS ARE TO BE READ IN CONJUNCTION WITH GIVEN JOINTING DETAILS

TYPICAL SLAB ON GROUND TRIMMER BAR DETAILS

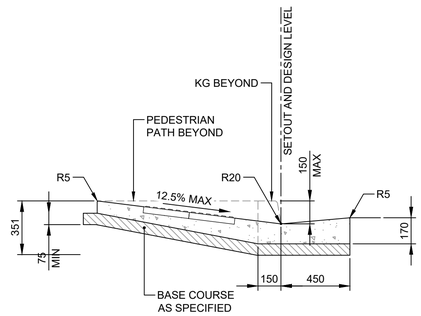
SCALE 1:20



NOTES

1. TACTILE GROUND INDICATORS ARE TO BE INSTALLED ON ACCESSIBLE PEDESTRIAN ROUTES ONLY.
2. TGSI'S ARE TO BE IN ACCORDANCE WITH AS/NZS 1428.4.4 2009.
3. TGS'S SHALL NOT BE INSTALLED WITHIN KERB RAMPS UNLESS APPROVED BY THE AUTHORITIES.

PLAN



SECTION 1 -

RAMPED PEDESTRIAN CROSSING AT KISS AND DROP

SCALE 1:20

0 400 800 1200 1600mm
1:20 A1 1:40 A3

Z:\jobs\24\241460\civil\sheets\1\0\241460-TTW-10-DR-CI-07503.dwg

Rev	Description	Eng	Draft	Date
3	SCHEMATIC DESIGN FOR REF	JL	ES	10.01.2025
2	SCHEMATIC DESIGN FOR REF	JL	ES	06.12.2024
1	FINAL DRAFT ISSUE FOR REF	JL	ES	21.11.2024

Client:

Engineer: TTW www.ttwengineers.com

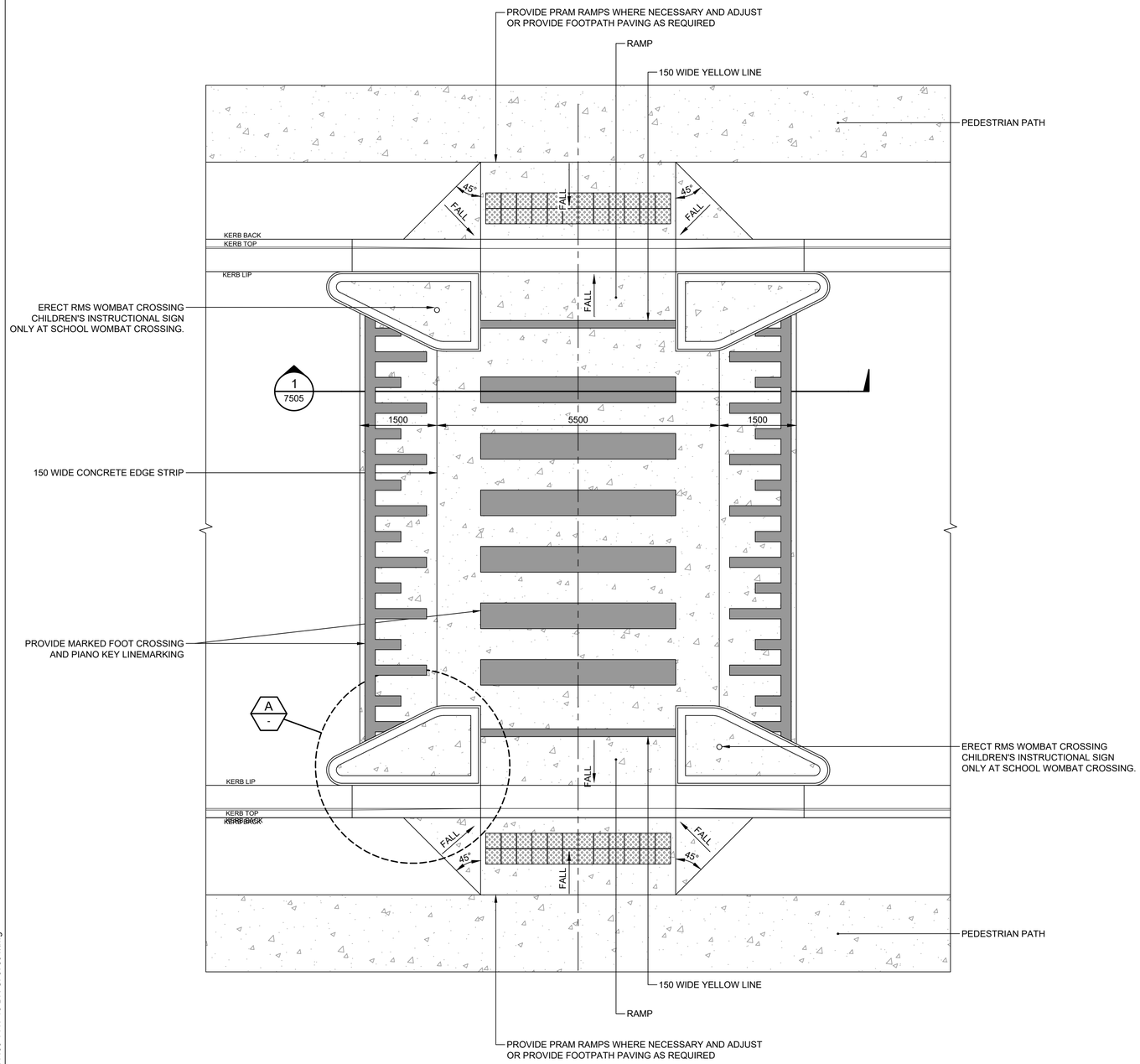
Project: NEW HIGH SCHOOL FOR SCHOFIELDS TALLAWONG

Drawing Title: PAVEMENT DETAILS SHEET 3

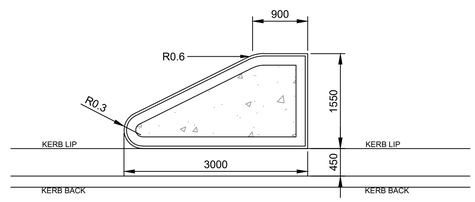
Scale at A1	Drawn	Designed	Approved
AS SHOWN	ES	AW	CR

Project No Originator Type Role Sheet No. Rev
STHS-TTW-01-00-DR-C-07503-3
10.01.2025 3:27 PM

NOT FOR CONSTRUCTION



PLAN
RAISED PEDESTRIAN CROSSING
SCALE 1:50



DETAIL A
SCALE 1:50

0.0 1000 2000 3000 4000mm
1:50 A1 1:100 A3

Z:\jobs\241\241460\civil\sheets\110\241460-TTW-10-DR-CI-07504.dwg

Rev	Description	Eng	Draft	Date
3	SCHEMATIC DESIGN FOR REF	JL	ES	10.01.2025
2	SCHEMATIC DESIGN FOR REF	JL	ES	06.12.2024
1	FINAL DRAFT ISSUE FOR REF	JL	ES	21.11.2024

Client: School Infrastructure NSW

Engineer: TTW www.ttwengineers.com

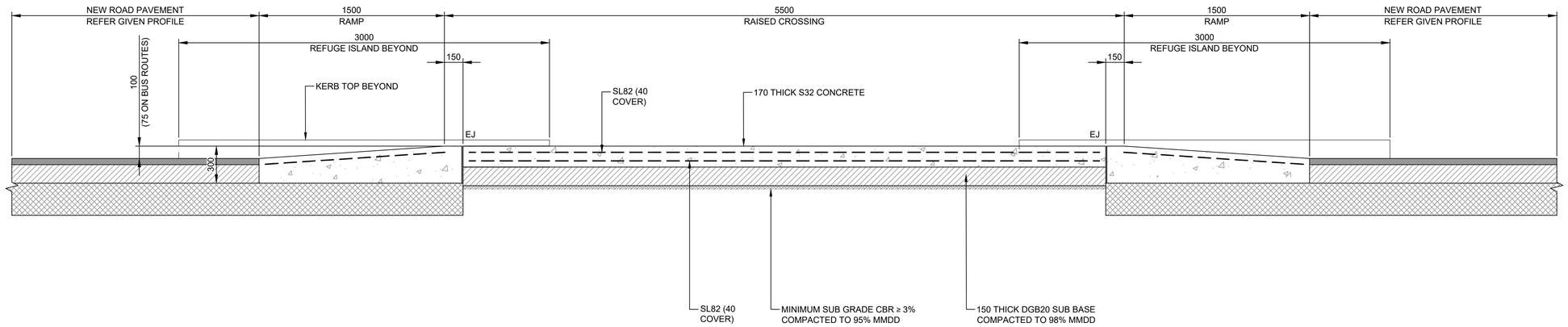
Project: NEW HIGH SCHOOL FOR SCHOFIELDS TALLAWONG

Drawing Title: PAVEMENT DETAILS SHEET 4

Scale at A1	Drawn	Designed	Approved
AS SHOWN	ES	AW	CR

Project No Originator Type Role Sheet No. Rev
STHS-TTW-01-00-DR-C-07504-3
10.01.2025 3:27 PM

NOT FOR CONSTRUCTION



SECTION 1
7504
SCALE 1:20

0.0 1000 2000 3000 4000mm
1:50 A1 1:100 A3

Z:\jobs\241\2414460\civil\sheets\1\0\2414460-TTW-10-DR-CI-07505.dwg

Rev	Description	Eng	Draft	Date
3	SCHEMATIC DESIGN FOR REF	JL	ES	10.01.2025
2	SCHEMATIC DESIGN FOR REF	JL	ES	06.12.2024
1	FINAL DRAFT ISSUE FOR REF	JL	ES	21.11.2024

Client: School Infrastructure NSW

Engineer: TTW
www.ttwengineers.com

Project: NEW HIGH SCHOOL FOR SCHOFIELDS TALLAWONG

Drawing Title: PAVEMENT DETAILS SHEET 5

Scale at A1	Drawn	Designed	Approved
AS SHOWN	ES	AW	CR

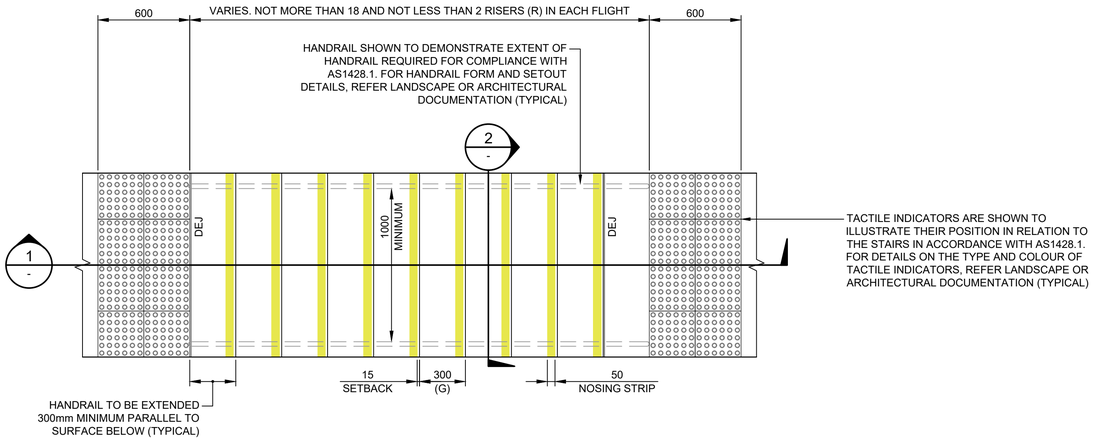
Project No Originator Type Role Sheet No. Rev
STHS-TTW-01-00-DR-C-07505-3
10.01.2025 3:27 PM

NOT FOR CONSTRUCTION

RISER AND GOING DIMENSIONS						
STAIR TYPE	RISER (R)		GOING (G)		SLOPE RELATIONSHIP (2R+G)	
	MAX	MIN	MAX	MIN	MAX	MIN
STAIRS (OTHER THAN SPRIAL)	190	115	355	240	700	550
SPIRAL	220	140	370	210	680	590

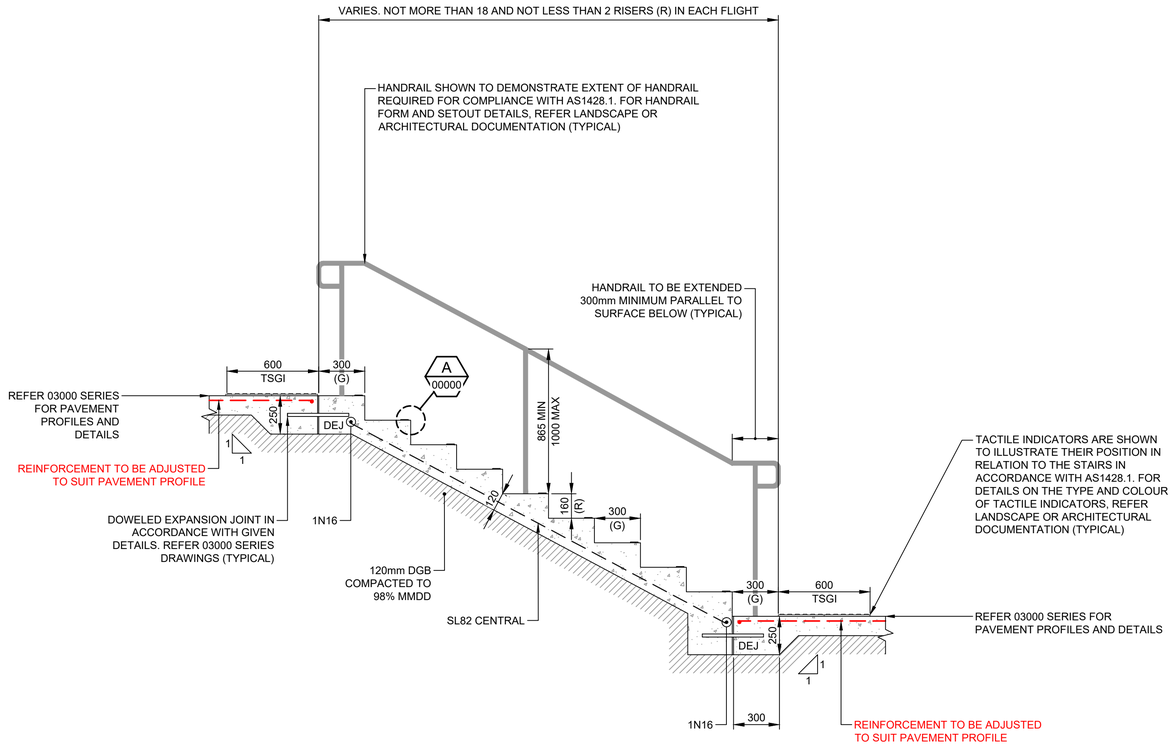
NOTES

1. CONCRETE STRENGTH TO BE 32MPa
2. REFER SITE PLANS FOR SETOUT, LEVELS AND GEOMETRY
3. FOR MINIMUM SLIP RESISTANCE OF STAIR TREADS AND LANDINGS REFER LANDSCAPE OR ARCHITECTURAL DOCUMENTATION



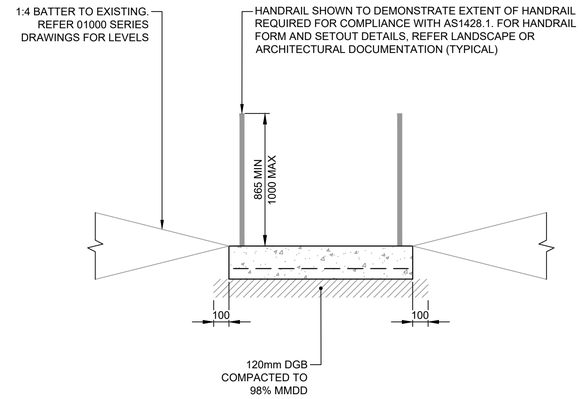
TYPICAL STAIR ON GRADE

SCALE 1:20



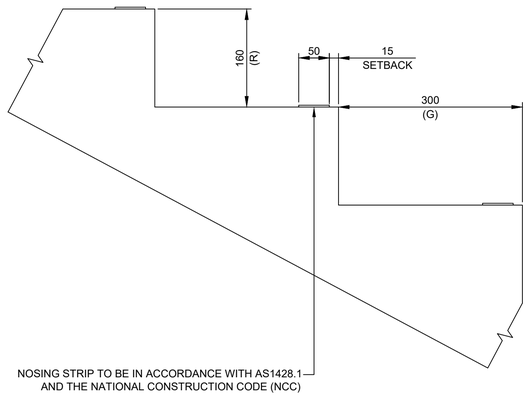
SECTION 1 -

SCALE 1:20



SECTION 2 -

SCALE 1:20



DETAIL A 00000

SCALE 1:5

0 100 200 300 400mm
1:5 A1 1:10 A3

0 400 800 1200 1600mm
1:20 A1 1:40 A3

Z:\jobs\241\2414\60\civil\sheets\110\2414\60-TTW-10-DR-CI-07506.dwg

Rev	Description	Eng	Draft	Date
3	SCHEMATIC DESIGN FOR REF	JL	ES	10.01.2025
2	SCHEMATIC DESIGN FOR REF	JL	ES	06.12.2024
1	FINAL DRAFT ISSUE FOR REF	JL	ES	21.11.2024

Client: School Infrastructure NSW

Engineer: TTW www.ttwengineers.com

Project: NEW HIGH SCHOOL FOR SCHOFIELDS TALLAWONG

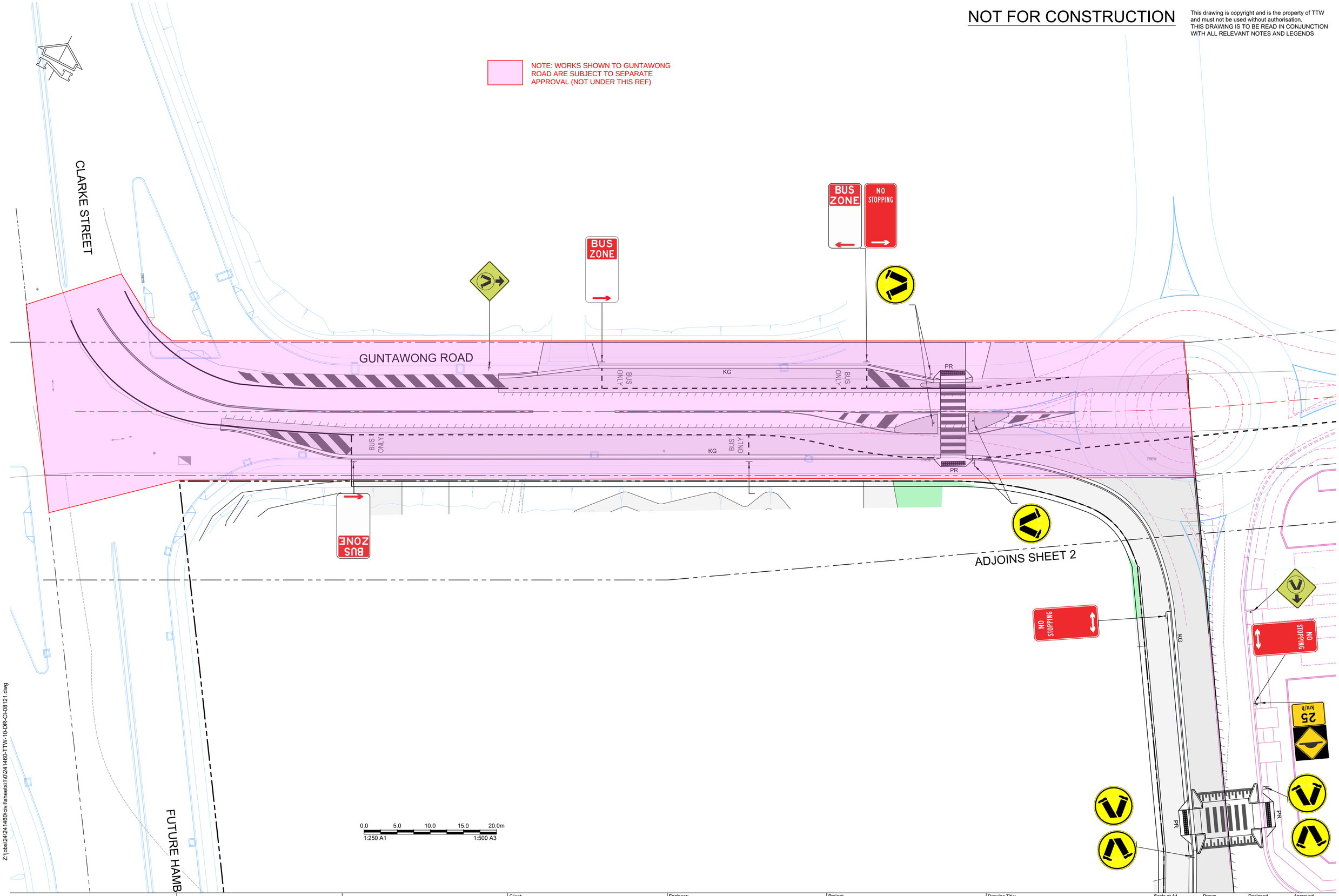
Drawing Title: PAVEMENT DETAILS SHEET 6

Scale at A1	Drawn	Designed	Approved
AS SHOWN	ES	AW	CR

Project No	Originator	Type	Role	Sheet No.	Rev
STHS	TTW	01	00	DR-C-07506	3

10.01.2025 3:28 PM

NOT FOR CONSTRUCTION



Z:\jobs\24\2414460\civil\sheets\11\0\2414460-TTW-10-DR-CI-08121.dwg

Rev	Description	Eng	Draft	Date
3	SCHEMATIC DESIGN FOR REF	JL	ES	10.01.2025
2	SCHEMATIC DESIGN FOR REF	JL	ES	06.12.2024
1	FINAL DRAFT ISSUE FOR REF	JL	ES	21.11.2024

Client: School Infrastructure NSW

Engineer: TTW www.ttwengineers.com

Project: NEW HIGH SCHOOL FOR SCHOFIELDS TALLAWONG

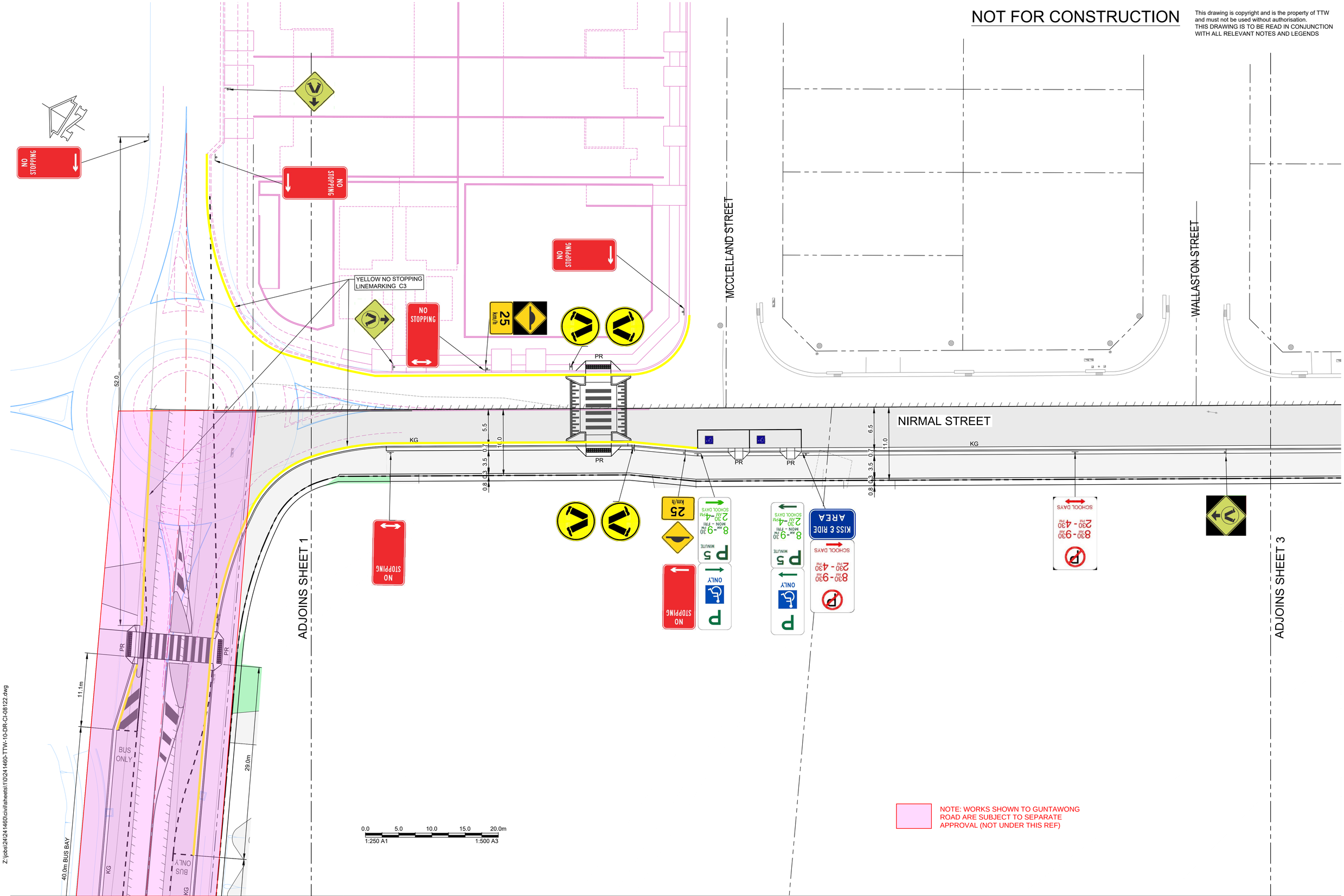
Drawing Title: SIGNAGE AND LINEMARKING PLAN (PUBLIC DOMAIN) PLAN SHEET 1

Scale at A1	Drawn	Designed	Approved
1:250	ES	AW	CR

Project No	Originator	Type	Role	Sheet No.	Rev
STHS-TTW-01-00-DR-C-08121-3					

10.01.2025 4:45 PM

NOT FOR CONSTRUCTION



Z:\jobs\24\241460\civil\sheets\10\241460-TTW-10-DR-CI-08122.dwg

Rev	Description	Eng Draft	Date
3	SCHEMATIC DESIGN FOR REF	JL	ES 10.01.2025
2	SCHEMATIC DESIGN FOR REF	JL	ES 06.12.2024
1	FINAL DRAFT ISSUE FOR REF	JL	ES 21.11.2024

Client: NSW GOVERNMENT School Infrastructure NSW

Engineer: TTW www.ttwengineers.com

Project: NEW HIGH SCHOOL FOR SCHOFIELDS TALLAWONG

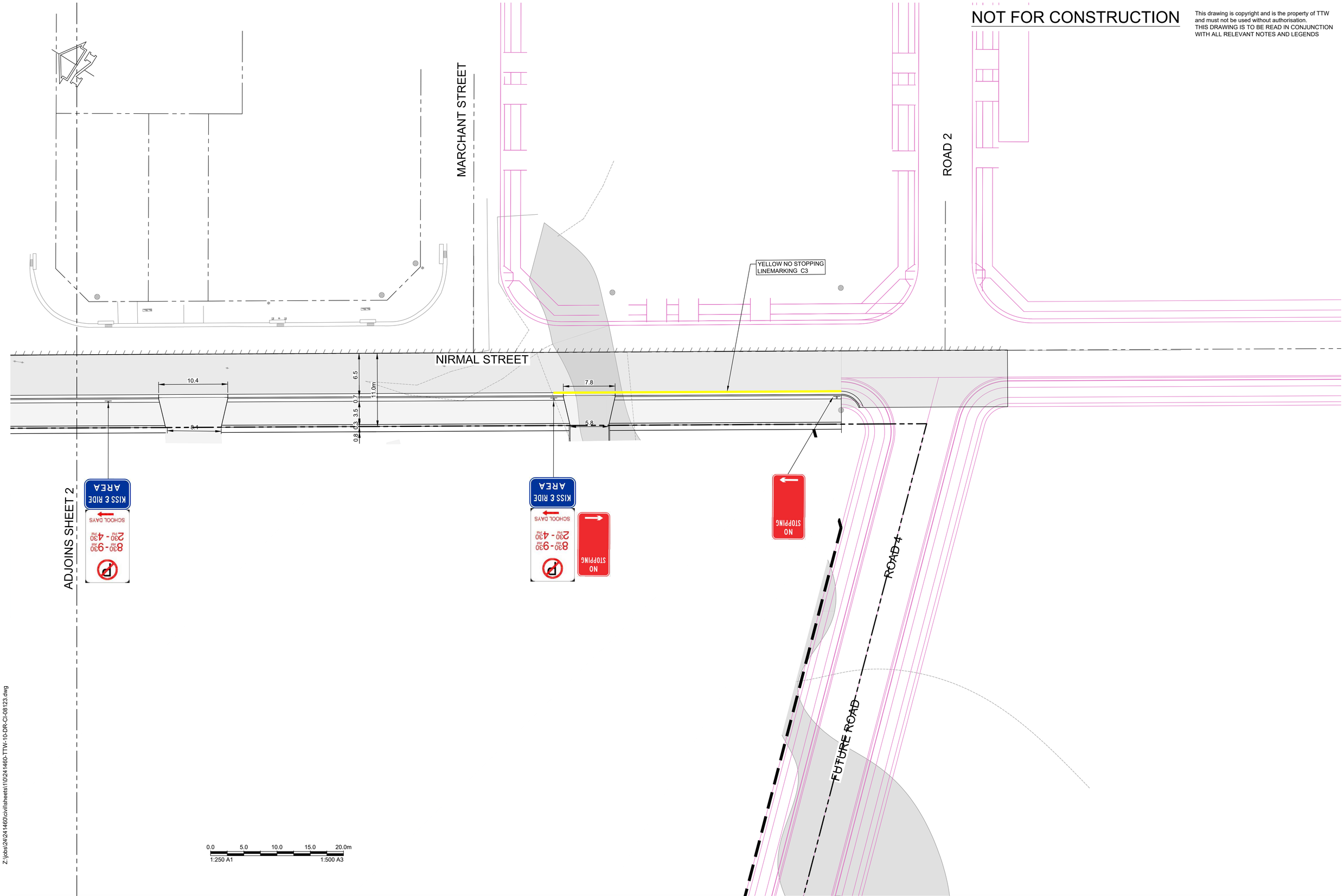
Drawing Title: SIGNAGE AND LINEMARKING PLAN (PUBLIC DOMAIN) PLAN SHEET 2

Scale at A1	Drawn	Designed	Approved
1:250	ES	AW	CR

Project No	Originator	Type	Role	Sheet No.	Rev
STHS	TTW	01	00	DR-C-08122-3	

10.01.2025 3:29 PM

NOT FOR CONSTRUCTION



Z:\jobs\24\241460\civil\sheets\10\241460-TTW-10-DR-CI-08123.dwg

Rev	Description	Eng	Draft	Date
3	SCHEMATIC DESIGN FOR REF	JL	ES	10.01.2025
2	SCHEMATIC DESIGN FOR REF	JL	ES	06.12.2024
1	FINAL DRAFT ISSUE FOR REF	JL	ES	21.11.2024

Client: NSW GOVERNMENT School Infrastructure NSW

Engineer: TTW www.ttwengineers.com

Project: NEW HIGH SCHOOL FOR SCHOFIELDS TALLAWONG

Drawing Title: SIGNAGE AND LINEMARKING PLAN (PUBLIC DOMAIN) PLAN SHEET 3

Scale at A1	Drawn	Designed	Approved
1:250	ES	AW	CR

Project No / Originator / Type / Role / Sheet No. / Rev: STHS-TTW-01-00-DR-C-08123-3

10.01.2025 3:09 PM

Appendix B

Council Correspondence

Jema Lopez

From: Alex Kwok <Alex.Kwok@blacktown.nsw.gov.au>
Sent: Friday, 11 October 2024 8:44 AM
To: Jema Lopez
Subject: RE: Site Stormwater Requirements
Attachments: OSD Deemed to Comply Tool - Developer's Edition v2.4.xlsm

Follow Up Flag: Follow up
Flag Status: Completed

Hi Jema

The site is classified into different zones R2 and R3 as you highlighted in red.
Please go to our map online which shows the zoning of the land.
BCC MapsOnline (nsw.gov.au)

In R2 zone, a development requires to provide temporary OSD and temporary water quality treatment (WQ).
The temporary OSD and WQ is required because our regional basin has not been installed yet.

In R3 zone, the development requires to provide temporary OSD and permeant water quality treatment.
It because the regional basin has not been installed yet and also it was not designed to cover and treat the WQ of R3 land.

Both the requirements of the OSD and water quality treatment are showed in our WSUD Developer handbook 2020.
The reduction target you mentioned is correct.
And the OSd calculation shall be done with our spreadsheet which I attached.

If you want a further discussion, I suggest you and your client may book a pre-application meeting with us.
The details of the meeting can be found in the following link:
https://www.blacktown.nsw.gov.au/Plan-build/Stage-3-preparing-an-application/Pre-Application-Meetings-PAM

Regards
Alex

Alex Kwok
Coordinator Drainage Development Assessment

(02) 9839 6348
PO Box 63 Blacktown NSW 2148
blacktown.nsw.gov.au

We acknowledge the Dharug as the First People of the Blacktown City region

Follow us on social media

From: Jema Lopez <jema.lopez@ttw.com.au>
Sent: Tuesday, 8 October 2024 2:14 PM
To: Blacktown Council <Blacktown.Council@blacktown.nsw.gov.au>
Cc: Kirusan Subakaran <kirusan.subakaran@ttw.com.au>
Subject: RE: Site Stormwater Requirements

Good afternoon Council officer,

I just wanted to follow-up on the query below. Thank you.

Very best regards,
Jema

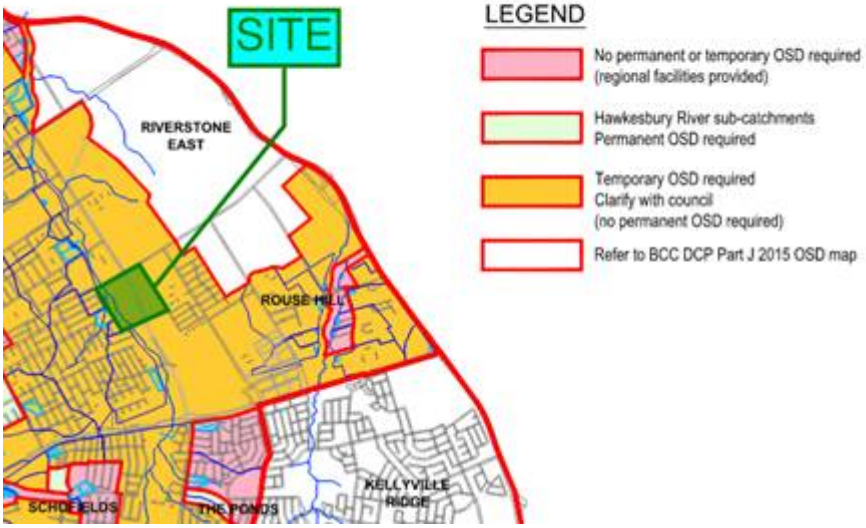
Jema Lopez | Civil Engineer
+61 2 9439 7288 | +61 2 9067 5017 | jema.lopez@ttw.com.au
TTW Engineers | Sydney
Read our latest news here

From: Jema Lopez
Sent: Tuesday, 25 June 2024 11:25 AM
To: council@blacktown.nsw.gov.au
Subject: Site Stormwater Requirements

Good afternoon Council officer,

I hope you are well. I am seeking to confirm the stormwater requirements for a proposed educational facility at 201 Guntawong Road, Rouse Hill. The approximate extent of the site is shown in the figure below.

In regard to stormwater quantity, as per the land zoned under northwest growth area SEPP - on-site stormwater detention (OSD) requirements map snapshot shown below, it is noted that no permanent OSD is required for the site. However, temporary OSD will be required with further clarification with Council. As such, could we please obtain further clarification/confirmation on this?



In regard to the water quality requirements, the proposed development is to comply with section 4.2 Water Quality of Part J of the DCP, which states that all developments shall achieve a minimum percentage reduction of the post development average annual load of pollutants in accordance to the table below.

Table 2 Required pollutant reduction targets

Pollutant	% post development average annual load reduction
Gross pollutants	90
Total suspended solids	85
Total phosphorous	65
Total nitrogen	45
Total hydrocarbons	90

Could you please confirm back in writing and let me know if I have missed any stormwater-related requirements or misinterpreted any of the above?

Thank you and best regards,
Jema