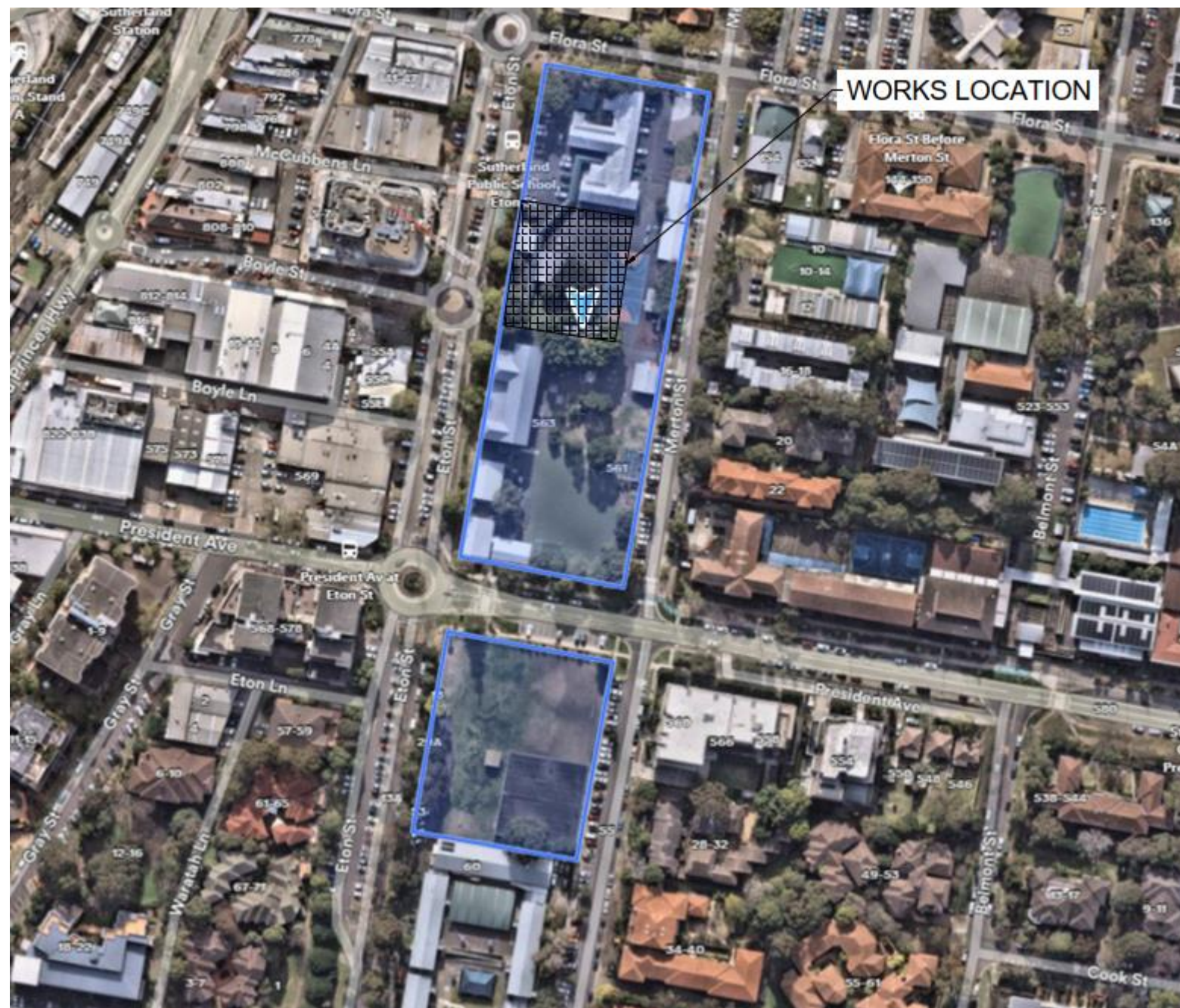




Education

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SUTHERLAND PUBLIC SCHOOL HALL UNGRADE CIVIL ENGINEERING REVIEW OF ENVIRONMENTAL FACTORS REPORT



Prepared for:
NSW Department of Education

By: **enstruct** group pty ltd

Revision: Final



SUTHERLAND PUBLIC SCHOOL HALL UNGRADE

CIVIL ENGINEERING REVIEW OF ENVIRONMNETAL FACTORS REPORT

ISSUE AUTHORISATION

PROJECT: Sutherland Public School Hall Upgrade
Project No: PS214113

Rev	Date	Purpose of Issue	Prepared by	Reviewed by	Issue Authorise by
1 - Draft	18/12/24	DRAFT	PL	MD	MD
1	20/12/24	FINAL	PL	MD	MD

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Executive Summary

enstruct have been engaged by School Infrastructure NSW to provide civil engineering consultancy and design for the works at Sutherland Public School. This report relates to the civil engineering elements of the Review and Environmental Factors (REF) and will discuss items such as stormwater, flooding, pavements, earthworks and sediment and erosion control.

The key items include:

- Onsite Stormwater Detention (OSD)
- Water Sensitive Urban Design (WSUD)
- Flooding
- Stormwater Overland Flow
- Earthworks
- Pavement design
- Erosion and Sediment control

In order to prevent an increase in runoff from the Site due to the increase in impervious area associated with the new building and external works, stormwater detention is required to cater for all storms up to and including the 1% AEP storm event. Based on preliminary hydraulic calculations a 33m³ OSD tank is required.

There are existing stormwater pipes running through the Site which clash with the proposed building. The existing stormwater is proposed to be diverted around the building and reconnected into the existing network in Eton Street.

Seven 690mm Stormfilter cartridges are proposed inside the OSD tank to achieve a minimum percentage reduction in average annual pollutant loads in accordance with Council's requirements.

The Council's online flood map indicates the Site is not flood affected.

Pavement design will be in accordance with the NSW Government Education Department's Educational Facilities Standards and Guidelines (EFSG) and take account of the geotechnical assessment by Douglas Partners.

Erosion and sediment control measures are to be in place during construction to minimise stormwater system contamination and the tracking of grit and silt onto surrounding roadways.

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1 Introduction

This Civil Engineering Report has been prepared to accompany a Review of Environmental Factors (REF) for an activity proposed by the Department of Education under Part 5 of the Environmental Planning and Assessment Act 1979 (EP&A Act) and State Environmental Planning Policy (Transport and Infrastructure) 2021 (SEPP TI).

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

This report examines and takes into account the relevant environmental factors in the Guidelines and Environmental Planning and Assessment Regulations 2021 under Section 170, Section 171 and Section 171A of the EP&A Regulation as outlined in the following table.

Table 1: Summary of Relevant Section of the Part 5 Guidelines and EP&A Regulation

Regulation / Guideline Section	Environmental factor	Response	Report Section
EP&A Regulation 171 2h	Long term effects on the environment	The proposed development will have negligible long-term impacts on the environment	2-6
EP&A Regulation 171 2i	Degradation to the quality of the environment	The proposed development will have negligible impacts to the quality of the environment	2-6
EP&A Regulation 171 2j	Risk to the safety of the environment	The proposed development will have negligible impacts to the safety of the environment	2-6
EP&A Regulation 171 2l	Pollution of the environment	The proposed development will have negligible pollution impacts	2-6

The site accommodates the Sutherland Public School which is located at 38-54 Eton Street, Sutherland, NSW 2232. The Sutherland Public School is approximately 1.35 hectares in area and is made up of the following 16 allotments:

- Lot 1 DP6600
- Lot 2 DP6600
- Lot 3 DP6600
- Lot 4 DP6600
- Lot 5 DP6600
- Lot 6 DP6600

- Lot 7 DP6600
- Lot 8 DP6600
- Lot 9 DP660
- Lot 10 DP6600
- Lot 5 Section 45 DP802
- Lot 6 Section 45 DP802
- Lot 7 Section 45 DP802
- Lot 8 Section 45 DP802
- Lot 9 Section 45 DP802
- Lot 10 Section 45 DP802

The proposed school hall is located within Lot 6, 7 and 8 DP 802 and has an area of approximately 957 sqm. Refer to **Figure 1**.

Vehicular access to the site is provided from Eton Street, Flora Street, and Merton Street, with parking spaces available along the northern and western sides of the site. Service vehicles and waste collection access the site through the Merton Street gate, which is located near the existing toilet block.

The site is currently zoned as SP2 Infrastructure (Educational Establishment) in the Sutherland Shire Local Environmental Plan 2015 (SSLEP 2015). The site has a street frontage to Flora Street to the north, Merton Street to the east, President Avenue to the south and Eton Street to the west. These local roads include footpaths, street lighting and street trees along all frontages.

The area of works currently includes Block J, steel awning for existing COLA, a garden bed, trees, four car parking spaces and covered walkway structures which are proposed to be demolished to accommodate the new school hall.

The project will address the existing undersized hall facility at Sutherland Public School, by providing an upgrade to achieve a medium primary school core facility according to the DoE Educational Facilities Standards and Guidelines (EFSG).

This will include demolition of existing Block J, a garden bed, car parking spaces and associated structures, and construction of a new single-storey school hall, including a covered outdoor learning area (COLA) and connecting covered walkways.

The proposal retains the existing staff and student capacity at Sutherland Public School.



Figure 1: School boundary in green, and the site in red
(Source: Mosaic)

The civil and stormwater designs have been prepared in accordance with the following requirements.

- Australian Standards;
- Australian Rainfall and Runoff (2019);
- Landcom (2004) Managing Urban Stormwater: Soils and Construction 4th edition;
- School Infrastructure NSW's Educational Facilities Standards and Guidelines (ESFG); and
- Sutherland Shire Council's Stormwater and Groundwater Management Development Control Plan (DCP).

2 Existing Site

2.1 Existing Stormwater

A survey by Astrea (DWG No. A4050-TOPO&TIL-REV D dated 08 Oct 2024) shows there is existing stormwater infrastructure within the Site and in Eton Street adjacent to the Site.

The From the Astrea survey, there is a single stormwater line that runs east to west through the centre of the school. The stormwater system is inferred to collect roof water from an outdoor steel awning metal roof and connects to the stormwater system running south along Eton Street. Refer to **Figure 2** for the existing network arrangement, pipe sizes and invert levels. The survey confirms the presence of various pits throughout the Site; however, further detailed survey is required to confirm the full connectivity of the existing network and accurately design the proposed stormwater system.

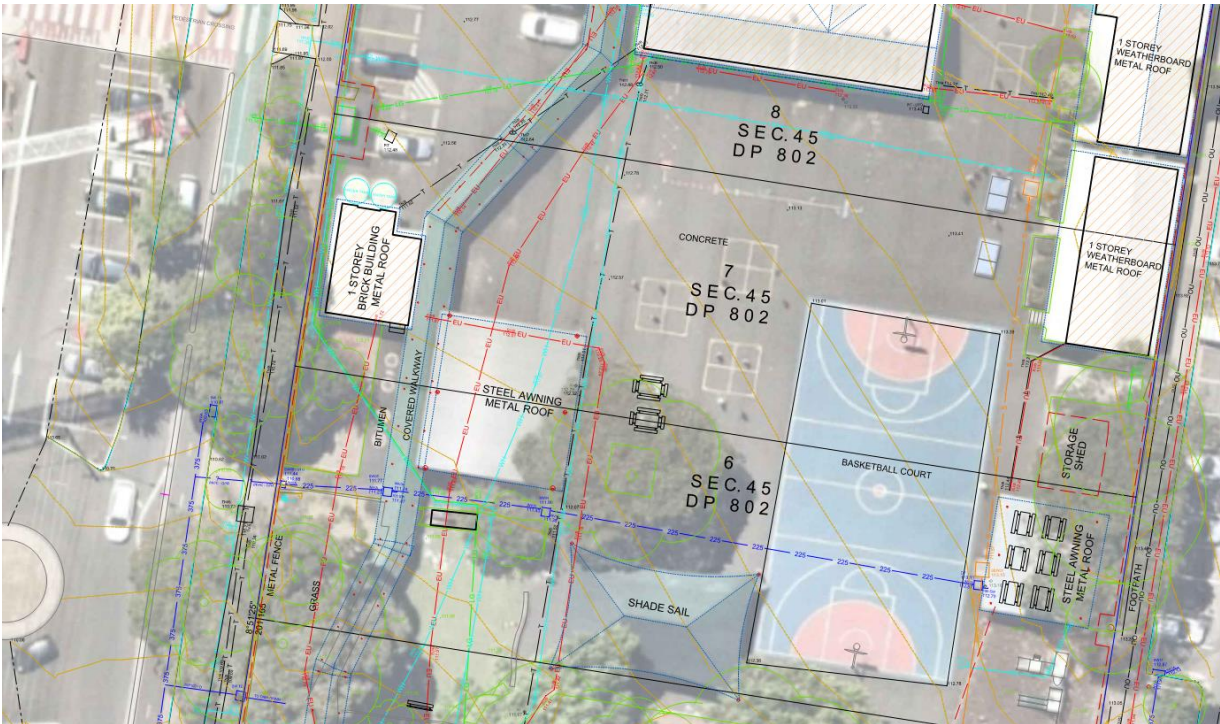


Figure 2: Existing Stormwater System (Astrea Survey)

2.2 Existing Geotechnical Conditions

Reference to the Sydney 1:100 000 Geological Series Map indicates that the Site is underlain by Hawkesbury Sandstone (shale lenses) of the Triassic period, which typically comprises fluvially deposited laminated mudstone, claystone, siltstone and sandstone. No shallow registered groundwater bores are located near the Site. Shallow water seepage was observed at depths of between 1m and 5m during previous investigations near the Site. Refer to Geotechnical report 224456.01.R.003.Rev.1 by Douglas Partners for further details.

Reference to the Sydney 1:100 000 Soil Landscape Series map indicates that the Site is underlain by a landscape group known as the Gymea soil landscape. The Gymea soil landscape is an erosional soil landscape and is characterised by topography of undulating to rolling rises and low hills on Hawkesbury Sandstone, with local relief of 20 m to 80 m and slope gradients of 10% to 25%.

The general subsurface profile encountered at the borehole locations may be summarised as follows:

- **PAVEMENT:** Asphaltic concrete pavement, with thickness of between 50mm and 100mm was encountered at all boreholes except BH04, BH05 and BH103, which were located within turfed areas or garden beds; overlying,

- **FILL:** Gravelly sand, sand, silty sand, sandy silt, silty clay and clay encountered to depths between 0.2m to 1.3m with varying proportion of other inclusions such as roots, wood fragments, ash and plaster; overlying,
- **RESIDUAL CLAY:** Medium to high plasticity clay, with consistency ranging between stiff to hard. Residual clay was observed to depths of between 2.3m and 2.8m overlying,
- **WEATHERED SILTSTONE BEDROCK:** Very low and low strength siltstone bedrock.

For further details, and borehole logs, refer to the geotechnical report by Douglas partners (Ref: 224456.01.R.003.Rev.1). **Figure 3** below shows an extract from the report highlighting the borehole locations:

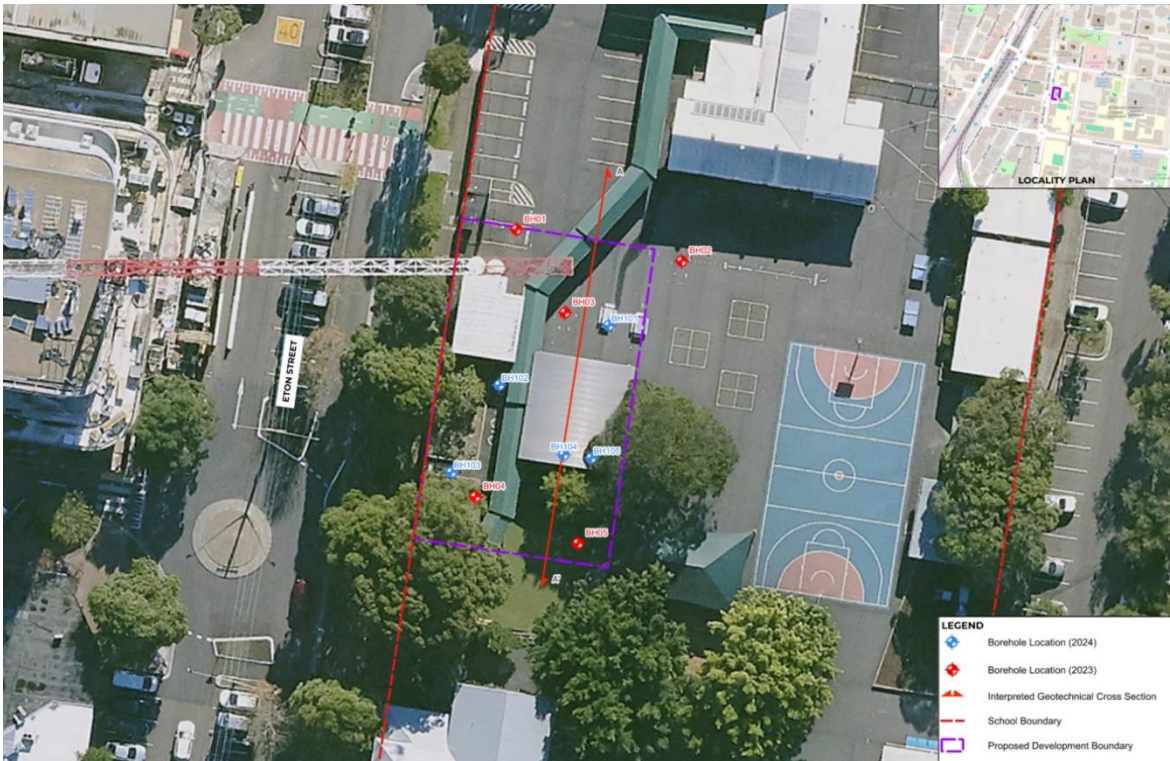


Figure 3: Douglas Partners Borehole Map (Douglas Partners Report: 224456.01.R.003.Rev.1)

2.3 Soil contamination

A soil contamination assessment for the Site was undertaken by Douglas Partners (Report dated 28 August 2024, Reference No. 224456.01.R.003.Rev.1).

Reference to the 1:25 000 Acid Sulfate Soils (ASS) Risk map indicates that the Site is in an area of no known occurrence of ASS. The nearest mapped occurrences of ASS are close to the Woronora River, which is over 1km away from the Site. The high elevation and geology at the Site suggest that the presence of ASS is unlikely.

Dryland salinity risk and hazard mapping was undertaken in 2000 by the former NSW Government Department of Land and Water Conservation to show the broad distribution of areas considered as having either a high salinity risk or a high salinity hazard.

The school Site is not located within, or close to, mapped areas with high salinity risk or high salinity hazard. The nearest areas mapped as having high salinity risk / hazard are in Western Sydney.

3 Proposed Development

The existing hall is undersized with some facilities such as a canteen, OSHC, a performance stage and storerooms located elsewhere in the school. The proposal hall seeks to provide an EFSG compliant medium size hall that includes storage areas, amenities, disabled WC and shower, OSHC office/store, canteen and associated store/office, garden store, covered walkways, landscaping and COLA within an area of 985m2. The Hall is proposed to be sited along the western boundary between heritage listed buildings - building B (1892) and building A (1929). Refer to **Figure 4** and **Figure 5** for proposed hall layout and location respectively.

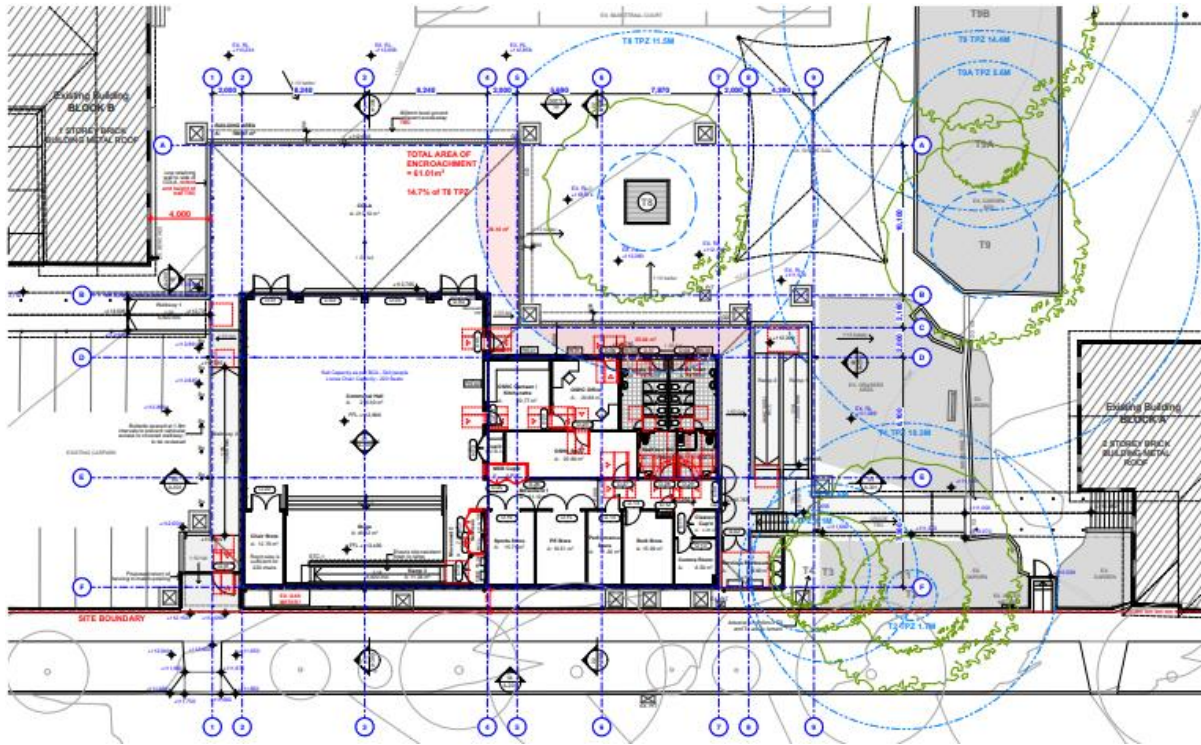


Figure 4: Proposed Hall Layout (Source: BKA Architects)

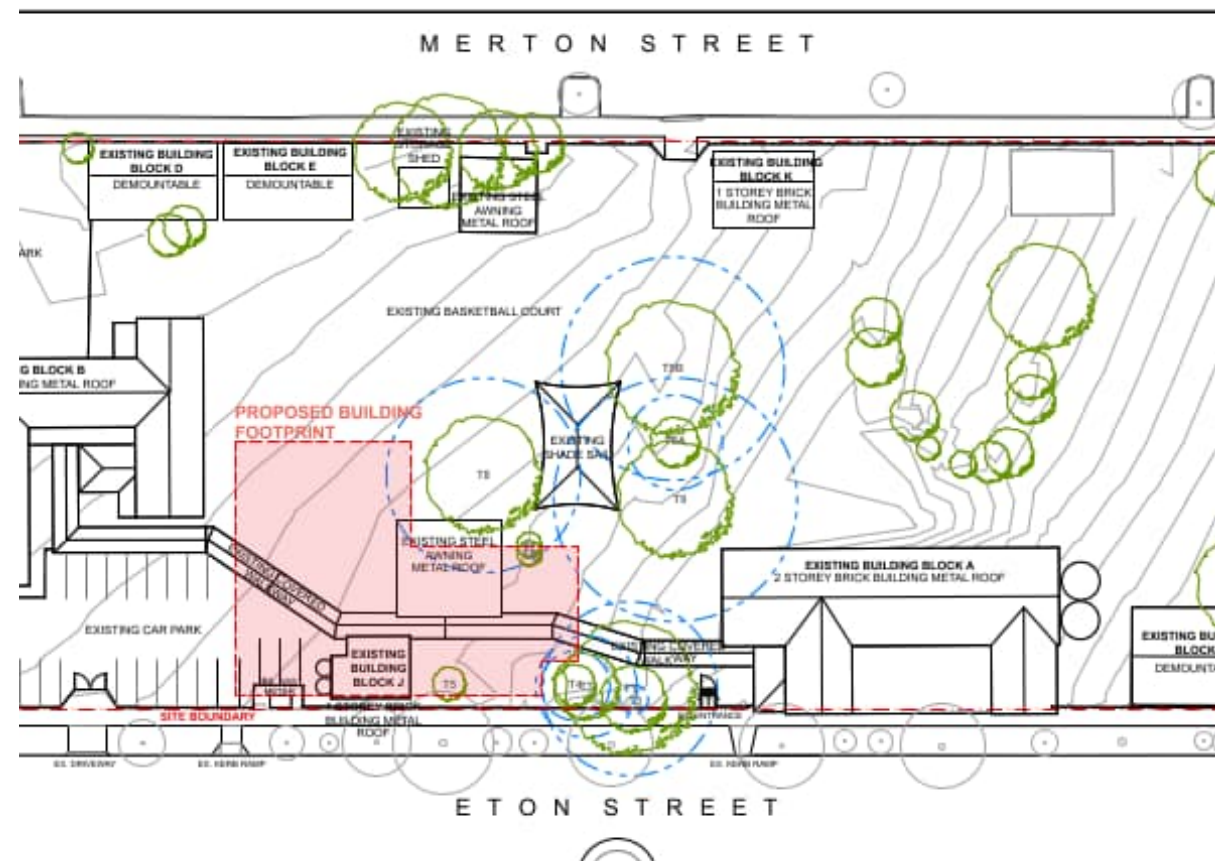


Figure 5: Hall Location (Source: BKA Architects)

4 Stormwater Design

The stormwater design must be in accordance with Australian Standards, Sutherland Shire Council Stormwater and Groundwater Management Development Control Plan, Australian Rainfall and Runoff (2019), and School Infrastructure NSW's EFSG 2.0 0224 Stormwater - Site.

In general, drainage is to be designed to ensure that Site facilities are available for students use in all weather conditions up to and including a 1% Annual Exceedance Probability (AEP) storm event. All new roof stormwater will be collected in roof gutters and downpipes and conveyed to the in-ground pipe system. Surface stormwater will be collected in pits. The in-ground stormwater will be connected to water quality controls and an Onsite Stormwater Detention (hereafter OSD) tank.

Pipes and pits will need to be designed to satisfy the minimum provisions of AS 3500.3. They must be designed to convey, at least, the 5% AEP flows. Where pipe capacity is exceeded (i.e. greater than 5% AEP), stormwater will be conveyed as overland flow. Overland flow paths are to be designed to convey at the minimum 1% AEP stormwater flows with a Velocity x Depth product no greater than $0.4\text{m}^2/\text{s}$.

Pipeline design will provide minimum cover relevant to the pipes location and selected pipe material. Minimum Pipe sizes shall be in accordance with EFSG 2.0 0224.0.08. The pipework requirements are as follows:

- Minimum DN 100mm for subsoil drainage
- Minimum DN 225mm downstream of any grated pit
- Minimum DN 225mm downstream of any side entry pit
- Class B pits are to be used in accordance with AS 3996

Refer to **Appendix A** for the Stormwater Plan and OSD tank details.

4.1 Onsite Stormwater Detention (OSD)

Due to the addition of impervious, hardstand areas as part of the development, Sutherland Shire Council Development Control Plan (DCP) 2015 requires that OSD is provided to manage stormwater discharge. Specifically, OSD is required to control stormwater discharge from the post development site to below the predevelopment flows generated from all storm durations up to and including the 1% AEP storm event.

The OSD tank has been located at the lowest point of the development site to ensure all surface flows will be directed to the OSD. OSD is to be located away from any natural watercourses and Overland Flow Paths (OLFP) from catchments external to the Site and are not to be inundated by a natural watercourse or externally sourced OLFP in all events up to and including the 1% AEP storm event. The EFSG notes a preference for above ground OSD or adsorption systems where practical (EFSG 2.0 0224 Stormwater - Site). However, due to the topography of the Site, the use of the external areas and spatial constraints, an above-ground detention system is not feasible. Therefore, a below ground OSD tank is proposed.

Preliminary hydraulic calculations indicate that approximately 33m^3 OSD will be required for the building as shown in **Appendix A**. There is no additional discharge to council's stormwater system as the result of the development.

Existing stormwater impacted by the new building is proposed to be diverted around the building and reconnected into the public stormwater network in Eton Street.

Whilst there is no preference for OSD Tank construction materials, the tank is to be structurally sound and maintain the ability to hold and retain water prior to its discharge into the connecting stormwater system. Given the tank is partly below the building footprint, a reinforced concrete tank is considered appropriate.

4.2 Flooding

The Site is not identified as being flood prone. Refer to **Figure 6** for Sutherland Shire Council's flood map.

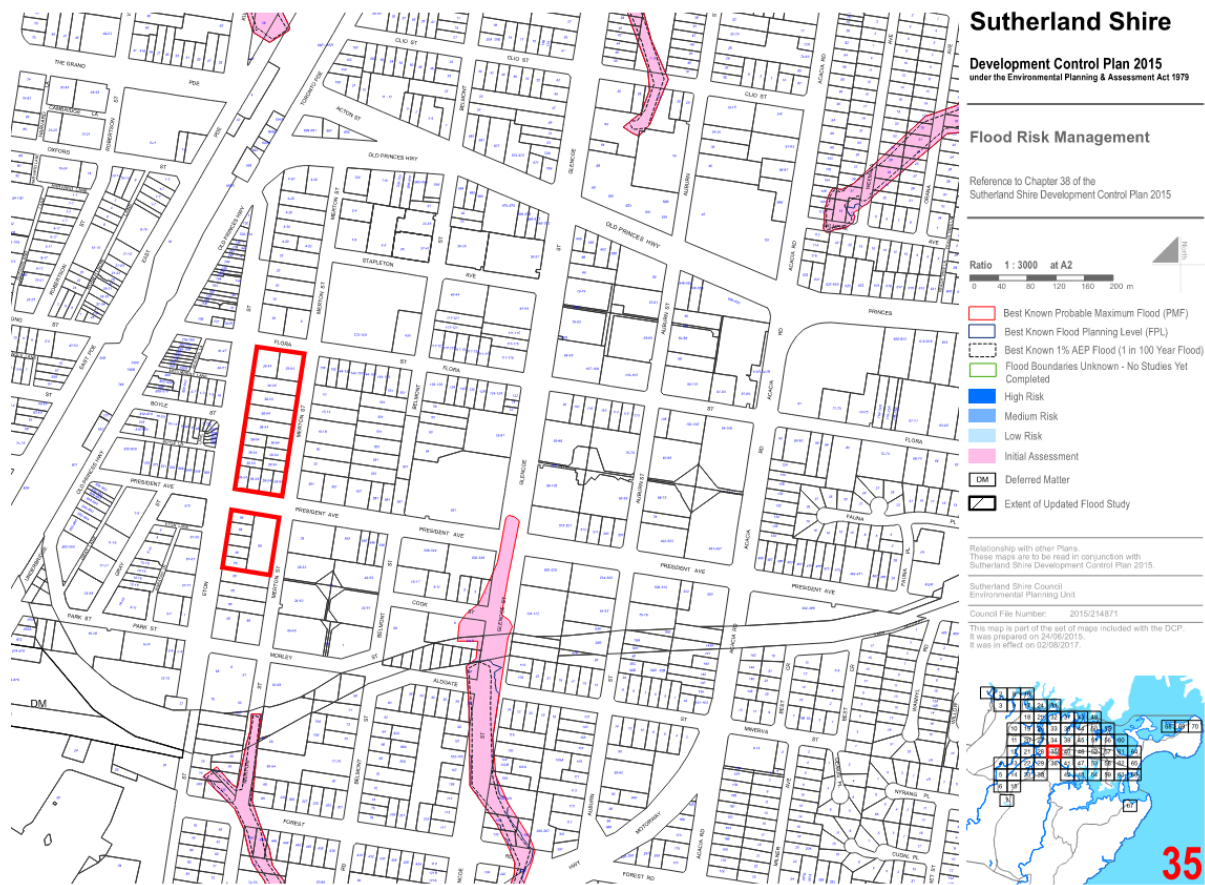


Figure 6: Sutherland Shire Flood Prone Land Map

Any new development is required to provide suitable freeboard above flood levels to habitable floor levels. Sutherland Shire Council’s Specification Stormwater Management 2009 sets out the freeboard requirements as seen in **Figure 7**.

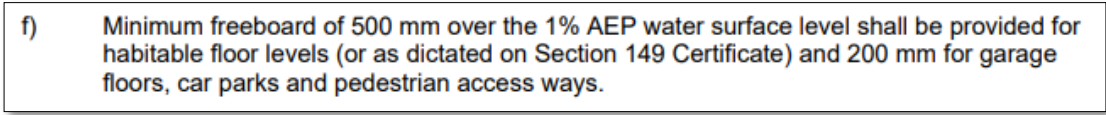


Figure 7: Freeboard Requirements Section 5.3

From Sutherland Shire Council’s flood mapping, the proposed Site is not flood affected. Therefore, it is a fair assumption the flood level around the proposed hall is expected to be equal to lowest point within the immediate vicinity of the hall. Therefore, the flood level RL during a 1% AEP storm is expected to be approximately RL 110.88m. In comparison, the proposed FFL of the hall is RL112.80. Therefore, there is more than 500mm freeboard between hall FFL and the expected 1% AEP flood water level, thus satisfying the condition above.

4.3 Overland Flow Paths

If the piped in-ground stormwater system fails due to blockage or if its capacity is exceeded, stormwater flows will be required to be conveyed as overland flow. The overland flow is to be directed away from buildings and towards the Site’s boundary.

Overland flow paths will be sized to accommodate the 1% AEP storm flows and not exceed a safe Depth x Velocity product of 0.4m²/s for pedestrians and vehicles.

4.4 Stormwater Quality

Stormwater discharged from the development will be treated to satisfy Council’s Stormwater Management requirements using Water Sensitive Urban Design (WSUD) measures. The Site’s stormwater will pass through suitable pollution control devices to achieve minimum percentage reduction in average annual pollutant loads.

To ensure the safety of the school population at all times, mechanical (in lieu of natural removal) pollutant removal devices may need to be incorporated to remove gross pollutants, suspended solids, and reduce nutrient runoff including nitrogen and phosphorous. The mechanical pollution control devices will require on-going maintenance. Pollutant removal devices will require at least a yearly inspection and maintenance.

A series of pollution control devices are proposed to remove contamination from stormwater runoff to the required level, prior to discharge. The devices include litter screens in pits, a detention tank trash screen, and seven 690mm Ocean Protect Stormfilter cartridges to remove nitrogen & phosphorus contaminants etc., prior to discharge to the Council stormwater system. This system is preferred as it will be able to achieve pollutant reductions required, is easily maintained, and does not require large open areas or pose a risk to safety for the school population. The EFSG also notes that stormwater is to be treated to remove foreign matter and ensure minimal impact.

Sutherland Shire Council DCP 2015 requires the following stormwater quality reduction targets in **Table 2**.

Table 2: Stormwater Pollution Reduction Target

Pollutant	Stormwater Reduction Target
Total Suspended Solids	80% reduction in the post development mean annual load
Total Phosphorous	40% reduction in the post development mean annual load
Total Nitrogen	40% reduction in the post development mean annual load
Gross Pollutants	Development must achieve a total retention of litter and organic matter greater than 50mm for storm events of up to 1 in 3-month ARI.

The removal rates are also to be in accordance with:

- The EPA’s manual Managing Urban Stormwater: Treatment Techniques
- Stormwater Treatment Devices User Guide (NSW Supply) – Government Contract No.019, July 1999, Department of Public Works and Services

- The relevant Australian Standards for pollution control devices.

4.4.1 MUSIC Model

A preliminary water quality analysis has been undertaken by enstruct to develop the WSUD strategy for the proposed development, and to assess its ability to meet Sutherland Shire Council’s water quality targets. The water quality modelling for this study was undertaken using industry standard software MUSICX (Model for Urban Stormwater Improvement Conceptualisation) Version 1.30.0. The music model layout representing the proposed WSUD strategy and results for the development are shown in in **Figure 8**.

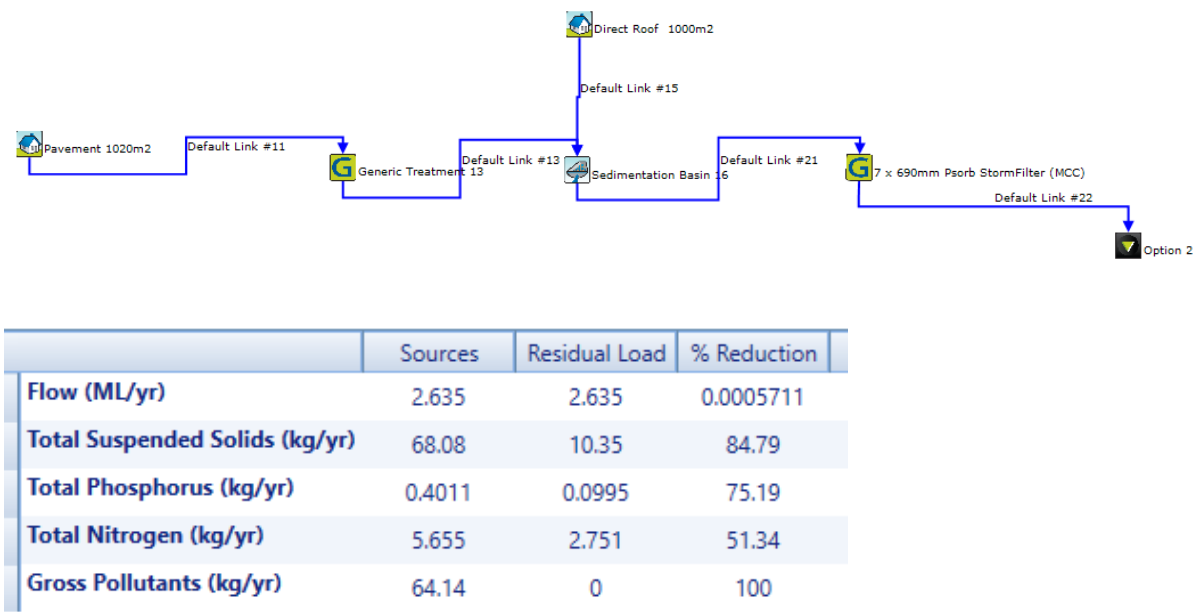


Figure 8: MusicX Results

The analysis indicates that seven 690mm Ocean Protect stormfilter cartridges, with a total treatment flow rate of 6.3L/s, incorporated into the in-ground stormwater system will suitably treat the stormwater to Council requirements, prior to site discharge.

Table 3 compares Council’s requirements and the above results.

Table 3: MusicX Results

Pollutant	Council Requirements	% Reduction
Total Suspended Solids	80%	84.9%
Total Phosphorous	40%	75.19%
Total Nitrogen	40%	51.34%
Gross Pollutants	100%	100%

From **Table 3**, it is evident all the results satisfy Council’s requirements.

4.5 Erosion and Sediment Control

During construction and while the Site is disturbed, erosion prevention and sediment control measures will be required. Erosion prevention generally involves managing stormwater by diverting overland flow around construction areas as well as collecting stormwater within the construction zone and directing it to sediment control devices. Devices likely to be incorporated include silt removal fences, hay bales, catch drains, and water flow dissipation and discharge control devices such as sand bags, pollution mattresses and basins.

Erosion prevention and sediment removal strategies need to be inspected regularly during construction works, cleaned and maintained after storm events, and modified to suit construction work progress, decanting and demolition.

Erosion and sediment control is to be provided in accordance with the “Blue Book” Part 1 [Landcom (2004) Managing Urban Stormwater: Soils and Construction, 4th edition]. Controls are to be maintained until the Site is fully stabilised to prevent pollution of the receiving environment.

An erosion and sediment control plan has been provided in the civil drawing set in **Appendix A**.

5 Civil Design

5.1 Earthworks

Careful consideration should be given to the floor level for any proposed building to limit excavation or filling. Whether excavation or filling is required depends on the location of any new building.

It is expected that excavations would be carried out through mostly fill and residual soil and possibly through weathered sandstone. These excavations should be readily achieved using conventional earthmoving equipment such as tracked excavators (Green Geotechnics). Earthworks volumes will be confirmed as the design progresses. Rock hammers or rock saws will only be required if medium strength shale is encountered.

For slopes up to 3m high, maximum temporary batter slopes of 1.5H:1V (Horizontal:Vertical) are recommended. Permanent batter slopes should not be steeper than 2:1, noting that EFSG

requires 4:1 batters where no landscaping is provided. Where landscaping is provided, batters can be 3:1.

Based on the above the bulk earthwork volumes have been estimated. From calculations, there will be approximately 16m³ of asphalt and subgrade excavation, and approximately 50m³ of fill materials for the area outside the proposed hall footprint. In addition, there is approximately 180m³ of fill and 192m³ of excavated materials for the proposed hall footprint.

5.2 Pavements

Pavement design is to meet the requirements of the geotechnical investigation. Based on the Geotechnical report, a design California Bearing Ratio (CBR) of 3% can be adopted for the Site. Pavements will be designed in accordance with the geotechnical engineers advice and also the requirements of ‘AUSTROADS Guide to Pavement Technology’ and applicable EFSG requirements. The following design requirements will be adopted in pavement design as appropriate:

- All pavements to be designed for a 25 year life.
- All pavements trafficked by buses and trucks to be designed for a minimum 5 x 105 repetitions of a standard axle load, as defined by AUSTROADS.
- For other vehicular traffic areas design for 1.0 x 105 repetitions of a standard axle load, as defined by AUSTROADS.
- Allow for movements in the foundations caused by moisture variations and mine subsidence.
- Design rigid pavements so there is no vertical differential movement between panels at joints.
- For truck turning areas pavements shall be rigid in construction and finished with a reinforced concrete surface.
- For other areas pavements may be either flexible or rigid in construction. For flexible construction finish with a surface coat of asphaltic concrete.
- Breccia or dolerite is not to be used in road base or concrete mix.
- Non-skid finish for vehicular trafficked pavements
- Non-slip finish for pedestrian trafficked pavements, including carpark
- AC for roads and parking to be AC10 and have minimum thickness of 40mm or greater as the design requires.
- AC for games courts to be AC5 and have minimum thickness of 25mm levelling course plus 25mm surface course or greater as the design requires.
- Limit fly ash content to 20% of cementitious content of mix by weight.
- For roads and parking areas concrete shall have minimum 32MPa characteristic compressive strength.
- For rigid method of construction finish with a reinforced concrete surface.

- Concrete pavements for vehicles shall be a minimum 150mm thick and reinforced with not less than SL92 mesh at top and 100 mm thick road base.
- Other concrete pavements shall be a minimum 100mm thick and reinforced with not less than SL72 mesh at top.
- Provide a thicker pavement and heavier mesh as the design requires and to meet durability requirements for minimum cover to reinforcement.
- For flexible construction finish with a surface coat of asphaltic concrete.
- Paving is to fall away from the buildings and covered areas.
- Finished vertical grades to be limited to < 1 in 10. Provide vertical curves where change of grade exceeds 3%. Provide cross-falls, as required.

6 Review of Environmental Factors

6.1 Integrated Water Management Plan

An integrated water management plan is a holistic and collaborative approach to the water cycle and considers elements such as Potable water, Rainwater reuse, Recycled water, Surface stormwater, Groundwater, Stormwater detention, and Water quality, among others.

In this report, Enstruct has covered the elements relating to surface stormwater, stormwater quality and stormwater detention. For potable water, rainwater storage and reuse, refer to the Hydraulics engineering report and drawings.

6.2 Mitigation Measures

The table below is a summary of the proposed mitigation measures. These are described in further detail in the proceeding sections of this report.

Table 3: Mitigation Measures Summary

When is Mitigation Measure to be complied with	Mitigation Measure	Reason for Mitigation Measure
D – Design C – Construction O - Operation		
D, C	Erosion and Sediment Control measures such as sediment fences, shaker grid construction vehicle exit, sand bag sediment traps, stabilisation of stockpiles and geotextile filters over stormwater inlets as described in Section 4.5. Erosion and sediment controls are to be designed, constructed, and installed in	To avoid polluting the water and/or blocking the stormwater network, erosion and sediment control measures have been detailed. To prevent sediment from leaving the Site with stormwater runoff. Stormwater will pass through sediment/siltation fences, but the fence will trap the sediment.

	accordance with Managing Urban Stormwater: Soils and Construction - Volume 1 and maintained until the Site is fully stabilised to prevent pollution of the receiving environment. Also refer to the Erosion and Sediment control plan in Appendix A .	To remove ground materials from construction vehicle wheels prior to the vehicle leaving the Site, to prevent the depositing of material onto the public roadway. To prevent sediment discharged from the Site from entering the stormwater inlet structure and contaminating the water course.
D, C, O	Stormwater Quantity Control as described in Section 4 and 4.1 . In summary, a 33m ³ Onsite Stormwater Detention (OSD) tank is required to control stormwater discharge from the post development site from all storm durations up to and including the 1% AEP (1 in 100 year) storm event. The OSD tank is shown on the Stormwater Plan in Appendix A .	To ensure the development is not worsening flow conditions in downstream receiving stormwater networks and waterways.
D, C, O	Stormwater Quality Control Measures as described in Section 4.4 and 4.4.1 . The measures comprise litter screens in pits, a detention tank trash screen and seven 690mm Ocean Protect Stormfilter cartridges. Details for the above are included on the Stormwater Details drawing in Appendix A .	To ensure that stormwater discharge is of adequate quality to protect downstream receiving stormwater networks and waterways from environmental and ecological. The measures will remove nitrogen & phosphorus contaminants etc., prior to discharge to the Council stormwater system.
D, C, O	Protection from flooding as described in Section 4.2 and 4.3 . The Site is not identified as being flood prone according to Sutherland Shire Council's flood map. There is more than 500mm freeboard between hall FFL and the expected 1% AEP flood water level. Overland flow paths will be sized to accommodate the 1% AEP storm flows and not exceed a safe Depth x Velocity product of 0.4m ² /s for pedestrians and vehicles.	To prevent adverse impacts from flooding and stormwater runoff to the development and its users. To prevent impacts of the proposed development on the flood risk to the existing community.

- is not considered to be a significant impact.

7 Conclusion

The civil works associated with the proposed upgrades to the existing Sutherland Public School will be carried out in accordance with engineering standards and will meet the requirements of relevant authorities.

The civil works will include an OSD tank to prevent an increase in runoff from the Site as a result of an increase in impervious area onsite, for all storms up to and including the 1% AEP storm event. Preliminary hydraulic calculations indicate that an approximately 33m³ of OSD will be required.

Seven 690mm Ocean Protect stormfilter cartridges inside the OSD tank are proposed to treat stormwater to Council requirements.

Council's website indicates the Site is not flood affected.

Pavement design will be in accordance with Austroads, EFGS requirements and the geotechnical assessment.

Erosion and sediment control measures are to be in place during construction to minimise stormwater system contamination and tracking of grit and silt onto surrounding roadways.

The activity will not have a 'significant effect on the environment' (refer to Section 5.7 of the EP&A Act).

It is concluded that, subject to implementation of the mitigation measures set out in this report and in the accompanying Civil Engineering drawing package, the activity:

- can be adequately mitigated through recommended measures; and

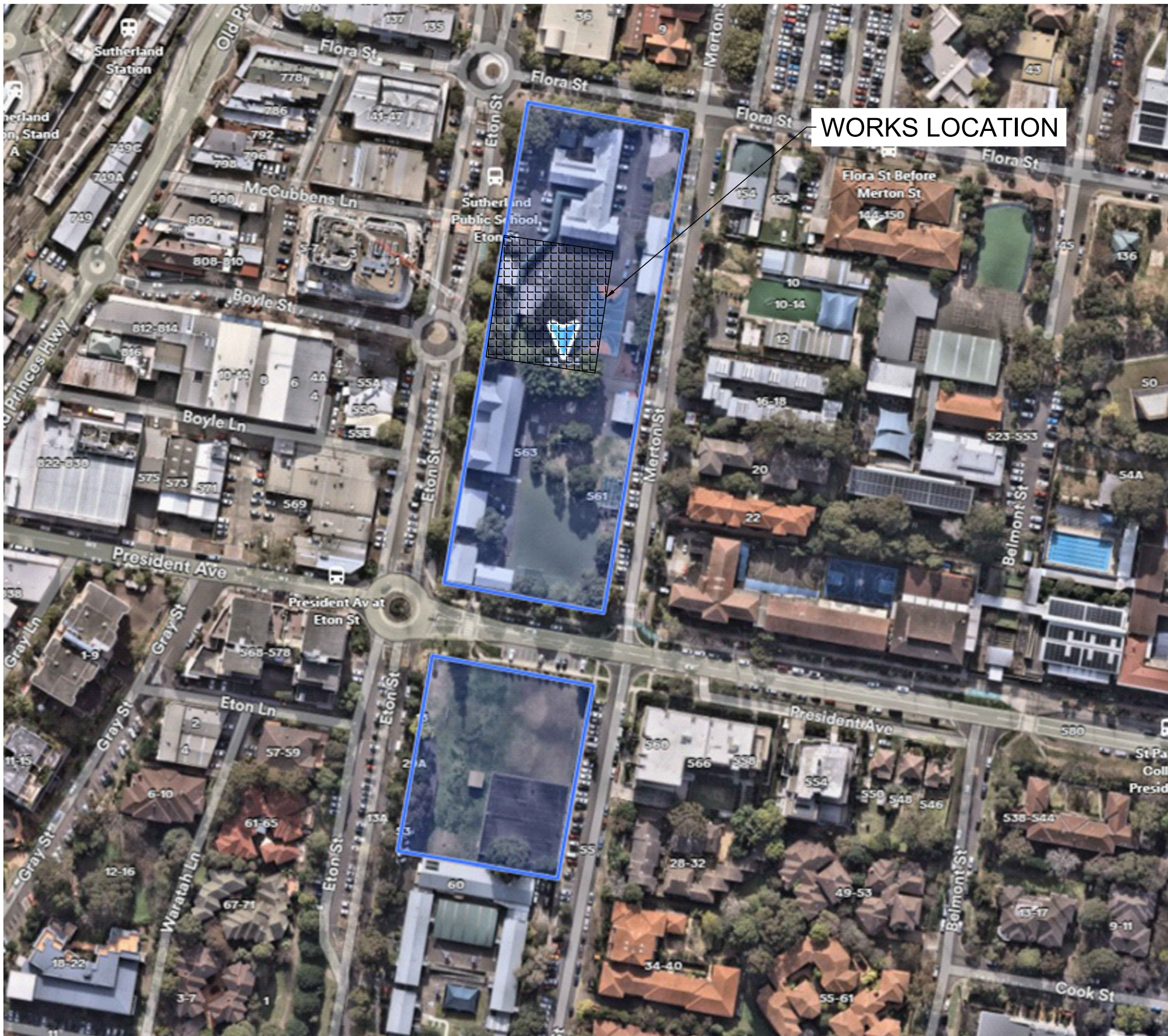
APPENDIX A: Civil Engineering Drawings

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CIVIL ENGINEERING WORKS

SUTHERLAND PUBLIC SCHOOL - NEW HALL

SCHEMATIC DESIGN DRAWINGS



LOCALITY PLAN
N.T.S.

CIVIL ENGINEERING WORKS DRAWING LIST:

- CV-0000COVER SHEET AND LOCALITY PLAN
- CV-0001NOTES SHEET
- CV-1001SEDIMENT AND EROSION PLAN
- CV-1051SEDIMENT AND EROSION DETAILS
- CV-2001BULK EARTHWORKS PLAN
- CV-3001SITEWORKS PLAN
- CV-4001STORMWATER PLAN
- CV-4050STORMWATER DETAILS

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PROPOSER



enstruct group pty ltd

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project

SUTHERLAND PUBLIC
SCHOOL HALL UPGRADE

drawing title

COVER SHEET AND
LOCALITY PLAN

status

SCHEMATIC DESIGN

scale at A1
N.T.S.

drawn
ALA

checked
TAH

approved
Dec-24

project no.
PS214113

sheet
PS214113-SPS-CV-0000

rev.
01

GENERAL NOTES

- Contractor must verify all dimensions and existing levels on site prior to commencement of works. Any discrepancies to be reported to the Engineer.
- Strip all topsoil from the construction area. All stripped topsoil shall be disposed of off-site unless directed otherwise.
- Make smooth connection with all existing works.
- 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.
- 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.
- 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.
- For all temporary batters refer to geotechnical recommendations.
- The approval of a substation shall be sought from the superintendent but is not an authorisation of a cost variation. The superintendent must approve any cost variation before any work starts.

REFERENCE DRAWINGS

- 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	Dwg Title	Dwg No	Rev	Date
BKA Architecture	Ground Floor lan	A-110 Modification	xx	xxx

KERBING NOTES

Includes all kerbs, gutters, dish drains, crossings and edges.

- 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.
- 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.
- 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.
- Broomed finished to all ramped and vehicular crossings, all other kerbing or dish drains to be steel float finished.
- In the replacement of kerbs - Existing road pavement is to be sawcut 900mm from: Lip of gutter, invert of kerb, or edge of dish drain. Upon completion of new kerbs, new basecourse 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.

DBYD SERVICES NOTE

"Public Service Utility information shown on plan has been compiled from information received from Dial Before You Dig inquiry, reference Number 36856679, which was obtained on 05/02/2024. Unless specifically shown otherwise, this location and depth of services shown on this plan have not been verified.

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."

BOUNDARY AND EASEMENTS NOTE

The property boundary and easements locations shown on enstruct drawing's have been based from information received from site survey.
Enstruct makes no guarantees that the boundary or easement information shown is correct, enstruct 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.

CONCRETE FINISHING NOTES

- All exposed concrete pavements are to be broomed finished.
- All edges of the concrete pavement including keyed and dowelled joints are to be finished with an edging tool.
- Concrete pavements with grades greater than 10 % shall be heavily broomed finished.
- Carborundum to be added to all stair treads and ramped crossings U.N.O.

REINFORCEMENT NOTES

- 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.
N. Hot rolled ribbed bar grade D500N
R. Plain round bar grade R250N
SL. Square mesh grade 500L
RL. Rectangular mesh grade 500L
- Provide bar supports or spacers to give the following concrete cover to all reinforcement unless otherwise noted on drawings.

Footings - 50 top, 50 bottom, 50 sides.

- Walls
- 40 generally.
 - 40 when cast in forms but later exposed to weather or ground.
 - 50 when cast directly in contact with ground.

- Cover to reinforcement ends to be 50 mm u.n.o.
- Provide N12-450 support bars to top reinforcement as required, Lap 500 U.N.O.
- Maintain cover to all pipes, conduits, reglets, drip grooves etc
- All cogs to be standard cogs unless noted otherwise.
- 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 LAPS

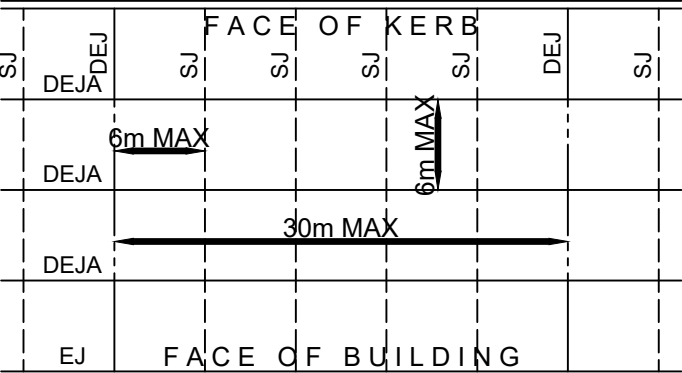


- Laps in reinforcement shall be made only where shown on the drawings unless otherwise approved. Lap lengths as per table below.

JOINTING NOTES

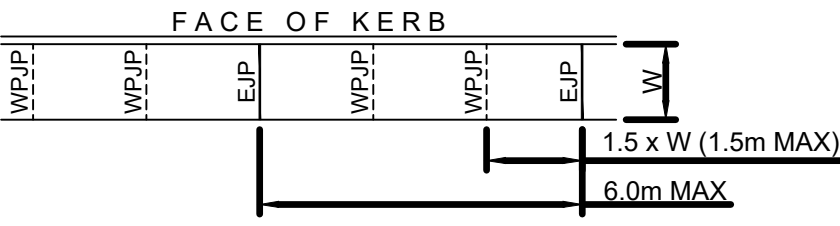
Vehicular Pavement Jointing

- All vehicular pavements to be jointed as shown on drawings.
- Keyed construction joints should generally be located at a maximum of 6m centres.
- Sawn joints should generally be located at a maximum of 6m centres or 1.5 x the spacing of keyed joints, where key joint spacing is less than 4m, with dowelled expansion joints at maximum of 30m centres.
- Provide 10mm wide full depth expansion joints between buildings and all concrete or unit pavers.
- 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.
- Vehicular pavement jointing as follows.



Pedestrian Footpath Jointing

- Expansion joints are to be located where possible at tangent points of curves and elsewhere at max 6.0m centres.
- Weakened plane joints are to be located at a max 1.5 x width of the pavement.
- Where possible joints should be located to match kerbing and / or adjacent pavement joints.
- All pedestrian footpath jointings as follows (uno).



PUBLIC DOMAIN NOTE

These plans are awaiting final approval from the authority regarding these public works. Public domain works are not to commence until these drawings are stamped as approved.

RETAINING WALLS

- Drainage shall be provided as shown on the drainage drawings.
- Backfilling shall be carried out after grout or concrete has reached a minimum strength of 0.85 f_c. Backfilling shall be approved granular material compacted in layers not exceeding 200mm to 95% Standard compaction unless noted otherwise.
- Provide waterproofing to back of walls as specified or noted.
- Where retaining walls rely on connecting structural elements for stability, do not backfill against the wall unless it is adequately propped or the elements have been constructed and have sufficient strength to withstand the loads.
- For all temporary batters obtain geotechnical engineers recommendations.

SURVEY AND SERVICES INFORMATION

SURVEY

Origin of levels : CONTACT THE SURVEYOR
Datum of levels : AHD
Coordinate system : MGA2020
Survey prepared by : Astrea
Setout Points : CONTACT THE SURVEYOR
Lot and DP : 1-10, DP6600; 5-9 Section 45 DP802

enstruct 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

The locations of underground services shown on enstruct 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.

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.

enstruct does not guarantee that the services information shown on these drawings shows more than the presence or absence of services, and will accept no liability for inaccuracies in the services information shown from any cause whatsoever.

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.

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.

enstruct plans do not indicate the presence of any survey mark. The contractor is to undertake their own search.

STORMWATER DRAINAGE NOTES

- Stormwater Design Criteria :
(A) Average recurrence interval -
1% AEP for roof drainage to first external pit
5% AEP years for paved and landscaped areas
(B) Rainfall intensities -
Time of concentration: 5 minutes
1% AEP = 228 mm/hr
5% AEP = 178.8 mm/hr
(C) Rainfall losses -
Impervious areas:
Pervious areas: IL = 1.0 mm , CL = 0 mm/hr
Landscaped areas: IL= 32.0 mm , CL = 0.84 mm/hr
- Pipes 300 dia and larger to be reinforced concrete Class "2" approved spigot and socket with rubber ring joints U.N.O. Pipes in public roadways (including public domain) to be class 4 reinforced concrete.
- Pipes up to 300 dia may be sewer grade uPVC with solvent welded joints, subject to approval by the engineer.
- Equivalent strength FRP pipes may be used subject to approval.
- Pits in roadways (including public domain) are to be insitu to council details.
- Enlargers, connections and junctions to be Manufactured fittings where pipes are less than 300 dia.
- Where subsoil drains pass under floor slabs and vehicular pavements, unslotted uPVC sewer grade pipe is to be used.
- Grates and covers shall conform with AS 3996-2006, and AS 1428.1 for access requirements.
- Pipes are to be installed in accordance with AS 3725. All bedding to be type H2 U.N.O.
- Care is to be taken with invert levels of stormwater lines. Grades shown are not to be reduced without approval.
- All downpipe connections area to be 150mm DIA or the same size as the downpipe (whichever is larger) laid at 1% minimum fall connection to the nearest pit. Minimum cover 450mm in landscaped areas.
- Subsoil drains to be slotted flexible uPVC U.N.O.
- Adopt invert levels for pipe installation (grades shown are only nominal).

STORMWATER PIT SCHEDULE

Note: Grate size does not necessarily reflect pit size, refer pit type details, shovly on detail sheets - CV-4050
Final internal pit dimensions are to comply with AS3500

Type	Description	Size	Class	Water Quality	Material	Number
A	Proposed Surface inlet pit	900x900	B	-	Heelsafe galvanised mild steel grate hinged to frame	1, 13
B	Proposed Surface inlet pit	900x900	B	-	Sealed infill galvanised mild still cover and frame	12
C	Proposed Surface inlet pit	900x900	D	-	Heelsafe galvanised mild steel grate hinged to frame	17
D	Access to OSD tank	900x900	B	-	Heelsafe galvanised mild steel grate hinged to frame	14,15
E	Proposed Surface inlet pit	900x600	B	Litter basket	Heelsafe galvanised mild steel grate hinged to frame	2, 3, 4, 5, 6, 9
F	Proposed Surface inlet pit	900x600	B	-	Heelsafe galvanised mild steel grate hinged to frame	11
G	Proposed Surface inlet pit	600x600	B	Litter basket	Heelsafe galvanised mild steel grate hinged to frame	16
H	Proposed Surface inlet pit	600x600	B	-	Heelsafe galvanised mild steel grate hinged to frame	8,10
J	Existing pit to remain					7

TO BE PRINTED IN FULL COLOUR

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01	13/12/24	FOR SCHEMATIC DESIGN	PL	PL	
rev	date	description	drm	ch/k	

rev	date	description	drm	ch/k	

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SUTHERLAND PUBLIC SCHOOL HALL UPGRADE

drawing title

GENERAL NOTES

status

SCHEMATIC DESIGN

scale at A1
N.T.S

drawn
ALA

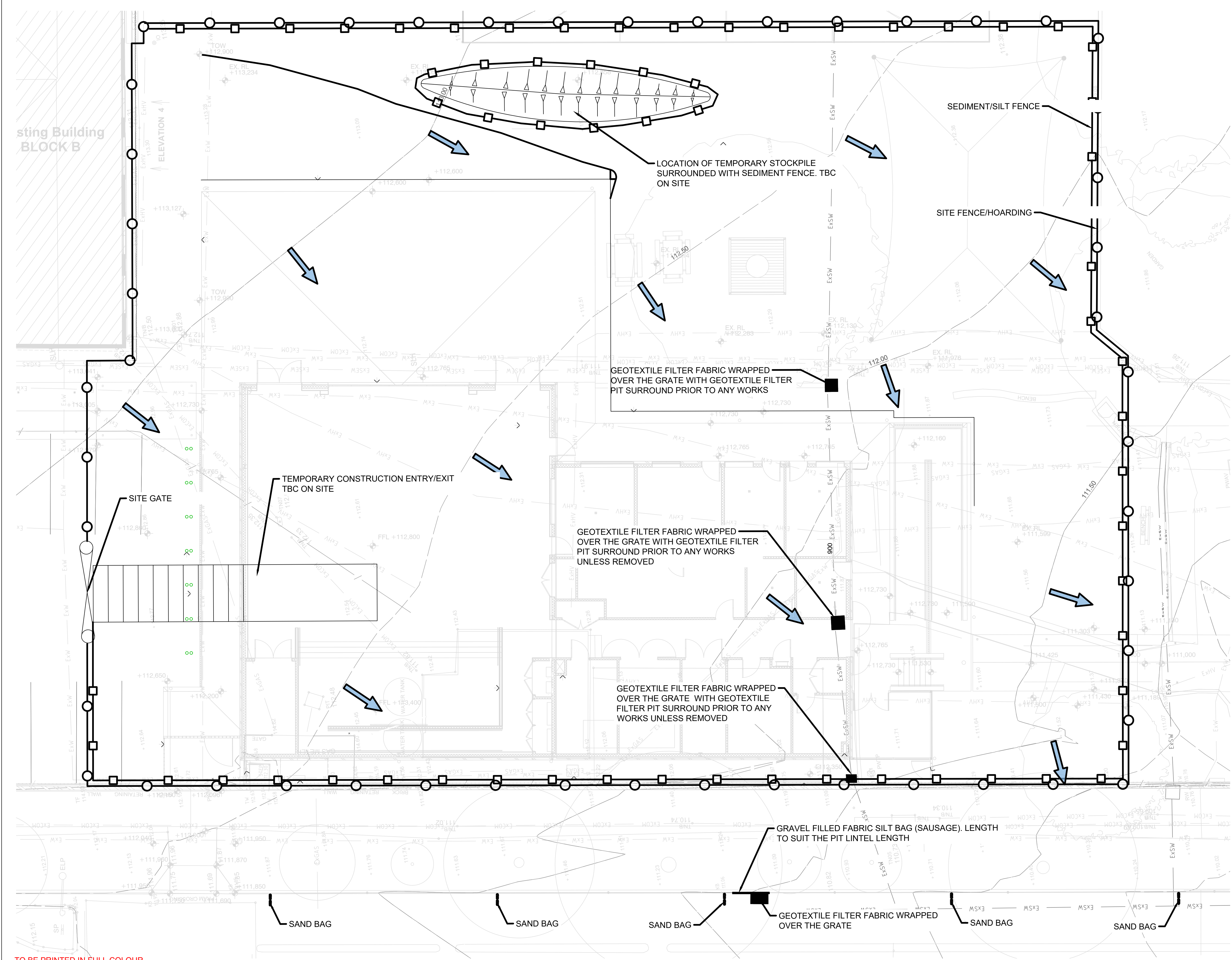
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Oct-24

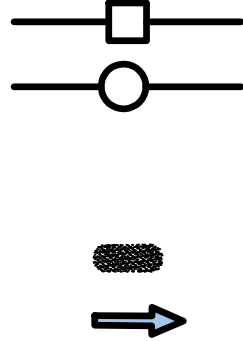
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PS214113

sheet
PS214113-SPS-CV-0001

rev.
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EROSION AND SEDIMENT CONTROL LEGEND



EROSION AND SEDIMENT CONTROL NOTES

- All work shall be generally carried out in accordance with
(A) Local authority requirements,
(B) EPA - Pollution control manual for urban stormwater,
(C) LANDCOM NSW - Managing Urban Stormwater: Soils and Construction ("Blue Book").
- Erosion and sediment control drawings and notes are provided for the whole of the works. Should the Contractor stage these works then the design may be required to be modified.
The erosion and sediment control plan shall be implemented and adapted to meet the varying situations as work on site progresses.
- Maintain all erosion and sediment control devices to the satisfaction of the superintendent and the local authority.
- When stormwater pits are constructed prevent site runoff entering the pits unless silt fences are erected around pits.
- Minimise the area of site being disturbed at any one time.
- Protect all stockpiles of materials from scour and erosion. Do not stockpile loose material in roadways, near drainage pits or in watercourses.
- All soil and water control measures are to be put back in place at the end of each working day, and modified to best suit site conditions.
- Control water from upstream of the site such that it does not enter the disturbed site.
- All construction vehicles shall enter and exit the site via the temporary construction entry/exit.
- All vehicles leaving the site shall be cleaned and inspected before leaving.
- Maintain all stormwater pipes and pits clear of debris and sediment. Inspect stormwater system and clean out after each storm event.
- Clean out all erosion and sediment control devices after each storm event.

Sequence Of Works

- Prior to commencement of excavation the following soil management devices must be installed:
 - Construct silt fences below the site and across all potential runoff sites.
 - Construct temporary construction entry/exit and divert runoff to suitable control systems.
 - Construct measures to divert upstream clean flows into existing stormwater system.
 - Construct sedimentation traps/basin (if any) including outlet control and overflow; otherwise allocate a place for the runoff and temporary sediment storage.
 - Construct turf lined swales.
 - Provide sandbag sediment traps upstream of existing pits.
- Construct geotextile filter pit surround around all existing pits and proposed pits as they are constructed.
- On completion of pavement provide sand bag kerb inlet sediment traps around pits.
- Provide and maintain a strip of turf on both sides of all roads after the construction of kerbs.

WATER QUALITY TESTING REQUIREMENTS

Prior to discharge of site stormwater, groundwater and seepage water into council's stormwater system, contractors must undertake water quality tests in conjunction with a suitably qualified environment consultant outlining the following:

- Compliance with the criteria of the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000)
- If required subject to the environmental consultants advice, provide remedial measures to improve the quality of water that is to be discharged into Councils storm water drainage system. This should include comments from a suitably qualified environmental consultant confirming the suitability of these remedial measures to manage the water discharged from the site into Councils storm water drainage system. Outlining the proposed, ongoing monitoring, contingency plans and validation program that will be in place to continually monitor the quality of water discharged from this site. This should outline the frequency of water quality testing that will be undertaken by a suitably qualified environmental consultant.



SERVICE CLASHES
CONTRACTOR TO REFER TO SERVICES DOCUMENTATION AND LIAISE WITH THE RELEVANT AUTHORITY TO MITIGATE ANY SERVICE CLASHES WITH THE PROPOSED WORKS.

WARNING
BEWARE OF UNDERGROUND SERVICES.
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NOT FOR CONSTRUCTION

rev	date	description	dm	ch/k
01	13/12/24	FOR SCHEMATIC DESIGN	PL	PL

rev	date	description	dm	ch/k

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project

SUTHERLAND PUBLIC SCHOOL HALL UPGRADE

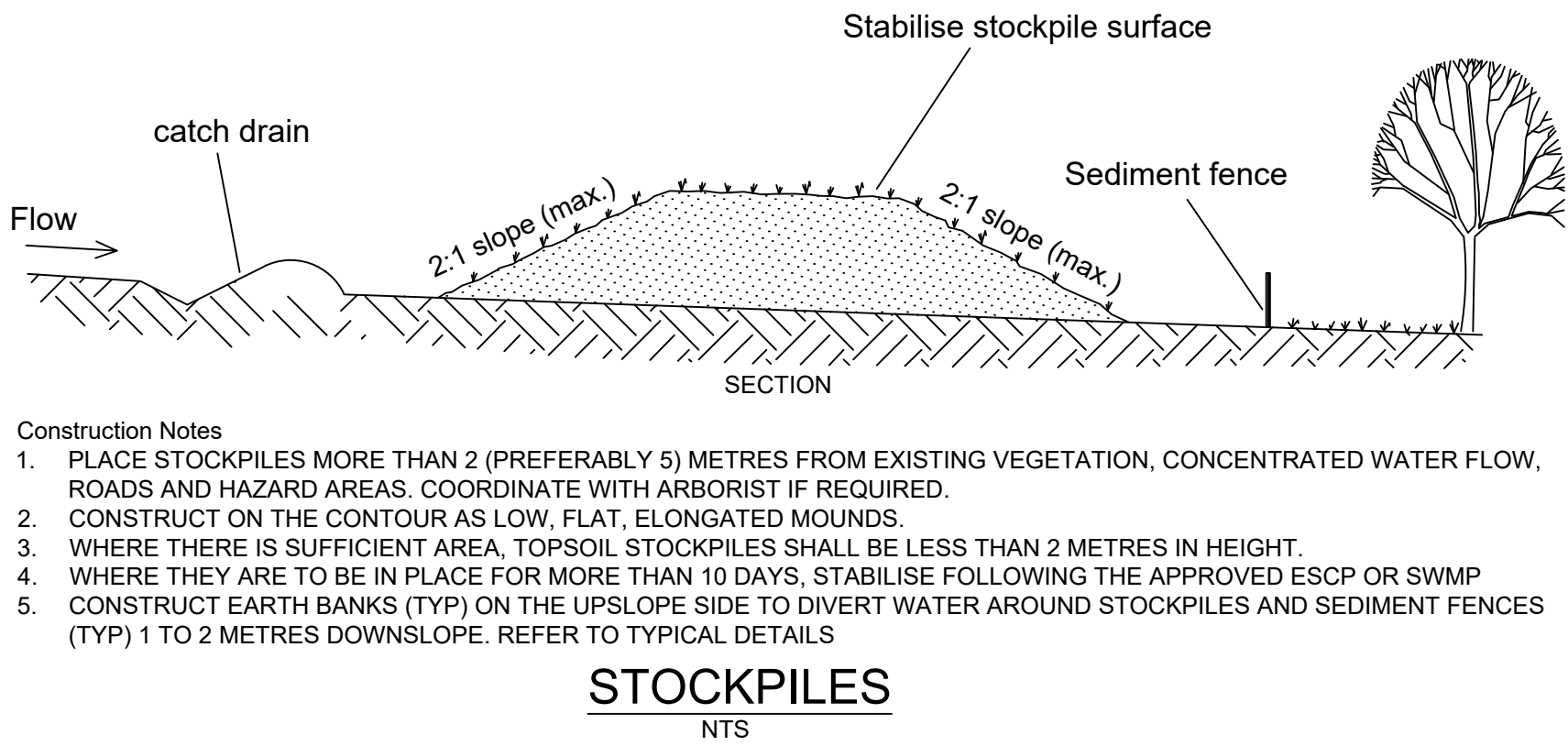
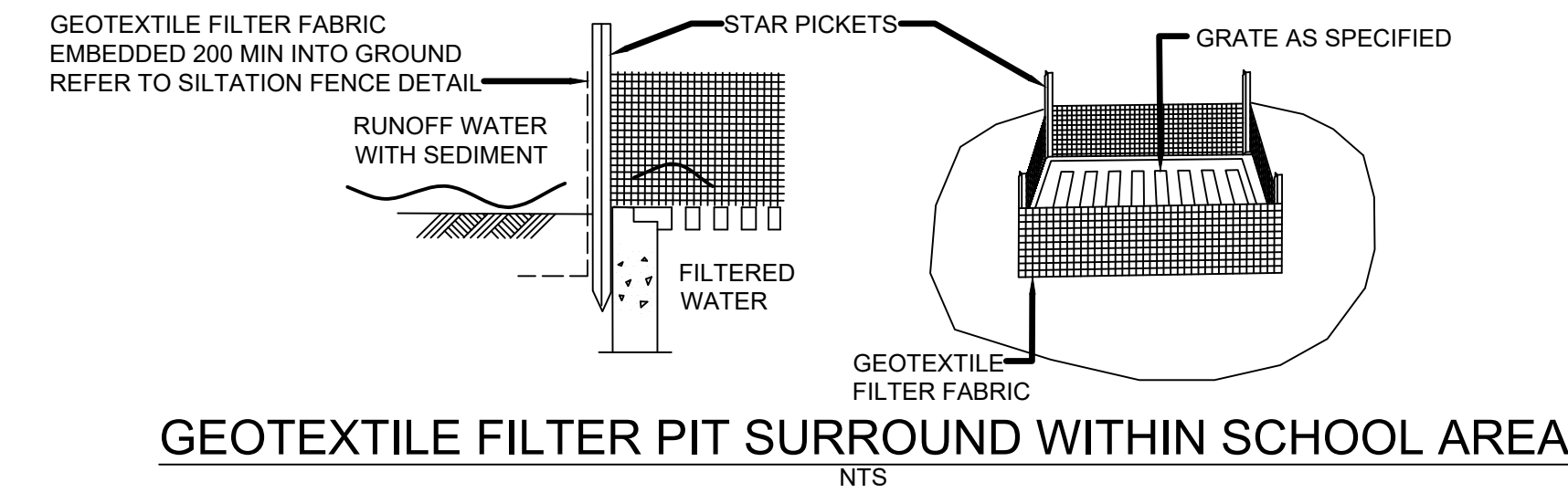
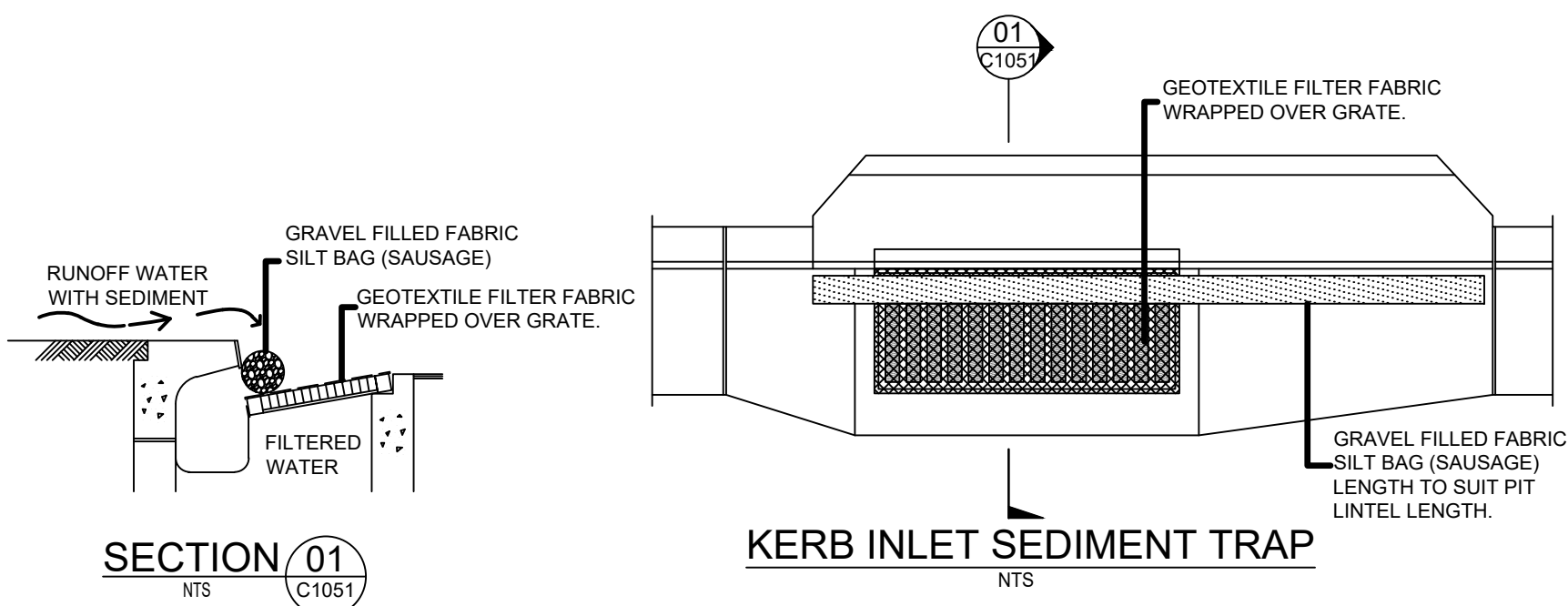
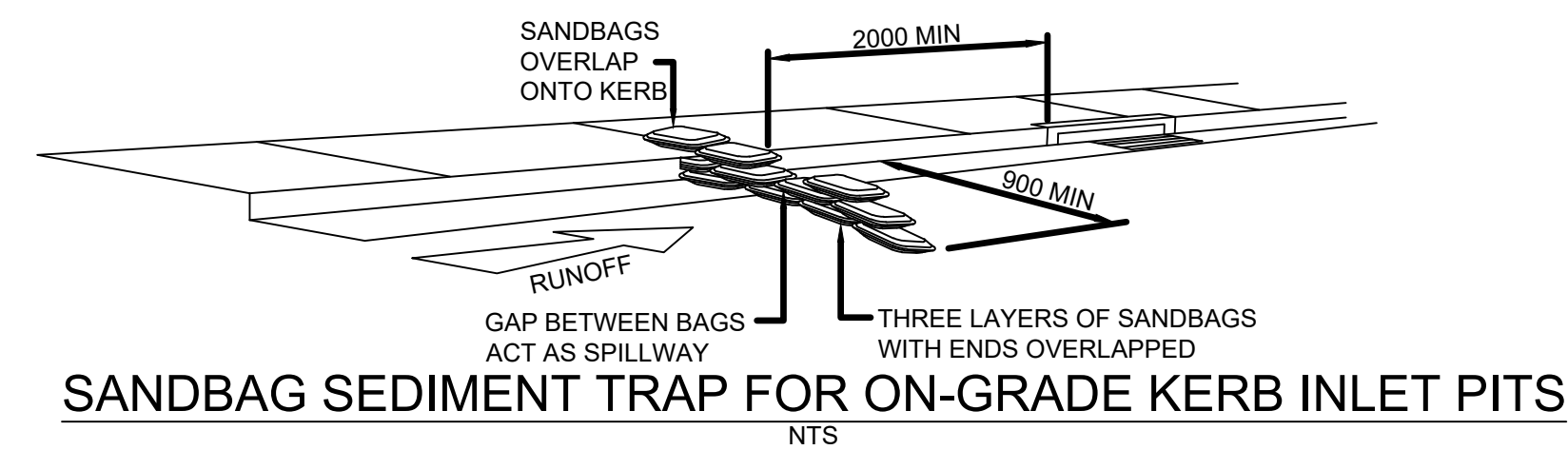
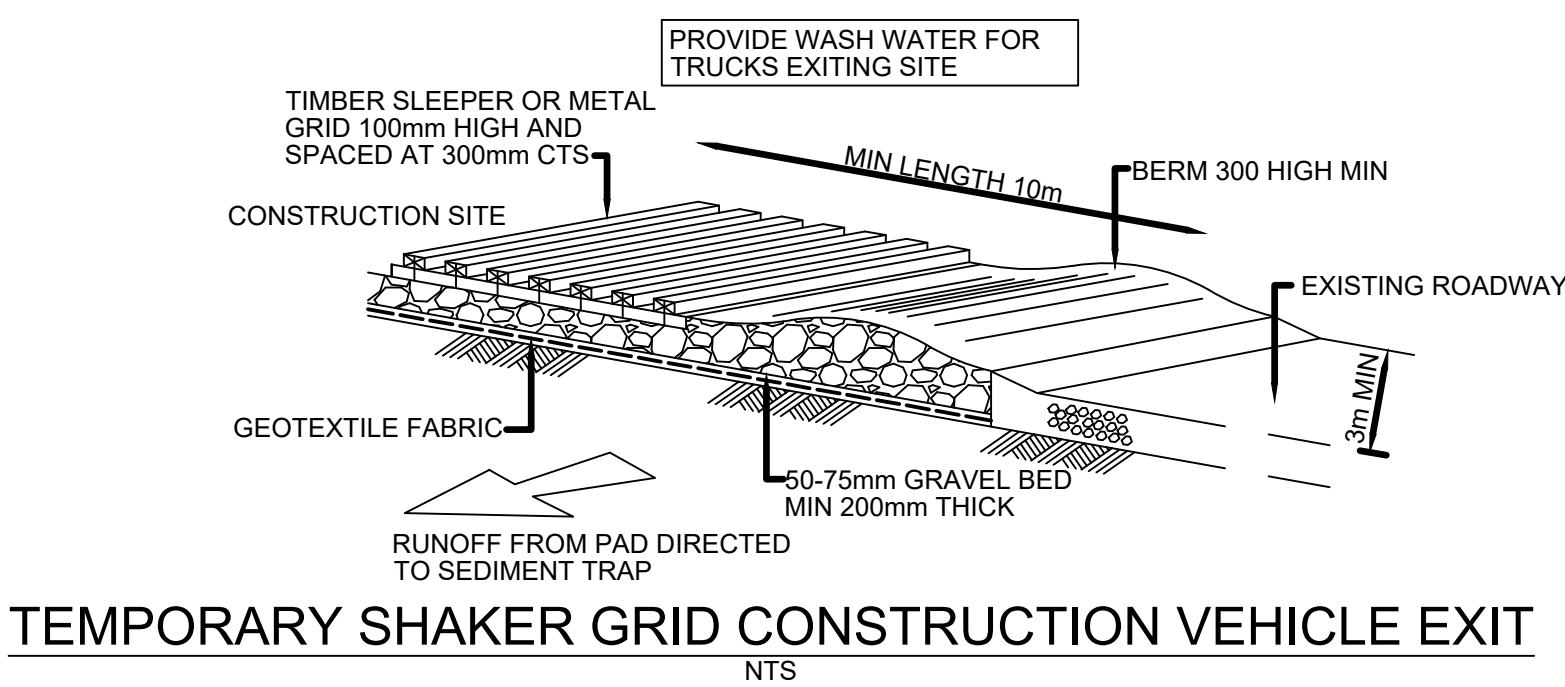
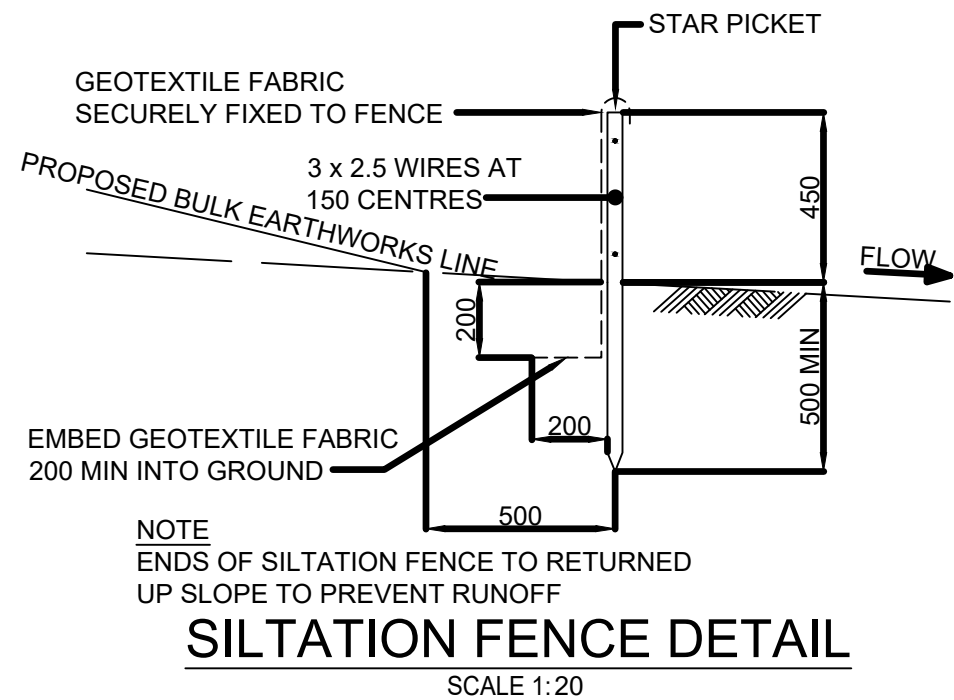
drawing title

EROSION AND SEDIMENT CONTROL PLAN

status

SCHEMATIC DESIGN

scale at A1 1:100	drawn ALA	checked TAH	approved Oct-24
project no. PS214113	sheet PS214113-SPS-CV-1001	rev. 01	



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NOT FOR CONSTRUCTION

01	13/12/24	FOR SCHEMATIC DESIGN	PL	PL	
rev	date	description	dm	ch/k	

rev	date	description	dm	ch/k	

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SUTHERLAND PUBLIC
SCHOOL HALL UPGRADE

drawing title

EROSION AND SEDIMENT
CONTROL DETAILS

status

SCHEMATIC DESIGN

scale at A1
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drawn
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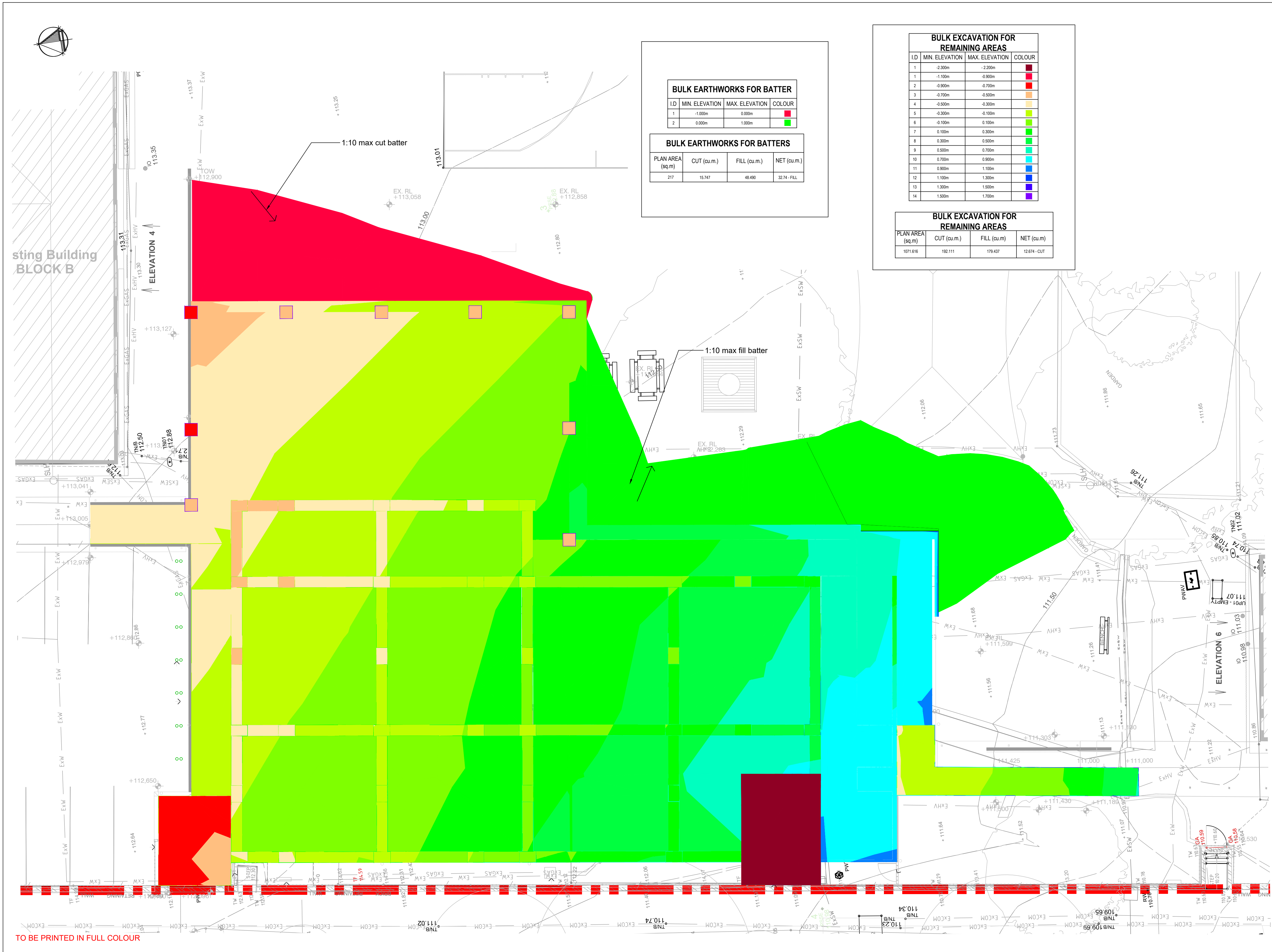
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Oct-24

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BULK EARTHWORKS FOR BATTER			
I.D	MIN. ELEVATION	MAX. ELEVATION	COLOUR
1	-1.000m	0.000m	Red
2	0.000m	1.000m	Green

BULK EARTHWORKS FOR BATTERS			
PLAN AREA (sq.m)	CUT (cu.m.)	FILL (cu.m.)	NET (cu.m.)
217	15.747	48.480	32.74 - FILL

BULK EXCAVATION FOR REMAINING AREAS			
I.D	MIN. ELEVATION	MAX. ELEVATION	COLOUR
1	-2.300m	-2.200m	Red
1	-1.100m	-0.900m	Red
2	-0.900m	-0.700m	Red
3	-0.700m	-0.500m	Orange
4	-0.500m	-0.300m	Orange
5	-0.300m	-0.100m	Yellow
6	-0.100m	0.100m	Yellow
7	0.100m	0.300m	Green
8	0.300m	0.500m	Green
9	0.500m	0.700m	Green
10	0.700m	0.900m	Cyan
11	0.900m	1.100m	Blue
12	1.100m	1.300m	Blue
13	1.300m	1.500m	Blue
14	1.500m	1.700m	Blue

BULK EXCAVATION FOR REMAINING AREAS			
PLAN AREA (sq.m)	CUT (cu.m.)	FILL (cu.m)	NET (cu.m)
1071.616	192.111	179.437	12.674 - CUT

BULK EARTHWORKS GENERAL NOTES

1. All bulk earthworks setout from grid lines U.N.O.
2. (i) All permanent batter max slope of 10(H):1(V) U.N.O.
(ii) All temporary batter max slope of 4(H):1(V) U.N.O.
Batters are not to exceed Geotechnical engineer specifications.
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 10 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 to provide proof roll compaction evidence for signoff.
7. Contractor shall place safety barriers around excavations in accordance with relevant safety regulations.
8. For interpretation of bulk earthworks foot print line shown on the bulk earthworks drawings refer to the bulk earthworks construction legend.
9. Bulk earthwork drawings are not to be used for detailed excavation.
10. Refer to Geotechnical Report prepared by - Douglas Partners X

BULK EARTHWORKS MODEL NOTES

1. THIS DRAWING IS AN ESTIMATE FOR INFORMATION ONLY WHICH SHOULD NOT BE TAKEN AS AN ACCURATE MEASUREMENT AND SHOULD NOT BE USED FOR CONSTRUCTION.
2. THIS MODEL REPRESENTS A LEVEL COMPARISON BETWEEN:
A) THE EXISTING SURFACE LEVELS, AND
B) THE FORMATION LEVELS OF THE PROPOSED DEVELOPMENT.
3. THE FORMATION LEVELS ARE BASED ON PAVEMENT THICKNESSES AS SHOWN IN THE DRAWING
6. THE EXISTING SURFACE LEVELS ARE BASED ON THE TIN MODEL FROM THE SURVEY FILE. REFER TO SURVEY NOTES.
7. THIS ESTIMATE DOES NOT INCLUDE EXCAVATION FOR ANY BELOW GROUND SERVICES INCLUDING STORMWATER INFRASTRUCTURE.
8. NO ALLOWANCE HAS BEEN CONSIDERED FOR SERVICE TRENCHES, IN GROUND TANKS, STRUCTURAL FOOTINGS, PILING, FLOOR SLABS OR LIFT PITS.
9. NO BULKING FACTOR HAVE BEEN APPLIED TO THE BULK EXCAVATION VOLUMES.
10. IT HAS BEEN ASSUMED THAT ALL EXCAVATED MATERIAL IS NOT CONTAMINATED AND CAN BE USED AS FILL MATERIAL ON SITE (NOT INCLUDING TOPSOIL). IF CONTAMINATION IS PRESENT, A SEPARATE ASSESSMENT SHOULD TAKE PLACE.
11. ANY DAMAGE TO EXISTING ROADS OR EXISTING BUILDINGS WILL BE RECTIFIED BY THE CONTRACTOR AT HIS EXPENSE.
12. ALL ENVIRONMENTAL MEASURES INCLUDING VEGETATION PROTECTION AND EROSION AND SEDIMENT CONTROLS SHALL BE PLACE PRIOR TO THE COMMENCEMENT OF ANY WORK.
13. EROSION PLANS AND BUILDING REPRESENTATIVE FAMILIAR WITH THE PLAN MUST BE ON SITE AT ALL TIMES DURING CONSTRUCTION.
14. ALL ARCHITECTURAL FINISHED SURFACE LEVELS SUPERSEDE THOSE INDICATED ON THE BULK EARTHWORKS PLAN. THE CONTRACTOR SHALL CONFIRM THE FINAL BUILDING PAD LEVEL REQUIRED TO SUIT THE STRUCTURAL DESIGN WITH THE STRUCTURAL DRAWINGS PRIOR TO COMMENCEMENT OF WORK.
15. REFER GEOTECHNICAL REPORT / ENGINEER FOR SUITABILITY OF MATERIAL WON FROM EXCAVATION BACKFILL.
16. NOT TO BE USED FOR DETAILED EXCAVATION, WHICH INCLUDES: LIFT PITS, TRENCHING, FOOTINGS AND OTHER EXCAVATION OF SIMILAR NATURE



SERVICE CLASHES
CONTRACTOR TO REFER TO SERVICES DOCUMENTATION AND LIAISE WITH THE RELEVANT AUTHORITY TO MITIGATE ANY SERVICE CLASHES WITH THE PROPOSED WORKS.

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NOT FOR CONSTRUCTION

rev	date	description	drn	ch/k
03	17/12/24	ISSUED FOR SCHEMATIC DESIGN	PL	MD
02	13/12/24	ISSUED FOR SCHEMATIC DESIGN	PL	MD
01	12/12/24	FOR SCHEMATIC DESIGN	PL	TAH

rev	date	description	drn	ch/k

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SUTHERLAND PUBLIC SCHOOL HALL UPGRADE

drawing title

BULK EARTHWORKS PLAN

status

SCHEMATIC DESIGN

scale at A1
1:100

drawn
JP

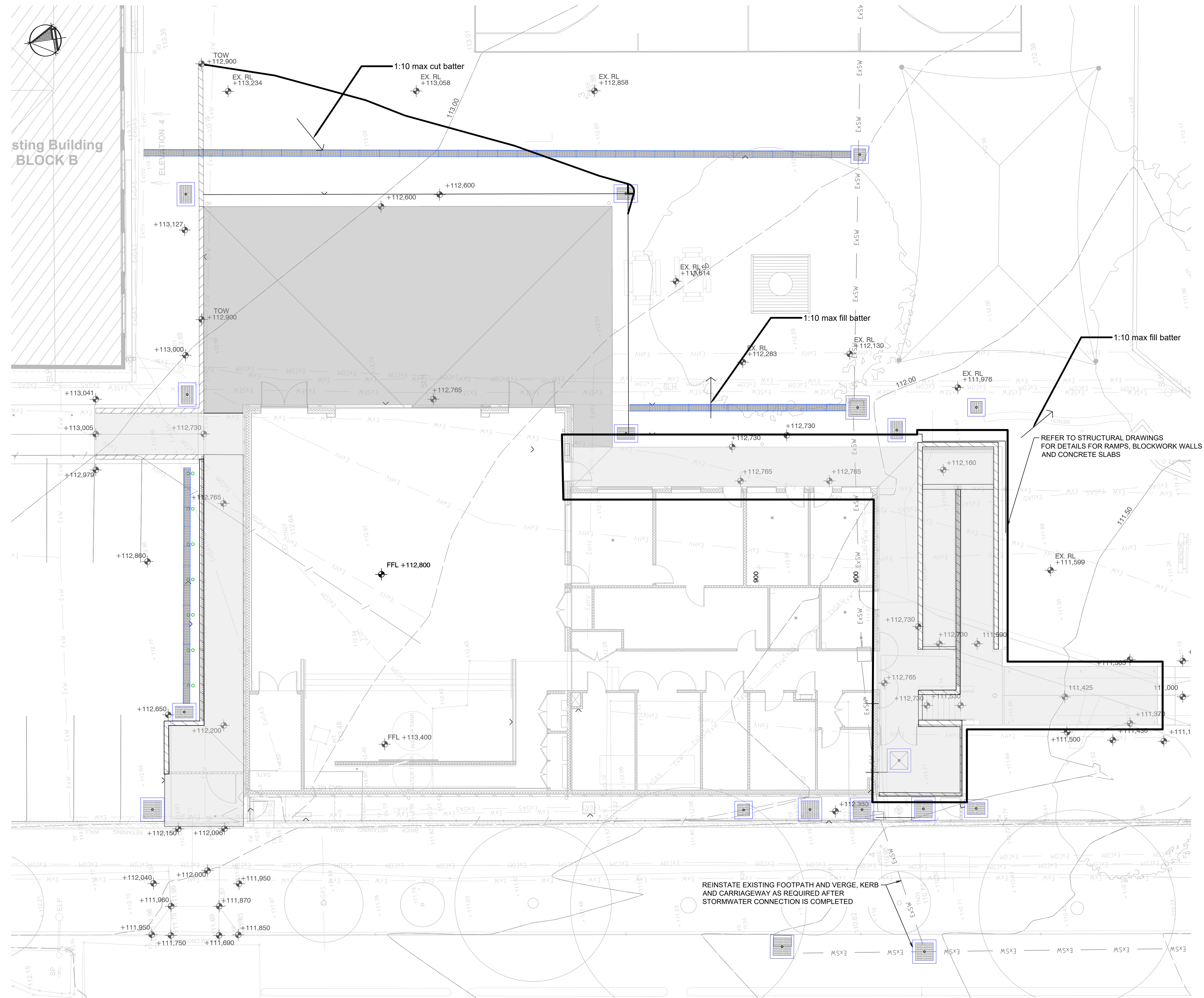
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approved
DEC-24

project no.
PS214113

sheet
PS214113-SPS-CV-2001_r3

rev.
03

sting Building
BLOCK B

SERVICES LEGEND

POW(OH)	Existing electrical (over head)
ExHV	Existing electrical High Voltage
ExGAS	Existing gas
ExSEW	Existing sewer
ExSW	Existing stormwater
ExCOM	Existing telecommunications
ExW	Existing water

LEGEND

	Proposed surface level
	Existing surface spot level
	Existing Contour
	Proposed stormwater pit. Refer to Sheet no. PS214113-SPS-CV-4001 and CV-4050 for further information.
	Grated Drain. Refer to Sheet no. PS214113-SPS-CV-4001 and CV-4050 for further information.
	Concrete slab. Refer to structural drawings
	Asphalt pavement Type 1
	Retaining structure refer to structural drawings

ASPHALT
PAVEMENT
TYPE 1

40m Thickness asphaltic concrete (AC10).
Color to Architectural Specification.

100mm Compacted thickness fine
crushed rock (DGB20) compacted to
98% standard MDD

Compacted subgrade to CBR4 min.



SERVICE CLASHES

CONTRACTOR TO REFER TO SERVICES DOCUMENTATION
AND LIAISE WITH THE RELEVANT AUTHORITY TO MITIGATE
ANY SERVICE CLASHES WITH THE PROPOSED WORKS.

WARNING

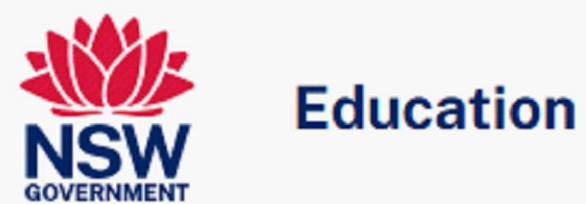
BEWARE OF UNDERGROUND SERVICES.
THE LOCATION OF UNDERGROUND SERVICES ARE
APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD
BE PROVEN ON SITE BY CIVIL CONTRACTOR PRIOR TO
CONSTRUCTION OF ANY CIVIL WORKS. NO GUARANTEE IS
GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

NOT FOR CONSTRUCTION

rev	date	description	dm	ch/k
01	13/12/24	FOR SCHEMATIC DESIGN	PL	PL

rev	date	description	dm	ch/k

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project

SUTHERLAND PUBLIC
SCHOOL HALL UPGRADE

drawing title

SITE WORKS PLAN

status

SCHEMATIC DESIGN

scale at A1

1:100

drawn

ALA

checked

TAH

approved

Oct-24

project no.

PS214113

sheet

PS214113-SPS-CV-3001

rev.

01



- Existing electrical (over head)
- Existing electrical High Voltage
- Existing gas
- Existing sewer
- Existing stormwater
- Existing telecommunications
- Existing water

Proposed stormwater pipe

Existing stormwater pipe

Grated drain (heel safe)

Proposed sealed pit

Proposed heel safe grated pit

Existing stormwater pit

subsoil drainage line (100 dia) with inspection opening/flushing point

Downpipe with Roof Water

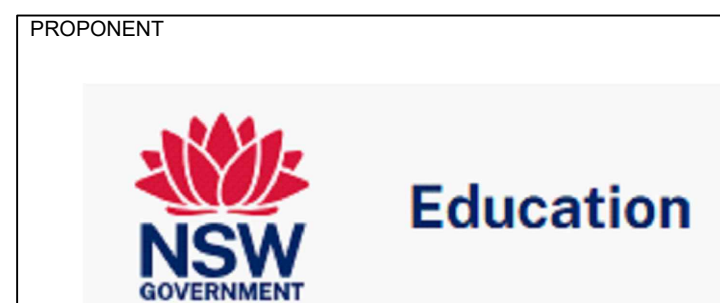
LEGEND

 Property boundary
 FFL +112.800
 +18.48
 19.00 Existing contour

TO BE PRINTED IN FULL COLOUR

04	13/12/24	ISSUED FOR SCHEMATIC DESIGN	DC	PL	
03	25/11/24	FOR CO-ORDINATION ONLY	DC	PL	
02	14/11/24	FOR REVIEW ONLY	ALA	PAL	
01	07/11/24	FOR SCHEMATIC DESIGN	PL	TAH	
rev	date	description	drn	ch/k	

rev	date	description		drm	ch'k



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SUTHERLAND PUBLIC SCHOOL HALL UPGRADE

drawing title

STORMWATER PLAN

SCHEMATIC DESIGN

status

scale at A1
1:100

drawn

checked	
TAL	

approved
Oct 34

project no.
PS214

sheet

PS214113-SPS-CV-4001

rev.
01

**BEFORE
YOU DIG**
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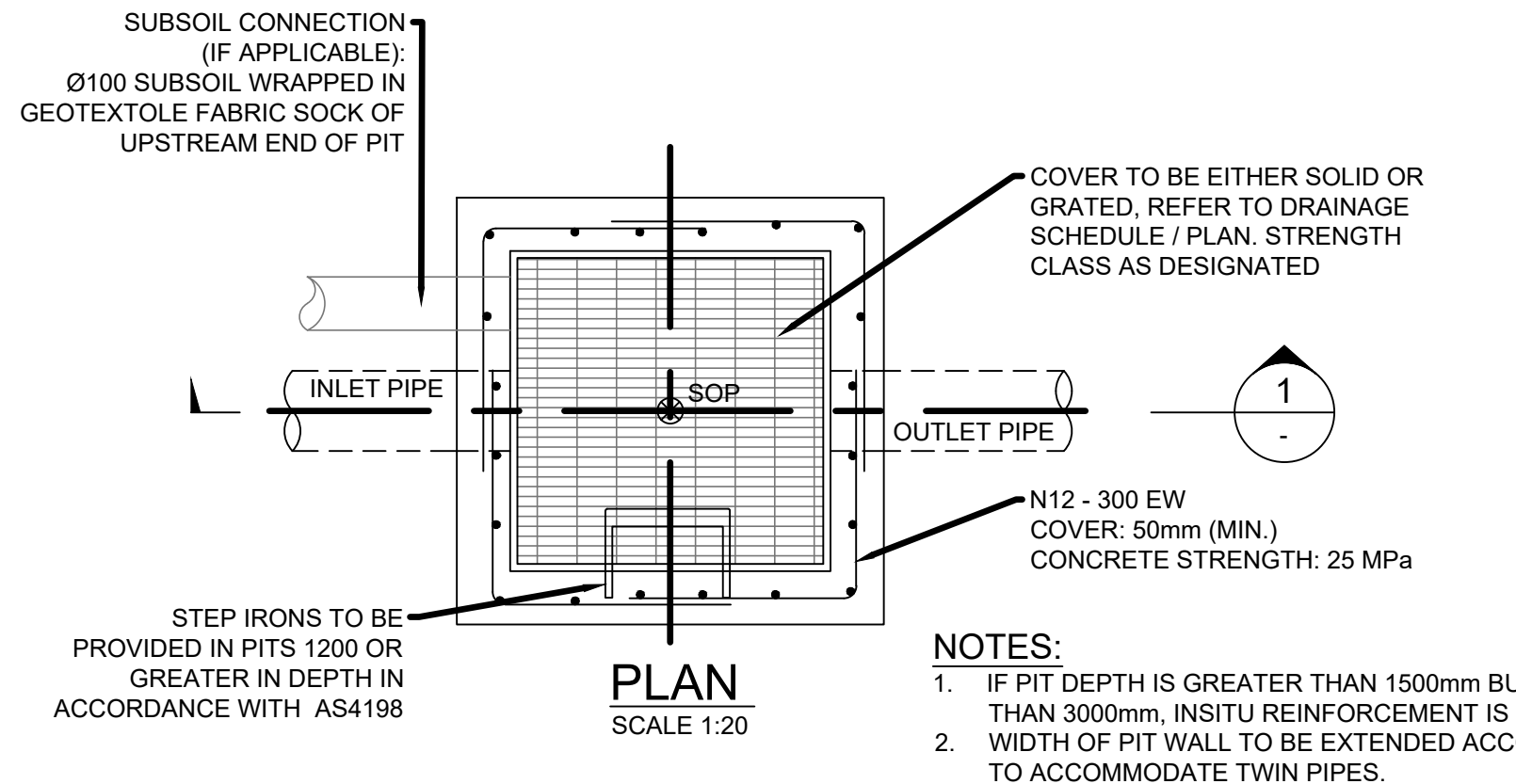
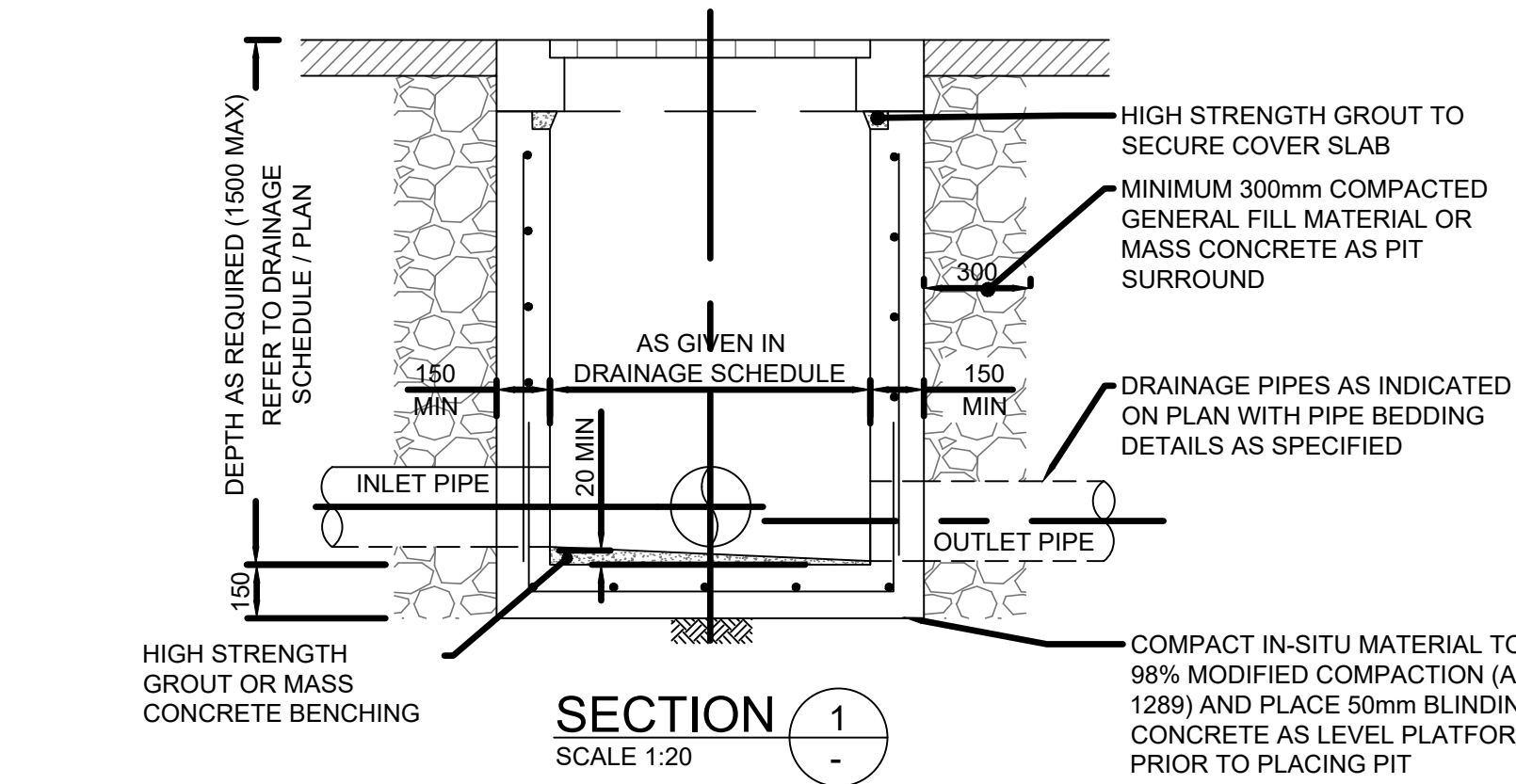
SERVICE CLASHES

CONTRACTOR TO REFER TO SERVICES DOCUMENTATION AND LIAISE WITH THE RELEVANT AUTHORITY TO MITIGATE ANY SERVICE CLASHES WITH THE PROPOSED WORKS.

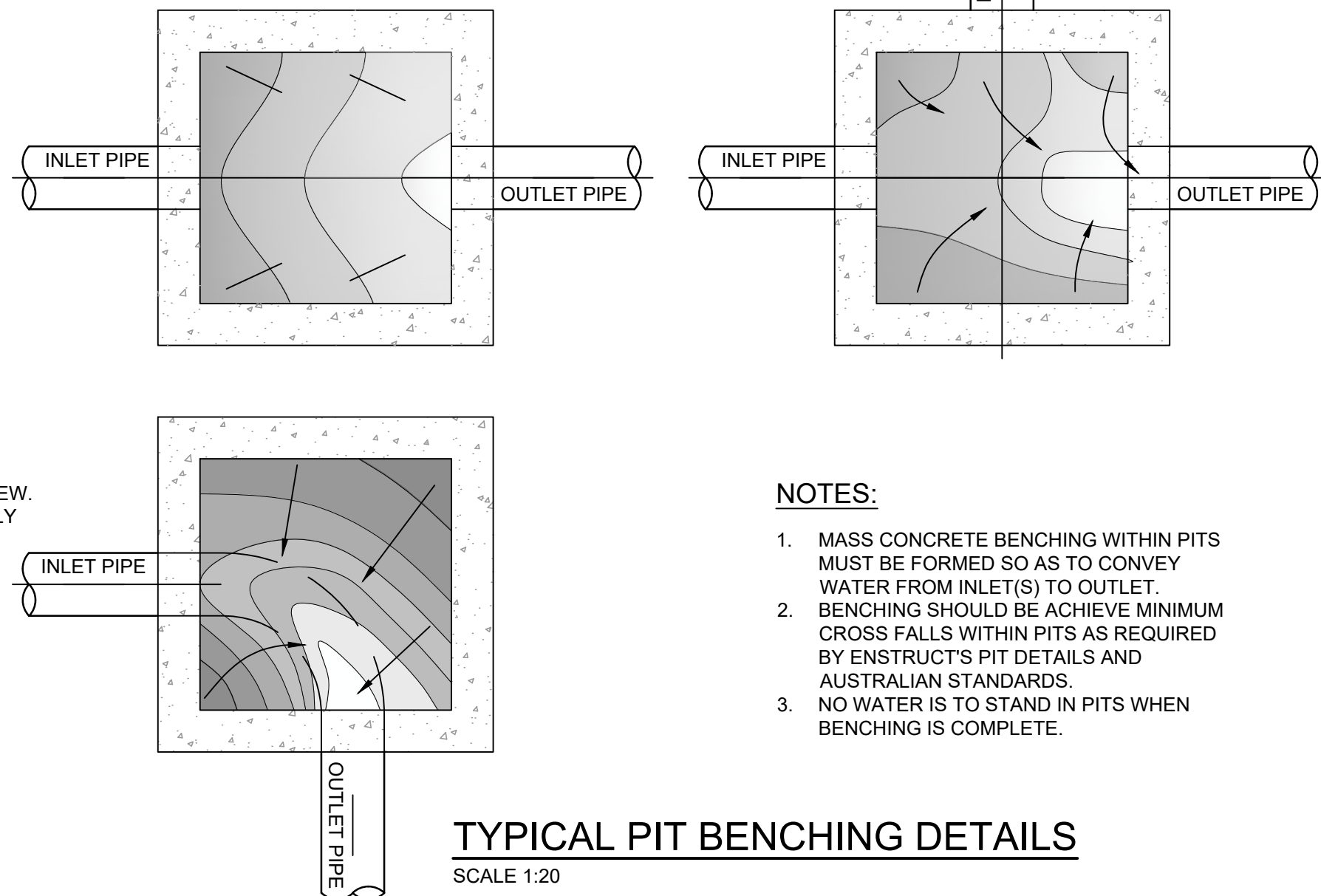
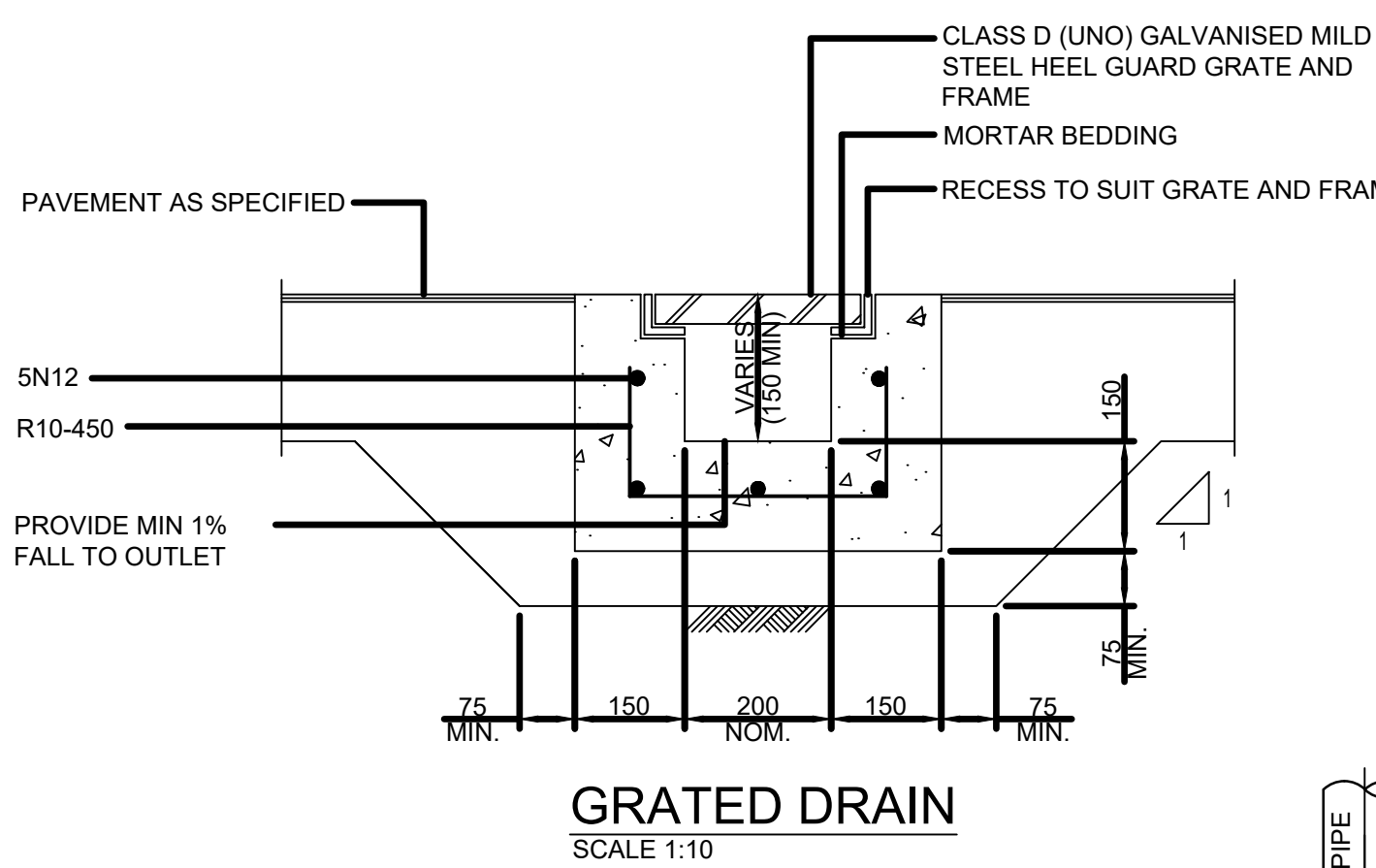
WARNING

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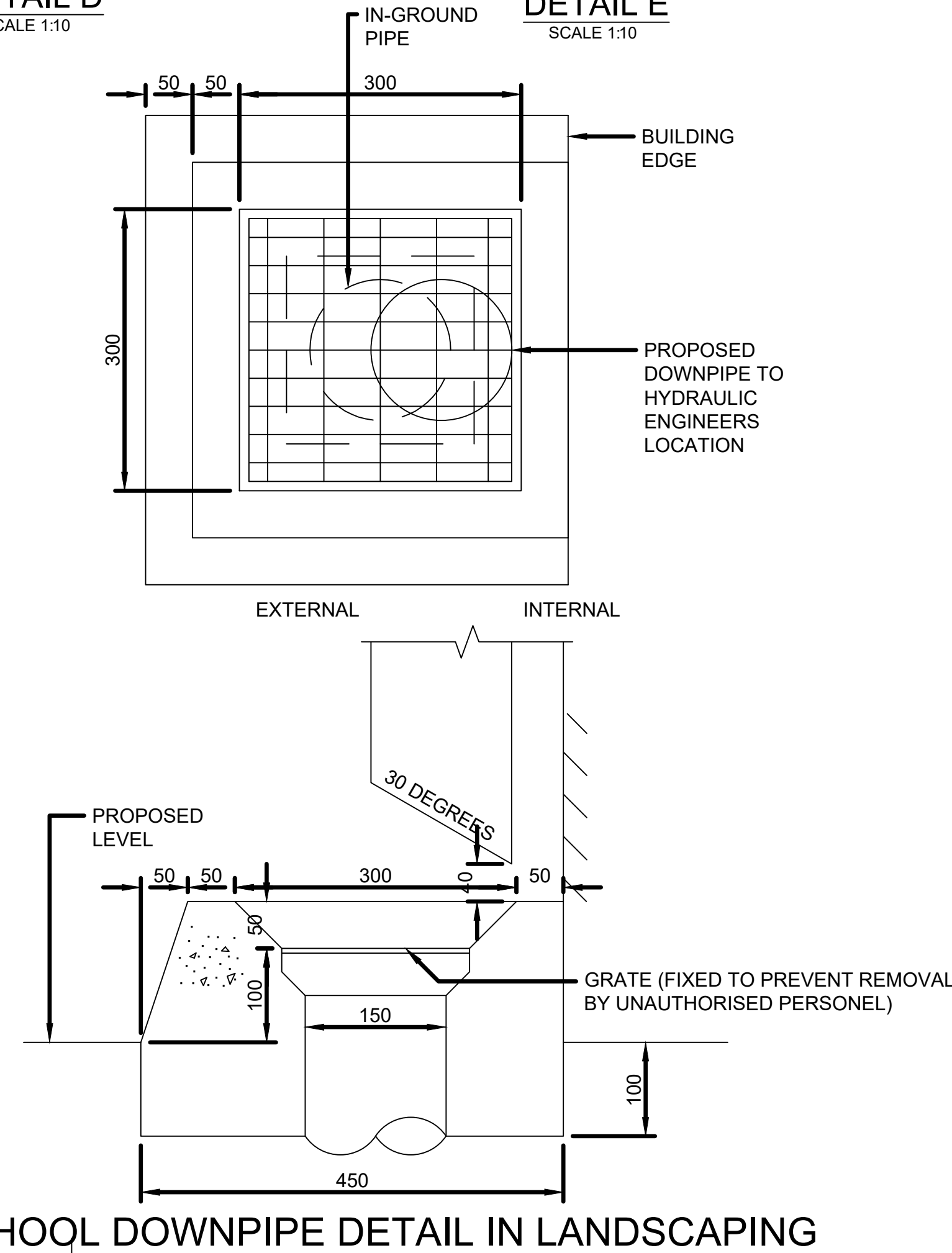
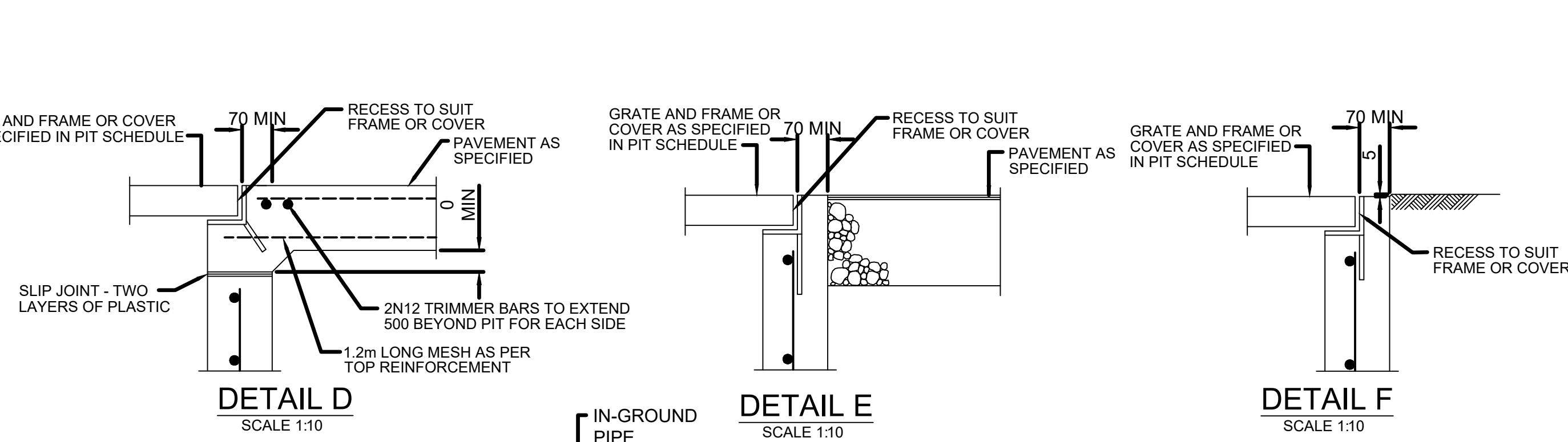
NOT FOR CONSTRUCTION



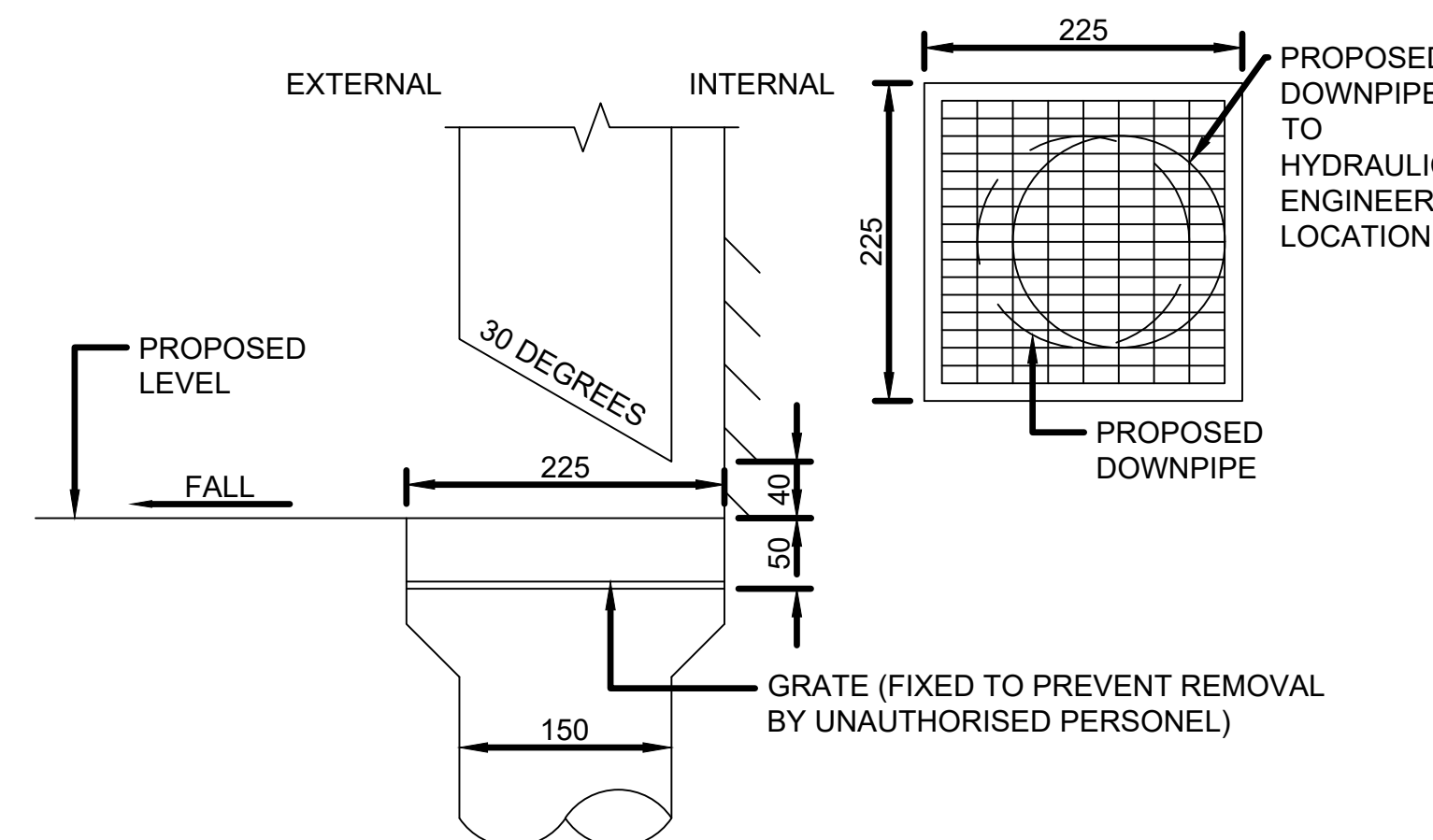
IN-SITU GRATED PIT TYPICAL DETAIL
SCALE 1:20



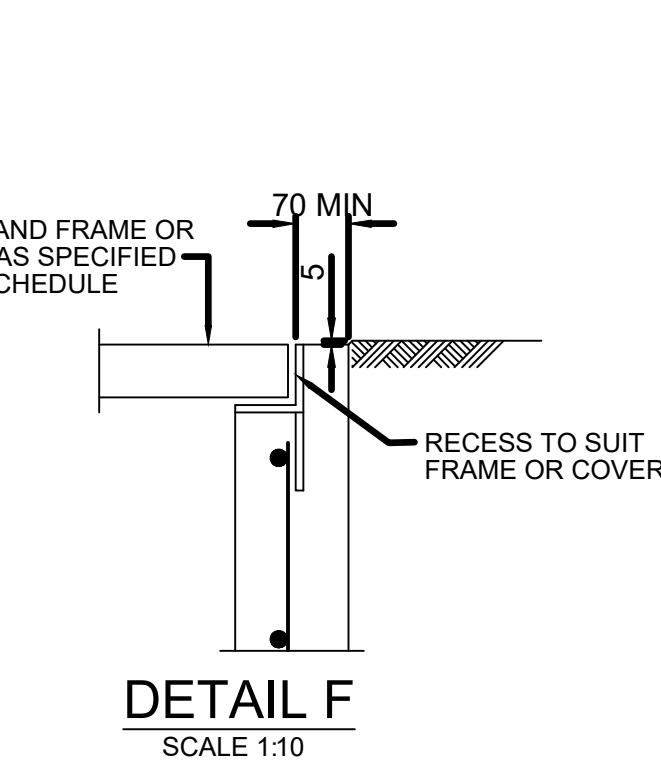
- NOTES:
1. MASS CONCRETE BENCHING WITHIN PITS MUST BE FORMED SO AS TO CONVEY WATER FROM INLET(S) TO OUTLET.
 2. BENCHING SHOULD BE ACHIEVE MINIMUM CROSS FALLS WITHIN PITS AS REQUIRED BY ENSTRUCT'S PIT DETAILS AND AUSTRALIAN STANDARDS.
 3. NO WATER IS TO STAND IN PITS WHEN BENCHING IS COMPLETE.



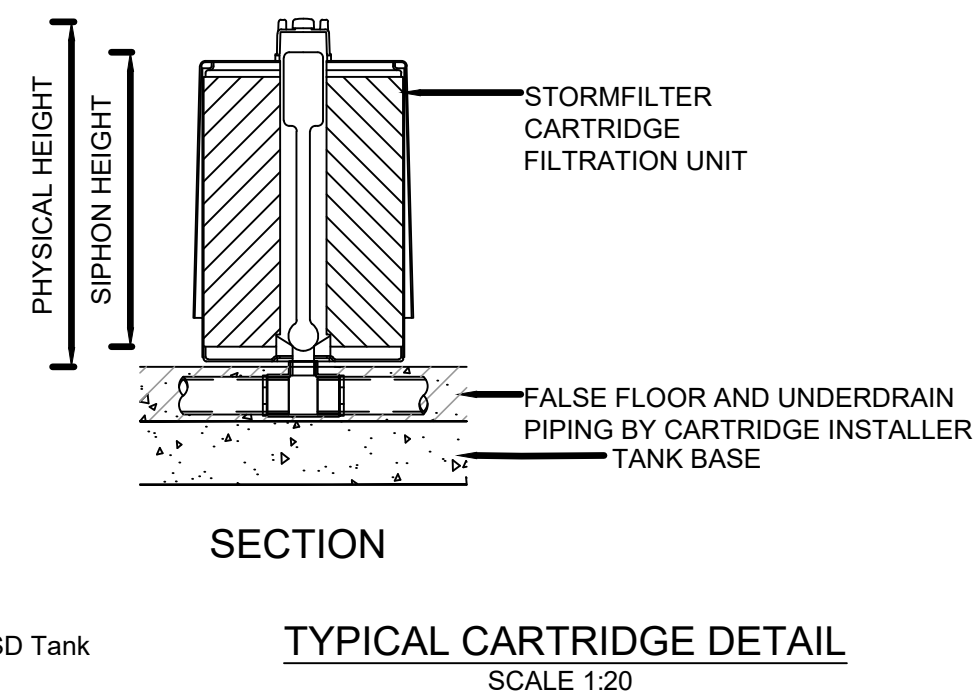
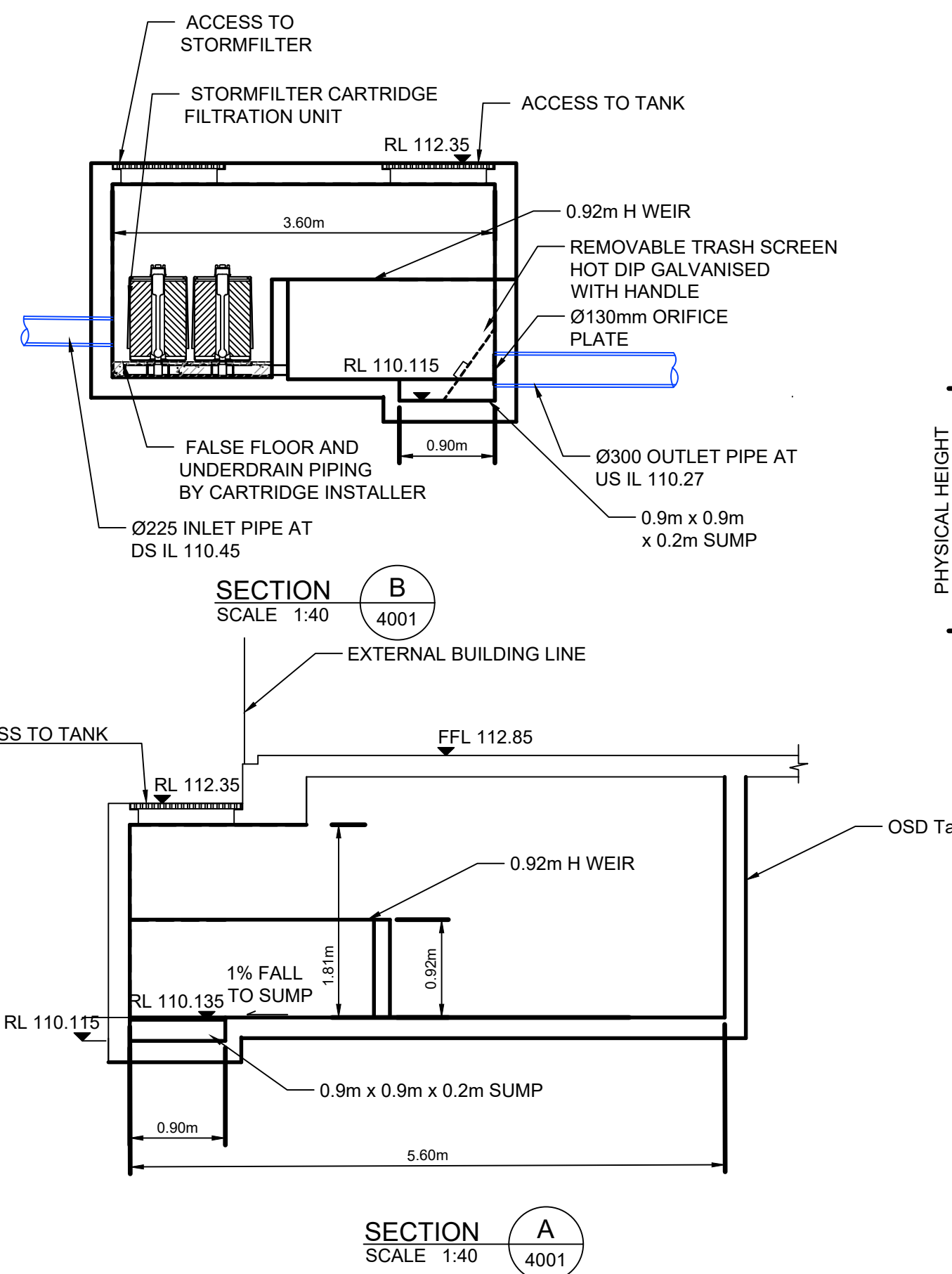
SCHOOL DOWNPIPE DETAIL IN LANDSCAPING



SCHOOL DOWNPIPE DETAIL IN PAVEMENT



DETAIL F
SCALE 1:10



- NOTE:
- CARTRIDGES ARE SHOWN FOR INFORMATION ONLY. REFER TO MANUFACTURER'S SPECIFICATIONS FOR TECHNICAL DETAILS AND SPECIFICATIONS.
 - ALL WATER QUALITY DEVICES REQUIRE MAINTENANCE. REFER TO MANUFACTURER'S MAINTENANCE SPECIFICATIONS AND SCHEDULES.

TO BE PRINTED IN FULL COLOUR

NOT FOR CONSTRUCTION

rev	date	description	dm	ch/k
01	13/12/24	ISSUED FOR SCHEMATIC DESIGN	JP	PL

rev	date	description	dm	ch/k

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project

SUTHERLAND PUBLIC
SCHOOL HALL UPGRADE

drawing title

STOWMWATER DETAILS

status

SCHEMATIC DESIGN

scale at A1 AS SHOWN	drawn PL	checked MD	approved Dec-24
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project no. PS214113	sheet PS214113-SPS-CV-4050	rev. 01
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