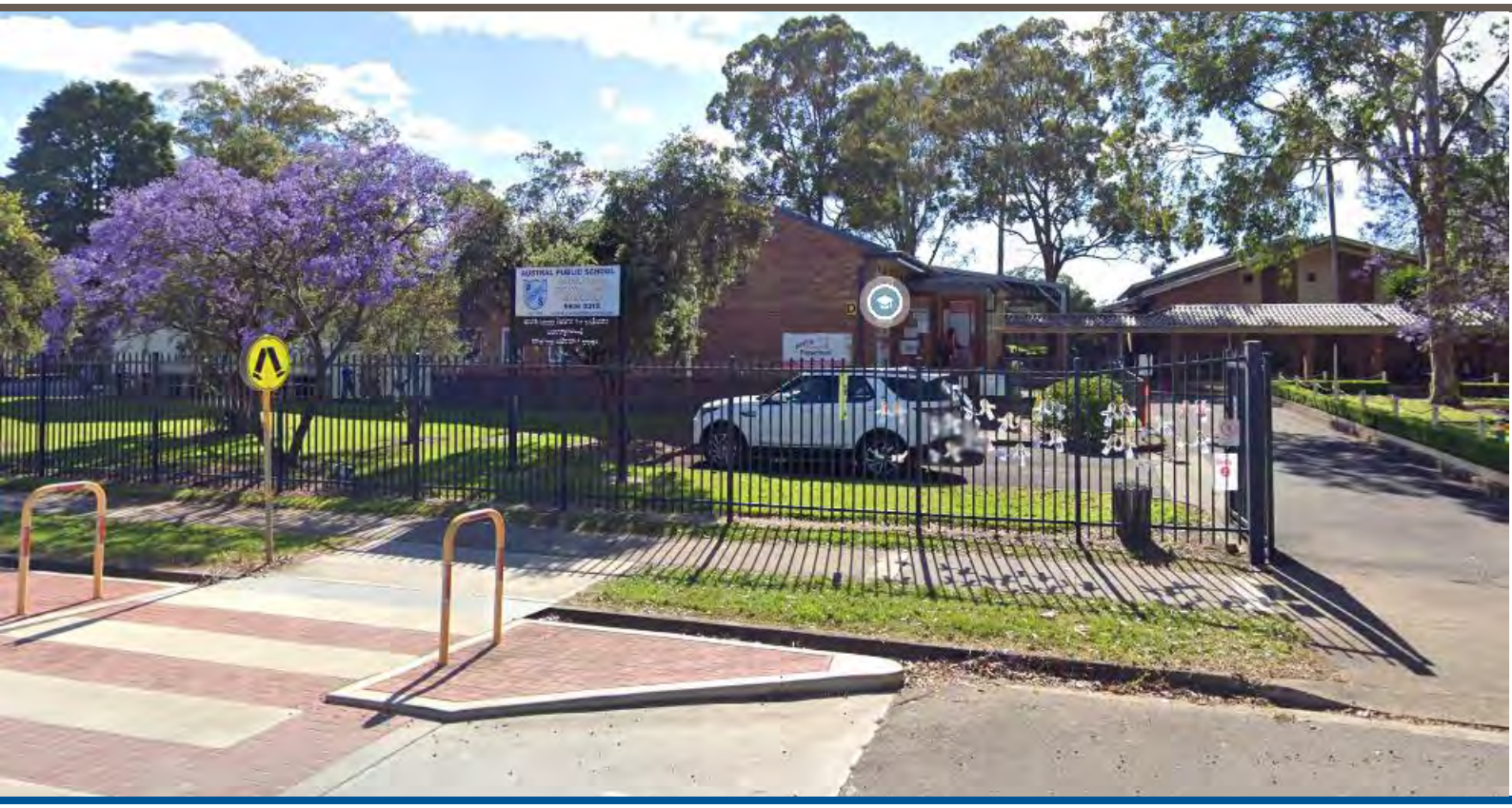
NSW Education

TETRA TECH COFFEY

Remedial Action Plan

Austral Public School Upgrade

Department of Education



Reference: 754-SYDEN366683-R01-Rev1

REMEDIAL ACTION PLAN

Austral Public School Upgrade

Report reference number: 754-SYDEN366683-R01-Rev1
17 January 2025

PREPARED FOR

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EXECUTIVE SUMMARY[1]

Tetra Tech Coffey Pty Ltd was engaged by Department of Education (DoE) to prepare a Remedial Action Plan (RAP) to support a Review of Environmental Factors (REF) for the DoE for the Austral Public School (APS) upgrade (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 proposed activity involves alterations and additions to the existing APS, including the following:

- Demolition of existing structures and removal of trees, as well as other site preparation works;
- The erection of a new 3-storey building comprising teaching spaces that includes 20 permanent teaching spaces and 3 support teaching spaces;
- Refurbishment and change of school function of Building I from classrooms to a Library;
- At-grade parking (57 new spaces, including 1 accessible space);
- New driveway and access gate from Edmondson Road;
- Erection of a substation within the site on the northern boundary;
- Upgrade of the sports field;
- Internal pathways, fencing, utility upgrades and associated works; and
- Off-site public domain improvements including retention and upgrading of the Kiss & Drop area and a temporary pedestrian road crossing on Tenth Avenue.

The intent of the activity is to allow for upgrades to APS that will provide a CORE 35 primary school compliant with the Educational Facilities Standards and Guidelines (EFSG). The works will increase the capacity of the school from 681 students and 40 Full Time Equivalent (FTE) teachers to 734 students and 64 FTE teachers, respectively. Furthermore, provision within the expanded 734 student capacity will be made for the creation of 30 support class students places.

Investigations completed within the site identified potentially unacceptable risks associated with asbestos, PFAS. A data gap exists regarding the potential presence of pathogens in soil associated with historic overflows of sewerage from septic tanks located along the western boundary of the site.

Based on contamination identified, the proposed activity and a review of remedial options, the preferred remedial strategy to mitigate contamination risks is to:

- Conduct a supplementary investigation to assess the potential human health risk associated with the septic tank overflow as anecdotally noted in the DSI. The assessment shall be documented in a standalone report and:
  - Where an unacceptable risk is identified, an addendum to this RAP shall be prepared.
  - Where no unacceptable risk is identified, the findings of the assessment will be summarised in the validation report.
- Carry out further investigation in the vicinity of TP08 where asbestos was previously identified to assess whether asbestos may pose unacceptable risks during the proposed upgrade works without appropriate mitigation, and in light of the continued use of the site as a school. The assessment shall be documented in a standalone report and:

[1] This executive summary must be read in the context of the full report and the attached limitations.

  - If asbestos is considered to pose an unacceptable risk to human health without appropriate remediation/management then a Remedial Works Plan (RWP) or Asbestos Management Plan (AMP) shall be prepared which details how risks will be mitigated, and the site can be made suitable for its ongoing use as a school.
  - Where no unacceptable risk is identified, the findings of the assessment will be summarised in the validation report.
- Prepare a Site-Specific Asbestos Management Plan (SSAMP) for asbestos previously identified in fill immediately surrounding TP08 which is not proposed to be disturbed as part of the proposed upgrade works.

It is understood that the identified PFAS contamination identified in soil in the southern portion of the site relates to a former fire station offsite to the south and will be remediated by LCC and the RFS prior to the implementation of the activity proposed by DoE.

Subject to the successful implementation of the measures detailed in this RAP, it is considered that the Site can be made suitable for the ongoing use as a primary school. This conclusion is contingent on the following:

- The remediation works to be implemented by LCC and RFS will be completed to a standard that demonstrates that the risk posed by PFAS-impacted media to human health and environmental receptors are low and acceptable in the context of the activity proposed by DoE.
- Measures or mechanisms are installed such that PFAS source areas beyond the site boundary cannot re-contaminate the site.
- The remediation works will be completed in a manner which does not pose additional obligations on DoE to monitor or manage PFAS contamination that derives from the former Fire Station.
- The remediation is completed in a manner that considers up to date guidance regarding PFAS, noting that a revision to PFAS National Environmental Management Plan ('PFAS NEMP') (HEPA, 2020; v2.0) was planned at the time this report was prepared.

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ACRONYMS/ABBREVIATIONS

Acronyms/Abbreviations	Definition
ACM	Asbestos Containing Material
AF	Asbestos Fines
AS	Australian Standard
ASC NEPM	National Environmental Protection (Assessment of Site Contamination) Measure
BTEX	Benzene, toluene, ethylbenzene and xylene
CEMP	Construction Environmental Management Plan
CLM	Contaminated Land Management
CSM	Conceptual Site Model
CT	Contaminant Threshold
DA	Development application
DQIs	Data Quality Indicators
DQOs	Data Quality Objectives
DSI	Detailed Site Investigation
EPA	Environment Protection Authority
FA	Fibrous Asbestos
HIL	Health investigation level
HSL	Health screening level
mAHD	Metres in Australian Height Datum
mBGL	Metres below ground level
mbgs	Metres below ground surface
NEPC	National Environment Protection Council
NSW	New South Wales
PFAS	per- and polyfluoroalkyl substances
POEO	Protection of the Environment Operations
PSI	Preliminary Site Investigation
QA	Quality Assurance
QC	Quality Control
RAP	Remedial Action Plan
SEPP RH	State Environmental Planning Policy (Resilience and Hazards)
SOP	Standard Operating Procedures
SSAMP	Site-specific Asbestos Management Plan
UFP	Unexpected finds protocol

1. INTRODUCTION

Tetra Tech Coffey Pty Ltd (Tetra Tech) was engaged by Department of Education (DoE) to prepare a Remedial Action Plan (RAP) to support a Review of Environmental Factors (REF) for the DoE for the Austral Public School (APS) upgrade (the activity). The purpose of the REF is to assess the potential environmental impacts of the activity prescribed by State Environmental Planning Policy (Transport and Infrastructure) 2021 (T&I SEPP) as "development permitted without consent" on land carried out by or on behalf of a public authority under Part 5 of the Environmental Planning and Assessment Act 1979 (EP&A Act). The activity is to be undertaken pursuant to Chapter 3, Part 3.4, Section 3.37 of the T&I SEPP.

The proposed activity is for the upgrades to the existing APS at 205 Edmondson Avenue, Austral, NSW, 2179 (the site) shown in Figure A below.

Figure A: Site layout and boundary (Source: GoogleMaps, accessed 1 November 2024)

This RAP was developed to support a REF for a planning approval to manage the potential risk posed by asbestos, potential pathogens in soil associated with Septic Tanks, and PFAS at the site considering the continued proposed ongoing use as a primary school. DoE is proposing the construction of additional permanent teaching spaces and core facilities to cater for future increased student capacity.

1.1 BACKGROUND

DoE is proposing to upgrade the existing school by providing additional permanent teaching spaces and core facilities responding to anticipated increase in student enrolments in line with significant forecast population growth across the southwestern Sydney region. The proposed activity involves alterations to the existing APS, including the following:

- Demolition of existing structures and removal of trees, as well as other site preparation works;
- The erection of a new 3-storey building comprising teaching spaces that includes 20 permanent teaching spaces and 3 support teaching spaces;
- Refurbishment and change of school function of Building I from classrooms to a Library;
- At-grade parking (57 new spaces, including 1 accessible space);
- New driveway and access gate from Edmondson Road;
- Erection of a substation within the site on the northern boundary;
- Upgrade of the sports field;
- Internal pathways, fencing, utility upgrades and associated works; and
- Off-site public domain improvements including retention and upgrading of the Kiss & Drop area and a temporary pedestrian road crossing on Tenth Avenue.

The intent of the activity is to allow for upgrades to APS that will provide a CORE 35 primary school compliant with the Educational Facilities Standards and Guidelines (EFSG). The works will increase the capacity of the school from 681 students and 40 Full Time Equivalent (FTE) teachers to 734 students and 64 FTE teachers, respectively. Furthermore, provision within the expanded 734 student capacity will be made for the creation of 30 support class students places.

Figure B shows the scope of works for the proposed activity.

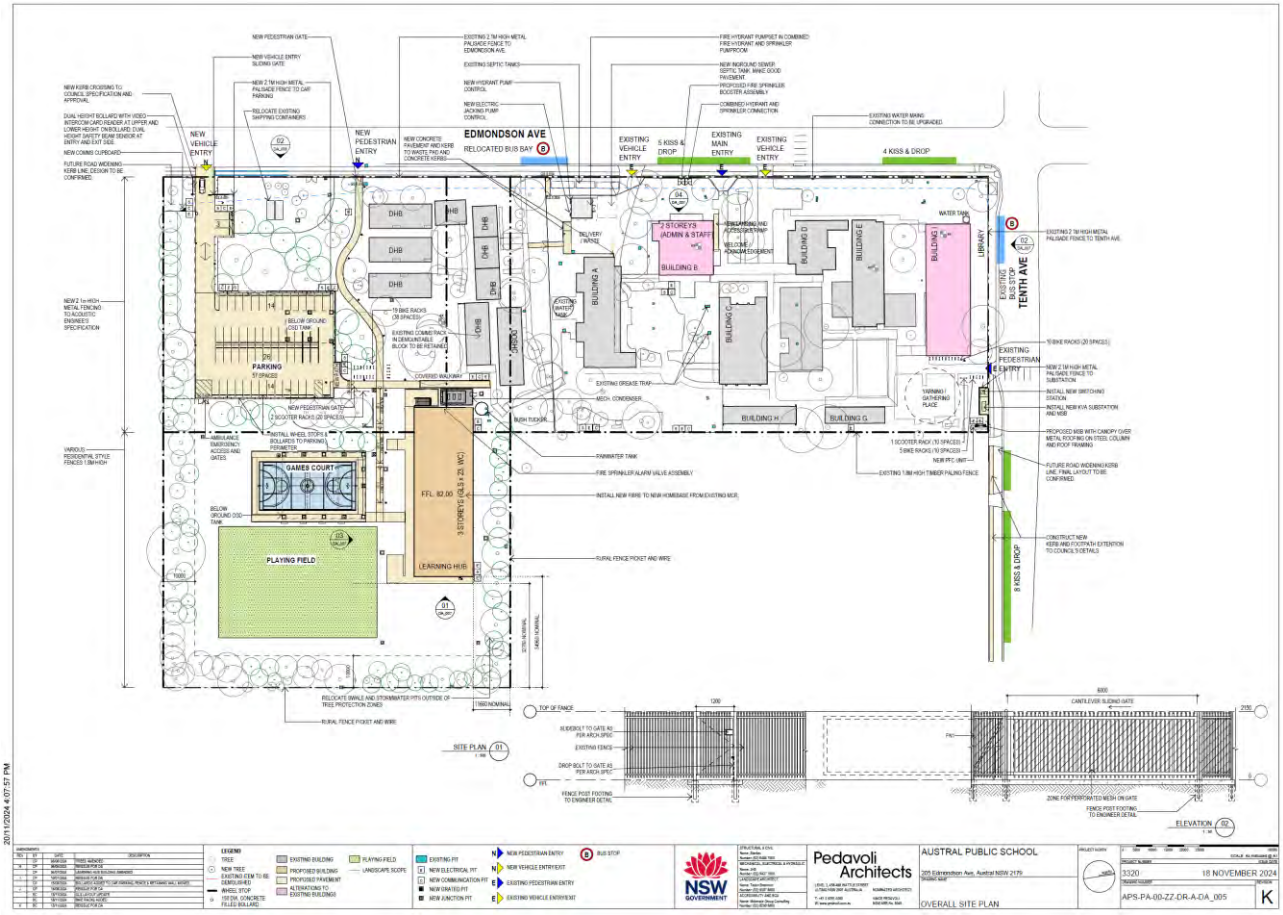


Figure B: Proposed site plan (source: Pedavoli Architects, Overall Site Plan (Rev K)

SMEC previously carried out a Detailed Site Investigation (DSI) for the Site (reference: 30018043-06-Austral DSI_Rev4_08 April 24), which identified PFAS and asbestos contaminated soil materials in the southern portion of the site which were assessed to pose potential health risks to site current and future site users.

Data presented within a Site Improvement Options Plan (SIOP) prepared by WSP for Liverpool City Council (LCC) (reference: PS122012-CLM-SIOP-001 RevA, dated 9 July 2021) indicates that the identified PFAS contamination in the southern portion of the site relates to releases from a former Fire Station located on the property referred to as 59 Ninth Avenue, which adjoins the southern site boundary. The SIOP proposes a methodology to remediate land that has been impacted by PFAS that derives from the former Fire Station. It is understood that these remediation works will be implemented by LCC and the Rural Fire Service (RFS) prior to the implementation of the activity proposed by DoE.

This RAP has been prepared based on the following provisions:

- The remediation works to be implemented by LCC and RFS will be completed to a standard that demonstrates that the risk posed by PFAS-impacted media to human health and environmental receptors are low and acceptable in the context of the activity proposed by DoE.
- Measures or mechanisms are installed such that PFAS source areas beyond the site boundary cannot re-contaminate the site.
- The remediation works will be completed in a manner which does not pose additional obligations on DoE to monitor or manage PFAS contamination that derives from the former Fire Station.

- The remediation is completed in a manner that considers up to date guidance regarding PFAS, noting that a revision to PFAS National Environmental Management Plan ('PFAS NEMP') (HEPA, 2020; v2.0) was planned at the time this report was prepared[2].

1.2 OBJECTIVES

The purpose of this report is to:

- Provide guidance for the further investigation and remediation (where required) of soils identified to be impacted by asbestos and septic overflow so that potentially unacceptable risks to human health and ecological receptors are mitigated in light of the proposed activity and continued use of the site as a school.
- Consider remedial options and identify a preferred remedial strategy such that the Site can be made suitable for the proposed activity.
- Outline the remediation and validation strategy required which if implemented can make the Site suitable for the proposed activity.
- Outline minimum controls to complete the proposed remedial works in a manner that minimises negative impacts upon worker health and safety (WHS) and the environment.

1.3 SCOPE OF WORKS

In preparing this RAP, Tetra Tech completed the following scope of works:

- Review of previous environmental reports.
- Review of plans describing the proposed activity.
- Preparation of a RAP for the site outlining a remedial strategy to manage the potential risk posed by asbestos.

This RAP contains detail and measures (approach) for further investigation and remediation to support a planning approval process. The RAP also summarises the remediation works proposed by LCC and RFS to mitigate risks from PFAS-impacted media in the southern portion of the site. Furthermore, it includes a requirement to revise this RAP at a later stage in the event that LCC and RFS do not carry out those works.

At the time of preparing this report, Tetra Tech Coffey had not been engaged to complete a site inspection. As such, Tetra Tech Coffey has relied upon observations made by SMEC, WSP and others as detailed in previous reports provided for review (refer to Section 4.4).

This report has been prepared in general accordance with relevant guidelines including the NSW EPA (2020) 'Guidelines for Consultants Reporting on Contaminated Land' and Schedule B2 of NEPC (2013) 'National Environment Protections (Assessment of Site Contamination) Measure 1999'.

[2] HEPA released the draft PFAS NEMP version 3.0 for public consultation in September 2022. Public consultation has since been closed. The PFAS NEMP version 3.0 reportedly proposes new guidance and standards, which builds on current version of the PFAS NEPM (v2.0), published in 2020.

This RAP has been developed with reference to the following legislation, industry standards, codes of practice, and guidance documents, where applicable:

- *NSW Work Health and Safety (WHS) Act 2011 (WHS Act 2011)*
- *NSW WHS Regulation 2017 (WHS Regulation 2017)*
- *NSW Contaminated Land Management Act 1997 (CLM Act)*
- *Protection of the Environment Operations (POEO) Act 1997 (POEO Act 1997)*
- *POEO (Waste) Regulation 2014 (POEO Waste Regulation 2014).*
- *Chapter 4, State Environmental Planning Policy (Resilience and Hazards) 2021 (SEPP RH)*
- *Liverpool Local Environmental Plan 2008*
- *National Environment Protection Council, National Environment Protection (Assessment of Site Contamination) Measure, 1999 (amended April 2013) (ASC NEPM 2013).*
- *NSW EPA Contaminated Land Guidelines: Consultants Reporting on Contaminated Sites, 2020 (NSW EPA 2020).*
- *NSW EPA Waste Classification Guidelines: Part 1 – Classifying Waste, 2014 (NSW EPA Waste Classification Guidelines 2014).*
- *NSW EPA Addendum to the Waste Classification Guidelines (2014) – Part 1: classifying waste (PFAS Addendum 2014)*
- *NSW HEPA PFAS National Environmental Management Plan, Version 2.0 – January 2020 (PFAS NEMP, 2020)*
- *NSW EPA 2022, Sampling Design Part 1 – Application (SDG)*
- *Western Australia Department of Health 2009, Guidelines for the Assessment, Remediation and Management of Asbestos Contaminated Sites in Western Australia (WA Guidelines)*

2. SITE INFORMATION

The information provided below is summarised from the DSI (SMEC, 2024).

2.1 SITE IDENTIFICATION

Site identification information is summarised in Table 2-1

Table 2-1: Summary of Site Details

Street Address	205 Edmondson Avenue, Austral NSW 2179
Site Area	Approximately 2.986 hectares (ha)
Property Title References	Lot 865 DP2475 Lot 1 DP398105 Lot 1 DP398106 Lot 1 and Lot 2 DP509613 Lot 1 DP512119
Current Zoning	SP2 Infrastructure (Educational Establishment) - State Environmental Planning Policy (Precincts - Western Parkland City) 2021 - Sydney Region Growth Centres
Current & Proposed Site Use	Primary school
Local Government Area	Liverpool City Council
Local Aboriginal Land Council	Gandangara LALC
Site co-ordinates	33°55'59.6"S 150°48'43.6"E (north-west corner)
Surrounding Land Use	**North:** Tenth avenue is orientated parallel with the Site's northern boundary. Immediately north of Tenth Avenue is a Neighbourhood Centre (B1) consisting of several commercial buildings and a motor service garage. Medium Density Residential (RE3) beyond. **South:** Several residential properties and the Austral NSW Rural Fire Service Station (no longer used for firefighting operations) are located immediately south of the Site. Further residential properties are located beyond a road to the south. **East:** Immediately east of the northern portion of the Site is a residential property. Further east consists of a pond, several paddocks, structures including shipping containers and large elongated sheds (suspected to have previously been used as chicken sheds). Further east is a construction site with active earthworks which appeared to commence sometime between August and October 2021. A large open paddock is also located immediately east of the southern portion of the Site. **West:** Edmondson Avenue is orientated parallel with the Site's western boundary. Several residential buildings, a local church and vacant land which includes evidence of grassed stockpiles are located beyond Edmondson Avenue to the west.

2.2 SITE DESCRIPTION

APS is located at 205 Edmondson Avenue, Austral on the south-eastern corner of the intersection between Edmondson Avenue and Tenth Avenue. The site has an area of 2.986 ha and comprises of 6 allotments, legally described as:

- Lot 1 DP 398105
- Lot 1 DP 398106
- Lot 1 DP 509613
- Lot 1 DP 512119
- Lot 2 DP 509613
- Lot 865 DP2475

The site currently comprises an existing co-educational primary (K-6) public school with:

- 8 permanent buildings.
- 14 demountable structures.
- Interconnected paths.
- Covered walkways.
- Play areas.
- At-grade parking.

The Austral Community Pre-school is also located within the site.

The existing buildings are clustered in the northern part of the site, ranging between 1 to 2 storeys in height. There is a sports oval in the south-eastern portion of the site, and a densely vegetated informal play area located in the south-western portion of the site.

A site inspection undertaken by SMEC as part of the PSI on 5 July 2022 identified the following in relation to the site description/layout:

- The Site is used as a primary school with the main buildings in the northern part of the Site and sports field in the south. Generally, on-site building structures were observed to be constructed of brick, with some de-mountable type structures
- No apparent signs of lead paint were observed at the Site. ACM was not observed on the ground surface of the Site, however, the Site walkover did not include a detailed inspection of all building structures or the ground surface
- The northern portion of Site predominately comprised buildings (offices, classrooms, school library, etc.), hardstand (asphalt and concrete, ranging from poor to good condition), and grassed areas with some gardens/vegetated areas
- The southern portion of the Site comprised the following:
    - A school field was located in the south-east of the Site. This area was grassed with trees lining the perimeter.
    - A vegetated area was located in the south-west of the Site. This area was predominately grassed with trees, and a mulched playground and grass-overed seating area located in the centre. Tetra Tech Coffey notes however at the time of preparing this report it appears a hardstand playing court is situated in the south-west portion of the site.
    - An open swale drainage line was observed around the perimeter of the school field and directed runoff toward stormwater pits. Several stormwater pits were observed along the swale drainage line.

- The northern portion of the Site generally sloped down to the south, with stairs and various levelling of different areas (i.e. building footprints, the school field, etc.)
  - An L-shaped mound was observed in the central-southern part of Site
  - An above-ground liquid petroleum gas (LPG) tank was observed in the centre west of Site. The tank was fenced off.

Recent aerial photographs show that three additional demountable classrooms have been established in this area of the site. These structures are established on pillars slightly above the existing ground surface, creating a crawl space beneath these buildings. The extent of the eastern-most demountable classroom appears to have overlapped the mulch-covered playground described by SMEC.

2.3 ENVIRONMENTAL SETTING SUMMARY

Site environmental setting information is provided below in Table 4-2 and includes information summarised from the DSI.

Table 2-2: Environmental setting

Item	Discussion
Topography	Topography details were obtained from the Australian Government Geoscience Australia Online Portal[3] and Google Earth. The site is noted to be relatively flat varying between approximately 84m and 86m Australian Height Datum (mAHD) in the northern and eastern portions of the site to a low point in the south-west corner of the site of approximately 81m AHD. The sports fields in the south-eastern portion of the site are noted to be topographically lower than the surrounding areas to the north, east and south.
Geology	With reference to the Sydney 1:100,000 Geological Map (Sheet Code S1 56-5 , 1966), the site is underlain by the Bringelly Shale of the Wianamatta Group and Liverpool sub-group formation consisting of shale, carbonaceous claystone, claystone, laminate, fine to medium-grained lithic sandstone, rare coal and tuff.[4]
Soil Landscape	Soil Landscape information for the Site was accessed through the NSW eSPADE online database[5]. Regional soils encompassing the Site are of the Blacktown soil landscape, mainly comprised of shallow to moderately deep (>100cm) hard setting mottled texture contrast soils, red and brown Podzolic soils on crests grading to yellow Podzolic soils on lower slopes and in drainage lines.
Acid Sulfate Soils (ASS)	The acid sulfate soil risk mapping on the online NSW eSPADE database[6] shows that the Site is an area of no known occurrence for acid sulfate soils.
Salinity	A review of the eSPADE online database[7] revealed that the Site and nearby surrounds (<1 km) has no recorded salting evident.
Hydrology (Surface Water) and Hydrogeology	The nearest surface water body ('Upper Canal System' – Pheasants Nest Weir to Prospect Reservoir) is located approximately 545m east of the Site. This waterway is a man-made canal with similar elevation to the site. As, such it is considered unlikely that local groundwater would be in hydraulic connectivity with this water way. An unnamed perennial waterway is situated approximately 600m to the west of the site. This waterway acts as a tributary to Kemps Creek whose nearest point is situated approximately 2.2km west of the site. The unnamed perennial waterway joins with Kemps Creek approximately 2.4km north-east of the site. Regional or perched groundwater at the Site is anticipated to flow in a west to north-west direction towards Kemps Creek and its tributaries, based on the location of nearby water bodies and groundwater data collected in previous investigations (WSP, 2021).

[3] Geoscience Australia Portal (ga.gov.au) accessed 23 October 2024
[4] DIGS Geological Survey of NSW Search accessed on 23 October 2024
[5] eSPADE v2.2 (nsw.gov.au) accessed on 23 October 2024
[6] eSPADE v2.2 (nsw.gov.au) accessed on 23 October 2024
[7] eSPADE v2.2 (nsw.gov.au) accessed on 23 October 2024

Item	Discussion
	An open swale drainage line was observed around the southern perimeter of the school field and directed runoff toward stormwater pits. Several stormwater pits were observed along the swale drainage line (SMEC, 2024). A review of Water NSW online data[8] base did not identify any groundwater bores within a 1km radius of the site.

2.4 PREVIOUS REPORTS

A summary of the following previous reports relating to the contamination status of the Site is presented below:

- WSP Australia Pty Ltd (2021) Liverpool City Council, Former NSW RFS Fire Station, Ninth Avenue Austral NSW, Site Improvement Options Plan, Ref. PS122012-CLM-SIOP-001 RevA, dated 9 July 2021 (the SIOP).

SMEC (2024) Detailed Site Investigation, Austral Public School, Ref. 30018043 Rev 4, dated 8 April 2024 (the DSI).The SIOP referred to the following reports which were not provided to Tetra Tech for review:

- WSP Australia Pty Ltd (2021) PFAS Environmental Site Assessment, Former NSW RFS Fire Station, 59 Ninth Avenue, Austral, NSW
- Terravale (2023) Human Health Risk Assessment (HHRA) of PFAS in Soil in On- and Off-site Areas of the Austral RFS Facility, 59 Ninth Street, Austral, NSW.

2.4.1 SMEC (2024) – Detailed Site Investigation

SMEC was engaged by SINSW to undertake a Detailed Site Investigation (DSI) at the site. The DSI was designed to reduce characterised ground contamination conditions relating to six potential areas of environmental concern (AECs), identified in a previous Preliminary Site Investigation (PSI) completed by SMEC in 2023. These AEC are summarised below:

- AEC1 – Areas near former/existing building structures from weathering and/or ineffective demolition of hazardous building materials.
- AEC2 – Historical on-site and off-site firefighting activities potentially involving PFAS containing fire fighting foam.
- AEC3 – Whole site from fill of unknown origin and/or quality. Also several small, suspected fill mounds were identified during a site walkover.
- AEC4 – Historical agricultural activities and potential application of pesticides for sports ovals on-site and off-site agricultural activities associated with poultry farms.
- AEC5 – Septic tanks prone to overflowing during heavy rainfall.
- AEC6 – On-site historical farm dam sediments which may have received run-off from surrounding land and could have acted as a sink for contamination and fill.

The PSI concluded that further investigation in the form of a DSI would be required. As part of the DSI, a sampling regime including collection of soil samples from 44 locations across the site was implemented. The following exceedances of the adopted Site Assessment Criteria (SAC) were recorded:

- PFAS compounds exceeded the SAC for human health and ecological protection at two locations in the proximity of the southern site boundary in a stormwater runoff area inferred to be from the NSW RFS site. One of the two locations was within the proposed excavation area outlined in the SIOP.

[8] Real-time water data

- Multiple fragments of suspected asbestos containing material (ACM) was observed in test pit TP08 at 0.4mBGL. ACM fragments were also identified in two of four 'step out' test pits denoted TP08A (0.8-0.9mBGL) and TP08D (0.3mBGL). The analysis of representative ACM samples confirmed the presence of chrysotile and amosite asbestos. The majority of the fragments observed were reportedly >7mm in length/breadth and in a good condition (i.e. not easily broken with hand pressure) and therefore assessed to be bonded (non-friable) asbestos. One fragment was observed to be a poor condition and hence assessed to comprise potentially friable asbestos.
- A singular zinc exceedance of the adopted ecological criteria was recorded however SMEC deemed this was not of significance.

A revised CSM was developed which indicated plausible source-pathway-receptor linkages with respect to the PFAS and asbestos contamination identified.

SMEC references a health risk assessment undertaken by WSP and Terravale on behalf of NSW RFS (2023), the findings of which identified that the risks to both primary school students and adult workers at the primary school are low and acceptable considering the maximum concentration of PFOS+PFHxS detected in surface soil near the southern boundary of the site.

SMEC also concluded that based on the findings of the DSI, further assessment along with possible remediation/management of the identified soil asbestos contamination would be required to make the site suitable for the proposed school redevelopment works.

2.4.2 WSP (2021) Site Improvement Options Plan

WSP was engaged by LCC to prepare the SIOP for the following properties:

- A former NSW RFS station located at 59 Ninth Avenue, Austral NSW;
- Residential properties located at 61 and 63 Ninth Avenue, Austral NSW; and
- A portion of Austral Public School (the site)

At the time of report preparation, no proposed changes to the land-use activities were identified with the exception of the former NSW RFS site which was proposed to be redeveloped for low-density residential purposes.

The objectives of the SIOP were to outline the preferred site improvement strategy to:

- Remove PFAS in soil to reduce the potential for human exposure, particularly for the residential properties;
- Reduce ongoing PFAS release to the environment from all properties including the site;
- Validate that the residential portions of the site were suitable for the current and proposed future low-density residential land-use. It is noted that the SIOP states:
- *'Validation sampling will not be undertaken at the excavation within Austral Public School as removal of material in this area is based on mass reduction and is not subject to validation against health or ecological based criteria. Validation of the improvement works undertaken within this portion of the site will be based on site inspection and field measurement/survey results to confirm that removal of PFAS impacted soil has been conducted as per this SIOP'.*

The proposed site improvement strategy was determined to comprise:

- Excavation and off-site disposal of PFAS impacted soil that were assessed not to be suitable to remain within the former RFS station and residential properties; and
- Soils at the site were considered not to present an unacceptable human health risk based on a Human Health Risk Assessment prepared by Terravale Pty Ltd. The SIOP proposes the removal of impacted soil to reduce PFAS mass within the 'site improvement area', which was determined by WSP to be 820m^2. The proposed excavation depth was 0.3mBGL over the 'site improvement area' and a localised excavation to 0.5mBGL in areas where concentrations of PFOS+PFHxS exceeded 0.09mg/kg. WSP state this criteria was set as 'two-times low density residential target concentrations, selected as an arbitrary value'.

3. CONCEPTUAL SITE MODEL

Contamination, if not managed appropriately, could pose a potential risk to human health and/or the environment during redevelopment and future use of the Site. For an environmental or human health risk from contamination to be present, there must be a plausible pollutant linkage between the source and a receptor by means of a pathway (i.e. exposure point, transport mechanism).

Based on the findings of the DSI (SMEC, 2014), the key sources of contamination that require further consideration in this RAP:

- Asbestos impacted fill materials located at/surrounding TP08. The asbestos was assessed to be predominantly in a bonded (non-friable) form. Some of the fragments observed in test pit TP08A were assessed to be in a poor condition and assessed as potentially friable asbestos.

The PFAS impacted materials identified within the southern portion of the site is the responsibility of the LCC and RFS. The strategy to address the potential risks associated with PFAS impacted materials is presented within the SIOP (WSP, 2024).

A conceptual site model (CSM) for the Site was developed as part of the DSI and is presented in Figure B and Figure C.

Source		Potential Pathway		Potential Receptor (s)	S-P-R Linkage
Primary	Secondary	Migration Pathway(s)	Exposure Pathway(s)		
Asbestos near TP08	-	• Exposing soil during earthworks • Erosion • Exposed soil/wind blown	• Inhalation of soil dust	• Future users of the site e.g. students and staff • Site workers during future construction works or maintenance activities • Off-site residential receptors (from wind-blown dusts/fibres)	Plausible if disturbed and not managed
PFAS from past firefighting training (AEC 2)	PFAS in soil	• Exposing soil during earthworks • Erosion	• Dermal contact • Inhalation of soil dust • Incidental ingestion (human)	• Future users of the site e.g. students and staff • Site workers during future construction works or maintenance activities • Off-site residential receptors (from wind-blown dusts/fibres) • Onsite ecological receptors (terrestrial organisms, transitory wildlife, including predators)	Unlikely (Terravale (2023) health risk assessment indicated risks were low and acceptable)
	PFAS in Groundwater	• Transport in groundwater to surface water	• Dermal contact • Incidental ingestion (human) • Ingestion (biota)	• Offsite ecological receptors (nearby water ways) • Recreational users • Consumers of food (if relevant)	Groundwater, surface water and sediment (on-offsite) was outside the scope of this DSI. The source is from offsite and responsibility of others. WSP (2021b) suggested risks were low.
	PFAS in Surface water/ stormwater/sediment	• Transport through stormwater and offsite			

Figure C: Conceptual site model as outlined in the site's DSI (SMEC, 2024)

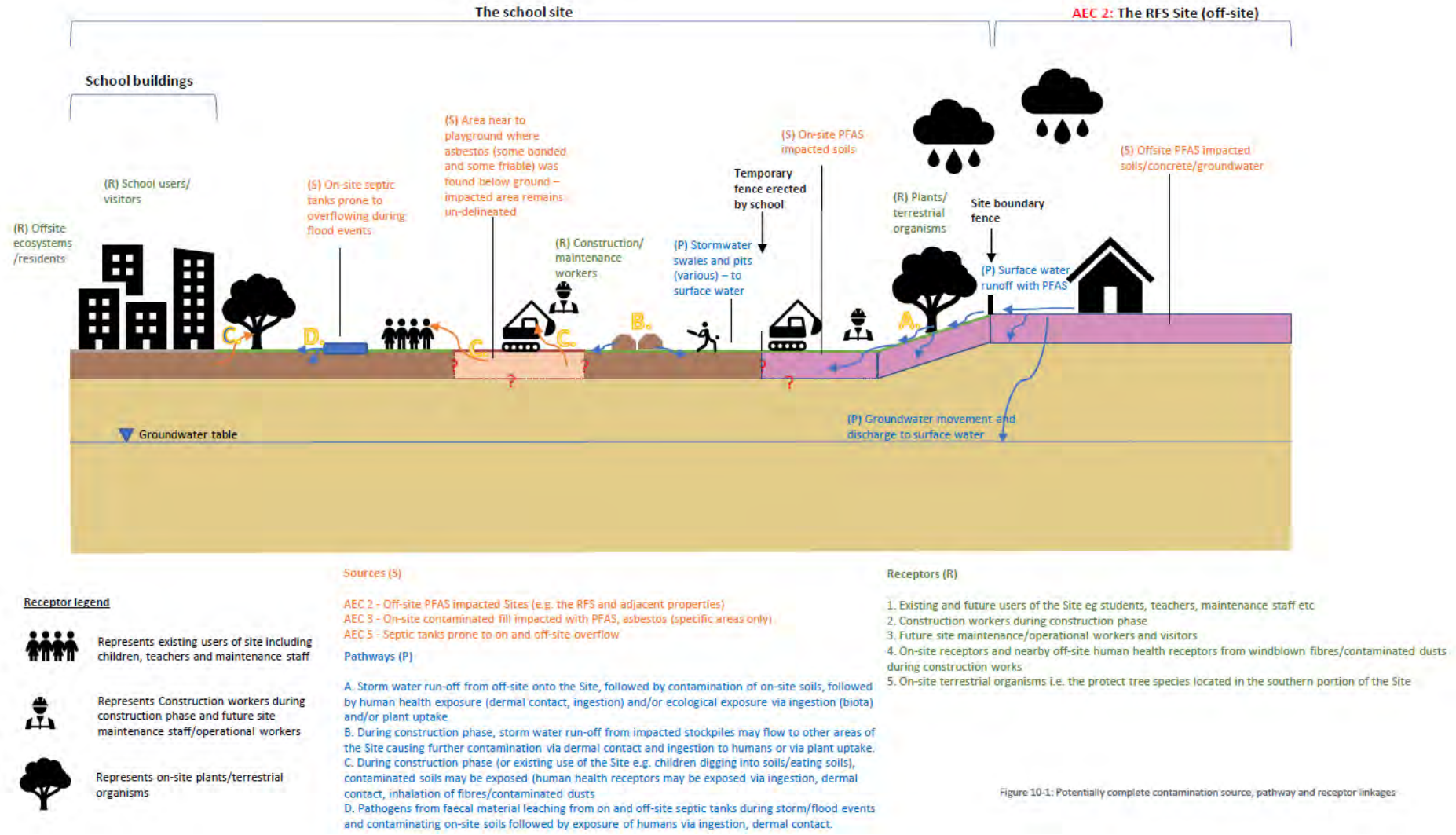


Figure D: Visual representation of conceptual site model as outlined in the site's DSI (SMEC, 2024)

3.1 DATA GAPS

The following data gaps were considered relevant for the development of this RAP:

- Fill material impacted with ACM was identified at TP08. ACM was also identified in two of the four 'step out' test pits (i.e. TP08A and TP08D), positioned to the north and west of test pit TP08. The lateral and vertical extent of asbestos impacted fill material has not been established by the DSI (SMEC, 2024).
  - ACM was detected in test pits TP08 and TP08D which were positioned within a grass-covered seating area, immediately west of a small, mulch covered playground that is located to the south of the existing demountable buildings. ACM was also detected in test pit TP08A, which was positioned beneath the western edge of the mulch covered playground. The ACM was reported to occur with other foreign materials including tiles and metal pipe.
  - These records indicate that ACM is present in fill materials at depths ranging from 0.3mBGL to 0.9mBGL. Available investigation records indicate that ACM impacted fill was not detected in surface soil material.
  - Since the investigation has been completed by SMEC, three demountable classrooms have been placed over part of the area where asbestos has been detected and the demountables are proposed to remain in place during the upgrade works.
  - Subsurface excavation works (including removal of surface soil, landscaping, installation of services and lighting) are planned to the south of this location within the Southern Construction Zone Boundary shown on Figure 4 in Appendix B. There is the potential for the upgrade works to disturb asbestos contamination in fill if present within the Southern Construction Zone south of TP08, TP08A and TP08D.
- Anecdotal evidence presented within the DSI indicates that school representatives had previously noted that septic tanks present on the western boundary of the site had historically overflowed. A discrepancy in field sampling activity reported by SMEC indicated that samples collected from areas surrounding the septic tank had not been assessed for the presence of pathogens associated with faecal material. This was identified as a data gap, which will be addressed through further confirmatory investigation proposed in Section 7.3.2. In the event that this investigation identifies unacceptable levels of pathogenic contamination, an addendum to this RAP will be required to demonstrate how such risks will be mitigated.

4. REMEDIATION OPTIONS ASSESSMENT

4.1 GOALS OF THE REMEDIAL WORK

The goals of the remedial works are to:

- Further investigate and mitigate potentially unacceptable risks to human health from asbestos impacted soils in consideration of the proposed activity works and the site's continuing use as a primary school.
- Undertake remedial works in a safe, environmentally sound manner that is generally protective to the construction and future site workers and causes minimal disruption to current site users and neighbouring land users.

4.2 REMEDIATION POLICY AND FRAMEWORK

Remediation policy in NSW is set by the CLM Act 1997, which requires contaminated land to be managed with regard to the principles of ecologically sustainable development as specified in Section 3(2). Ecologically sustainable development requires the effective integration of economic and environmental considerations in decision-making processes. Ecologically sustainable development can be achieved through the implementation of the following principles and programs as described in Section 8.3.

The preferred order of options for remediation, as stated in S6(16) of the ASC NEPM (2013) is:

- If practicable, on-site treatment of the contamination so that it is destroyed, or the associated risk is reduced to an acceptable level; and
- Off-site treatment of excavated soil, so that the contamination is destroyed, or the associated risk is reduced to an acceptable level, after which soil is returned to the Site; or

If the above is not practicable:

- Consolidation and isolation of the soil on site by containment with a properly designed barrier; or
- Removal of contaminated material to an approved site or facility, followed, where necessary, by replacement with appropriate material; or
- Where the assessment indicates remediation would have no net environmental benefit or would have a net adverse environmental effect, implementation of an appropriate management strategy.

The guidance also notes that if remediation is likely to cause a greater adverse effect than leaving the Site undisturbed, remediation should not proceed.

4.3 REMEDIAL OPTIONS APPRAISAL

Tetra Tech Coffey has considered a range of technically feasible remediation options, each with advantages and disadvantages.

The appropriateness of a particular option would vary depending on a range of factors including:

- Space available on-site during remediation and construction.
- Air quality, noise, and impact on current site users and adjacent site users.
- Nature and extent of contamination.
- The amenability of on-site contaminants to treatment or natural attenuation.
- Geological and hydrogeological conditions.
- Type(s) of contamination, including the impacted media.
- Human health and environmental risks (both during and post re-development).

- The proposed activity designs.
- Effectiveness of remediation – will the solution meet the remedial objectives?
- Contractor experience with remedial technology/procedures.
- Sustainability – waste generation, stakeholder acceptance of the remedial solution.
- Acceptable timeframes.
- Cost effectiveness.
- Long term liabilities and ongoing management requirements.

Table 4-1: Remedial options appraisal

Option	Method	Description	Advantages	Disadvantages	Technically feasible?
1	Capping and on-going Management	Placement of an effective capping layer to separate site users from asbestos impacted soils. The capping layer can be constructed from building slabs, pavement and/or a layer of clean soil imported to site applied at a prescribed thickness along with placement of a marker layer to differentiate the impacted soil layer.	Can be incorporated into the design plans and meet remedial objectives. Avoids disposal costs. The process is integrated into the construction program as part of the proposed activity. Improved sustainability outcomes. Does not require specialist contractor expertise to implement.	Contamination remains in-situ, posing potential constraints on future development. Long term management of capping layer required to remain effective. Notification of contamination on land titles. The extent of area requiring capping has not been determined with confidence.	Yes
2	Encapsulation of impacted material onsite within a constructed borrow pit.	Asbestos impacted soils will be consolidated and managed within a borrow pit, constructed in an area where no disturbance will occur during construction. The pit will be capped by a suitable capping layer.	Can be incorporated into the design plans and meet remedial objectives. Avoids disposal costs. The process is integrated into the construction program as part of the proposed activity. Improved sustainability outcomes. Does not require specialist contractor expertise to implement.	Contamination remains in-situ, posing potential constraints on future development. Volumetric limitations as there may be insufficient volume to contain impacted material. Long term management of capping layer required to remain effective. Notification of contamination on land titles. The volume of asbestos impacted fill has not been determined with confidence.	Yes

Option	Method	Description	Advantages	Disadvantages	Technically feasible?
3	Excavation of asbestos impacted soil and offsite disposal (source removal)	Excavate impacted materials. Transport directly to a licensed landfill facility. Re-instate excavation with clean validated fill material.	Effectively removes the contamination. Does not leave a legacy of contamination that requires management over longer term. Relatively fast method, with a high confidence in programme. Does not require specialist contractor expertise to implement. Option is scalable to manage uncertainty regarding quantity of asbestos impacted fill.	High cost due to the haulage and disposal of waste soil, relative to Options 1 and 2. Lower sustainability credentials relative to Options 1 and 2.	Yes

5. PREFERRED REMEDIAL STRATEGY

Based on discussions with DoE and in light of the CSM and data gaps identified, the preferred remediation option is:

1. Conduct a supplementary investigation to assess the potential human health risk associated with the septic tank overflow as anecdotally noted in the DSI. The assessment shall be documented in a standalone report and:
    - Where an unacceptable risk is identified, an addendum to this RAP shall be prepared.
    - Where no unacceptable risk is identified, the findings of the assessment will be summarised in the validation report.
2. Carry out further investigation in the vicinity of TP08 where asbestos was previously identified to assess whether asbestos may pose unacceptable risks during the proposed upgrade works without appropriate mitigation, and in light of the continued use of the site as a school. The assessment shall be documented in a standalone report and:
    - If asbestos is considered to pose an unacceptable risk to human health without appropriate remediation/management then an Asbestos Management Plan (AMP) shall be prepared as an Addendum to this RAP which details how asbestos risks will be mitigated, and the site can be made suitable for its ongoing use as a school. Consideration of Remedial Options presented in Table 4-1 shall be considered (e.g., capping and onsite management and/or offsite disposal in collaboration with DoE)
    - Where no unacceptable risk is identified, the findings of the assessment will be summarised in the validation report and the upgrade works may continue with consideration of the site management measures outlined in Section 8.
3. Prepare a Site-Specific Asbestos Management Plan (SSAMP) for asbestos previously identified in fill immediately surrounding TP08 which is not proposed to be disturbed as part of the proposed upgrade works.

5.1 MITIGATION MEASURES

Mitigation measures are required for a REF and are actions or measures to avoid, minimise, rectify (by repairing, rehabilitating or restoring) and/or reduce or eliminate over time (by preservation and maintenance) the adverse environmental impacts of a Division 5.1 activity. A summary of mitigation measures for the identified asbestos and PFAS contamination at the site is provided below.

Table 5-1: Mitigation measures

Mitigation Number/Name	Aspect/Section	Mitigation Measure	Reason for Mitigation Measure
Supplementary investigation of soils surrounding septic tank	To be undertaken if proposed activities to be undertaken in this area	Where unacceptable risk identified, addendum to RAP required. Where no unacceptable risk identified, results to be included in validation report	Potential for unacceptable contamination from a human health perspective if works proposed for this area
Further investigation of soils surrounding TP08	To be undertaken if proposed activities to be undertaken in this area	Where unacceptable risk identified, addendum to RAP in the form of an ASMP required. Where	Potential for unacceptable contamination from a human health

		no unacceptable risk identified, results to be included in validation report	perspective if works proposed for this area
Asbestos in soil surrounding TP08 not proposed to be disturbed	To be undertaken prior to commencement of proposed activities	Preparation of a SSAMP	To detail management procedures and measures to manage identified contamination

5.2 KEY ROLES, RESPONSIBILITIES AND CONTACT INFORMATION

Key roles and responsibilities in relation to implementation of the RAP are outlined in Table 5-2.

Table 5-2 Key roles and responsibilities

Role	Contact Information	Responsibility
Site Owner/Representative	DoE	• Management of the proposed activity.
Principal Contractor	TBD	• Project management and execution of RAP. • Carry out further investigations. • Obtain necessary approvals/licences relevant to carrying out remedial works where required. • Arrange for themselves (including contractors/subcontractors) and relevant representatives to be inducted into this RAP, both now and in the future as required, by the Project Environmental Consultant or appropriately trained alternative representative. • Ensure that this RAP is implemented and adhered to. • Provide relevant information regarding site environmental management to contractors and subcontractors working at the Site. • Ensure that contractors and subcontractors undertaking works at the Site are fulfilling the environmental protection/management responsibilities for the work, including holding relevant licences and permits. • Maintain records and documents produced as set out in this RAP, especially for movement of soil materials leaving and imported onto the Site.
Contractors / subcontractors	TBD	• Liaise with the Site Superintendent / Principal Contractor, other contractors and parties, and relevant authorities. • Ensure overall compliance with the RAP, applicable legislation and regulations for their contribution to site works. • Regular reporting of the RAP performance to the Principal Contractor.
Project Environmental Consultant	TBD	• Brief the Principal Contractor on the requirements of the RAP, as required. • Provide advice to the Principal Contractor and relevant parties regarding management of environmental issues as detailed in this RAP. • Provide advice for management of unexpected finds, as required. • Validate implementation of remedial works and make a conclusion on the suitability of the Site for the proposed end use(s). • Undertake periodic review of the effectiveness of the RAP, and revise the RAP as required, at the request of the Principal Contractor.

Contact details of the remediation contractors and the DoE Project Manager should be displayed in a prominent location at the Site (such as the entrance or site office). Any incidents should be initially reported to the site manager, who shall prepare an incident report for the DoE Project Manager.

5.3 PROPOSED SEQUENCE OF WORKS

To optimise and achieve efficiencies in the project, further investigation and remediation works shall be implemented during the construction stage.

Table 5-3 below provides a recommended sequence of events for carrying out the remediation and validation works.

Table 5-3: General steps in remediation and validation strategy

Step	Description	Responsible Parties
1	**Preparation of** technical reports to be prepared to support a REF for the activities that require approval under Part 5 of the EP&A Act.	**Site Owner**
2	Carry out a supplementary investigation for asbestos as outlined in Section 7.3.1. Complete a supplementary investigation within the vicinity of the septic tanks at outlined in Section 7.3.2.	Environmental Consultant
3a	Prepare RAP Addendum and/or AMP based if required as an outcome of Step 2.	Environmental Consultant
3b	Implement RAP Addendum and/or AMP based if required as an outcome of Step 2.	Remedial Contractor
4a	Implement Site Management Measures outlined in Section 8.	Remedial Contractor
4b	Validate Imported Materials	Remedial Contractor and Environmental Consultant
5	Prepare a Validation Report reviewed and signed off by a Certified Environmental Professional – Site Contamination Specialist (CEnvP-SC).	Environmental Consultant
6	Prepare SSAMP for asbestos retained onsite. Review of the SSAMP by a CEnvP-SC.	Environmental Consultant
7	The Department of Education maintains an online asbestos register for certain schools which require on-going asbestos management. The SSASMP shall be added to the online asbestos register and DoE Asset Management System (AMS).	Site Owner

5.4 REMEDIAL APPROACH

5.4.1 Supplementary Investigation for Asbestos

Further investigation shall be carried out by an appropriately qualified and experienced environmental consultant including:

- Carry out a visual inspection of the ground surface surrounding and beneath (where access is possible) the three demountable classrooms where asbestos was previously identified (TP08) for suspected ACM.
- Within the Southern Construction Zone (refer to Figure 4 in Appendix B), excavate test pits between TP08B, TP13, TP14 and TP15 in a grid pattern at double the minimum sampling density recommended in Table 2 of the NSW Sampling Design Guidelines - Part 1 (2022). Test pits shall extend to natural soil. Proposed sampling locations (six test pits) are shown in Figure 4, Appendix B.
    - Soil materials and observations shall be logged by an experienced environmental consultant that is competent in the identification of asbestos in the field.

  - The presence and lateral extent of asbestos contamination will be assessed by visual observations and laboratory analysis of soil samples. At least three samples per test pit (two from within the top 0.3m and one from deeper fill) shall be collected, field screened and analysed for asbestos.
  - Soil samples shall be collected in accordance with Section 11.3.2 of Schedule B2 of the ASC NEPM 2013. That is, a 10L soil sample from each sampling location (at least three per test pit) and screened on-site and a separate 500mL representative samples collected from each depth interval for analysis of asbestos including AF and FA in accordance with Section 11.3.2 of Schedule B2 of the ASC NEPM 2013. This data will be used to assess the suitability of surface soils and fill for the proposed upgrade works and ongoing site use as a school.
  - Laboratory analytical results shall be compared against the relevant HIL values (HIL-A).
- A report shall be prepared documenting the outcomes of the investigation and if required provide recommendations for remediating/managing asbestos i.e., through preparation of an AMP as an Addendum to this RAP.

The following decision rules would apply to data generated from the investigation:

- If asbestos is visible on the ground surface, then recommendations shall be made for the ACM to be removed and validated. Asbestos in/on soil contamination outside the Southern Construction Zone (i.e., beneath the three demountable classrooms) will be managed in accordance with a Site-Specific Asbestos Management Plan (SSAMP).
- If no visible asbestos on surface soil (0-0.3mBGL), and asbestos concentrations do not exceed the adopted HSLs at each sampling location, the surface soils may be considered to pose a low risk of asbestos.
- If asbestos is observed within surface soil (0-0.3mBGL), and/or asbestos is reported at concentrations exceeding the adopted HSLs, the surface soils shall be deemed unsuitable for use and require remediation/management, an AMP shall be prepared to supplement this RAP outlining the remediation and long-term management strategy as well as management controls to be implemented during the upgrade works to mitigate unacceptable health risks.
- If asbestos is identified in fill beneath surface soils and will be disturbed during the upgrade works, then an AMP shall be prepared as an addendum to this RAP outlining the remediation and long-term management strategy as well as management controls to be implemented during the upgrade works to mitigate unacceptable risks to human health from asbestos.

5.4.2 Investigation of Septic Tank Releases

Anecdotal evidence presented within the DSI indicated that school representatives had previously noted that septic tanks present on the western boundary of the site had historically overflowed. A discrepancy in field sampling activity reported by SMEC indicated that samples collected from areas surrounding the septic tank had not been assessed for the presence of pathogens associated with faecal material.

In order to address this data gap, Tetra Tech Coffey recommends the following supplementary investigation to be undertaken:

- Undertake three hand augers surrounding the septic tank location to an approximate depth of 1.0mBGL. Propose sample locations are shown in Figure 4, Appendix B.
- Soil profiles shall be logged by suitably qualified and experienced environmental scientist in accordance with the Australian Standard AS1726:2017 Geotechnical Site Investigations and Section 7.3, Field Description of Soils, in Schedule B2 of the ASC NEPM.
- Soil samples should be collected from 0-0.3m, 0.5m and 1mbgs at each hand auger location and submitted to the laboratory for analysis of pathogens including faecal coliforms and E. coli.

- The assessment shall be documented in a standalone report.
- Where samples report detection of pathogenic bacteria in soil, an assessment should be prepared to assess the potential risk to school users. Where potentially unacceptable risks are identified, an addendum to this RAP should be developed detailing an appropriate remedial strategy to mitigate this risk. Options to mitigate potentially unacceptable risks may include removal of impacted soil, restrict access to the impacted area, and review the integrity of the septic tank system.
- If no unacceptable risk is identified, the report shall be summarised in the validation report.

6. SITE MANAGEMENT

All works should be undertaken in accordance with all relevant legislative, regulatory and guidance requirements, including but not limited to, the procedures outlined in this Section. If the legislation, regulations or guidelines contradict the information presented here the legislation, regulations or guidelines prevail.

6.1 SITE ESTABLISHMENT

Site establishment procedures should include:

- Work area fencing, warning signage and temporary site facilities. This should describe the type and location of barrier fences to segregate school users from remediation and construction activity.
- Occupational health and safety controls.
- Environmental monitoring and controls, including dust, odour and stormwater management.
- Preparing stockpiling areas.
- Vehicular transit routes onto and off the Site.
- Location, isolation, relocation, protection and/or termination of services potentially affected by the remediation/redevelopment works (if present).
- Establishing contingency planning and controls to address unexpected finds.

A site-specific Work Health and Safety (WHS), and Construction Environmental Management Plan (CEMP) must be prepared by the remedial contractor covering the above aspects.

6.2 MANAGEMENT OF UNEXPECTED FINDS

6.2.1 Management of Unexpected Finds

Should unexpected contamination or aesthetically unacceptable material be encountered onsite, works will stop in the affected part of the site. This area will be isolated to minimise potential for disturbance to the affected soils. The sub-contractors on site, the environmental consultant and Principal Contractor will be notified immediately of the unexpected find. The environmental consultant will inspect the find as soon as practicable to assess if emergency services are required and recommend interim actions to mitigate potential health and/or safety risk.

Following inspection by the environmental consultant and determination of the type and nature of materials, the materials should be managed in accordance with the procedures set out in the site's Unexpected Finds Protocol as detailed in Section 8.2.3 of this report.

6.2.2 Training and Induction of Personnel

Personnel involved in earthworks on site are to be inducted on the identification of potential unexpected finds. The induction can be undertaken at the time of general site induction and refreshed periodically at toolbox meetings.

Induction to provide awareness of all types of possible unexpected finds is not practicable. In general, a precautionary approach should be employed, and the unexpected finds procedure outlined in the following section will be implemented.

Additionally, it is noted that some forms of potential contamination may not be associated with any visual or olfactory indications in the field. The unexpected finds procedure will not provide protection against such impacts.

6.2.3 Unexpected Finds Procedure

Should an unexpected actual or suspected contamination be encountered during the proposed works, the following procedure applies:

1. Stop work in the potentially hazardous area as soon as it is safe to do so and move to the upwind side of the area, or away from the area. Notify the Principal Contractor representative.
2. Assess the potential immediate risk to human health posed by the unexpected find and assess if evacuation or emergency services need to be contacted.
3. Delineate an exclusion zone around the affected area using fencing and/or appropriate barriers and signage. Additional control measures may be required for odours and/or volatile compounds (e.g. odours suppression, no ignition source etc.).
4. Contact the appointed environmental consultant for advice and request a site visit to undertake an assessment of the unexpected find.
5. The environmental consultant will assess the unexpected find and provide advice regarding:
    a) Preliminary assessment of the contamination and need for immediate management controls;
    b) What further assessment and/or remediation works are required and how such works are to be undertaken in accordance with contaminated site regulations and guidelines;
    c) Preparation of an addendum to the remediation action plan (if necessary) or provide clean up advice;
    d) Remediation works required (where applicable);
    e) Validation works required following remediation works (if applicable).
6. The environmental consultant will provide relevant information and advice to the Principal Contractor representative regarding the contamination status of the affected area and management of the residual potential environmental risk. Consideration shall be given to amending training/induction procedures and Site Safety Plan/Site Work Method Statements.
7. If it is deemed safe to do so by the Principal Contractor representative, works may resume in the affected area.

6.3 WASTE CLASSIFICATION, MATERIAL TRACKING AND DISPOSAL

Surplus spoil that cannot be reused on-site and requires off-site disposal/export should be managed in accordance with the relevant sections of the POEO Waste Regulation 2014. Management of waste should include but not be limited to:

- Classifying the waste in accordance with the NSW EPA Waste Classification Guidelines 2014. Where sampling is required to confirm the waste classification of surplus spoil, this shall be undertaken in accordance with the ASC NEPM 2013 and the NSW EPA Sampling Design Guidelines (2020).
- Transporting the waste by an appropriately licensed waste contractor.
- Disposing of the waste at an appropriately licensed waste disposal facility.
- Tracking of waste using the NSW EPA's online "WasteLocate" system (NSW EPA Integrated Waste Tracking Solution (IWTS)), where required.
- All excavated soil that is removed from site is to be tracked on a Materials Tracking Plan maintained by the remediation contractor and provided to DoE and the Environmental Consultant at the completion of the remedial works.
- Waste soil must be disposed of a facility licensed to accept the waste.

- The Material Tracking Plan shall include but not be limited to appropriate documentation including waste classification assessment reports; waste disposal dockets; date removed; material description/classification; receiving facility; NSW EPA POEO licence; and truck registers.

6.4 IMPORTED MATERIALS

Imported material (including but not limited to DGB, aggregate, crushed rock, soil, bedding sand and mulch) will need to be lawful and suitable for the site with respect to contamination.

- Imported soil and aggregate will be required to be classified as excavated natural material (ENM) or virgin excavated natural material (VENM), be a product meeting an appropriate resource recovery order/exemption provided by the NSW EPA.
- Mulch will be required to be a commercial product and have a specification to demonstrate compliance with the Resource Recovery Exemption for Mulch.

Prior to importation, the validation consultant shall carry out a review of documentation provided by the material supplier to check material origin.

- This may include but not be limited to a review of:
    - VENM certificates, including laboratory reports if available.
    - ENM certificates including laboratory reports.
    - Letters confirming the applicable resource recovery order/exemption and relevant laboratory certificates.
- Commercially quarried material which is extracted and sold from a quarry is exempt from a VENM certificate provided that the supplier can confirm the source/quarry of the material and the quarry has an Environment Protection Licence (EPL) issued by the NSW EPA for extractive purposes.

To be considered suitable for use, chemical results for recycled or processed products (where presented in supplied documentation) shall meet the criteria specified in the appropriate resource recovery order and be less than criteria for a school land use presented in guidelines made or approved by the NSW EPA including the ASC NEPM 2013.

Each truck load of imported material shall be visually inspected by a representative of the remedial contractor or the Validation Consultant when delivered, tipped and spread, to check that the material is consistent with that described in the source documentation, and for the presence of potential contamination.

Imported material shall be recorded and tracked during import in accordance with the Material Tracking Plan (MTP) to be developed by the remedial contractor.

If insufficient information is provided, then the material shall be assessed by the Validation Consultant for due diligence purposes at the source site prior to importation and/or during import to confirm suitability for use. A sampling, analytical and quality plan shall be prepared by the Validation Consultant prior to import and be specific to the material being imported.

Also, if suspected contamination is observed during importation, then the material shall be assessed by the Validation Consultant to confirm suitability for use.

7. VALIDATION REPORT

A Validation Report shall be prepared following completing of in-ground works (e.g., at the completion of landscaping) associated with the upgrade works that accurately describes works undertaken to mitigate the risks identified. The Validation Report shall be prepared in accordance with the Contaminated land Guidelines: Consultants Reporting on Contaminated Land (NSW EPA, 2020) and the ASC NEPM (NEPC, 2013).

Coffey understands that LCC and/or RFS would also provide documentation meeting a similar standard to demonstrate that the risks associated with PFAS impacted soil have been appropriately mitigated.

In general, the Validation Report will contain information including:

- Description of the project to which the Validation Report relates to, supported by a survey plan that defines the boundary of the site and areas where remediation works were completed.
- A description of the remedial works carried out and any retained contamination on site (nature and location with regards to surveys where carried out).
- Details of the source, classification and suitability of all imported materials.
- Any variations to the strategy undertaken during the implementation of the remedial works.
- Details of any environmental incidents and/or unexpected finds of contamination occurring during the course of the remedial works and the actions undertaken in response to these incidents.
- Details on waste classification, tracking and off-site disposal.
- Suitability of imported materials.
- Clear statement of the suitability of the site that is the subject of the Validation Report for the proposed use.
- Scope and requirements for the ongoing management (SSAMP).

7.1 ONGOING MANAGEMENT

The remedial strategy relies on the presence and integrity of existing cover layers to prevent school users being exposed to asbestos in the vicinity of TP08 and for any asbestos retained on site as part of the upgrade works.

Asbestos in/on ground contamination will be managed in accordance with a SSAMP.

The SSAMP shall include the following:

- Site Identification details covered by the SSAMP.
- A description of the Site.
- A summary of the location, nature and types of asbestos contamination remaining at the Site which requires management including a conceptual site model.
- Assumptions on which exposure settings and risk management protocols are based including a summary of the existing or installed cover layers including material types and thickness.
- Persons/entities responsible for the implementation of the SSAMP.
- An ongoing management strategy to mitigate potential risks to health and the environment during
    - Ongoing use of the Site as a primary school facility.
    - Excavations and subsurface ground works.
    - Other unexpected penetration of isolation/cover layers.
- A long-term maintenance and monitoring/inspection program.

- An unexpected-finds protocol.

7.1.1 Enforceability and Notification

The SSAMP will need to be implemented and maintained as long as asbestos impacted soil remains on the site, or until use of the site as a primary school ceases.

Tetra Tech considers that the SSAMP would be enforceable under the WHS Act 2011 and WHS Regulation 2017. The SSAMP should also be placed on the DoE online Schools asbestos register (https://www.schoolinfrastructure.nsw.gov.au/what-we-do/we-look-after-our-schools/schools-asbestos-register.html).

8. CONCLUSION

Tetra Tech Coffey Pty Ltd was engaged by Department of Education (DoE) to prepare a Remedial Action Plan (RAP) to support a Review of Environmental Factors (REF) for the DoE for the Austral Public School (APS) upgrade works (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 proposed activity involves alterations and additions to the existing APS, including the following:

- Demolition of existing structures and removal of trees, as well as other site preparation works;
- The erection of a new 3-storey building comprising teaching spaces that includes 20 permanent teaching spaces and 3 support teaching spaces;
- Refurbishment and change of school function of Building I from classrooms to a Library;
- At-grade parking (57 new spaces, including 1 accessible space);
- New driveway and access gate from Edmondson Road;
- Erection of a substation within the site on the northern boundary;
- Upgrade of the sports field;
- Internal pathways, fencing, utility upgrades and associated works; and
- Off-site public domain improvements including retention and upgrading of the Kiss & Drop area and a temporary pedestrian road crossing on Tenth Avenue.

Investigations completed within the site identified potentially unacceptable risks associated with asbestos, PFAS. A data gap exists regarding the potential presence of pathogens in soil associated with historical overflows of sewerage from septic tanks located along the western boundary of the site.

Based on contamination identified, the proposed activity and a review of remedial options, the preferred remedial strategy to mitigate contamination risks is to:

1. Conduct a supplementary investigation to assess the potential human health risk associated with the septic tank overflow as anecdotally noted in the DSI. The assessment shall be documented in a standalone report and:
    - Where an unacceptable risk is identified, an addendum to this RAP shall be prepared.
    - Where no unacceptable risk is identified, the findings of the assessment will be summarised in the validation report.
2. Carry out further investigation in the vicinity of TP08 where asbestos was previously identified to assess whether asbestos may pose unacceptable risks during the proposed upgrade works without appropriate

mitigation, and in light of the continued use of the site as a school. The assessment shall be documented in a standalone report and:

- If asbestos is considered to pose an unacceptable risk to human health without appropriate remediation/management then an Asbestos Management Plan (AMP) shall be prepared as an Addendum to this RAP which details how asbestos risks will be mitigated, and the site can be made suitable for its ongoing use as a school. Consideration of Remedial Options presented in Table 4-1 shall be considered (e.g., capping and onsite management and/or offsite disposal in collaboration with DoE)
- Where no unacceptable risk is identified, the findings of the assessment will be summarised in the validation report and the upgrade works may continue with consideration of the site management measures outlined in Section 8.

3. Prepare a Site-Specific Asbestos Management Plan (SSAMP) for asbestos previously identified in fill immediately surrounding TP08 which is not proposed to be disturbed as part of the proposed upgrade works.

It is understood that the identified PFAS contamination identified in soil in the southern portion of the site relates to a former fire station offsite to the south and will be remediated by LCC and the RFS prior to the implementation of the activity proposed by DoE.

The remedial works must be validated by a suitably qualified consultant which shall include a program of inspections, sampling, laboratory analysis and reporting. At the completion of the remedial works, a validation report will be required to be prepared in general accordance with *NSW EPA 2020 Guidelines for Consultants Reporting on Contaminated Land*, and Schedule B2 of the ASC NEPM (2013), documenting the works as completed and the resultant site contamination status.

Subject to the successful implementation of the measures detailed in this RAP, it is considered that the Site can be made suitable for the ongoing use as a primary school. This conclusion is contingent on the following:

- The remediation works to be implemented by LCC and RFS will be completed to a standard that demonstrates that the risk posed by PFAS-impacted media to human health and environmental receptors are low and acceptable in the context of the activity proposed by DoE.
- Measures or mechanisms are installed such that PFAS source areas beyond the site boundary cannot re-contaminate the site.
- The remediation works will be completed in a manner which does not pose additional obligations on DoE to monitor or manage PFAS contamination that derives from the former Fire Station.
- The remediation is completed in a manner that considers up to date guidance regarding PFAS, noting that a revision to PFAS National Environmental Management Plan (‘PFAS NEMP’) (HEPA, 2020; v2.0) was planned at the time this report was prepared.

APPENDIX A: IMPORTANT INFORMATION ABOUT YOUR TETRA TECH COFFEY ENVIRONMENTAL REPORT

IMPORTANT INFORMATION ABOUT YOUR TETRA TECH COFFEY ENVIRONMENTAL REPORT

Introduction

This report has been prepared by Tetra Tech Coffey for you, as Tetra Tech Coffey's client, in accordance with our agreed purpose, scope, schedule and budget.

The report has been prepared using accepted procedures and practices of the consulting profession at the time it was prepared, and the opinions, recommendations and conclusions set out in the report are made in accordance with generally accepted principles and practices of that profession.

The report is based on information gained from environmental conditions (including assessment of some or all of soil, groundwater, vapour and surface water) and supplemented by reported data of the local area and professional experience. Assessment has been scoped with consideration to industry standards, regulations, guidelines and your specific requirements, including budget and timing. The characterisation of site conditions is an interpretation of information collected during assessment, in accordance with industry practice.

This interpretation is not a complete description of all material on or in the vicinity of the site, due to the inherent variation in spatial and temporal patterns of contaminant presence and impact in the natural environment. Tetra Tech Coffey may have also relied on data and other information provided by you and other qualified individuals in preparing this report. Tetra Tech Coffey has not verified the accuracy or completeness of such data or information except as otherwise stated in the report. For these reasons the report must be regarded as interpretative, in accordance with industry standards and practice, rather than being a definitive record.

Your report has been written for a specific purpose

Your report has been developed for a specific purpose as agreed by us and applies only to the site or area investigated. Unless otherwise stated in the report, this report cannot be applied to an adjacent site or area, nor can it be used when the nature of the specific purpose changes from that which we agreed.

For each purpose, a tailored approach to the assessment of potential soil and groundwater contamination is required. In most cases, a key objective is to identify, and if possible quantify, risks that both recognised and potential contamination pose in the context of the agreed purpose. Such risks may be financial (for example, clean up costs or constraints on site use) and/or physical (for example, potential health risks to users of the site or the general public).

Limitations of the Report

The work was conducted, and the report has been prepared, in response to an agreed purpose and scope, within time and budgetary constraints, and in reliance on certain data and information made available to Tetra Tech Coffey.

The analyses, evaluations, opinions and conclusions presented in this report are based on that purpose and scope, requirements, data or information, and they could change if such requirements or data are inaccurate or incomplete.

This report is valid as of the date of preparation. The condition of the site (including subsurface conditions) and extent or nature of contamination or other environmental hazards can change over time, as a result of either natural processes or human influence. Tetra Tech Coffey should be kept appraised of any such events and should be consulted for further investigations if any changes are noted, particularly during construction activities where excavations often reveal subsurface conditions.

In addition, advancements in professional practice regarding contaminated land and changes in applicable statues and/or guidelines may affect the validity of this report. Consequently, the currency of conclusions and recommendations in this report should be verified if you propose to use this report more than 6 months after its date of issue.

The report does not include the evaluation or assessment of potential geotechnical engineering constraints of the site.

Interpretation of factual data

Environmental site assessments identify actual conditions only at those points where samples are taken and on the date collected. Data derived from indirect field measurements, and sometimes other reports on the site, are interpreted by geologists, engineers or scientists to provide an opinion about overall site conditions, their likely impact with respect to the report purpose and recommended actions.

Variations in soil and groundwater conditions may occur between test or sample locations and actual conditions may differ from those inferred to exist. No environmental assessment program, no matter how comprehensive, can reveal all subsurface details and anomalies. Similarly, no professional, no matter how well qualified, can reveal what is hidden by earth, rock or changed through time.

The actual interface between different materials may be far more gradual or abrupt than assumed based on the facts obtained. Nothing can be done to change the actual site conditions which exist, but steps can be taken to reduce the impact of unexpected conditions.

For this reason, parties involved with land acquisition, management and/or redevelopment should retain the services of a suitably qualified and experienced environmental consultant through the development and use of the site to identify variances, conduct additional tests if required, and recommend solutions to unexpected conditions or other unrecognised features encountered on site. Tetra Tech Coffey would be pleased to assist with any investigation or advice in such circumstances.

Recommendations in this report

This report assumes, in accordance with industry practice, that the site conditions recognised through discrete sampling are representative of actual conditions throughout the investigation area. Recommendations are based on the resulting interpretation.

Should further data be obtained that differs from the data on which the report recommendations are based (such as through excavation or other additional assessment), then the recommendations would need to be reviewed and may need to be revised.

Report for benefit of client

Unless otherwise agreed between us, the report has been prepared for your benefit and no other party. Other parties should not rely upon the report or the accuracy or completeness of any recommendation and should make their own enquiries and obtain independent advice in relation to such matters.

Tetra Tech Coffey assumes no responsibility and will not be liable to any other person or organisation for, or in relation to, any matter dealt with or conclusions expressed in the report, or for any loss or damage suffered by any other person or organisation arising from matters dealt with or conclusions expressed in the report.

To avoid misuse of the information presented in your report, we recommend that Tetra Tech Coffey be consulted before the report is provided to another party who may not be familiar with the background and the purpose of the report. In particular, an environmental disclosure report for a property vendor may not be suitable for satisfying the needs of that property's purchaser. This report should not be applied for any purpose other than that stated in the report.

Interpretation by other professionals

Costly problems can occur when other professionals develop their plans based on misinterpretations of a report. To help avoid misinterpretations, a suitably qualified and experienced environmental consultant should be retained to explain the implications of the report to other professionals referring to the report and then review plans and specifications produced to see how other professionals have incorporated the report findings.

Given Tetra Tech Coffey prepared the report and has familiarity with the site, Tetra Tech Coffey is well placed to provide such assistance. If another party is engaged to interpret the recommendations of the report, there is a risk that the contents of the report may be misinterpreted and Tetra Tech Coffey disowns any responsibility for such misinterpretation.

Data should not be separated from the report

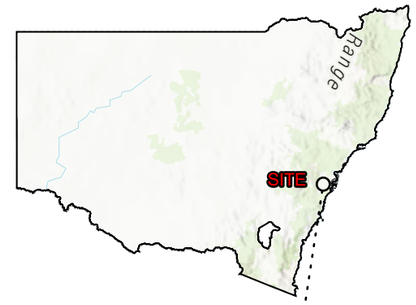
The report as a whole presents the findings of the site assessment and the report should not be copied in part or altered in any way. Logs, figures, laboratory data, drawings, etc. are customarily included in our reports and are developed by scientists or engineers based on their interpretation of field logs, field testing and laboratory evaluation of samples. This information should not under any circumstances be redrawn for inclusion in other documents or separated from the report in any way.

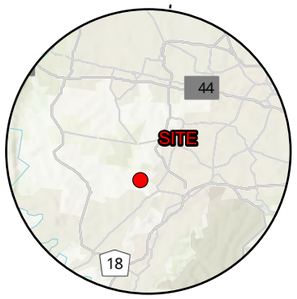
This report should be reproduced in full. No responsibility is accepted for use of any part of this report in any other context or for any other purpose or by third parties.

Responsibility

Environmental reporting relies on interpretation of factual information using professional judgement and opinion and has a level of uncertainty attached to it, which is much less exact than other design disciplines. This has often resulted in claims being lodged against consultants, which are unfounded. As noted earlier, the recommendations and findings set out in this report should only be regarded as interpretive and should not be taken as accurate and complete information about all environmental media at all depths and locations across the site.

APPENDIX B: FIGURES





NSW GOVERNMENT Education
School Infrastructure

LEGEND

- Site Boundary
- Lot Boundary

SOURCE
Site boundary from Tetra Tech Coffey.
Lot boundary, road names from SixMaps NSW
Aerial Imagery from Nearmap (Capture date: 24-09-2024)

N

0 50 100 Meters

SCALE **1:5,000**
PAGE SIZE: **A3**
PROJECTION: **GDA2020 MGA Zone 56**

SCHOOLS INFRASTRUCTURE NSW

AUSTRAL PUBLIC SCHOOL
REMEDIAL ACTION PLAN

FIGURE 01

Site Location

TETRA TECH COFFEY

DATE: **05.11.24** PROJECT: **754-SYDEN366683** FILE: **366683_APSRAP_F001_GIS**

LEGEND

Sample Location

- Hand Auger
- Test Pit
- Site Boundary
- Lot boundary

NSW GOVERNMENT Education School Infrastructure

N

0 20 40 Meters

SCALE **1:1,000**

PAGE SIZE: **A3**

PROJECTION: **GDA2020 MGA Zone 56**

SOURCE
Site boundary, sample locations, from Tetra Tech Coffey.
Lot boundary, road names from SixMaps NSW
Aerial Imagery from Nearmap (Capture date: 24-09-2024)

SCHOOLS INFRASTRUCTURE NSW

AUSTRAL PUBLIC SCHOOL
REMEDIAL ACTION PLAN

FIGURE 02

Site Sample Location

TETRA TECH COFFEY

DATE: **05.11.24** PROJECT: **754-SYDEN366683** FILE: **366683_APSRAP_F002_GIS**

LEGEND

Sample Location

- Hand Auger
- Test Pit

Exceedance Type

- Exceeds ecological criteria
- Exceeds human health criteria
- Exceeds human health and ecological criteria (PFAS)
- Site Boundary
- Lot boundary

N

0 20 40 Meters

SCALE **1:1,000**
PAGE SIZE: **A3**
PROJECTION: **GDA2020 MGA Zone 56**

SOURCE
Site boundary, sample locations, exceedances data from Tetra Tech Coffey.
Lot boundary, road names from SixMaps NSW
Aerial Imagery from Nearmap (Capture date: 24-09-2024)

NSW GOVERNMENT Education School Infrastructure

SCHOOLS INFRASTRUCTURE NSW

AUSTRAL PUBLIC SCHOOL
REMEDIAL ACTION PLAN

FIGURE 03

Location of adopted SAC Exceedances

TETRA TECH COFFEY

DATE: **05.11.24** PROJECT: **754-SYDEN366683** FILE: **366683_APSRAP_F003_GIS**

LEGEND

Sample Location

- Hand Auger
- Test Pit

Proposed Supplimentary Investigation Locations

- Asbestos
- Septic Tank

Remedial Excavation Extent

- Inferred extent of remedial excavation (PFAS) (WSP SIOP, 2021)
- Southern Construction Zone Boundary
- Site Boundary
- Lot boundary

NSW GOVERNMENT Education School Infrastructure

N

0 20 40 Meters

SCALE **1:1,000**
PAGE SIZE: **A3**
PROJECTION: **GDA2020 MGA Zone 56**

SOURCE
Site boundary, sample locations, additional investigation locations and inferred remedial excavation data from Tetra Tech Coffey.
Lot boundary, road names from SixMaps NSW
Aerial Imagery from Nearmap (Capture date: 24-09-2024)

SCHOOLS INFRASTRUCTURE NSW

AUSTRAL PUBLIC SCHOOL
REMEDIAL ACTION PLAN

FIGURE 04

Remedial Zones

TETRA TECH COFFEY

DATE: **04.12.24** PROJECT: **754-SYDEN366683** FILE: **366683_APSRAP_F004_GIS**

APPENDIX C: UNEXPECTED FINDS PROTOCOL

1. Unexpected Finds Procedure

As discussed in the RAP, an unexpected find would include the but not be limited to the following:

- Contaminated materials (including black slag, ash, stained and/ or odorous soils).
- Asbestos, including the presence of significant aggregates of friable asbestos materials (visible) as ACM and or material with the potential to be Asbestos Fines/ Friable Asbestos (AF/FA) impacted material (e.g. weathered fibrous cement sheet fragments, pipe lagging, insulation etc.).
- Buried infrastructure (e.g. underground storage tanks, pipes, footings).
- LNAPL (Light Non-Aqueous Phase Liquid)/ DNAPL (Dense Non-Aqueous Phase Liquid) contamination.
- Potential acid sulphate soils.
- Human skeletal remains.

If an unexpected find is identified during earthworks, the following procedure shall be followed:

1. Cease disturbance of the affected portion of the Site.
2. Immediately implement controls if it is considered that the unexpected find may pose an immediate risk of harm to human health or the environment, and it is safe to do so.
3. Notify the relevant authorities if required (i.e. NSW EPA, SafeWork NSW).
4. Contact the Site Supervisor, Principal Contractor and the Environmental Consultant to assess the find.
5. Site Supervisor, Principal Contractor and Environmental Consultant to assess the location and extent of the unexpected find, if safe to do so.
6. Work Health and Safety (WHS) and environmental controls shall be established based on initial observations, if required. These may include but not be limited to:
    a. Controlling access by establishment of barricades and warning signs.
    b. Encapsulating with clean soil, plastic or geofabric.
    c. Establishing erosion and sediment controls
    d. Employing dust mitigation measures.
    e. Air monitoring.
7. Further visual assessment and sample collection and analysis shall be carried out by a qualified Environmental Consultant or occupational hygienist/ Licensed Asbestos Assessor (LAA), if required. If necessary, samples shall be collected and analysed at a laboratory for contaminants of potential concern using National Association of Testing Authorities (NATA) accredited methods.
8. Depending on the outcome of the assessment by the Environmental Consultant/ occupational hygienist/ LAA, the unexpected find may need to be further assessed, managed, remediated or disposed offsite in accordance with regulatory requirements.
9. A toolbox meeting shall be held by the Principal Contractor. The Environmental Consultant/ occupational hygienist/ LAA and key stakeholders shall attend the meeting to determine an appropriate course of action. This should include discussions around:
    a. The handling, treatment, remediation and disposal of material.
    b. Workplace Health and Safety considerations.
    c. How the affected area shall be validated.
10. Affected areas shall be reopened for earthworks following validation and/ or clearance of the location and issuance of a report by the Environmental Consultant/ occupational hygienist/ LAA and/ or instruction from the Principal Contractor or CER.

1.1. Visual Assessment of Unexpected Finds Material

The unexpected finds will initially be assessed in-situ for indications of contamination and then again as they are excavated and/ or moved around the Site. The visual assessments will be used to identify indicators of potential contamination, or areas of contamination not previously identified during

capping investigations (i.e. buried containers, heavily impacted soils and wastes, indications of asbestos sheeting etc.). Such indicators will include:

- Soils and waste materials that exhibit a strong odour.
- Soils and waste materials that appear to be oil-stained, fibrous or have unusual colours.
- Materials that contain slag materials, are black, metalliferous or shiny.

If the unexpected find appears to contain contaminated materials, or contamination is identified through laboratory analysis, these will be stockpiled in a location separate from the other site works and further assessed, in accordance with the procedures outlined in the following sections.

1.2. Management of Potentially Contaminated Material 1.2.1.

Temporary Stockpiling

The following general procedures will be followed during stockpiling of excavated potentially contaminated material:

- Potentially contaminated material will be stockpiled separately from other stockpiled soils in an isolated area of the Site.
- Access to stockpiles of potentially contaminated fill will be limited by keeping the stockpiles within the Site's fencing.
- Stockpiles will be placed on level ground with a height of no greater than 1m. Stockpiles will not be placed on slopes greater than 5°.
- Stockpiles will be placed on reasonably robust barrier (i.e. concrete, geofabric and plywood) or on existing fill. If stockpiles are placed on natural/uncontaminated soil, then over-excavation is likely to be required to facilitate validation. If this procedure is not followed there is the potential for contaminants to migrate into the surface soils.
- The stockpile heights will be kept to a maximum of approximately 2m.
- Where stockpiles are proposed to remain in a location overnight, the stockpiles will be covered by weighted HDPE sheets or tarpaulins to prevent erosion of stockpiled materials. Heavy objects not containing sharp edges will be placed on the sheets to prevent them from being blown by winds.
- Adequate hay bales and/or silt fences will be placed around the perimeter of the stockpile area to filter runoff from the stockpiles and prevent overland stormwater flow from affecting the base of the stockpiles.
- A stormwater diversion bund will be created up gradient of the stockpiles to prevent stormwater running through the stockpiles.

The stockpiles should be assessed by the Environmental Consultant, or in the event that suspected asbestos material is occupational hygienist (for non-friable asbestos) and/or LAA (for friable asbestos) in accordance with Section 1.2.3, as soon as practical, to remove the risk of stockpiling potentially contaminated materials on Site.

1.2.2. Management of Open Excavations

Excavations resulting from the removal of potentially contaminated soil will be barricaded in order to restrict access to the excavation areas. Appropriate warning signs will be placed around the excavations, in accordance with applicable regulations and codes of practice.
The excavations will remain barricaded until such time when the excavations have been validated and backfilled (where appropriate). Gas monitoring will be required whilst the excavation remain open.

The validation of excavations should be carried out by a suitably qualified environmental consultant, in accordance with Section 1.2.5, as soon as practical, to remove the risk of open excavations on Site.

1.2.3. Assessment of Potentially Contaminated Stockpiled Materials for Offsite Disposal on Onsite Reuse

Sampling of Stockpiles

To validate stockpiles for re-use on site, or to provide waste classification to allow disposal to landfill, the sampling rates included in Table 8-2 and Table 8-3 of the RAP are applicable.

- Where stockpiles are not placed on impervious material, sampling of the stockpile footprints at a rate of 1 sample per 25m^2.
- Soil samples from large stockpiles will be taken with the aid of excavators to provide representative samples of material from within the stockpiles.
- Samples will be taken from the centre of the excavator bucket in order to minimise the potential for cross-contamination.
- A clean pair of disposable gloves will be worn when collecting each sample.
- Samples will be kept chilled while in the field and in transit to the laboratory.

Laboratory Analysis

Where required, the stockpile waste classification samples will be dispatched to a NATA-accredited laboratory for analysis. Each sample will be analysed for the following suite of contaminants:

- Heavy Metals
- TRH
- BTEX
- PAH
- PFAS
- Asbestos (Presence/Absence) or quantitative for consideration for onsite reuse (material sourced from non-ACM impacted sections of the Site).
- For material sourced from ACM impacted sections of the Site (northern and eastern), samples must be assessed quantitatively in accordance with the requirements of the WA Guidelines.

In addition, selected samples may be analysed for leachability using the Toxicity Characteristic Leaching Procedure (TCLP), based on the initial results.

Classified waste is to be transported to an appropriately licensed facility. In some cases (i.e. disposal of special (asbestos) waste), disposal approval may be required from the landfill prior to transportation.

1.2.4. Re-Use or Disposal of Stockpiled Soil

On-Site Re-Use of Stockpiled Soils

If the stockpiled soils are to be re-used on Site, the results of the laboratory analysis will be compared to validation criteria detailed in Section 1.2.6. If the results meet the adopted validation criteria, the material will be able to be re-used on Site. If the results exceed the adopted guidelines, the soils will either be selected for on-site containment beneath the foundation raft slab or road and/ or be disposed offsite.

Off-Site Disposal of Stockpiled Soils

If the stockpiled soils are to be disposed offsite, the results of the laboratory analysis will be compared to the NSW EPA (2014) Waste Classification Guidelines in order to provide a waste classification for the stockpiled soils.

Stockpiled fill material, with an appropriate waste classification, can be disposed of at a landfill licensed to accept that type of waste. For example, hazardous waste can only be disposed of to a landfill licensed to accept hazardous waste.

Materials of different waste classifications should not be mixed prior to offsite disposal. Should they become mixed, the material will take on the higher classification. For example, should hazardous waste be mixed with general solid waste, then the entire stockpile will be classed as hazardous waste.

Waste disposal dockets will need to be retained for material being disposed offsite. The dockets will record the amount of material being disposed, the final fate of the material, and demonstrate that the material was disposed appropriately.

If material is disposed offsite, we recommend that a wash down bay or tyre grid be installed at entrance/exit point of the site in order to minimise potentially contaminating material being tracked offsite in vehicle tyres.

Documentation

Records should be maintained during removal of materials from Site, including the quantities of contaminated material contained or disposed offsite. This will also need to be accompanied by waste disposal dockets.

1.2.5. Validation of Excavations

Excavations resulting from the removal of potentially contaminated material will need to be validated prior to works re-commencing in those areas. Validation will be required in order to assess whether the potentially contaminated material has been adequately removed, or if further excavations or management of the material are necessary.

Validation requirements (i.e. strategy, sample quantities, analytical testing requirements etc.) are outlined in Section 8 of the RAP.

1.2.6. Validation Criteria

Health Investigation and Screening Levels

Health Investigation Levels (HILs) are applicable for assessing human health risk via relevant exposure pathways. HILs were developed for a broad range of metals and organic substances. These are generic to all soil types and apply generally to a depth of 3m below the soil surface for residential sites. Tetra Tech note that given the proposed ongoing use as a primary school a depth of <1m would be considered appropriate.

Health screening levels (HSLs) have been developed for selected petroleum compounds and fractions and are applicable to assessing human health risk via inhalation after vapour intrusion into indoor air and direct contact with soil and groundwater. These HSLs depend on general soil type (sand, silt and clay mixture), building configurations and land use scenarios. Given that the area is proposed for ongoing use as a primary school facility, the HSLs for vapour intrusion would only be applicable to locations where buildings are proposed to be constructed. HSLs for vapour Intrusion will be compared against residential land use criteria.

The adopted HIL are compared against residential based criteria based on the proposed future land use and are summarised in Table 1.1 and Table 1.2 respectively. Based on soils observed during fieldworks, which comprised coarse sand, HSLs have been compared against coarse grained soils.

Table 1.1: Health Investigation Levels

Chemical	Health Investigation Levels for Residential A land use (HIL - A) (mg/kg)
Arsenic	100
Cadmium	20
Copper	6000
Lead	300
Mercury	40
Nickel	400
Zinc	7400
Carcinogenic PAH (measured as Benzo(a)pyrene TEQ)	3
Total PAH	300
PFOA	0.1
Sum of PFOS and PFHxS	0.01

Table 1.2: Health Screening Levels

Chemical	Health Screening Levels for Direct Contact Residential (HSL – A) (mg/kg)[1]	Health Screening Levels for Intrusive Maintenance Worker (mg/kg)[1]	Health Screening Levels for Vapour Intrusion Residential (HSL – A) CLAY[2]
Toluene	14,000	120,000	560
Ethylbenzene	4,500	85,000	NL
Xylene	12,000	130,000	130
Naphthalene	1,400	29,000	6

[1] - Table A4, Appendix A - CRC Care Technical Report No. 10 – Health Screening Levels for Petroleum Hydrocarbons in Soil and Groundwater Part 1: Technical Development Document.

[2] – Table 1A(3), Schedule B1 – ASC NEPM 2013

Benzene	100	1,100	0.7
TRH C6 – C10	4,400	82,000	60
TRH C6 – C10 minus BTEX	-	-	
TRH >C10-C16	3,300	62,000	330
TRH >C10-C16 less Naphthalene	-	-	-
TRH >C16-C34	4,500	85,000	-
TRH >C34-C40	6,300	120,000	-

Ecological Investigation and Screening Levels

To assess the potential impact on terrestrial ecosystems from contamination within the upper 2m of soil / fill material, the ASC NEPM presents EILs for different settings (e.g. areas of ecological significance, urban residential/ public open space, commercial).

Section 3.5.1 of NEPM Schedule B5a states that the aim of the EILs is that varying levels of protection will be provided to the following ecological receptors at all sites:

- "Biota supporting ecological processed including microorganisms and soil invertebrates
- Native flora and fauna
- Introduced flora and fauna
- Transitory or permanent wildlife."

The following EIL/ ESLs provided in Table 1.3 are derived from Tables 1B(4) to Table 1B(6) of the ASC NEPM for coarse soil textures. Site specific EIL criteria for zinc, copper, chromium and nickel will be required to be derived from assessing pH, Cation Exchange Capacity, iron content, Total Organic Carbon and clay content.

Table 1.3: Ecological Investigation and Screening Levels

Chemical	**EIL – Urban Residential/ Public Open Space (mg/kg)**	**ESL – Urban Residential and Public Open Space**
	Contaminant Limit (mg/kg)	
Arsenic	100	-
Chromium	330*	-
Copper	65*	-
Lead	1,100	-
Nickel	250*	-
Zinc	180*	-
Naphthalene	170	-
Benzo(a)pyrene	-	20

TRH C6 – C10	-	180
TRH >C10 – C16	-	120
TRH >C16 – C34	-	300
TRH >C34 – C40	-	2800
Benzene	-	50
Toluene	-	85
Ethylbenzene	-	70
Xylene	-	105

*EIL criteria derived from assessing pH, Cation Exchange Capacity, iron content, Total Organic Carbon and clay content as part of the DSI.

We note that the ESL for benzo(a)pyrene (B(a)P) listed within the ASC NEPM (2013) (0.7mg/kg) is derived from the 1999 Canadian Soil Quality Guideline (SQG) values (Warne, 2010). Due to the availability of a significant amount of new toxicity data, the SQG was revised and published in *Canadian Council of Ministers of the Environment, Canadian Soil Quality Guidelines for Environmental Health* (CCME, 2010), however these revisions were not considered in the amended ASC NEPM (2013) revision. As such, Tetra Tech considers that the low reliability ESLs prescribed in the ASC NEPM (2013) are now outdated and the revised SQG for B(a)P as presented in CCME 2010 has been derived based on a similar methodology to that prescribed in Schedule B5b of the NEPM (i.e. based on the species sensitivity distribution approach). As such the 0.7mg/kg SQG is superseded by the relevant value contained in Table 1 (CCME 2010) with the adopted ESLs for B(a)P being 20mg/kg.

Asbestos Screening Levels

In accordance with Section 4.8 of Schedule B1 of the ASC NEPM, consideration to HSLs for asbestos have been included where laboratory analysis is completed as part of additional assessment and/ or validation sampling. HSLs for asbestos in soils assess three forms of asbestos, which include:

- Asbestos Containing Material (ACM) – material that is ‘bound in a matrix such as cement or resin (e.g. asbestos fencing and vinyl tiles). This term is restricted to material that cannot pass a 7 mm x 7 mm sieve. This sieve size is selected because it approximates the thickness of common asbestos cement sheeting and for fragments to be smaller than this would imply a high degree of damage and hence potential for fibre release’.
- Fibrous Asbestos (FA) – material that ‘comprises friable asbestos material and includes severely weathered cement sheet, insulation products and woven asbestos material. This type of friable asbestos is defined here as asbestos material that is in a degraded condition such that it can be broken or crumbled by hand pressure. This material is typically unbonded or was previously bonded and is now significantly degraded (crumbling)’.
- Asbestos Fines (AF) – material that ‘includes free fibres, small fibre bundles and also small fragments of bonded ACM that pass through a 7 mm x 7 mm sieve. (Note that for bonded ACM fragments to pass through a 7 mm x 7 mm sieve implies a substantial degree of damage which increases the potential for fibre release.)’.

No visible forms of asbestos relating to ‘All forms of asbestos’ relate to the top 0.1m of soil.

The HSL criteria for asbestos in soils is presented in Table 1.4.

Table 1.4: Asbestos HSLs

Form of Asbestos	Health Screening Levels (%w/w)
	Residential (HSL - A)
Bonded ACM*	0.01%
FA and AF*	0.001%
All forms of asbestos	No visible forms of asbestos

ACM: Asbestos Containing Material, FA: Friable Asbestos, AF: Asbestos Fines; *Not applicable to the Contamination Assessment as the sampling and analysis would not corelate to the HSLs; No visible forms of asbestos related to the top 0.1m of soil.

Management Limits

In accordance with Section 2.9 of Schedule B1 of the ASC NEPM, consideration of Management Limits for petroleum hydrocarbons has been included to assess the potential for accumulation of explosive vapours, the potential risk to buried infrastructure, or the formation of phase separated hydrocarbons (PSH). As a conservative measure, coarse soil texture management limits have been adopted as the assessment criteria and may be revised based on the predominant soil texture following fieldworks.

A summary of the adopted management limits for this Site is provided in Table 1.5.

Table 1.5: Management Limits

Chemical	Management Limits Residential, Parkland and Public Open Space (mg/kg) – Fine Soil Texture
F1 - TRH C6-C10	800
F2 - TRH C10-C16	1,000
F3 - TRH C16 – C34	3,500
F4 - TRH C34 – C40	10,000

1.3. UFP Record Keeping

Any unexpected finds encountered should be listed on a UFP register, which should include the action taken and the status of the unexpected find. A suitable register is attached.

Prior to closing out an unexpected find it will be important to ensure the appropriate documentation is

obtained, such as: photographs, the UFP form, details of the reuse and/ or containment, waste classification assessment(s) and a validation report or clearance letter.

UNEXPECTED FINDS PROTOCOL FORM

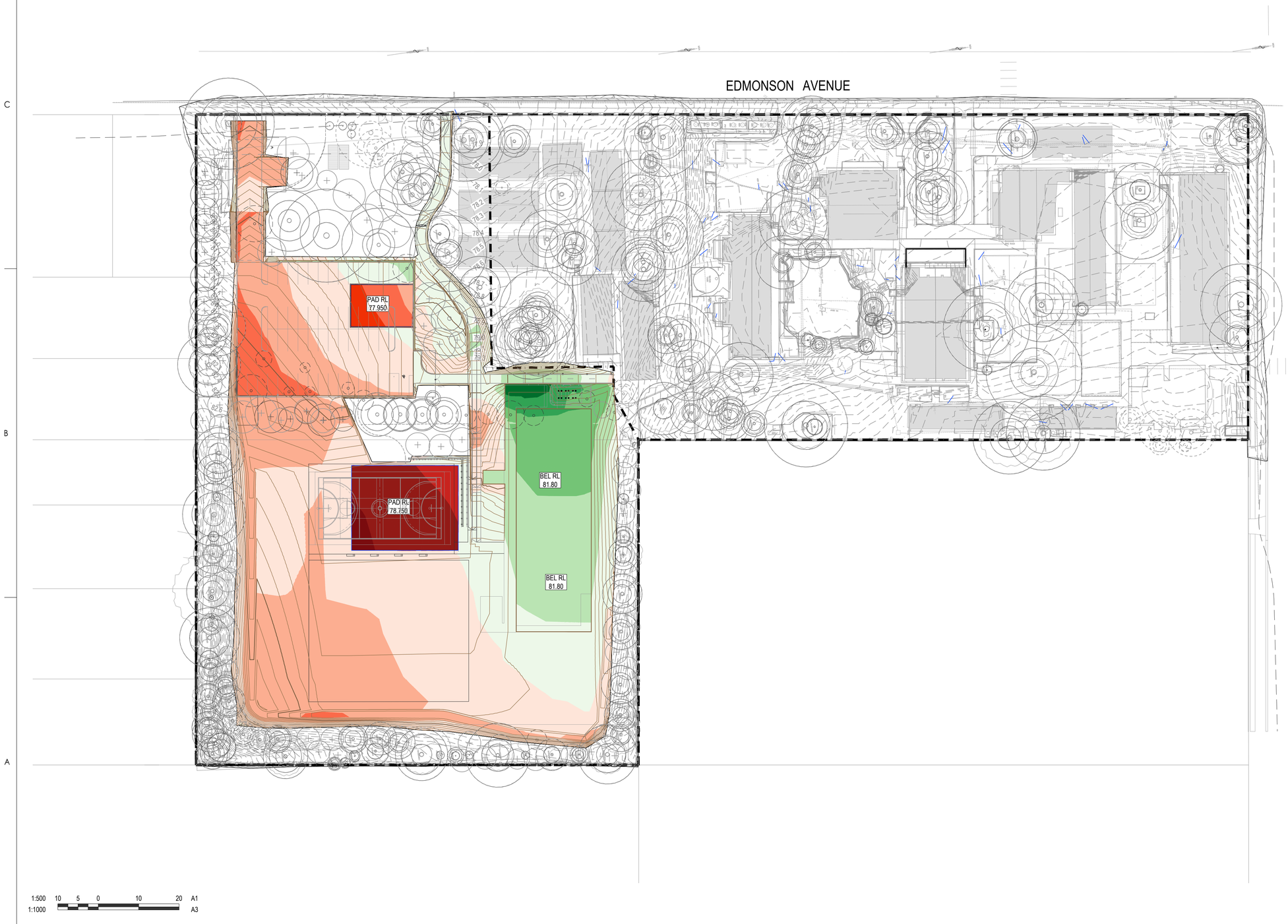
To be completed by the Site Supervisor/Environmental Representative

Form Completed By	
Company Name	
Contact Details	
Date Form Completed	
Date Unexpected Finds Identified	
UFP Reference No.	
Location of Unexpected Finds (including sketch)	
Description of Unexpected Finds	
Persons Contacted Notified	
Unexpected Finds Isolated (Y / N)	
Descriptions of Controls Established	
Photographs Taken (Y / N)	
Further Assessment Required (Y / N)	
Other Comments	

Unexpected Finds Protocol

UFP Reference No.	Date UFP Identified	Suspect Material	Recorded on UFP Form (Y / N)	Action Taken	Status

APPENDIX D: PROPOSED DEVELOPMENT PLANS



LEGEND

	SITE BOUNDARY
	EXTENT OF WORKS
14.0	BULK EARTHWORKS CONTOURS
18.0	EXISTING CONTOURS
BEL	BULK EARTHWORKS LEVEL

NOTES

1. VOLUMES ARE INDICATIVE ONLY AND ARE BASED ON A COMPARISON BETWEEN THE DESIGN SURFACE AND THE SURVEYED SURFACE.
2. NOTE THAT ALL VOLUMES DEPICTED ARE SOLID VOLUMES ONLY AND MAY NOT REFLECT DETAILED EARTHWORKS.
3. NO ALLOWANCE HAS BEEN MADE FOR BULKING FACTORS.
4. NO ALLOWANCE HAS BEEN MADE FOR DETAILED EARTHWORKS; ie ON SITE DETENTION TANKS, RAINWATER TANK, SERVICE TRENCHING, DETAILED EXCAVATION, FOOTINGS, RETAINING WALLS, PAVEMENT BOXING, BUILDING SLABS AND THE LIKE.
5. THE CONTRACTOR SHALL USE FINAL SURFACE LEVELS AND TYPICAL PAVEMENT DETAILS FOR ACTUAL EARTHWORKS LEVELS.
6. TOPSOIL STRIPPING OF 200mm HAS BEEN ASSUMED FOR THE PURPOSE OF THE BULK EARTHWORKS. REFER GEOTECH REPORT FOR FURTHER INFORMATION.
7. BULK EARTHWORKS CUT/FILL VOLUME CONSIDERATIONS:
   - 200mm TOPSOIL HAS BEEN CONSIDERED TO BE REMOVED.
   - 200mm STRUCTURAL SLAB UNDER BUILDING PADS.
   - 400mm THICKNESS FOR TRAFFICABLE PAVEMENT.
5. THE SURVEY SURFACE AS PROVIDED HAS BEEN UTILISED FOR COMPARISON PURPOSES.
6. STANTEC DOES NOT TAKE RESPONSIBILITY FOR ACCURACY OF EXISTING SURVEY.
7. BULK EARTHWORKS DOES NOT TAKE INTO CONSIDERATION ANY CONTAMINDATED MATERIAL AND ANY REMEDIATION STRATEGY WORKS.

Elevations Table

Number	Minimum Elevation	Maximum Elevation	Color
1	-4.00	-3.50	
2	-3.50	-3.00	
3	-3.00	-2.50	
4	-2.50	-2.00	
5	-2.00	-1.50	
6	-1.50	-1.00	
7	-1.00	-0.50	
8	-0.50	0.00	
9	0.00	0.50	
10	0.50	1.00	
11	1.00	1.50	
12	1.50	2.00	
13	2.00	2.50	

CUT AND FILL VOLUME

CUT: 4,652 m^3
FILL: 1,794 m^3
CUT: 2858 m^3

N

Key Plan: (NTS)

F	ISSUED FOR DA	LPT	JMB	2024.03.18
E	ISSUED FOR DA	LPT	JMB	2024.03.08
D	ISSUED FOR DA	LPT	JMB	2024.02.23
C	95% SCHEMATIC DESIGN	LPT	JMB	2024.02.02
B	50% SCHEMATIC DESIGN	LPT	MDR	2023.12.15
A	CONCEPT DESIGN	LPT	MDR	2023.03.31
Issued/Revision		By	Appd	YYYY.MM.DD

Issue Status

PRELIMINARY

NOT FOR CONSTRUCTION

This document is suitable only for the purpose noted above. Use of this document for any other purpose is not permitted.

Colour Disclaimer

This drawing has been documented in colour. This drawing is required to be printed in colour. Failure to do so may result inloss of information. Black and white printing may be used if specific black and white documents have been obtained from Stantec.

Notes

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Client/Project Logo

NSW Education School Infrastructure

Client/Project

SINSW

AUSTRAL PUBLIC SCHOOL

EDMONDSON AVENUE, AUSTRAL, NSW 2179

File Name: 304000720-CI-1-100-001.DWG	-	-	-	2023.03.31
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title

BULK EARTHWORKS PLAN

Project No. 304000720

Scale 1:500

Revision F

Drawing No. **CI-1-100-001**

Plotted: 5/16/2024 2:44:10 PM By: TRAN, JADE
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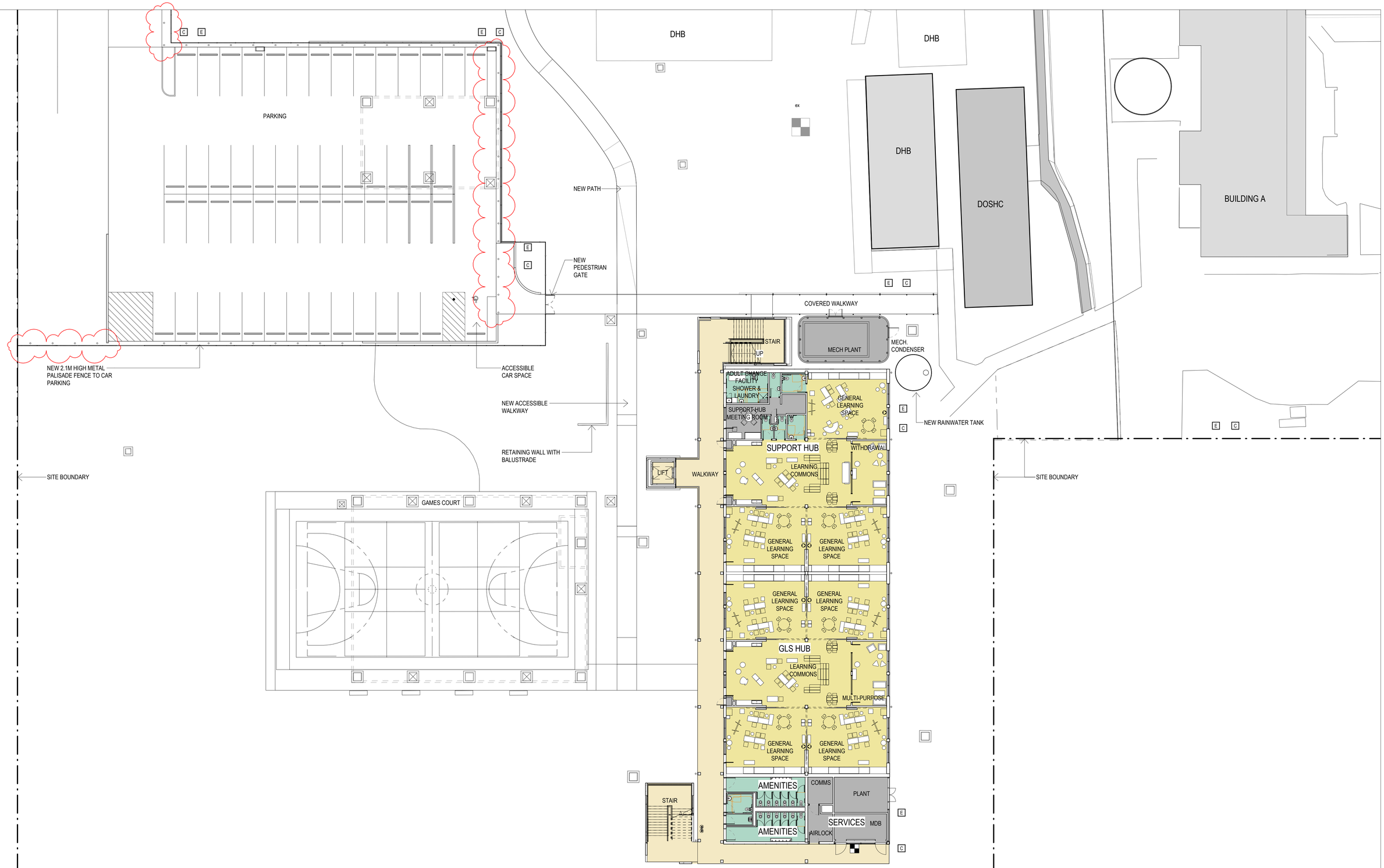
ORIGINAL SHEET - ISO A1 COORD - MGA/YY-Zone DATUM - mAHD



16/08/2024 10:54:53 AM

AMENDMENTS

REV	BY	DATE	DESCRIPTION
C	CP	26/02/2024	DRAFT DA
D	CP	08/03/2024	ISSUE FOR DA
	CP	21/03/2024	WALKWAY AMENDED
E	CP	22/03/2024	REISSUE FOR DA
F	CP	11/04/2024	REISSUE FOR DA
	CP	04/07/2024	LEARNING HUB BUILDING AMENDED
G	CP	10/07/2024	REISSUE FOR DA
	CP	15/08/2024	BOLLARDS ADDED TO CAR PARKING. FENCE & RETAINING WALL MOVED.
H	CP	16/08/2024	REISSUE FOR DA

- Admin & Staff
- Amenities
- Circulation
- Existing
- GLS & Homebase
- Library
- Specialties
- Storage & Services

NSW GOVERNMENT

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Number: (02) 8484 7000

MECHANICAL, ELECTRICAL & HYDRAULIC
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Number: (02) 9437 1000

LANDSCAPE ARCHITECT
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Number: (02) 9387 6855

ACCESSIBILITY AND BCA
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NOMINATED ARCHITECT:
VINCE PEDAVOLI
NSW ARB No. 5045

AUSTRAL PUBLIC SCHOOL

205 Edmondson Ave, Austral NSW 2179

DRAWING NAME

SITE PLAN - GROUND FLOOR
COMPOSITE PLANS - SHEET 02

PROJECT NORTH

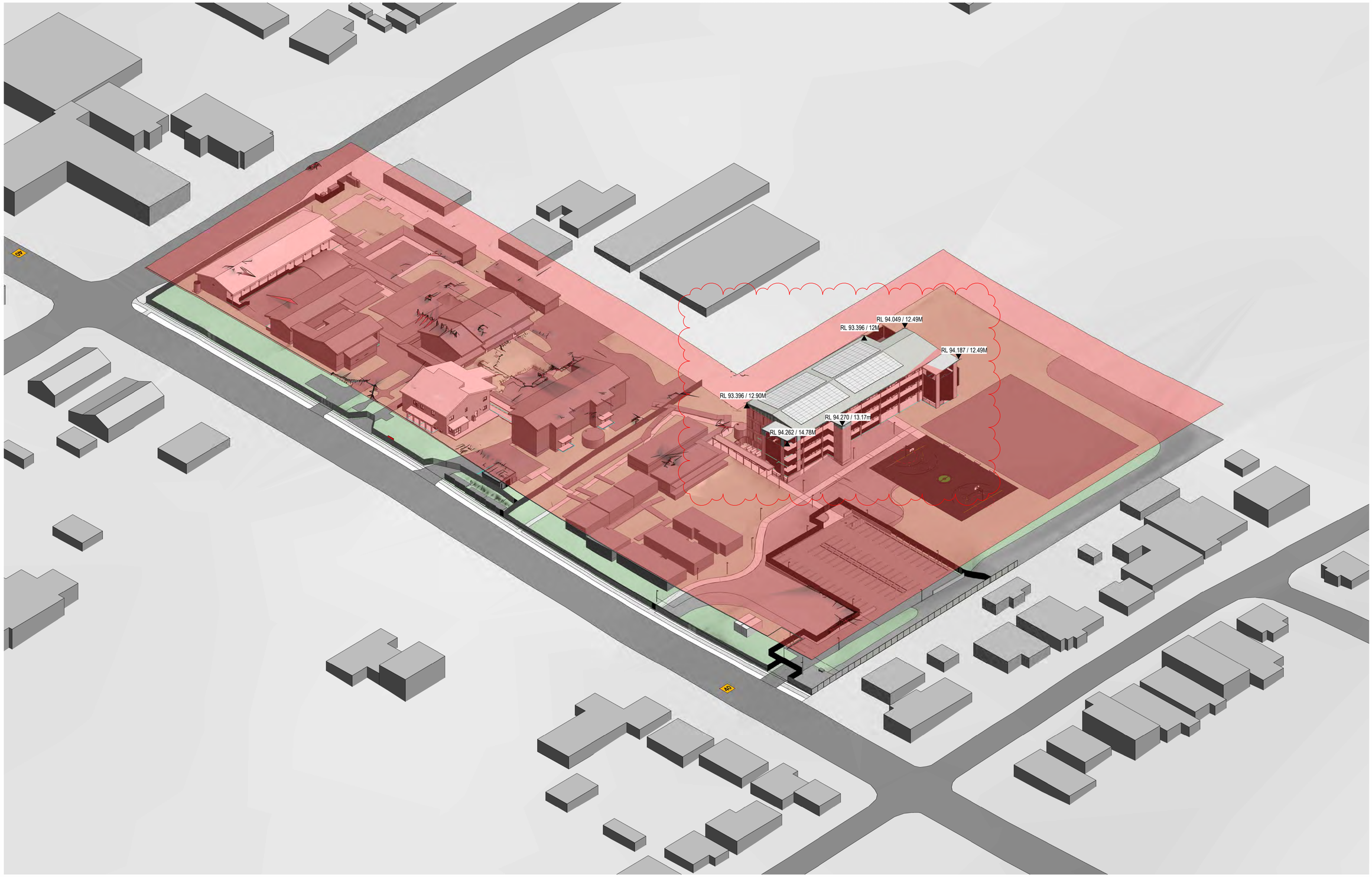
NORTH

0 2000 4000 6000 8000 10000 20000

SCALE 1 : 200 @ A1

PROJECT NUMBER	ISSUE DATE
3320	16 AUGUST 2024

DRAWING NUMBER	REVISION
APS-PA-00-GF-DR-A-DA_102	H



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AMENDMENTS

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A	CP	09/02/2024	DRAFT DA
B	CP	26/02/2024	DRAFT DA
C	CP	08/03/2024	ISSUE FOR DA
	CP	21/03/2024	WALKWAY AMENDED
D	CP	22/03/2024	REISSUE FOR DA
E	CP	11/04/2024	REISSUE FOR DA
	CP	04/07/2024	LEARNING HUB BUILDING AMENDED
F	CP	10/07/2024	REISSUE FOR DA

12 METRE HEIGHT LIMIT

NSW GOVERNMENT

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AUSTRAL PUBLIC SCHOOL

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DRAWING NAME

SITE HEIGHT LIMIT DIAGRAM

SCALE NTS

PROJECT NUMBER: 3320

ISSUE DATE: 10 JULY 2024

DRAWING NUMBER: APS-PA-00-XX-DR-A-DA_304

REVISION: F

Stantec

SINSW

NSW GOVERNMENT Education School Infrastructure

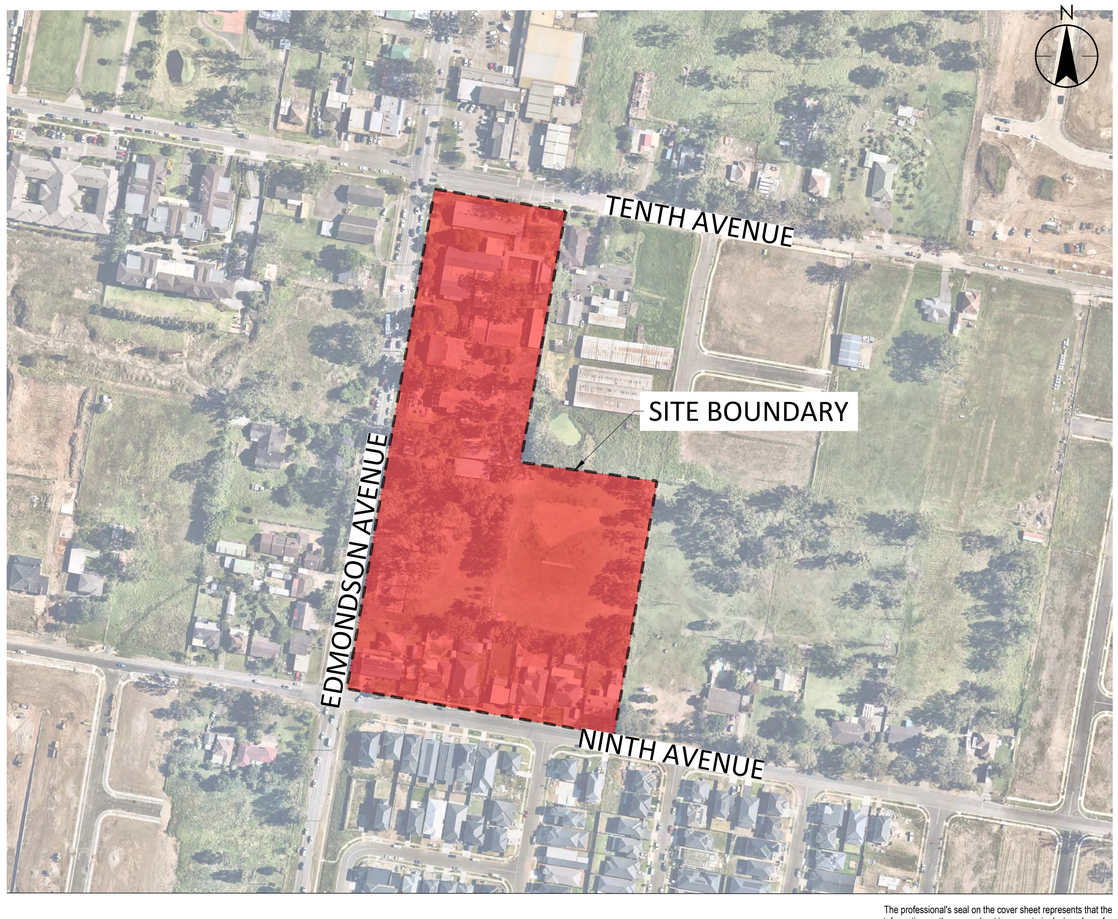
AUSTRAL PUBLIC SCHOOL

EDMONSON AVENUE, AUSTRAL, NSW 2179

ISSUED FOR DA
2024.06.06

Stantec Project Number: 304000720

DRAWING LIST	
NO.	DRAWING NAME
CI-1-000-001	COVER SHEET, DRAWING REGISTRY AND LOCALITY PLAN
CI-1-007-001	GENERAL NOTES
CI-1-050-001	EXISTING CONDITIONS PLAN
CI-1-060-001	GENERAL ARRANGEMENT PLAN
CI-1-066-001	SITEWORKS DETAILS
CI-1-070-001	EROSION AND SEDIMENT CONTROL PLAN
CI-1-076-001	EROSION AND SEDIMENT CONTROL DETAILS
CI-1-100-001	BULK EARTHWORKS PLAN
CI-1-440-001	PAVEMENT PLAN
CI-1-446-001	PAVEMENT DETAILS
CI-1-500-001	MUSIC CATCHMENT PLAN
CI-1-500-002	DRAINS CATCHMENT PLAN
CI-1-520-001	STORMWATER DRAINAGE PLAN
CI-1-526-001	STORMWATER DRAINAGE DETAILS SHEET 1 OF 7
CI-1-526-002	STORMWATER DRAINAGE DETAILS SHEET 2 OF 7
CI-1-526-003	STORMWATER DRAINAGE DETAILS SHEET 3 OF 7
CI-1-526-004	STORMWATER DRAINAGE DETAILS SHEET 4 OF 7
CI-1-526-005	STORMWATER DRAINAGE DETAILS SHEET 5 OF 7
CI-1-526-006	STORMWATER DRAINAGE DETAILS SHEET 6 OF 7
CI-1-526-007	STORMWATER DRAINAGE DETAILS SHEET 7 OF 7
CI-1-527-001	STORMWATER PIT SCHEDULE



GENERAL NOTES

1. DESIGN HEREIN HAS BEEN PREPARED BY STANTEC AUSTRALIA PTY LTD LEVEL 9, THE FORUM, 203 PACIFIC HIGHWAY, ST LEONARDS NSW 2065
2. CONTRACTOR TO CHECK WITH ENGINEER IF THESE NOTES ARE TO SUPPLEMENT A CIVIL SPECIFICATION.
3. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL / RELEVANT AUTHORITY SPECIFICATIONS AND DETAILS.
4. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH OTHER CONSULTANTS' DRAWINGS AND SPECIFICATIONS AND WITH OTHER SUCH WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ANY DISCREPANCY SHALL BE REFERRED TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.
5. ALL DIMENSIONS ARE IN MILLIMETRES (mm) & ALL LEVELS ARE IN METRES (m), UNO (UNLESS NOTED OTHERWISE).
6. NO DIMENSION SHALL BE OBTAINED BY SCALING THE DRAWINGS.
7. ALL LEVELS AND SETTING OUT DIMENSIONS SHOWN ON THE DRAWINGS SHALL BE CHECKED ON SITE PRIOR TO COMMENCEMENT OF WORKS.
6. EXISTING SERVICES WHERE SHOWN HAVE BEEN PLOTTED FROM SUPPLIED DATA AND SUCH THEIR ACCURACY CAN NOT BE GUARANTEED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH THE LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF WORK.
7. CAD FILES / DTM FILES TO BE SUPPLIED IN AUTOCAD FORMAT FOR SETOUT PURPOSES (UPON REQUEST).

SURVEY NOTES

1. THE EXISTING SITE CONDITIONS SHOWN ON THE FOLLOWING DRAWINGS HAVE BEEN SHOWN AS PER THE TOPOGRAPHIC SURVEY RECEIVED ON 24/05/2024 PREPARED BY MONTEATH & POWYS, REFERENCE '220216C_08', DATED 24/05/2024.
2. THE INFORMATION IS SHOWN TO PROVIDE A BASIS FOR DESIGN. STANTEC DOES NOT GUARANTEE THE ACCURACY OR COMPLETENESS OF THE SURVEY BASE OR ITS SUITABILITY AS A BASIS FOR CONSTRUCTION DRAWINGS. SHOULD DISCREPANCIES BE ENCOUNTERED DURING CONSTRUCTION BETWEEN THE SURVEY DATA AND ACTUAL FIELD DATA, CONTACT STANTEC.
3. IF AN EXISTING SERVICES PLAN HAS BEEN SUPPLIED THIS DOES NOT TAKE PRECEDENCE OVER ORIGINAL SURVEY PLAN.
4. CONTRACTOR TO REVIEW ORIGINAL SURVEY PLAN AND NOTES. THIS INCLUDES REVIEW OF SUBSURFACE UTILITY CLASS INFORMATION

PROTECTION OF TREES

1. WHERE STORMWATER DRAINAGE IS LAID IN THE VICINITY OF TREES / CANOPIES OF TREES, THE WORKS ARE TO BE COMPLETED TO THE PROJECT ARBORISTS REQUIREMENTS.

EXISTING SERVICES

1. EXISTING SERVICES, WHERE SHOWN, HAVE BEEN PLOTTED FROM SUPPLIED DATA AND SUCH THEIR ACCURACY CAN NOT BE GUARANTEED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH THE LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF WORK.
2. EXISTING SERVICES SHOWN ON THE PLANS ARE LOCATED APPROXIMATELY BASED ON INFORMATION SUPPLIED BY THE RELEVANT AUTHORITIES AND/OR SURVEY RECEIVED. STANTEC DOES NOT TAKE RESPONSIBILITY FOR THE SUITABILITY OR LOCATION/DEPTH OF THE EXISTING SERVICES.
3. STANTEC DOES NOT TAKE RESPONSIBILITY FOR ANY POSSIBLE DESIGN ADJUSTMENT OF ANY ADDITIONAL EXISTING SERVICES OR THE ASSOCIATED AUTHORITY NEGOTIATIONS AS A RESULT OF THE PROPOSED WORKS.
4. THE INFORMATION IS SHOWN TO PROVIDE A BASIS FOR DESIGN. STANTEC DOES NOT GUARANTEE THE ACCURACY OR COMPLETENESS OF THE SURVEY BASE OR ITS SUITABILITY AS A BASIS FOR CONSTRUCTION DRAWINGS.
5. EXISTING BUILDINGS, EXTERNAL STRUCTURES AND TREES SHOWN ON THESE DRAWINGS ARE FEATURES EXISTING PRIOR TO ANY DEMOLITION WORKS.
6. THE CONTRACTOR SHALL UNDERTAKE POTHOLING AND/OR INVESTIGATION WORKS TO LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCING WORKS. THIS INCLUDES CONFIRMING THE LOCATION AND DETAILS OF THE EXISTING SITE STORMWATER DISCHARGE.
7. ALL AREAS WITHIN THE EXTENT OF WORKS TO BE SCANNED FOR EXISTING UTILITY SERVICES AND LOCATIONS PRIOR TO CONSTRUCTION.
8. WHIST EVERY EFFORT HAS BEEN MADE TO AVOID CLASHES WITH EXISTING SERVICES, EXTENT AND QUALITY OF SUPPLIED DATA IS INSUFFICIENT FOR COMPLETE CLASH DETECTION ACCURACY. CONTRACTOR TO TAKE CARE WORKING AROUND EXISTING UTILITIES AND REPORT ANY POSSIBLE CLASHES BACK TO THE ENGINEER.
9. THE CONTRACTOR SHALL ALLOW FOR THE CAPPING OFF, EXCAVATION, REMOVAL AND DISPOSAL IF REQUIRED OF ALL EXISTING SERVICES IN AREAS AFFECTED BY WORKS WITHIN THE CONTRACT AREA, AS SHOWN ON THE DRAWINGS UNLESS DIRECTED OTHERWISE BY THE SUPERINTENDENT.
10. THE CONTRACTOR SHALL ENSURE THAT AT ALL TIMES SERVICES TO ALL BUILDINGS NOT AFFECTED BY THE WORKS ARE NOT DISRUPTED.
11. THE CONTRACTOR SHALL CONSTRUCT TEMPORARY SERVICES TO MAINTAIN EXISTING SUPPLY TO BUILDINGS REMAINING IN OPERATION DURING WORKS TO THE SATISFACTION AND APPROVAL OF THE SERVICE AUTHORITY. ONCE DIVERSION IS COMPLETE AND COMMISSIONED, THE CONTRACTOR SHALL REMOVE ALL SUCH TEMPORARY SERVICES AND MAKE GOOD TO THE SATISFACTION OF THE RELEVANT SERVICE AUTHORITY.
12. PRIOR TO COMMENCEMENT OF ANY WORKS THE CONTRACTOR SHALL GAIN WRITTEN APPROVAL OF THEIR PROGRAMME FOR THE RELOCATION/CONSTRUCTION OF TEMPORARY SERVICES.
13. CLEARANCE AND COVER REQUIREMENTS SHALL BE OBTAINED FROM THE RELEVANT SERVICE AUTHORITY BEFORE COMMENCEMENT OF WORKS AND SHALL BE ADHERED TO AT ALL TIMES.

PROPOSED SERVICES NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH RELEVANT SERVICE AUTHORITY DOCUMENTATION AND CURRENT NSW STREETS OPENING CONFERENCE GUIDE TO CODES AND PRACTICES FOR STREETS OPENING LITERATURE.
2. THE CONTRACTOR SHALL ATTEND, MANAGE & SUPERVISE THE PROVISION OF PUBLIC UTILITY SERVICES TO THE WORKS GENERALLY AS INDICATED ON THE SERVICES PLANS, NOTING THAT PRIOR & DURING CONSTRUCTION THE PUBLIC UTILTITY AUTHORITIES WILL FINALISE THEIR DOCUMENTATION TO CONSTRUCTION ISSUE STANDARD.
3. THE CIVIL CONTRACTOR (TRENCH PROVIDER) IS TO ARRANGE ON SITE MEETING WITH ALL SERVICE AUTHORITIES PRIOR TO THE INSTALLATION OF CONDUITS.
4. THE CIVIL CONTRACTOR TO CO-ORDINATE INSTALLATION OF ELECTRICITY, GAS,TELECOMMUNICATION, WATER AND SEWER SERVICES.
5. ELECTRICITY, GAS AND TELECOMMUNICATION SERVICES ARE TO BE LAID FOLLOWING THE INSTALLATION OF STORMWATER, SEWER AND WATER SERVICES AND KERB AND GUTTER.
6. ALL UTILITY AUTHORITY REPRESENTATIVES TO INSPECT ROAD CROSSINGS PRIOR TO SEALING.
7. ALL ELECTRICAL ROAD CROSSINGS TO BE CLASS 6 (ORANGE) uPVC CONDUITS.
8. ALL GAS ROAD CROSSINGS TO BE uPVC GREY SEWER GRADE CONDUITS.
9. FOR ALL STREET POLES, REFER TO THE ELECTRICAL ENGINEER'S DOCUMENTATION. STREET POLES TO BE POSITIONED THE APPROPRIATE DISTANCE FROM FACE OF KERB TO FACE OF POLE ACCORDING TO THE CURRENT NSW STREETS OPENING CONFERENCE GUIDE TO CODES AND PRACTICES FOR STREETS OPENING LITERATURE. CONTRACTOR TO ALLOW TO EXCAVATE AND BACKFILL TRENCH GENERALLY IN ACCORDANCE WITH NOTE 2.
10. ALL SERVICE PIT COVERS AND MARKERS ARE TO BE LAID WHOLLY WITHIN THE CONCRETE FOOTPATH. CONTACT SUPERINTENDANT SHOULD DIFFICULTIES ARISE.
11. TELSTRA'S PLANS SHOW ONLY THE PRESENCE OF CABLES AND PLANT. THEY ONLY SHOW THEIR POSITION RELATIVE TO ROAD BOUNDARIES, PROPERTY FENCES ETC. AT THE TIME OF INSTALLATION AND TELSTRA DOES NOT WARRANT OR HOLD OUT THAT SUCH PLANS ARE ACCURATE THEREAFTER DUE TO CHANGES THAT MAY OCCUR OVER TIME. DO NOT ASSUME DEPTH OR ALIGNMENT OF CABLES OR PLANT AS THESE VARY SIGNIFICANTLY.
12. THE CONTRACTOR HAS A DUTY OF CARE WHEN EXCAVATING NEAR TELSTRA CABLES AND PLANT. BEFORE USING MACHINE EXCAVATORS TELSTRA PLANT MUST FIRST BE PHYSICALLY EXPOSED BY SOFT DIG POTHOLING TO IDENTIFY IT'S LOCATION TELSTRA WILL SEEK COMPENSATION FOR DAMAGES CAUSED TO IT'S PROPERTY AND LOSSES CAUSED TO TELSTRA AND IT'S CUSTOMERS.

STORMWATER DRAINAGE NOTES

1. ON COMPLETION OF STORMWATER INSTALLATION, ALL DISTURBED AREAS MUST BE RESTORED TO ORIGINAL CONDITION, INCLUDING KERBS, FOOTPATHS, CONCRETE AREAS, GRAVEL AND GRASSED AREAS AND ROAD PAVEMENTS, UNLESS DIRECTED OTHERWISE.
2. THE CONTRACTOR IS TO EXERCISE DUE CARE AND ATTENTIION DURING PIPE INSTALLATION ENSURING PIPES ARE NOT DAMAGES DURING CONSTRUCTION AND CONSTRUCTION TRAFFIC DOES NOT EXCEED THE LOAD SPECIFIED FOR THE PIPE PROPOSED. IF THE PROPOSED PIPE CLASS WILL NOT WITHSTAND THE CONSTRUCTION LOAD, THE CONTRACTOR IS TO UPGRADE PIPE CLASSES TO SUIT AT NO COST TO THE PRINCIPAL.
3. PIPES 300 DIA. AND LARGER TO BE REINFORCED CONCRETE CLASS '3' APPROVED SPIGOT AND SOCKET WITH RUBBER RING JOINTS. U.N.O.
4. PIPES LESS THAN OR EQUAL TO 225 DIA. SHALL BE uPVC DWV GRADE CLASS SN8 IN ACCORDANCE WITH AS/NZS 1260:2009-PVC-U PIPES AND FITTINGS FOR DRAIN, WASTE AND VENT APPLICATION WITH SOLVENT WELDED JOINTS.
5. EQUIVALENT STRENGTH REINFORCED CONCRETE OR FIBROUS REINFORCED CONCRETE PIPES MAY BE USED SUBJECT TO APPROVAL BY THE SUPERINTENDENT.
6. CONTRACTOR IS TO ENSURE THAT ALL DRAINAGE STRUCTURES ARE ADEQUATELY REINFORCED AND SHALL PROVIDE DESIGN CERTIFICATION FOR ALL REINFORCED CONCRETE LIDS.
7. ALL STORMWATER DRAINAGE LINES UNDER PROPOSED BUILDING SLABS TO BE uPVC PRESSURE PIPE GRADE 6. ENSURE ALL VERTICALS AND DOWNPIPES ARE uPVC PRESSURE PIPE, GRADE 6 FOR A MIN OF 3.0m IN HEIGHT.
8. PIPES TO BE INSTALLED TO TYPE H2 (NOT UNDER ROADWAYS) OR TYPE HS2 (UNDER ROADWAYS) SUPPORT IN ACCORDANCE WITH AS 3725 (2007). IN ALL CASES BACKFILL TRENCH WITH SAND TO 300mm ABOVE PIPE. WHERE PIPE IS UNDER PAVEMENTS BACKFILL REMAINDER OF TRENCH TO UNDERSIDE OF PAVEMENT WITH SAND OR APPROVED GRANULAR MATERIAL COMPACTED IN 150mm LAYERS TO MINIMUM 98% STANDARD MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289 5.2.1. (OR A DENSITY INDEX OF NOT LESS THAN 75)
9. PIT COVER LEVELS TO MATCH SURROUNDING FINISHED LEVELS. DESIGN FINISHED SURFACE LEVELS OF STRUCTURES ARE FOR THE CONTRACTORS GUIDANCE ONLY. ACTUAL FINISHED LEVELS SHALL BE SET OUT AS DIRECTED ON SITE IN KEEPING WITH THE REQUIREMENTS AND SPECIFICATIONS OF THE LOCAL AUTHORITY AND ACTUAL FINISHED GROUND LEVELS.
10. STORMWATER PIT COVERS FOR JUNCTION AND GRATED PITS TO COMPLY WITH AS 3996 FOR:

LOAD CLASS	TYPICAL USE
CLASS A	INTERNAL PEDESTRIAN PRECINCTS ONLY. NO VEHICULAR TRAFFIC
CLASS B	EXTERNAL AREAS INCLUDING FOOTPATHS, FOOTWAYS AND LIGHT VEHICULAR TRAFFIC ONLY
CLASS D	CARS, TRUCKS (HIGHWAY TRAFFIC) AND COMMERCIAL VEHICULAR TRAFFIC
CLASS E	HEAVY DUTY FORKLIFTS AND EARTHMOVING EQUIPMENT

11. REFER TO TABLE BELOW FOR MINIMUM PIT DIMENSIONS (AS 3500.3 TABLE 7.5.2.1):

DEPTH TO INVERT	WIDTH	LENGTH
LESS THAN 600mm	450mm	450mm
FROM 600mm TO 900mm	600mm	600mm
FROM 900mm TO 1200mm	600mm	900mm
MORE THAN 1200mm	900mm	900mm

STORMWATER DRAINAGE NOTES

1. ALL INTERNAL WORKS WITHIN PROPERTY BOUNDARIES ARE TO COMPLY WITH THE REQUIREMENTS OF AS 3500 3.1 (2006) AND AS/NZS 3500 3.2 (2010).
2. PRECAST PITS MAY BE USED EXTERNAL TO THE BUILDING SUBJECT TO APPROVAL BY STANTEC AUSTRALIA.
3. ENLARGERS, CONNECTIONS AND JUNCTIONS TO BE PREFABRICATED FITTINGS WHERE PIPES ARE LESS THAN 300 DIA.
4. PIPES FOR SUBSOIL DRAINS SHALL BE SLOTTED 100mm DIA. CLASS 1000 WRAPPED IN GEOFABRIC, UNO, COMPLYING WITH THE REQUIREMENTS OF AS2439. ALL SUBSOIL PIPES SHALL BE FACTORY SLOTTED HDPE, MIN. 100mm DIA. CLASS SN8, SIMILAR OR EQUAL TO VINIDEX DRAINCOIL, CERTIFIED uPVC, IN ACCORDANCE WITH AS1260, AS2032 (PIPE) & AS3789 (JOINTING) INSTALLED ON GEOTEXTILE FABRIC WITH 150mm SURROUND OF 25mm BLUE METAL AGGREGATE, UNO. WHERE SUBSOIL DRAINS PASS UNDER FLOOR SLABS AND PAVEMENTS, UNSLOTTED uPVC DWV GRADE CLASS SN8 SEWER GRADE PIPE IS TO BE USED.
5. CARE IS TO BE TAKEN WITH LEVELS OF STORMWATER LINES. GRADES SHOWN ARE NOT TO BE REDUCED WITHOUT APPROVAL.
6. AT ALL TIMES DURING CONSTRUCTION OF STORMWATER PITS, ADEQUATE SAFETY PROCEDURES SHALL BE TAKEN TO ENSURE AGAINST THE POSSIBILITY OF PERSONNEL FALLING DOWN PITS.
7. ALL EXISTING STORMWATER DRAINAGE LINES AND PITS THAT ARE TO REMAIN ARE TO BE INSPECTED AND CLEANED. DURING THIS PROCESS ANY PART OF THE STORMWATER DRAINAGE SYSTEM THAT WARRANTS REPAIR SHALL BE REPORTED TO THE SUPERINTENDENT/ENGINEER FOR FURTHER DIRECTIONS. CCTV SHALL BE UNDERTAKEN OF EXISTING PIPES WHERE NECESSARY TO CONFIRM THEIR ADEQUACY PRIOR TO AND FOLLOWING CONSTRUCTION.
8. THE CONTRACTOR IS TO ORGANISE AND STAGE CONSTRUCTION WORK AND UNDERTAKE ANY DIVERSION WORKS TO ENSURE THE EXISTING DRAINAGE IS ABLE TO CONVEY ALL STORMWATER FLOWS THAT MAY OCCUR DURING THE PERIOD OF THE CONSTRUCTION WORKS.
9. ANY DAMAGE TO THE WORKS DUE TO STORMWATER FLOWS OR FLOODING DURING THE CONSTRUCTION PERIOD IS AT THE CONTRACTOR'S RISK.
10. SETOUT POINTS FOR STORMWATER STRUCTURES ARE AS INDICATED IN THE DRAWINGS UNLESS OTHERWISE NOTED.
11. ALL PAVED SURFACE LEVELS AND GRADES TO BE COORDINATED WITH GULLY PIT LEVELS TO ENSURE NO UNDRAINED AREAS OCCUR.
12. THE SIDES OF ALL PIPE TRENCH EXCAVATIONS DEEPER THAN 1.0m SHALL BE FULLY SUPPORTED AT ALL TIMES AND HAVE APPROPRIATE EDGE PROTECTION.
13. ALL NEW PIPES TO BE LAID IN AN UPSTREAM DIRECTION. THE LINE, LEVEL AND LOCATION OF EXISTING SERVICES CROSSING THE LINE OF THE PROPOSED STORMWATER PIPE SHALL BE DETERMINED BY EXCAVATION PRIOR TO THE LAYING OF THE PIPE. IF CONFLICT IS APPARENT, THE ENGINEER SHALL BE NOTIFIED AND INSTRUCTIONS AS TO WHETHER THE EXISTING SERVICE IS TO BE ADJUSTED OR THE PROPOSED PIPE INVERT ALTERED WILL BE ISSUED.
14. PIPE BEDDING, HAUNCH AND BACKFILL TO BE AS SHOWN ON THE CIVIL DETAILS DRAWINGS AND THE CIVIL SPECIFICATION. WHERE TRENCHES ARE IN ROCK, THE PIPE SHALL BE BEDDED ON A MIN. 50mm CONCRETE BED OR 75mm THICK BED OF 12mm BLUE METAL UNDER THE BARREL OF THE PIPE. THE PIPE COLLAR AT NO POINT SHALL BEAR ON THE ROCK.
15. SUBSOIL DRAINAGE PIPES TO BE SLOTTED PIPE AND FILTER SOCK CLASS 1000 TO AS2439 PART 1 LAID AT PREFERABLE MINIMUM GRADE 1 IN 100 OR ABSOLUTE MINIMUM 1 IN 200 WHERE LIMITED BY OUTFALL LEVELS.
16. 100mm DIA. SUBSOIL DRAINAGE SHALL BE PROVIDED IN THE FOLLOWING LOCATIONS AND CONNECTED TO THE SITE STORMWATER DRAINAGE SYSTEM, UNO.:-
    - 16.1. UNDER KERBS AND ADJACENT TO ALL PAVEMENTS
    - 16.2. AT THE BASE OF THE HIGH SIDE OF ALL RETAINING WALLS
    - 16.3. AROUND THE BUILDING SLAB FOOTPRINT
    - 16.4. AROUND ALL STORMWATER PITS

28. STORMWATER STRUCTURES ARE TO BE CONSTRUCTED PERPENDICULAR TO THE INCOMING PIPEWORK UNLESS OTHERWISE NOTED.
29. PRECAST COMPONENTS SHALL BE CONNECTED BY MEANS OF EPOXY OR CHEMICAL GROUTED BARS OF THE SAME DIAMETER AND SPACING AS THE SMALLER BARS IN THE RESPECTIVE COMPONENTS.
25. PRE-CAST PITS MUST HAVE LIFTING ANCHORS.
26. WORKING LOADS ARE THOSE DUE TO FILL MATERIAL AND STANDARD HIGHWAY VEHICLES AS PER AS3725. CONSTRUCTION LOADS HAVE NOT BEEN ALLOWED FOR.
27. ALL EXPOSED EDGES ON STORMWATER PITS TO BE ROUNDED TO 5mm RAD. UNO.
28. ALL MILD STEEL FIXTURES INCLUDING GRATES, FRAMES, STEP IRONS, LADDERS, ETC., SHALL BE HOT DIP GALVANISED. GALVANISING SHALL COMPLY WITH THE REQUIREMENTS OF AS1214 OR AS1650, AS APPROPRIATE.
29. ALL CONNECTIONS TO EXISTING DRAINAGE PITS SHALL BE MADE IN A TRADESMAN-LIKE MANNER AND THE INTERNAL WALL OF THE PIT AT THE POINT OF ENTRY SHALL BE CEMENT RENDERED TO ENSURE A SMOOTH FINISH.
30. PITS DEEPER THAN 1200mm SHALL HAVE ACCESS LADDERS OR STEP IRONS INSTALLED AND SHALL BE IN ACCORDANCE WITH THE LOCAL OR STATUTORY REQUIREMENTS.
31. WHERE A PIT IS IDENTIFIED AS A CONFINED SPACE, PIT COVERS SHALL BE PROVIDED WITH STANDARD CONFINED SPACE SIGNAGE.
32. CAPPED FLUSHING POINTS MUST BE PROVIDED FOR ALL SUBSOIL AND SEEPAGE DRAINAGE SYSTEMS AT THE END OF EACH PIPE, AT MAX. 30m SPACING AND AT CHANGES IN DIRECTION.
33. THE CONTRACTOR SHALL OBTAIN A ROAD OPENING PERMIT FOR ANY WORKS WITHIN THE PUBLIC ROAD RESERVE AND COMPLY WITH ALL AUTHORITY REQUIREMENTS.
34. PIPES SHALL BE TRUE TO GRADES SHOWN AND ALIGNED SO THAT THE CENTRES OF THE INLET PIPES INTERSECT WITH THE CENTRE OF THE OUTLET PIPE AT THE DOWNSTREAM FACE OF THE PIT.
35. MINIMUM GRADES FOR GRAVITY STORMWATER DRAINAGE SHALL CONFORM TO AS 3500 PART 3 AS FOLLOWS, UNO:-
    - 35.1. 1% FOR 100mm AND 150mm DIA. PIPES
    - 35.2. 0.5% FOR 225mm DIA. PIPES
    - 35.3. 0.4% FOR 300mm DIA. PIPES
    - 35.4. 0.33% FOR 375mm DIA. PIPES
36. MINIMUM DEPTH OF COVER SHALL BE AS FOLLOWS, UNO:-
    - 36.1. 300mm IN PRIVATE PROPERTY (NON-VEHICULAR TRAFFIC)
    - 36.2. 450mm IN PUBLIC AREAS
    - 36.3. 600mm IN VEHICULAR TRAFFICABLE AREAS (FOOTWAY/ROADWAYS)

STORMWATER DRAINAGE NOTES

37. BED ALL PIPES FIRMLY AND EVENLY ONTO IMPORTED BEDDING FILL MATERIAL.

38. LAY AND JOINT ALL PIPES IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATION AND
    - AS 3725 BURIED FLEXIBLE PIPELINES
    - AS 2566 LOADS ON BURIED FLEXIBLE PIPELINES
    - AS 1597.2 PRECAST REINFORCED CONCRETE BOX CULVERTS
    - AS 3500 NATIONAL PLUMBING AND DRAINAGE CODE
    - SYDNEY WATER REQUIREMENTS (WHERE APPLICABLE)

39. ALLOW TO TEST ALL PIPES AND PITS TO MANUFACTURERS REQUIREMENTS.

EROSION AND SEDIMENT CONTROL NOTES

GENERAL INSTRUCTIONS

1. THE SITE SUPERINTENDENT/ENGINEER WILL ENSURE THAT ALL SOIL AND WATER MANAGEMENT WORKS ARE LOCATED AS DOCUMENTED.
2. ALL WORK SHALL BE GENERALLY CARRIED OUT IN ACCORDANCE WITH
    - 2.1. LOCAL AUTHORITY REQUIREMENTS
    - 2.2. EPA REQUIREMENTS
    - 2.3. NSW DEPARTMENT OF HOUSING MANUAL "MANAGING URBAN STORMWATER, SOILS AND CONSTRUCTION", 4th EDITION, MARCH 2004.
3. MAINTAIN THE EROSION CONTROL DEVICES TO THE SATISFACTION OF THE SUPERINTENDENT AND THE LOCAL AUTHORITY.
4. WHEN STORMWATER PITS ARE CONSTRUCTED, PREVENT SITE RUNOFF ENTERING UNLESS SEDIMENT FENCES ARE ERECTED AROUND PITS.
5. CONTRACTOR IS TO ENSURE ALL EROSION & SEDIMENT CONTROL DEVICES ARE MAINTAINED IN GOOD WORKING ORDER AND OPERATE EFFECTIVELY. REPAIRS AND OR MAINTENANCE SHALL BE UNDERTAKEN AS REQUIRED, PARTICULARLY FOLLOWING STORM EVENTS.

LAND DISTURBANCE

6. WHERE PRACTICAL, THE SOIL EROSION HAZARD ON THE SITE WILL BE KEPT AS LOW AS POSSIBLE. TO THIS END, WORKS SHOULD BE UNDERTAKEN IN THE FOLLOWING SEQUENCE:
    - 6.1. INSTALL A SEDIMENT FENCE ALONG THE BOUNDARIES AS SHOWN ON PLAN. REFER DETAIL.
    - 6.2. CONSTRUCT STABILISED CONSTRUCTION ENTRANCE TO LOCATION AS DETERMINED BY SUPERINTENDENT/ENGINEER. REFER DETAIL.
    - 6.3. INSTALL SEDIMENT BASIN AS SHOWN ON PLAN
    - 6.4. INSTALL SEDIMENT TRAPS AS SHOWN ON PLAN.
7. UNDERTAKE SITE DEVELOPMENT WORKS IN ACCORDANCE WITH THE ENGINEERING PLANS. WHERE POSSIBLE, PHASE DEVELOPMENT SO THAT LAND DISTURBANCE IS CONFINED TO AREAS OF WORKABLE SIZE.

EROSION CONTROL

8. DURING WINDY WEATHER, LARGE, UNPROTECTED AREAS WILL BE KEPT MOIST (NOT WET) BY SPRINKLING WITH WATER TO KEEP DUST UNDER CONTROL.
9. FINAL SITE LANDSCAPING WILL BE UNDERTAKEN AS SOON AS POSSIBLE AND WITHIN 20 WORKING DAYS FROM COMPLETION OF CONSTRUCTION ACTIVITIES.

SEDIMENT CONTROL

10. STOCKPILES WILL NOT BE LOCATED WITHIN 2 METRES OF HAZARD AREAS, INCLUDING LIKELY AREAS OF CONCENTRATED OR HIGH VELOCITY FLOWS SUCH AS WATERWAYS. WHERE THEY ARE BETWEEN 2 AND 5 METRES FROM SUCH AREAS, SPECIAL SEDIMENT CONTROL MEASURES SHOULD BE TAKEN TO MINIMISE POSSIBLE POLLUTION TO DOWNSLOPE WATERS, E.G. THROUGH INSTALLATION OF SEDIMENT FENCING.
11. ANY SAND USED IN THE CONCRETE CURING PROCESS (SPREAD OVER THE SURFACE) WILL BE REMOVED AS SOON AS POSSIBLE AND WITHIN 10 WORKING DAYS FROM PLACEMENT.
12. WATER WILL BE PREVENTED FROM ENTERING THE PERMANENT DRAINAGE SYSTEM UNLESS IT IS RELATIVELY SEDIMENT FREE, I.E. THE CATCHMENT AREA HAS BEEN PERMANENTLY LANDSCAPED AND/OR ANY LIKELY SEDIMENT HAS BEEN FILTERED THROUGH AN APPROVED STRUCTURE.
13. TEMPORARY SOIL AND WATER MANAGEMENT STRUCTURES WILL BE REMOVED ONLY AFTER THE LANDS THEY ARE PROTECTING ARE REHABILITATED.

OTHER MATTERS

13. ACCEPTABLE RECEPTORS WILL BE PROVIDED FOR CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHINGS, LIGHT-WEIGHT WASTE MATERIALS AND LITTER.
14. ANY EXISTING TREES WHICH FORM PART OF THE FINAL LANDSCAPING PLAN WILL BE PROTECTED FROM CONSTRUCTION ACTIVITIES BY:
    - 14.1. PROTECTING THEM WITH BARRIER FENCING OR SIMILAR MATERIALS INSTALLED OUTSIDE THE DRIP LINE
    - 14.2. ENSURING THAT NOTHING IS NAILED TO THEM
    - 14.3. PROHIBITING PAVING, GRADING, SEDIMENT WASH OR PLACING OF STOCKPILES WITHIN THE DRIP LINE EXCEPT UNDER THE FOLLOWING CONDITIONS.
    - 14.4. ENCROACHMENT ONLY OCCURS ON ONE SIDE AND NO CLOSER TO THE TRUNK THAN EITHER 1.5 METRES OR HALF THE DISTANCE BETWEEN THE OUTER EDGE OF THE DRIP LINE AND THE TRUNK, WHICH EVER IS THE GREATER
    - 14.5. A DRAINAGE SYSTEM THAT ALLOWS AIR AND WATER TO CIRCULATE THROUGH THE ROOT ZONE (E.G. A GRAVEL BED) IS PLACED UNDER ALL FILL LAYERS OF MORE THAN 300 MILLIMETRES DEPTH
    - 14.6. CARE IS TAKEN NOT TO CUT ROOTS UNNECESSARILY NOR TO COMPACT THE SOIL AROUND THEM.

ASPHALTIC CONCRETE NOTES

1. GENERAL
    - 1.1. MINERAL AGGREGATED SHALL COMPLY WITH AUSTRALIAN STANDARDS
    - 1.2. MINERAL FILLER SHALL COMPPLY WITH AS 2357 MINERAL FILLERS OR ASPHALT
    - 1.3. BITUMEN BINDER SHALL COMPLY WITH AS 2008.
2. MIX PROPORTIONS
    - 2.1. JOB MIX - 10mm NOMINAL SIZE AGGREGATE. MINIMUM BITUMEN CONTENT BY MASS OF TOTAL MASS - 5.1%
    - 2.2. MIX STABILITY SHALL BE BETWEEN 16kN AND 36kN AS DETERMINED BY AS 2891
    - 2.3. AIR VOIDS IN COMPACTED MIX SHALL BE BETWEEN 4% AND 7% OF THE TOTAL VOLUME OF THE MIX
    - 2.4. VOIDS FILLED IN BINDER - BETWEEN 65% AND 80% OF AIR VOIDS IN THE TOTAL MINERAL AGGREGATE FILLED BY BINDER IN ACCORDANCE WITH AUSTRALIAN STANDARDS
3. PAVEMENT PREPARATION
    - 3.1. THE EXISTING SURFACE TO BE SEALED SHALL BE DRY AND BROOMED BEFORE COMMENCEMENT OF WORK TO ENSURE COMPLETE REMOVAL OF ALL SUPERFICIAL AND FOREIGN MATTER
    - 3.2. ALL DEPRESSIONS OR UNEVEN AREAS ARE TO BE TACK-COATED AND BROUGHT UP TO THE GENERAL LEVEL OR PAVEMENT WITH ASPHALTIC CONCRETE BEFORE LAYING THE MAIN COURSE
4. TACK COATING
    - 4.1. THE WHOLE AREA TO BE SHEETED WITH ASPHALTIC CONCRETE SHALL BE LIGHTLY AND EVENLY COASTED WITH RAPID SETTING BITUMEN COMPLYING WITH AUSTRALIAN STANDARDS. APPLICATION RATE FOR RESIDUAL BITUMEN SHALL BE 0.15 TO 0.3L/m^2. APPLICATION SHALL BE BY MEANS OF A MECHANICAL SPRAYER WITH A SPRAY BAR.
5. SPREADING
    - 5.1. ALL ASPHALTIC CONCRETE SHALL BE SPREAD WITH A SELF-PROPELLING PAVING MACHINE
    - 5.2. THE ASPHALTIC CONCRETE SHALL BE LAID AT A MIX TEMPERATURE AS SPECIFIED BELOW:-

ROAD SURFACE TEMPERATURE IN SHADE (°C)	MIX TEMPERATURES (°C)
5 - 10	NOT PERMITTED
10 - 15	150
15 - 25	145
OVER 25	140

- 5.3 ASPHALTIC CONCRETE SHALL NOT BE LAID WHEN THE ROAD SURFACE IS WET OR WHEN COLD WINDS CHILL THE MIX, ADVERSELY AFFECTING SPREADING AND COMPACTION
- 5.4 THE MINIMUM COMPACTED THICKNESS IS 30mm OVER EXISTING SEALED PAVEMENTS AND 50mm OVER NEW PAVEMENTS

6. JOINTS
    - 6.1. THE NUMBER OF JOINTS BOTH LONGITUDINAL AND TRANSVERSE SHALL BE KEPT TO A MINIMUM
    - 6.2. THE DENSITY AND SURFACE FINISH AT JOINTS SHALL BE SIMILAR TO THOSE OF THE REST OF THE LAYER
7. COMPACTION
    - 7.1. ALL COMPACTION SHALL BE UNDERTAKEN USING SELF-PROPELLED ROLLERS
    - 7.2. INITIAL ROLLING SHALL BE COMPLETE BEFORE THE MIX TEMPERATURE FALLS BELOW 105°C
    - 7.3. SECONDARY ROLLING SHALL BE COMPLETED BEFORE THE MIX TEMPERATURE FALLS BELOW 60°C
    - 7.4. MINIMUM CHARACTERISTICS VALUE OF RELATIVE COMPACTION OF A LOT WHEN TESTED IN ACCORDANCE WITH AS 2150
8. FINISHED PAVEMENT PROPERTIES
    - 8.1. FINISHED SURFACES SHALL BE SMOOTH, DENSE AND TRUE TO SHAPE AND SHALL NOT VARY MORE THAN 10mm FROM THE SPECIFIED PLAN LEVEL AT ANY POINT AND SHALL NOT DEVIATE FROM THE BOTTOM OF A 3m STRAIGHT EDGE LAID IN ANY DIRECTION BY MORE THAN 5mm.
9. OTHER
    - 9.1. ASPHALTIC CONCRETE SHALL CONFORM TO RMS. SPECIFICATION R116.
    - 9.2. ALL BASECOURSE MATERIAL SHALL BE IGNEOUS ROCK QUARRIED MATERIAL TO COMPLY WITH RMS. FORM 3051 (UNBOUND), RMS. FORM 3052 (BOUND) COMPACTED TO MINIMUM 98% MODIFIED DENSITY IN ACCORDANCE WITH AS 1289 5.2.1. FREQUENCY OF COMPACTION TESTING SHALL NOT BE LESS THAN 1 TEST PER 50m^3 BASECOURSE MATERIAL PLACED.
    - 9.3. ALL SUB-BASE COURSE MATERIAL SHALL BE IGNEOUS ROCK QUARRIED MATERIAL TO COMPLY WITH RMS. FORM 3051, 3051.1 AND COMPACTED TO MINIMUM 95% MODIFIED DENSITY IN ACCORDANCE WITH A.S 1289 5.2.1. FREQUENCY OF COMPACTION TESTING SHALL NOT BE LESS THAN 1 TEST PER 50m^3 OF SUB-BASE COURSE MATERIAL PLACED.
    - 9.4. AS AN ALTERNATIVE TO THE USE OF IGNEOUS ROCK AS A SUB-BASE MATERIAL IN (9.2) A CERTIFIED RECYCLED CONCRETE MATERIAL COMPLYING WITH RMS. FORM 3051 AND 3051.1 WILL BE CONSIDERED. SUBJECT TO MATERIAL SAMPLES AND APPROPRIATE CERTIFICATIONS BEING PROVIDED TO THE SATISFACTION OF STANTEC.
    - 9.5. SHOULD THE CONTRACTOR WISH TO USE A RECYCLED PRODUCT THIS SHALL BE CLEARLY INDICATED IN THEIR TENDER AND THE PRICE DIFFERENCE BETWEEN AN IGNEOUS PRODUCT AND A RECYCLED PRODUCT SHALL BE CLEARLY INDICATED. THIS PRODUCT SHALL BE REVIEWED AND APPROVED BY THE ENGINEER.

RETAINING WALL NOTES

1. BASE MATERIAL SHALL BE COMPACTED TO MINIMUM 98% SMDD WITHIN 2% OF STANDARD OPTIMUM MOISTURE CONTENT (SMOC) DETERMINED BY THE STANDARD COMPACTION TEST IN ACCORDANCE WITH THE CURRENT AUSTRALIAN STANDARD AS 1289.5.1.1 MINIMUM ALLOWABLE BEARING PRESSURE OF 150kPa. GEOTECHNICAL ENGINEER EMPLOYED BY CONTRACTOR TO INSPECT AND CONFIRM.
2. DRAINAGE MATERIAL WITHIN AND IMMEDIATELY BEHIND THE WALL SHALL BE 12-20mm CLEAN AGGREGATE. DRAINAGE MATERIAL TO EXTEND A MINIMUM OF 300mm BEHIND THE RETAINING WALL. COMPACT THE DRAINAGE MATERIAL. ALTERNATIVELY, USE NO FINES CONCRETE AS FOLLOWS:-
    - 2.1. CONCRETE STRENGTH N15
    - 2.2. 210kg/m^3 PORTLAND CEMENT
    - 2.3. MAXIMUM AGGREGATE SIZE 20mm
    - 2.4. W/C RATIO 0.45 TO 0.55
    - 2.5. DENSITY 1600 TO 2000kg/m^3
3. INFILL SOIL SHALL BE CLASS 1 CONTROLLED FILL TO AS 4678, OR AS SPECIFIED ON THE DRAWINGS. UNSUITABLE SOILS, SUCH AS HEAVY CLAYS OR ORGANIC SOILS WITH HIGH PLASTICITY, SHALL NOT BE USED IN THE REINFORCED SOIL MASS.
4. SPREAD BACKFILL IN UNIFORM LIFTS OF 200mm UNCOMPACTED THICKNESS. COMPACT TO 95% SMDD. COMPACTION WITHIN 1.0m BEHIND THE WALL SHALL BE ACCOMPLISHED USING A HAND-OPERATED PLATE COMPACTOR AND SHALL BEGIN BY RUNNING THE PLATE DIRECTLY ON THE BLOCK, THEN COMPACTING IN PARALLEL PATHS, PROGRESSIVELY AWAY FROM THE WALL FACE.
5. WHERE ROADWAYS OR BUILDING STRUCTURES ARE LOCATED ABOVE THE REINFORCED ZONE, COMPACT TO 98% SMDD WITHIN 2% OF SMOC DETERMINED BY THE STANDARD COMPACTION TEST IN ACCORDANCE WITH AS 1289.5.1.1. COMPACTION TESTING SHALL BE TAKEN 1.2m BEHIND THE WALL.

Key Plan: (NTS)

	Issued/Revision	By	Appd	YYYY.MM.DD
H	ISSUED FOR DA	LPT	VE	2024.06.06
G	ISSUED FOR DA	LPT	VE	2024.05.21
F	ISSUED FOR DA	LPT	JMB	2024.03.18
E	ISSUED FOR DA	LPT	JMB	2024.03.08
D	ISSUED FOR DA	LPT	JMB	2024.02.23
C	95% SCHEMATIC DESIGN	LPT	JMB	2024.02.02
B	50% SCHEMATIC DESIGN	LPT	MDR	2023.12.15
A	CONCEPT DESIGN	LPT	MDR	2023.03.31

Issue Status

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File Name: 304000720-CI-1-007-001.DWG	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD
	-	-	-	2023.03.31

Title
GENERAL NOTES

Project No.
304000720

Scale
NTS

Revision
H

Drawing No.
CI-1-007-001

ORIGINAL SHEET - ISO A1 COORD - MGA/YY-Zone DATUM - mAHD

Plotted: 07-Jun-24 10:13:08 AM By: TODD, LAUREN
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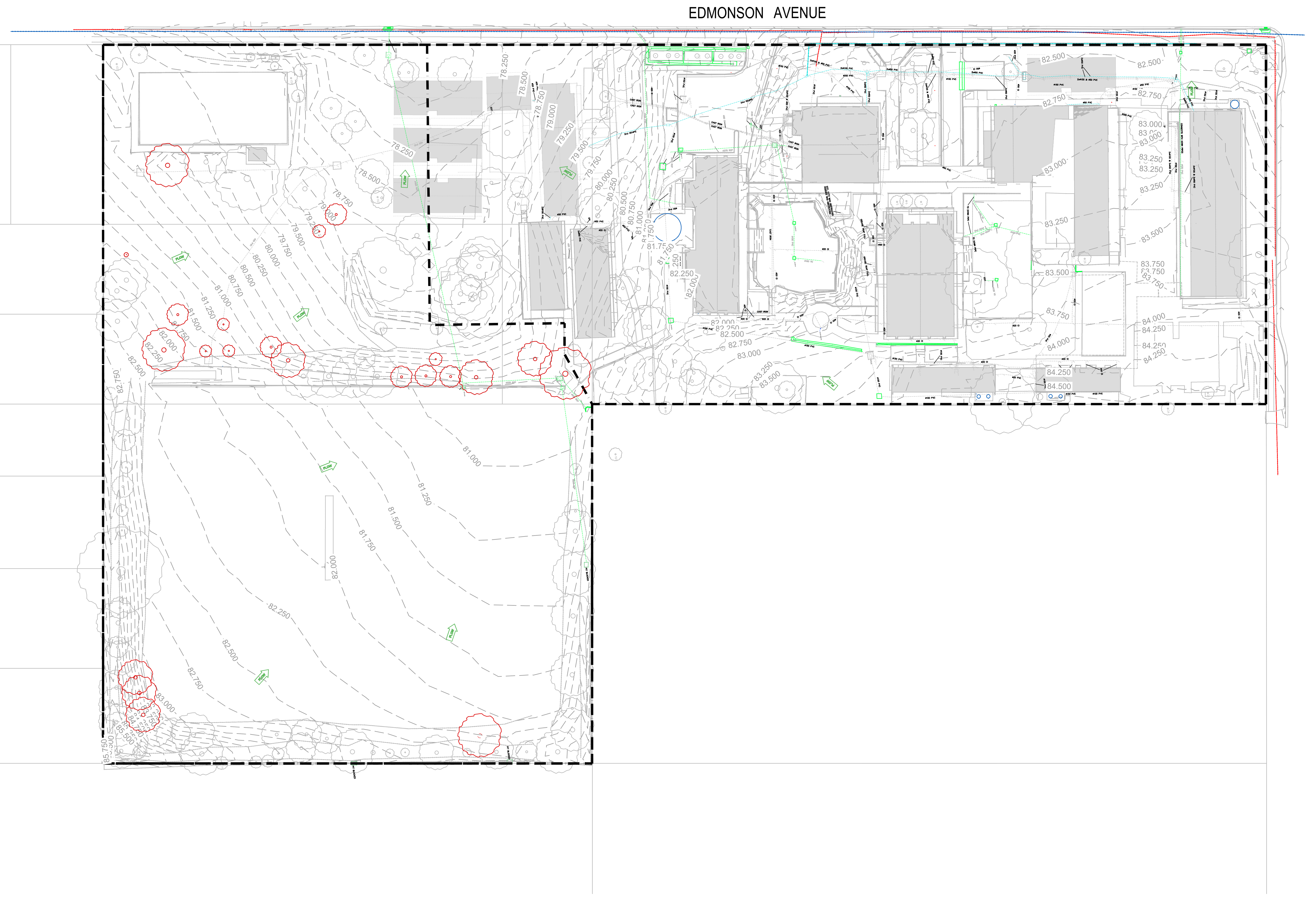

LEGEND

- PROPOSED SITE BOUNDARY
- EXTENT OF WORKS
- EXISTING BUILDING
- 82.500 EXISTING CONTOURS
- E EXISTING ELECTRICAL
- C EXISTING TELECOM
- W EXISTING WATER
- D EXISTING STORMWATER PIPE
- EXISTING STORMWATER PIT
- EXISTING KERB INLET PIT
- FLOW OVERLAND FLOW PATH
- EXISTING TREES TO BE DEMOLISHED

NOTES

1. EXISTING SERVICES SHOWN ON THE PLANS ARE LOCATED APPROXIMATELY BASED ON INFORMATION SUPPLIED BY THE RELEVANT AUTHORITIES, AND SURVEY RECEIVED ON 24/05/2024 PREPARED BY MONTEATH & POWYS PTY LTD, REFERENCE '220216C_08', DATED 24/05/2024. STANTEC DOES NOT TAKE RESPONSIBILITY FOR THE SUITABILITY OR LOCATION/DEPTH OF THE EXISTING SERVICES.
2. THE INFORMATION IS SHOWN TO PROVIDE A BASIS FOR DESIGN. STANTEC DOES NOT GUARANTEE THE ACCURACY OR COMPLETENESS OF THE SURVEY BASE OR ITS SUITABILITY AS A BASIS FOR CONSTRUCTION DRAWINGS.
3. ALL AREAS WITHIN THE EXTENT OF WORKS TO BE SCANNED FOR EXISTING UTILITY SERVICES AND LOCATIONS PRIOR TO CONSTRUCTION.

1:500 5 0 5 10 15 20 25 A1
1:1000 A3

Key Plan: (NTS)

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H	ISSUED FOR DA	LPT	VE	2024.06.06
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File Name: 304000720-CI-1-050-001.DWG

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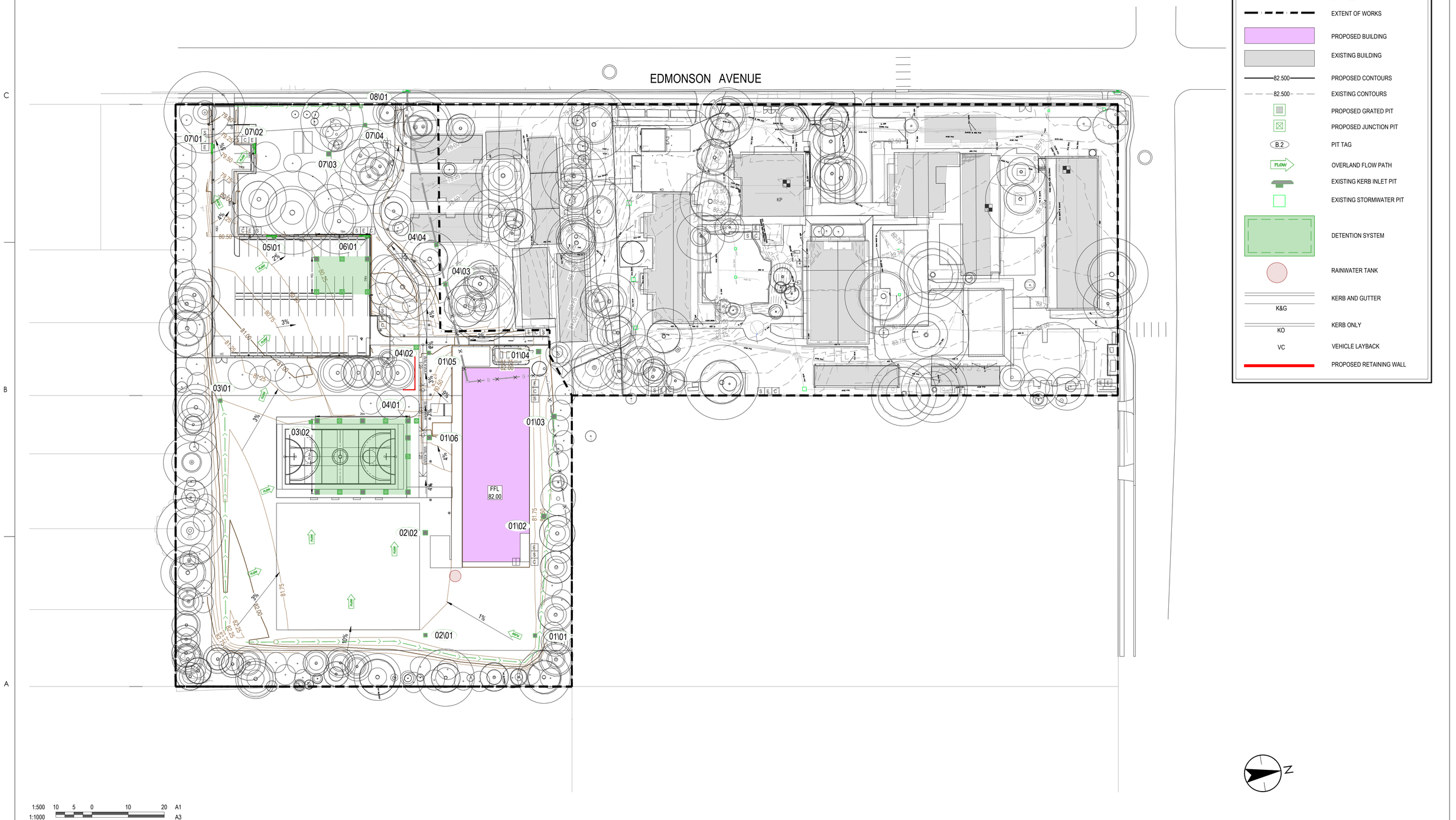
-	-	-	2023.03.31

Title
EXISTING CONDITIONS PLAN

Project No. 304000720
Scale 1:500
Revision H
Drawing No. **CI-1-050-001**

ORIGINAL SHEET - ISO A1 COORD - MGA/YY-Zone DATUM - mAHD



Key Plan: (NTS)

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Title

GENERAL ARRANGEMENT PLAN

Project No. 304000720

Scale 1:500

Revision H

Drawing No. **CI-1-060-001**

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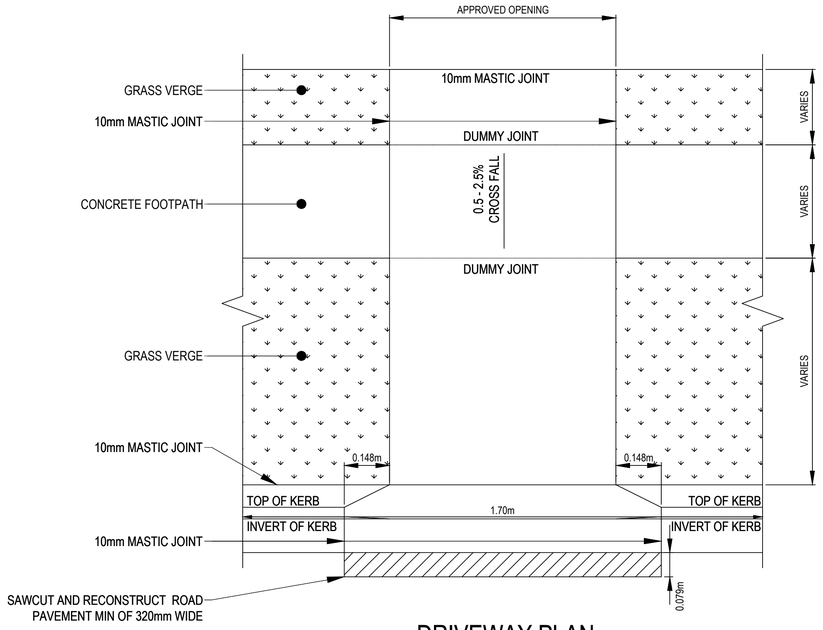
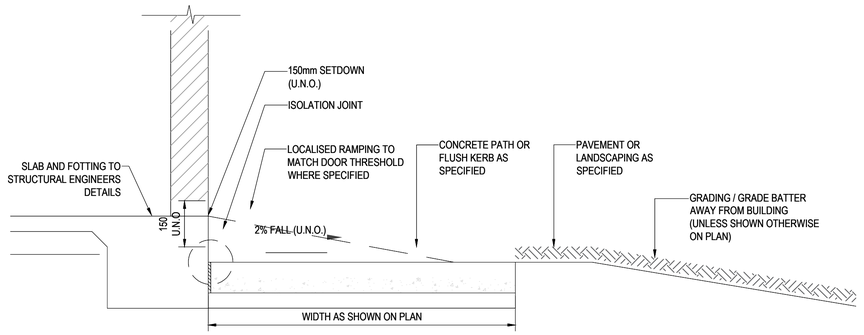
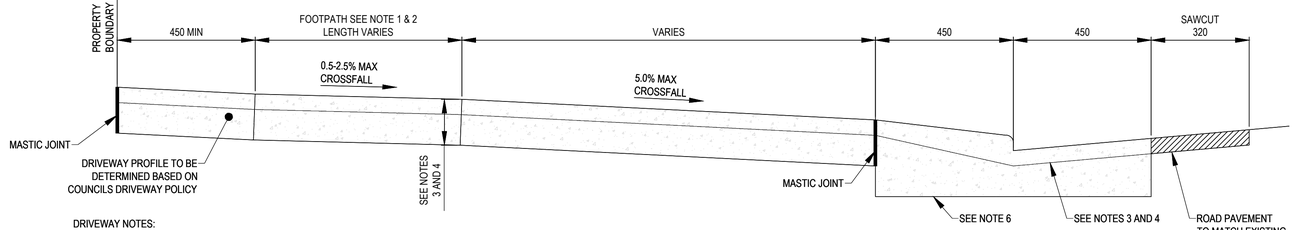


DRIVEWAY PLAN
N.T.S



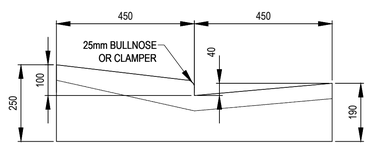
TYPICAL BUILDING PERIMETER/ SET DOWN
N.T.S



SECTION 1
SCALE 1:10

DRIVEWAY NOTES:

1. WHERE FOOTPATH MEETS THE DRIVEWAY, THE CROSS-FALL SHALL BE A MIN 0.5% AND MAX 2.5%, GRADED TOWARDS THE ROAD.
2. WHERE THE FOOTPATH MEETS THE DRIVEWAY, DUMMY JOINTS ARE TO BE PROVIDED. SAW CUT JOINTS WILL NOT BE ACCEPTABLE.
3. REDISDENTIAL DRIVEWAY - 110mm THICKNESS, 25MPa (MINIMUM) COMPRESSIVE STRENGTH AT 28 DAYS WITH SL62 MESH PLACED CENTRALLY AS PER SPECIFICATION.
4. INDUSTRIAL DRIVEWAY - 150mm THICKNESS, 25MPa (MINIMUM) COMPRESSIVE STRENGTH AT 28 DAYS WITH SL82 MESH PLACED CENTRALLY AS PER SPECIFICATION.
5. MATERIAL - DRIVEWAYS SHALL BE ALL CONSTRUCTED IN PLAIN CONCRETE. NO STENCILED, STAMPED, PATTERNED, COLOURED CONCRETE OR ANY OTHER TYPE OF COSMETIC FINISH IS PERMITTED.
6. EXISTING SUBBASE TO BE PROOF ROLLED WITH A SUITABLE ROLLER. AREAS WHICH SHOW VISIBLE HEAVE UNDER COMPACTION SHOULD BE OVER EXCAVATED FURTHER 300mm AND REPLACED WITH COMPACTED AND APPROVED FILL. BEDDING MATERIAL SHALL BE DGB20 (DENSELY GRADED BASE) 100mm LAYER COMPACTED TO 98%.
7. A MINIMUM 320mm WIDTH OF ASPHALT IN FRONT OF GUTTER IS TO BE REMOVED AND REPLACED WITH HOT MIX. APPLICANT CAN OBTAIN QUOTATION FROM COUNCIL.
8. ALL EXPOSED EDGES TO BE ROUNDED TO 10mm AND SURFACES BE BROOM FINISHED.
9. LAYBACK, GUTTER AND KERB SHALL BE STEEL TROWLED FINISHED.
10. IT IS THE RESPONSIBILITY OF THE OWNER TO ENGAGE THE SERVICES OF A QULAIFIED PROFESSIONAL TO DESIGN ALL DRIVEWAYS (INTERNAL AND EXTERNAL) IN ACCORDANCE WITH AS/NZS 2890.1 2004 OFF STREET CAR PARK STANDARDS.



LAYBACK DETAIL
SCALE 1:10

1:10 0.1 0 0.1 0.2 0.3 0.4 0.5 A1
1:20 A3

Key Plan: (NTS)

H	ISSUED FOR DA	LPT	VE	2024.06.06
G	ISSUED FOR DA	LPT	VE	2024.05.21
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B	50% SCHEMATIC DESIGN	LPT	MDR	2023.12.15
A	CONCEPT DESIGN	LPT	MDR	2023.03.31
Issued/Revision		By	Appd	YYYY.MM.DD

Issue Status

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205 EDMONDSON AVENUE, AUSTRAL, NSW 2179

File Name: 304000720-CI-1-066-001.DWG	-	-	-	2023.03.31
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
SITEWORKS DETAILS
SHEET 1 OF 2

Project No.
304000720

Scale
AS SHOWN

Revision
H

Drawing No.
CI-1-066-001

Plotted:07-Jun-24 (12:53 AM By: TODD, LAUREN)
W:\304000720\PROJECT DOCUMENTATION\CIVIL\DRAWINGS & DESIGN\SHEET SET\STG1
ORIGINAL SHEET - ISO A1 COORD - MGA/YY-Zone DATUM - mAHD

TEMPORARY SEDIMENT BASIN LOCATION OVERLAND FLOW FROM ALL AREAS TO BE DIRECTED TO THE TEMPORARY SEDIMENT BASIN. SETTLEMENT AND TREATMENT PRIOR TO DISCHARGE FROM SITE TO BE UNDERTAKEN IN ACCORDANCE WITH:
- COUNCIL EROSION AND SEDIMENT CONTROL POLICY
- GEOTECHNICAL AND ENVIRONMENTAL ASSESSMENT

TEMPORARY SEDIMENT BASIN DETAILS:
- TOTAL VOLUME= 265 cu.m
- SETTLING ZONE VOLUME= 177 cu.m
- SEDIMENT STORAGE VOLUME= 88 cu.m

BASIN SIZING CAN BE REDUCED OR REMOVED FOLLOWING STABILISING DISTURBED SOILS WITH STRUCTURE AND INSTALLATION OF PROPOSED STORMWATER NETWORK. EMERGENCY PUMP TO NEARBY STORMWATER NETWORK

EDMONSON AVENUE

SITE GATE

SHAKER GRID DEVICE TO BE LOCATED AT SITE ENTRY

DEMOLISH PAVEMENT TO INSTALL STABILISED CONSTRUCTION ACCESS

SEDIMENT FENCE TO BE LOCATED AROUND SITE WHERE NECESSARY

PROVIDE SANDBAG PROTECTION AROUND ALL EXISTING/ PROPOSED STORMWATER INLET STRUCTURES FOR PROTECTION AGAINST SEDIMENT AND DEBRIS

TOPSOIL STOCKPILE WITH SEDIMENT FENCING TO BE CONFIRMED

SITE FENCE TO BE LOCATED AROUND SITE WHERE NECESSARY

LEGEND

- SITE BOUNDARY
- EXTENT OF WORKS
- VEHICLE SHAKEDOWN DEVICE
- PROPOSED SILT FENCE
- PROPOSED SITE FENCE
- SITE GATE
- SANDBAG PIT PROTECTION
- SEDIMENT TRAP FOR KERB INLET PITS
- PROPOSED GRATED DRAIN
- PROPOSED GRATED PIT
- PROPOSED JUNCTION PIT
- EXISTING STORMWATER PIT
- EXISTING KERB INLET PIT
- PROPOSED CATCH DRAIN
- PROPOSED SEDIMENT BASIN
- PROPOSED STOCKPILE

NOTES

1. MINIMISE THE AREA OF SITE BEING DISTURBED AT ANY ONE TIME.
2. WORKS IN PROXIMITY OF EXISTING TREES TO BE CARRIED OUT IN ACCORDANCE WITH ARBORIST CONSULTANT ADVICE. PROVIDE TREE PROTECTION WHERE REQUIRED.
3. SEDIMENT AND EROSION CONTROL PLAN IS INDICATIVE ONLY.

N

1:500 10 5 0 10 20 A1
1:1000 A3

Key Plan: (NTS)

Issued/Revision

		By	Appd	YYYY.MM.DD
H	ISSUED FOR DA	LPT	VE	2024.06.06
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File Name: 304000720-CI-1-070-001.DWG | Dwn. - | Dsgn. - | Chkd. - | 2023.03.31 YYYY.MM.DD

Title
EROSION AND SEDIMENT CONTROL PLAN

Project No. 304000720

Scale 1:500

Revision H

Drawing No. **CI-1-070-001**

Plotted: 07-Jun-24 10:12:24 AM By: TODD, LAUREN
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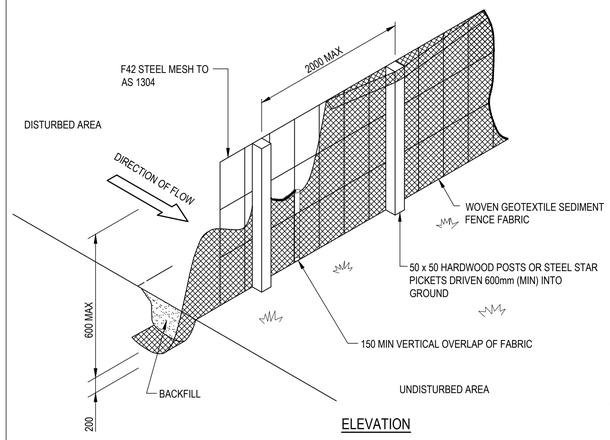
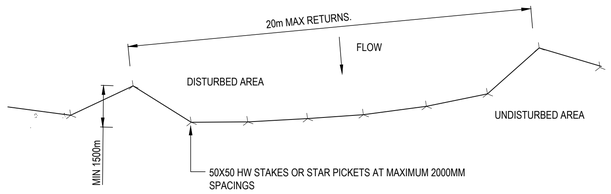
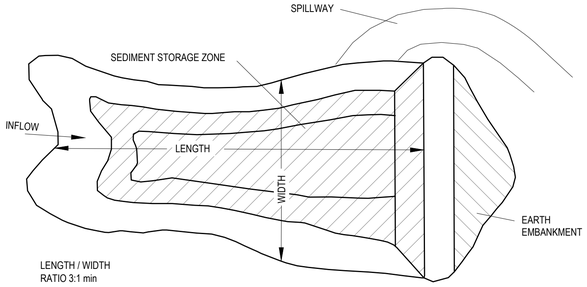


ELEVATION

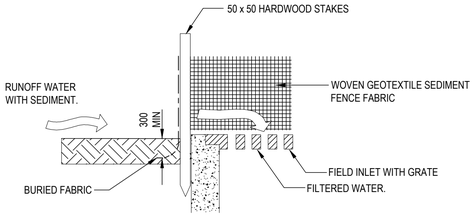


PLAN

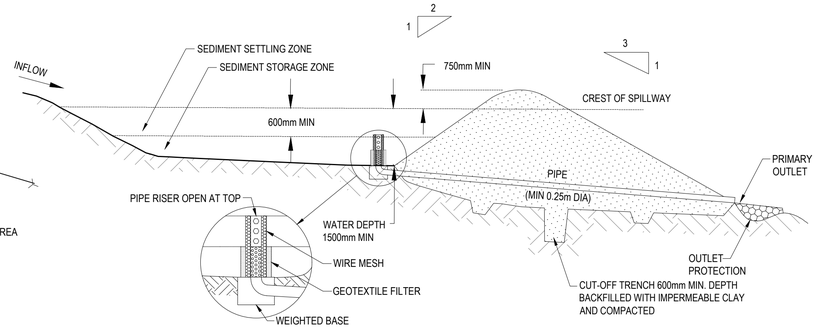


PLAN VIEW

NOTES:
1. REMOVE ALL VEGETATION AND TOPSOIL FROM UNDER THE DAM WALL AND FROM WITHIN THE STORAGE AREA
2. CONSTRUCT A CUT-OFF TRENCH 500mm DEEP AD 1200mm WIDE ALONG THE CENTRELINE OF THE EMBANKMENT EXTENDING TO A POINT ON THE GULLY WALL LEVEL WITH THE RISER CREST.
3. MAINTAIN THE TRENCH FREE OF WATER AND RECOMPACT THE MATERIALS WITH EQUIPMENT AS SPECIFIED IN THE SWMP TO 95% STANDARD PROCTOR DENSITY
4. SELECT FILL FOLLOWING THE SWMP THAT IS FREE OF ROOTS, WOOD, ROCK, LARGE STONE OR FOREIGN MATERIAL.
5. PREPARE THE SITE UNDER THE EMBANKMENT BY RIPPING TO AT LEAST 100mm TO HELP BONG COMPACTED FILL TO THE EXISTING SUBSTRATE
6. SPREAD THE FILL IN 100mm TO 150mm LAYERS AND COMPACT IT AT OPTIMUM MOISTURE CONTENT FOLLOWING THE SWMP
7. CONSTRUCT THE EMERGENCY SPILLWAY
8. REHABILITATE THE STRUCTURE FOLLOWING THE SWMP



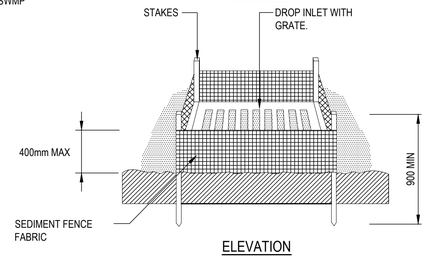
SECTION



CROSS-SECTION

SEDIMENT BASIN DETAIL

SCALE N.T.S



ELEVATION

GEOTEXTILE FILTER FABRIC DROP INLET SEDIMENT TRAP

SCALE N.T.S.

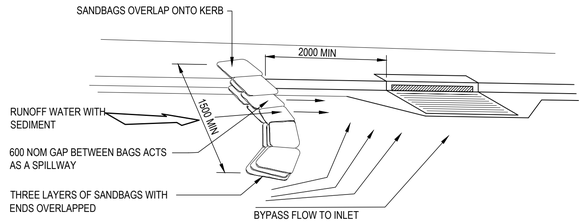
NOTES

1. THIS PLAN IS TO BE READ IN CONJUNCTION WITH OTHER ENGINEERING PLANS AND ANY WRITTEN INSTRUCTIONS THAT MAY BE ISSUED.
2. THE CONTRACTOR SHALL IMPLEMENT ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES PRIOR TO DISTURBANCE OF THE RELATED CATCHMENT AREA AND TO THE STANDARD OF 'MANAGING URBAN STORMWATER, SOIL & CONSTRUCTION' & COUNCIL SPECIFICATIONS.
3. ALL SUBCONTRACTORS SHALL BE INFORMED OF THEIR RESPONSIBILITIES IN MINIMISING THE POTENTIAL FOR SOIL EROSION AND POLLUTION TO DOWN SLOPE AREAS.
4. LAND DISTURBANCE SHALL BE LIMITED TO THAT NECESSARY FOR IMPLEMENTATION OF THE PLANS OF WORKS. BUFFER ZONES AND LAND NOT TO BE DISTURBED SHALL BE CLEARLY MARKED WITH BARRIER FENCE. 'SILT' FENCE FOR STRAW BALE SEDIMENT TRAPS SHALL BE PLACED AT REGULAR INTERVALS IMMEDIATELY DOWNSLOPE OF ALL UNPROTECTED DISTURBED LANDS.
5. THE LOCATION OF 'SILT' FENCES, BARRIER FENCES, SEDIMENT TRAPS AND OTHER DEVICES ARE INDICATIVE ONLY AND FINAL LOCATIONS ARE TO BE DECIDED ON SITE. VARIATIONS WILL BE PERMITTED TO BEST SUIT THE CIRCUMSTANCES. CONTRACTOR TO PREPARE DETAILED CONSTRUCTION SEDIMENT AND EROSION CONTROL PLAN.
6. ALL SOIL EROSION AND SEDIMENT CONTROL STRUCTURES SHALL BE INSPECTED FOLLOWING EACH STORM EVENT AND ANY NECESSARY MAINTENANCE WORK SHALL BE UNDERTAKEN TO ENSURE THEIR CONTINUED PROPER OPERATION. SEDIMENT SHALL BE REMOVED FROM THE SOIL EROSION & SEDIMENT CONTROL STRUCTURES WHEN
7. NO MORE THAN 40% CAPACITY HAS BEEN REACHED. THESE STRUCTURES SHALL CONTINUE IN PROPER OPERATION UNTIL ALL DEVELOPMENT ACTIVITIES HAS BEEN COMPLETED AND THE SITE FULLY ESTABLISHED.
8. WHERE THE AREA TO BE DISTURB CONTAINS TREES TO REMAIN, AN ARBORIST CONSULTANT SHOULD PROVIDE ADVICE ON PROCEDURES AND MEASURES TO BE PLACED.
9. TEMPORARY REHABILITATION SHALL BE UNDERTAKEN WITHIN 14 WORKING DAYS BEFORE EITHER WORKS CONTINUE OR PERMANENT REHABILITATION IS UNDERTAKEN.
10. ALL OF THE SOIL STORAGE, REVEGETATION AND SEDIMENT AND EROSION CONTROL MANAGEMENT DEVICES/MEASURES SHALL BE IMPLEMENTED TO NSW ENVIRONMENT PROTECTION AUTHORITY (EPA) AND DEPARTMENT OF LAND AND WATER REQUIREMENTS.
11. ALL SEDIMENT AND EROSION CONTROL MANAGEMENT MEASURES/DEVICES SHOWN ON THE PLANS SHALL BE IMPLEMENTED PRIOR TO CONSTRUCTION, AND MAINTAINED DURING AND AFTER.

SECTION DETAIL

SEDIMENT FENCE DETAIL

SCALE N.T.S.

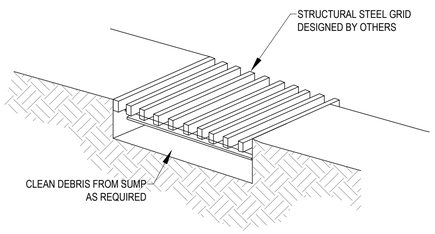


SANDBAG KERB INLET SEDIMENT TRAP

SCALE N.T.S.

TEMPORARY CONSTRUCTION ENTRY/EXIT SEDIMENT TRAP

SCALE N.T.S.



SHARKER PAD

SCALE N.T.S

TYPICAL STOCKPILE CONFIGURATION

SCALE N.T.S.

NOTE:
1. LOCATE STOCKPILES AT TOP OF CATCHMENT ON FLAT GROUND AND NOT WITHIN 5m OF CONCENTRATED FLOW PATHS.

CATCH DRAIN / EARTH BANK DETAIL

SCALE N.T.S.

NOTES:
1. ONLY TO BE USED AS TEMPORARY BANK WHERE MAXIMUM UPSLOPE LENGTH IS 80 METRES.
2. BUILD DRAINS WITH CIRCULAR, PARABOLIC OR TRAPEZOIDAL CROSS SECTIONS RATHER THAN V SHAPED

DIVERSION CHANNEL/ BANK DETAIL

SCALE: NTS

LEVEL SPREADER (OR SILL)

SCALE N.T.S

Key Plan: (NTS)

H	ISSUED FOR DA	LPT	VE	2024.06.06
G	ISSUED FOR DA	LPT	VE	2024.05.21
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File Name: 304000720-CI-1-076-001.DWG	- Dwn.	- Dsgn.	- Chkd.	2023.03.31 YYYY.MM.DD

Title

EROSION AND SEDIMENT CONTROL DETAILS

Project No. 304000720

Scale NTS

Revision H

Drawing No. **CI-1-076-001**

Plotted: 07-Jun-24 10:12:09 AM, By: TODD.LAVIERI
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ORIGINAL SHEET - ISO A1 COORD - MGA/YY-Zone DATUM - mAHD

LEGEND

	SITE BOUNDARY
	EXTENT OF WORKS
14.0	BULK EARTHWORKS CONTOURS
18.0	EXISTING CONTOURS
BEL	BULK EARTHWORKS LEVEL

NOTES

1. VOLUMES ARE INDICATIVE ONLY AND ARE BASED ON A COMPARISON BETWEEN THE DESIGN SURFACE AND THE SURVEYED SURFACE.
2. NOTE THAT ALL VOLUMES DEPICTED ARE SOLID VOLUMES ONLY AND MAY NOT REFLECT DETAILED EARTHWORKS.
3. NO ALLOWANCE HAS BEEN MADE FOR BULKING FACTORS.
4. NO ALLOWANCE HAS BEEN MADE FOR DETAILED EARTHWORKS; ie ON SITE DETENTION TANKS, RAINWATER TANK, SERVICE TRENCHING, DETAILED EXCAVATION, FOOTINGS, RETAINING WALLS, PAVEMENT BOXING, BUILDING SLABS AND THE LIKE.
5. THE CONTRACTOR SHALL USE FINAL SURFACE LEVELS AND TYPICAL PAVEMENT DETAILS FOR ACTUAL EARTHWORKS LEVELS.
6. TOPSOIL STRIPPING OF 200mm HAS BEEN ASSUMED FOR THE PURPOSE OF THE BULK EARTHWORKS. REFER GEOTECH REPORT FOR FURTHER INFORMATION.
7. BULK EARTHWORKS CUT/FILL VOLUME CONSIDERATIONS:
   - 200mm TOPSOIL HAS BEEN CONSIDERED TO BE REMOVED.
   - 200mm STRUCTURAL SLAB UNDER BUILDING PADS.
   - 400mm THICKNESS FOR TRAFFICABLE PAVEMENT.
5. THE SURVEY SURFACE AS PROVIDED HAS BEEN UTILISED FOR COMPARISON PURPOSES.
6. STANTEC DOES NOT TAKE RESPONSIBILITY FOR ACCURACY OF EXISTING SURVEY.
7. BULK EARTHWORKS DOES NOT TAKE INTO CONSIDERATION ANY CONTAMINDATED MATERIAL AND ANY REMEDIATION STRATEGY WORKS.

Elevations Table

Number	Minimum Elevation	Maximum Elevation	Color
1	-4.00	-3.50	
2	-3.50	-3.00	
3	-3.00	-2.50	
4	-2.50	-2.00	
5	-2.00	-1.50	
6	-1.50	-1.00	
7	-1.00	-0.50	
8	-0.50	0.00	
9	0.00	0.50	
10	0.50	1.00	
11	1.00	1.50	
12	1.50	2.00	
13	2.00	2.50	

CUT AND FILL VOLUME

CUT: 4,652 m^3
FILL: 1,794 m^3
CUT: 2858 m^3

N

Key Plan: (NTS)

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Title
BULK EARTHWORKS PLAN

Project No. 304000720
Scale 1:500
Revision H
Drawing No. CI-1-100-001

Plotted: 07-Jun-24 10:12:09 AM By: TODD, LAUREN
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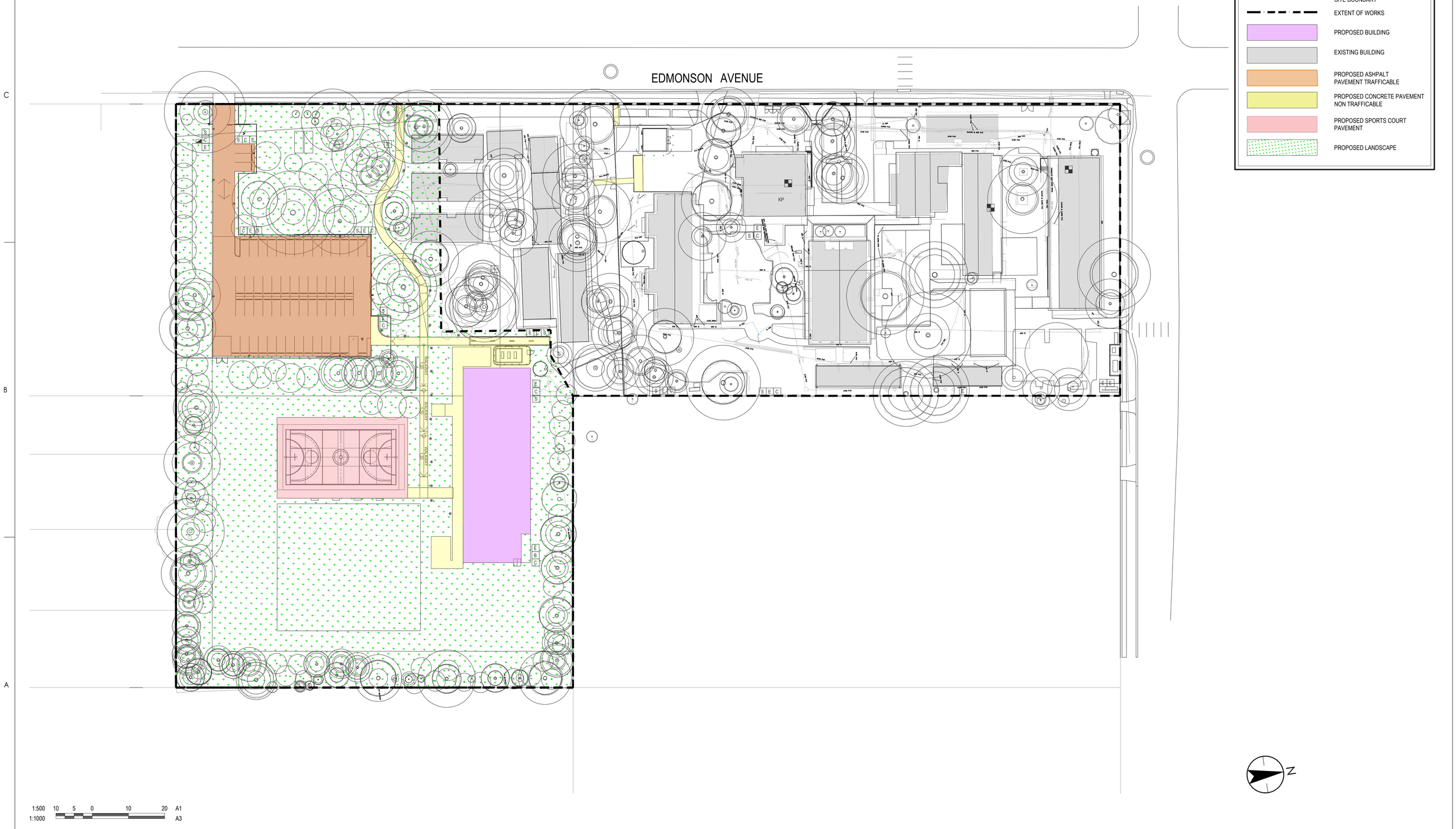

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File Name: 304000720-CI-1-440-001.DWG	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD
	-	-	-	2023.03.31

Title
PAVEMENT PLAN

Project No.
304000720

Scale
1:500

Revision
H

Drawing No.
CI-1-440-001

Plotted: 07 Jun 24 10:10:18 AM By: TODD, LAUREN
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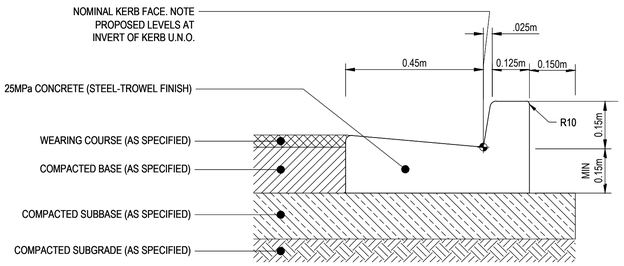
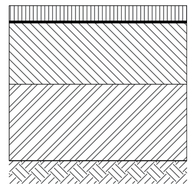


KERB AND GUTTER DETAIL
(SCALE 1:10)



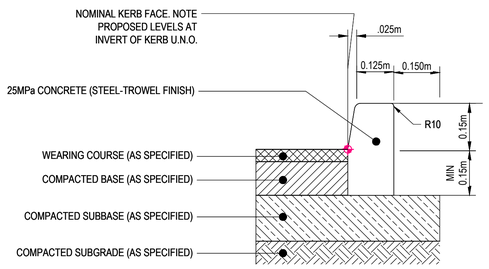
50mm AC10 SURFACING
7mm PRIMER SEAL

200mm THICK BASE.
DGB20 (CBR 80).
98% MODIFIED COMPACTION.

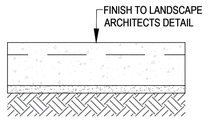
250mm THICK SUB-BASE.
DGS40 (CBR 45).
95% MODIFIED COMPACTION.

COMPACTED SUBGRADE (CBR 3%)

PROPOSED ASPHALT PAVEMENT TRAFFICABLE
(SCALE 1:10)



KERB ONLY 'KO' DETAIL
(SCALE 1:10)



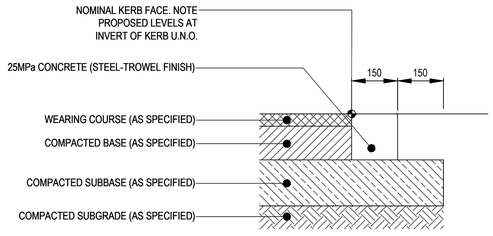
FINISH TO LANDSCAPE
ARCHITECTS DETAIL

140mm CONCRETE 32MPa WITH
SL92 MESH 40mm COVER

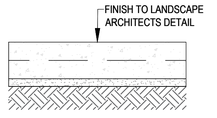
25mm SAND BEDDING

COMPACTED SUBGRADE (MIN 3%)

PROPOSED SPORTS COURT PAVEMENT
(SCALE 1:10)



FLUSH KERB DETAIL (FK)
(SCALE 1:10)



FINISH TO LANDSCAPE
ARCHITECTS DETAIL

120mm CONCRETE 25MPa WITH
SL72 MESH CENTRALLY PLACED

25mm SAND BEDDING

COMPACTED SUBGRADE (MIN 3%)

PROPOSED CONCRETE PAVEMENT NON TRAFFICABLE
(SCALE 1:10)

1:10 0.1 0 0.1 0.2 0.3 0.4 0.5 A1
1:20 A3

Key Plan: (NTS)

G	ISSUED FOR DA	LPT	VE	2024.06.06
F	ISSUED FOR DA	LPT	VE	2024.05.21
E	ISSUED FOR DA	LPT	JMB	2024.03.18
D	ISSUED FOR DA	LPT	JMB	2024.03.08
C	ISSUED FOR DA	LPT	JMB	2024.02.23
B	95% SCHEMATIC DESIGN	LPT	MDR	2024.02.02
A	50% SCHEMATIC DESIGN	LPT	MDR	2023.12.15
Issued/Revision		By	Appd	YYYY.MM.DD

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205 EDMONDSON AVENUE, AUSTRAL, NSW 2179

File Name: 304000720-CI-1-446-001.DWG	-	-	-	2023.12.15
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
PAVEMENT DETAILS

Project No.
304000720

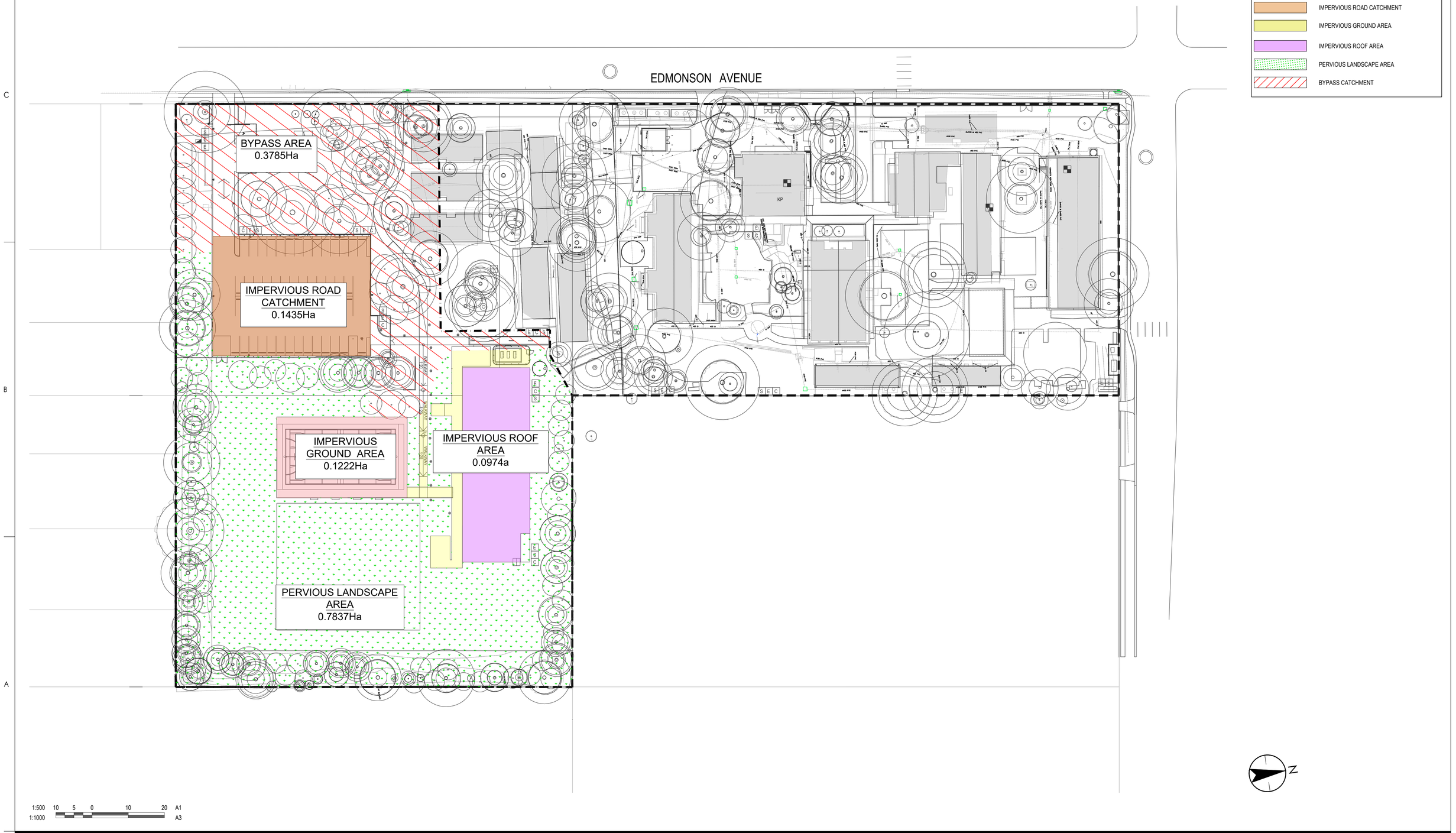
Scale
1:10

Revision
G

Drawing No.
CI-1-446-001

Plotted: 07 Jun 24 10:09:46 AM By: TODD.LAVIEN
U:\304000720\PROJECT DOCUMENTATION\CIVIL\DRAWINGS & DESIGN\SHEET SET\1G1

ORIGINAL SHEET - ISO A1 COORD - MGA/YY-Zone DATUM - mAHD



Key Plan: (NTS)

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C	ISSUED FOR DA	LPT	JMB	2024.02.23
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File Name: 304000720-CI-1-500-001.DWG	-	-	-	2023.12.15
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
MUSIC CATCHMENT PLAN

Project No.
304000720

Scale
1:500

Revision
G

Drawing No.
CI-1-500-001

Plotted: 07-Jun-24 10:09:30 AM, By: TODD.LAUREN
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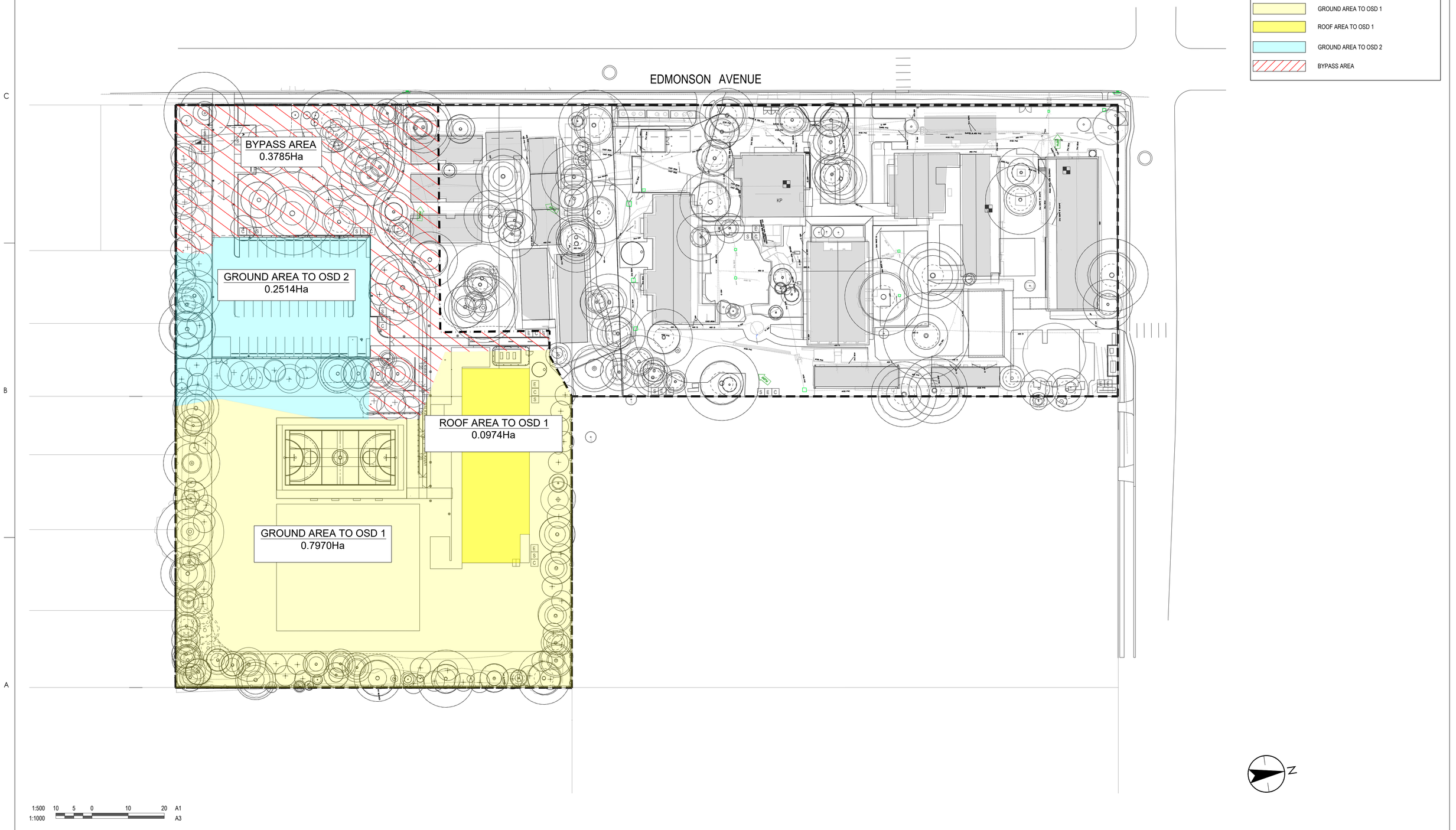

Key Plan: (NTS)

G	ISSUED FOR DA	LPT	VE	2024.06.06
F	ISSUED FOR DA	LPT	VE	2024.05.21
E	ISSUED FOR DA	LPT	JMB	2024.03.18
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B	95% SCHEMATIC DESIGN	LPT	MDR	2024.02.02
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Issued/Revision		By	Appd	YYYY.MM.DD

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File Name: 304000720-CI-1-500-002.DWG	Dwn.	Dsgn.	Chkd.	2023.12.15 YYYY.MM.DD

Title

DRAINS CATCHMENT PLAN

Project No. 304000720

Scale 1:500

Revision G

Drawing No. **CI-1-500-002**

Plotted: 07-Jun-24 10:08:48 AM By: TODD, LAUREN
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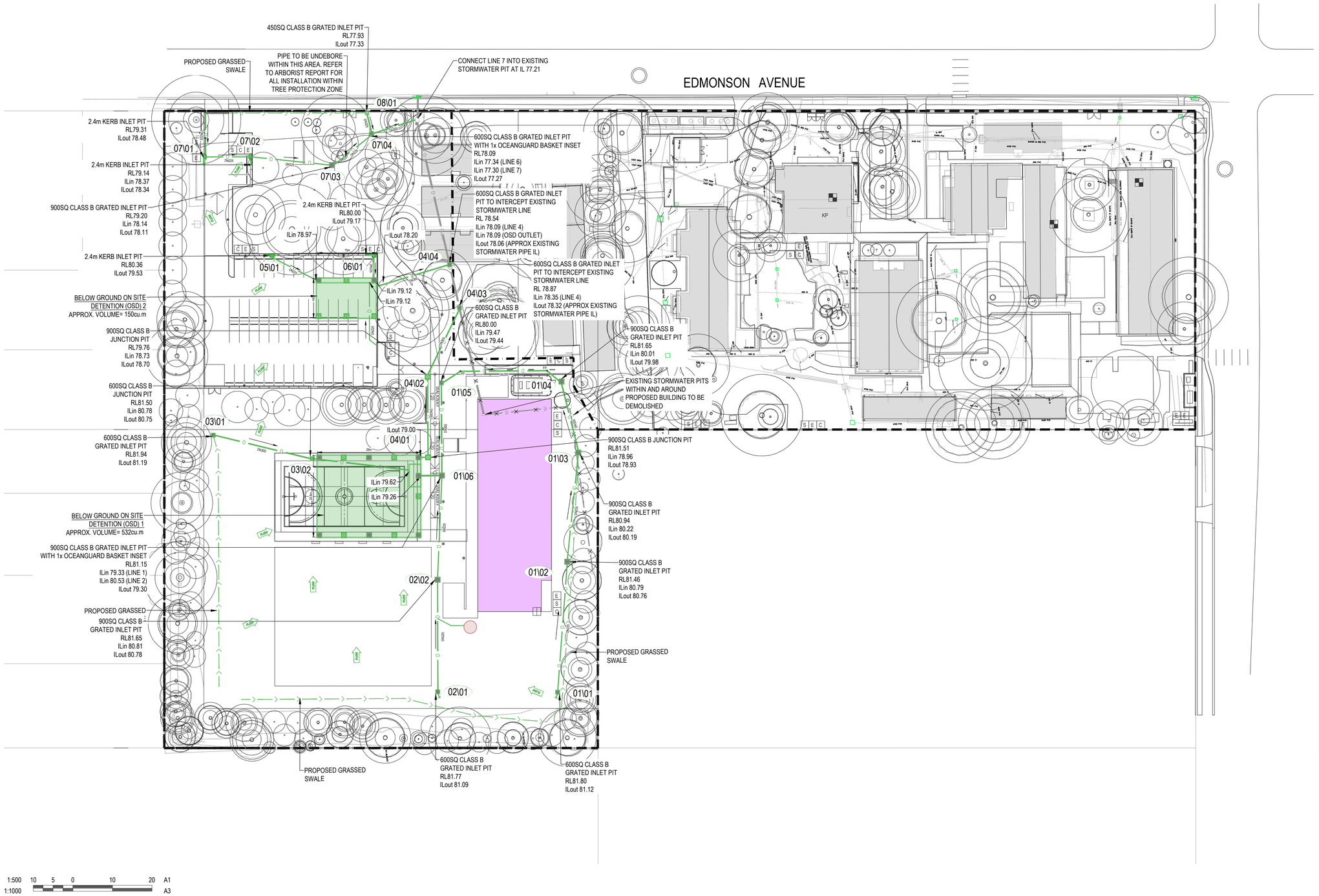

LEGEND

- SITE BOUNDARY
- EXTENT OF WORKS
- PROPOSED BUILDING
- EXISTING BUILDING
- DN375 — PROPOSED STORMWATER PIPE INCLUDING DIAMETER SIZE
- PROPOSED GRATED DRAIN PROVIDE CLASS D GALV GRATING
- PROPOSED GRATED PIT
- PROPOSED JUNCTION PIT
- B.2 — PIT TAG
- FLOW — OVERLAND FLOW PATH
- EXISTING KERB INLET PIT
- EXISTING STORMWATER PIT
- ON-SITE DETENTION SYSTEM
- RAINWATER TANK
- EXISTING STORMWATER PIPE
- EXISTING SERVICE TO BE REMOVED
- FP — FLUSH POINT

NOTES

1. ALL STORMWATER PIPES TO HAVE A MINIMUM OF 1% SLOPE IN DIRECTION SHOWN UNO.
2. ALL IN-GROUND STORMWATER PIPES TO BE uPVC, UNLESS TRAFFICABLE.
3. ALL IN-GROUND STORMWATER PIPES TO BE MINIMUM 450 BELOW LANDSCAPED SURFACES AND 600 BELOW SURFACES IN TRAFFICABLE AREA.
4. GRATES, FRAMES AND COVERS IN ROADWAYS TO BE CLASS D.
5. GRATES AND FRAMES NOT IN ROADWAYS TO BE CLASS B.
6. STORMWATER PIPES ARE TO BE INSTALLED IN ACCORDANCE WITH AS 3725.
7. ALL WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH COUNCIL STANDARDS AND CONSTRUCTION SPECIFICATIONS.
8. THE CONTRACTOR SHALL VERIFY LOCATIONS OF EXISTING SERVICES WITH ALL RELEVANT AUTHORITIES BEFORE COMMENCING CONSTRUCTION.
9. EXISTING STORMWATER NETWORK NEED TO BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
10. CONTRACTOR TO LOCATE AND EXPOSE ALL EXISTING SERVICES BEFORE CONSTRUCTION STARTS. EXISTING SERVICES TO BE RELOCATED WHERE NEEDED TO AVOID CLASHING.
11. ALL GRATED DRAINS WITHIN LANDSCAPE AREAS TO BE ACO DRAIN K200 AND WITHIN TRAFFICABLE AREAS TO BE ACO DRAIN K300 OR APPROVED EQUIVALENT.
12. ALL GRATED DRAINS WITH PEDESTRIAN ACCESS TO HAVE HEELSAFE GRATE.
13. FOR DOWNPIPES THAT WILL BE CONNECTED INTO THE RWT REFER TO THE HYDRAULIC CONSULTANT DOCUMENTATION. THOSE DPs THAT ARE BYPASSING THE RWT TO BE CONNECTED DIRECTLY INTO THE STORMWATER NETWORK.
14. CONTRACTOR TO ENSURE THAT THE BASE OF THE INFITLRATION TRENCH IS TO BE AT LEAST 1.0m ABOVE THE UNDERLYING WATER TABLE OR ROCK STRATUM, IF PRESENT. ANY DISCREPANCY SHALL BE REFERRED TO THE ENGINEER BEFORE PROCEEDING WITH THE WORKS.
15. IF DURING CONSTRUCTION OF THE STORMWATER SYSTEM, LAYERED SOILS SUCH AS CLAY LENSES OR INDURATED MATERIAL ARE IDENTIFIED, FURTHER GEOTECHNICAL ADVICE SHOULD BE SOUGHT.

N

Key Plan: (NTS)

H	ISSUED FOR DA	LPT	VE	2024.06.06
G	ISSUED FOR DA	LPT	VE	2024.05.21
F	ISSUED FOR DA	LPT	JMB	2024.03.18
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D	ISSUED FOR DA	LPT	JMB	2024.02.23
C	95% SCHEMATIC DESIGN	LPT	JMB	2023.02.02
B	50% SCHEMATIC DESIGN	LPT	MDR	2023.12.15
A	CONCEPT DESIGN	LPT	MDR	2023.03.31
Issued/Revision		By	Appd	YYYY.MM.DD

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File Name: 304000720-CI-1-520-001.DWG	-	-	-	2023.03.31
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title

STORMWATER DRAINAGE PLAN

Project No. 304000720

Scale 1:500

Revision H

Drawing No. **CI-1-520-001**

Plotted: 07-Jun-24 10:08:54 AM By: TODD, LAUREN
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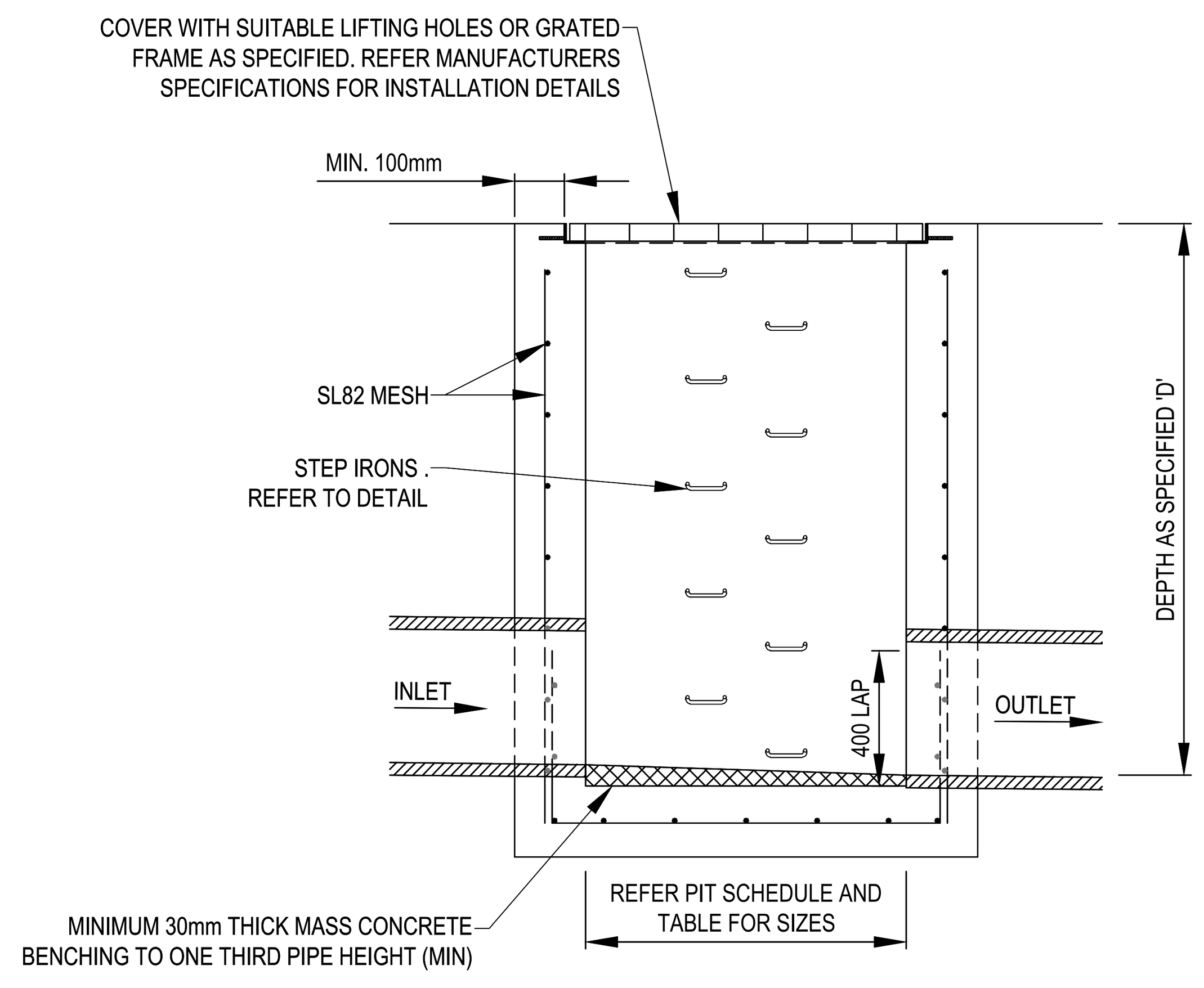
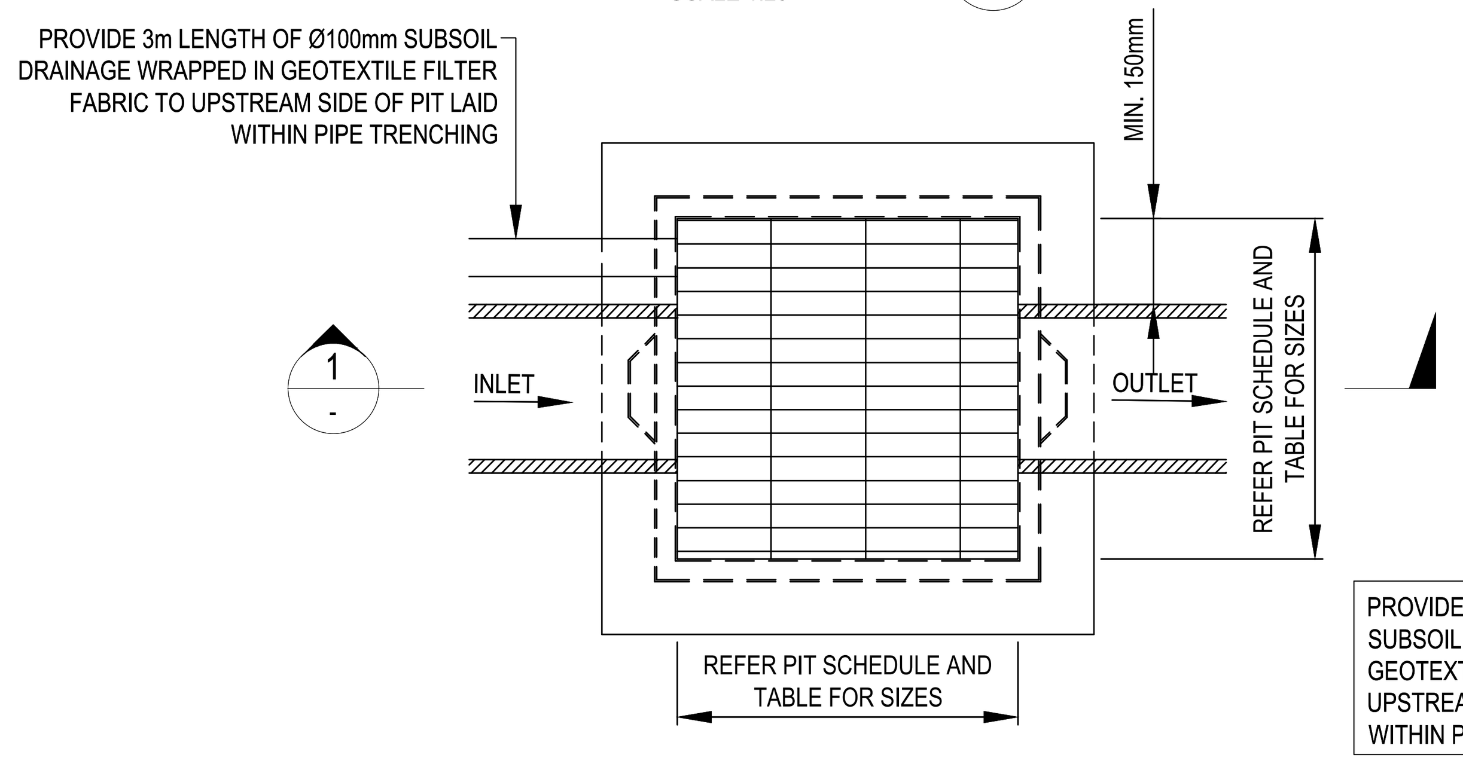


SECTION 1
SCALE 1:20

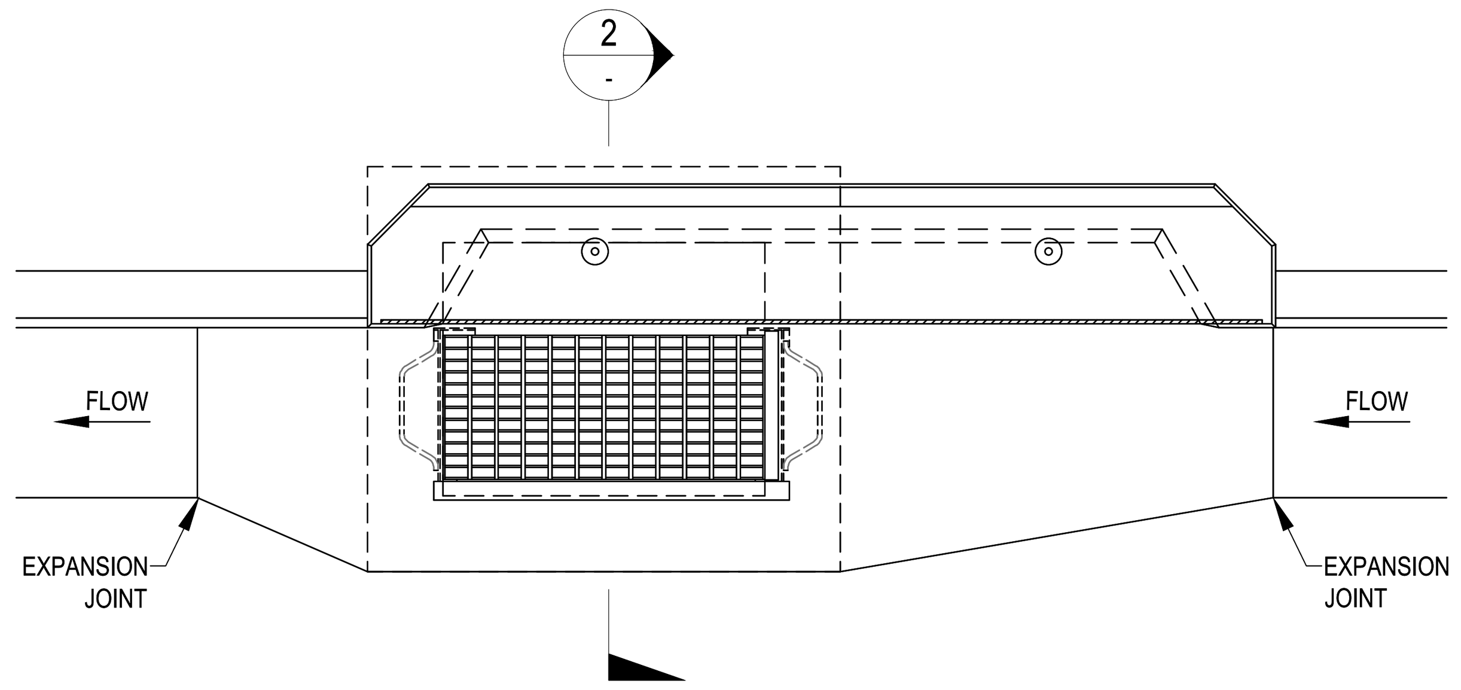
INTERNAL PIT DIMENSIONS (MIN.)		
'D'	'X'	'Y'
D < 600	450	450*
600 < D < 900	600	600*
900 < D < 1200	600	900
D > 1200	900	900

NOTE: PITS DENOTED *SHALL BE USED ONLY WHERE SPECIFIED IN DRAINAGE SCHEDULE OR ON PLAN

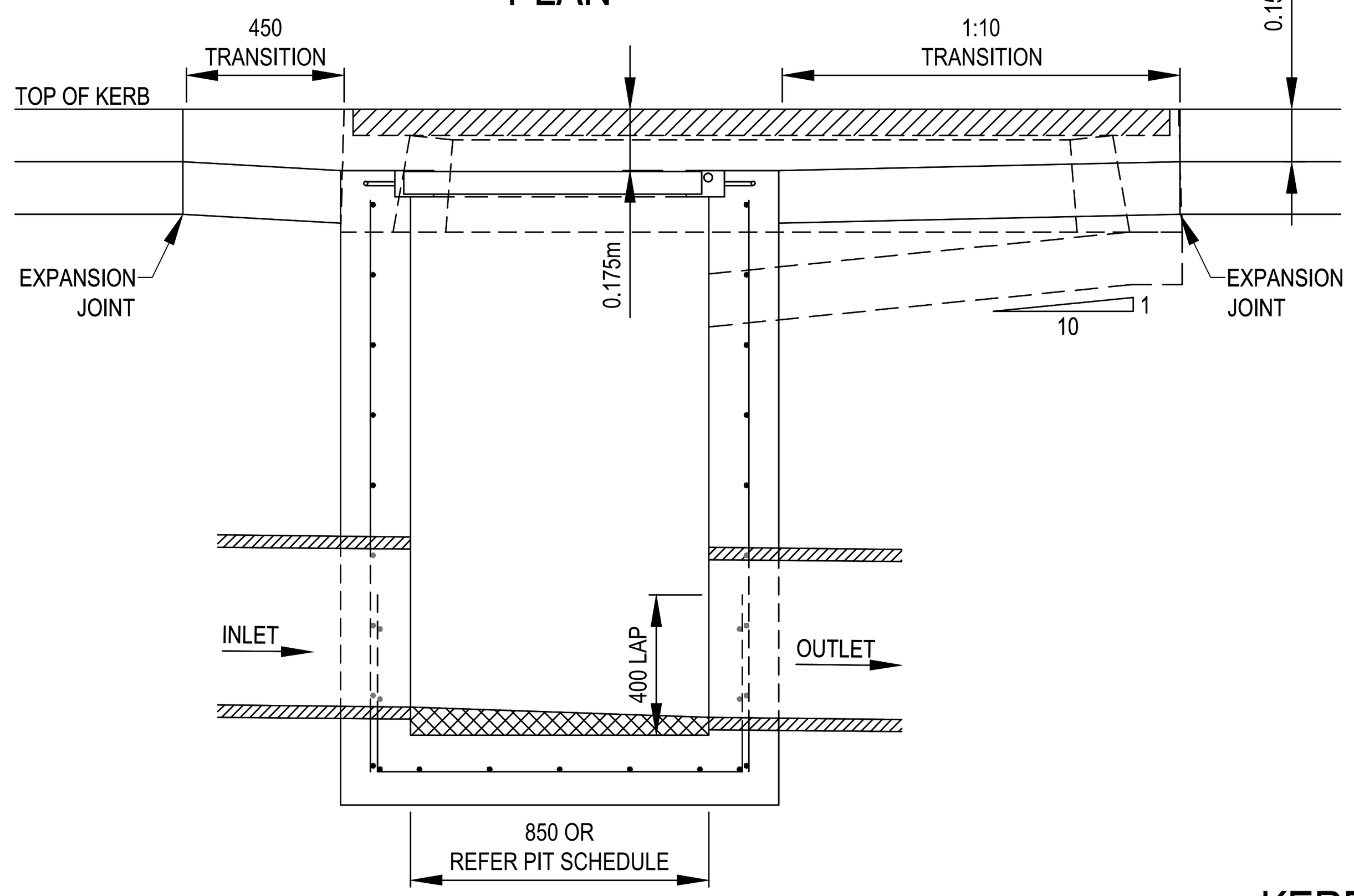


PROVIDE 3m LENGTH OF Ø100mm SUBSOIL DRAINAGE WRAPPED IN GEOTEXTILE FILTER FABRIC TO UPSTREAM SIDE OF PIT LAID WITHIN PIPE TRENCHING

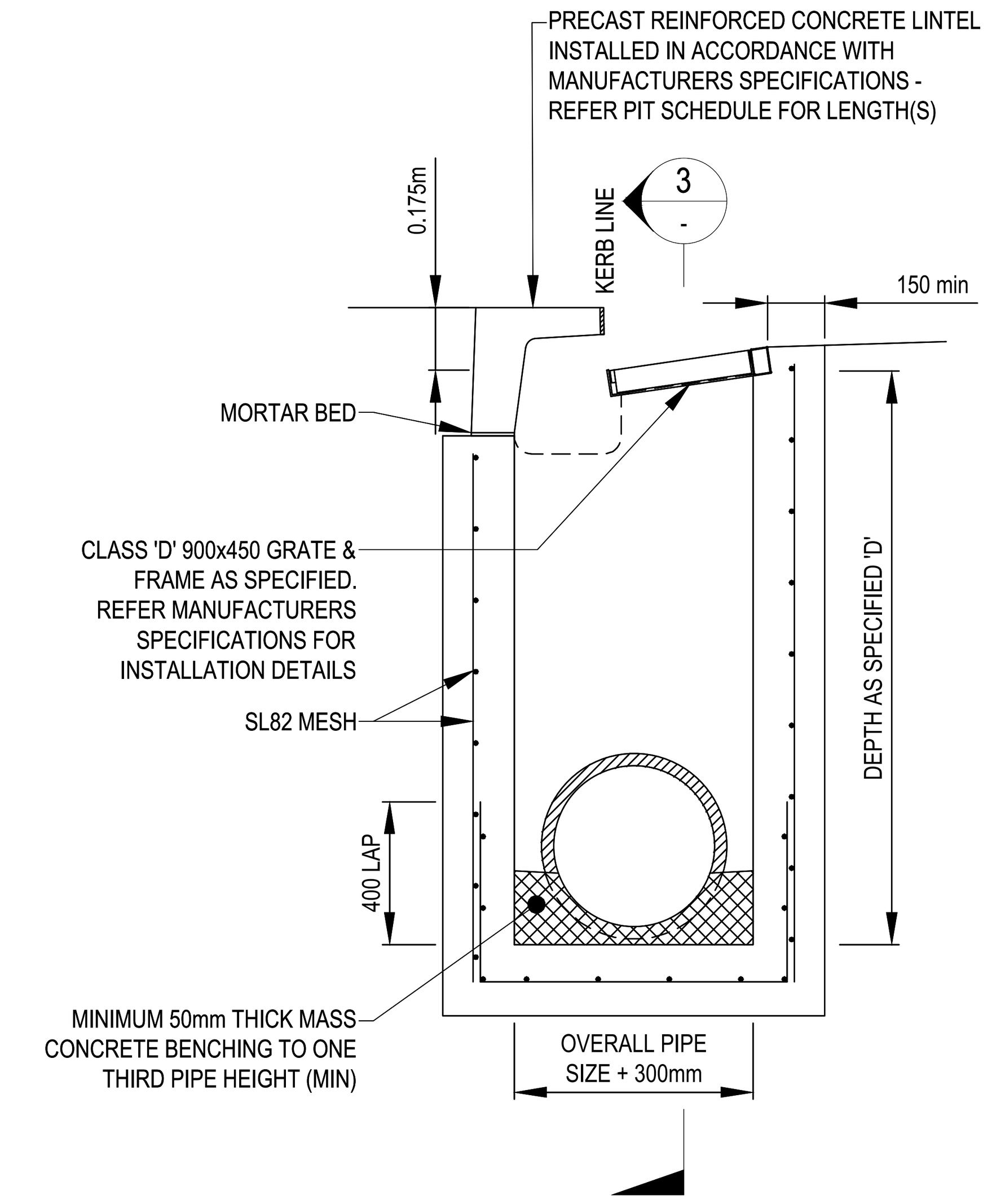
SURFACE INLET/JUNCTION PIT PLAN
SCALE 1:20



PLAN



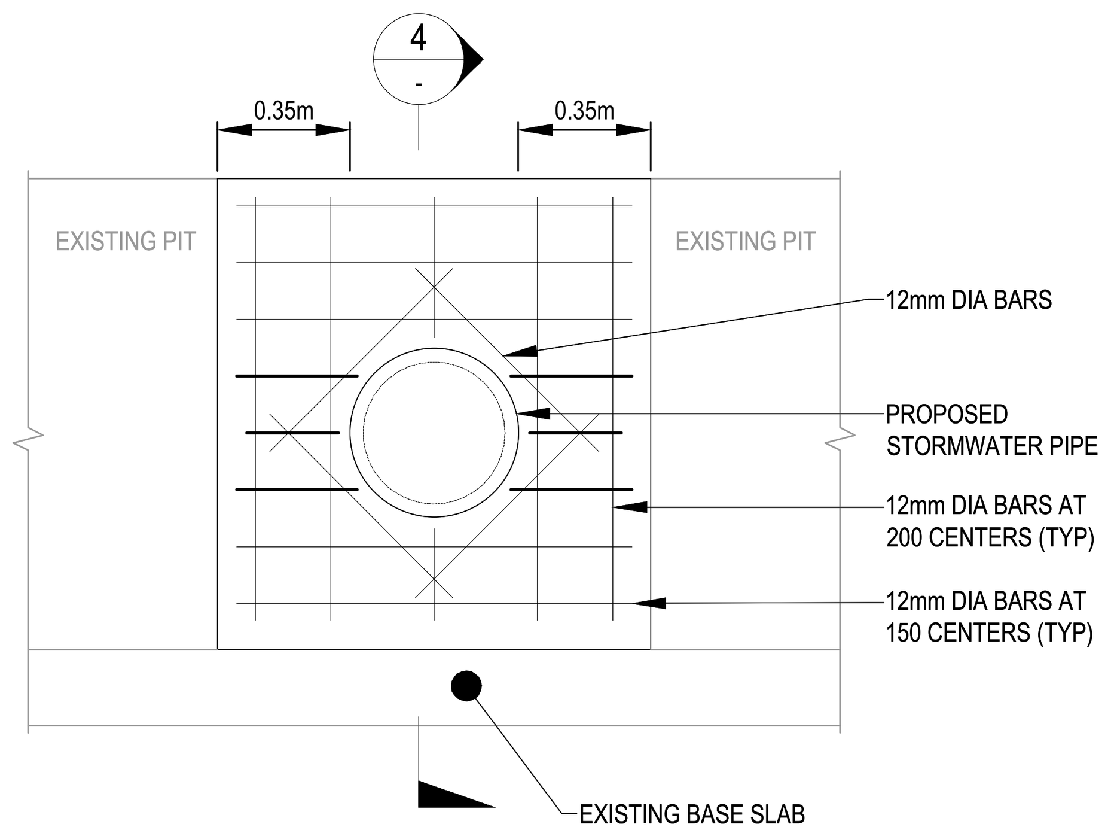
SECTION 3
SCALE 1:20



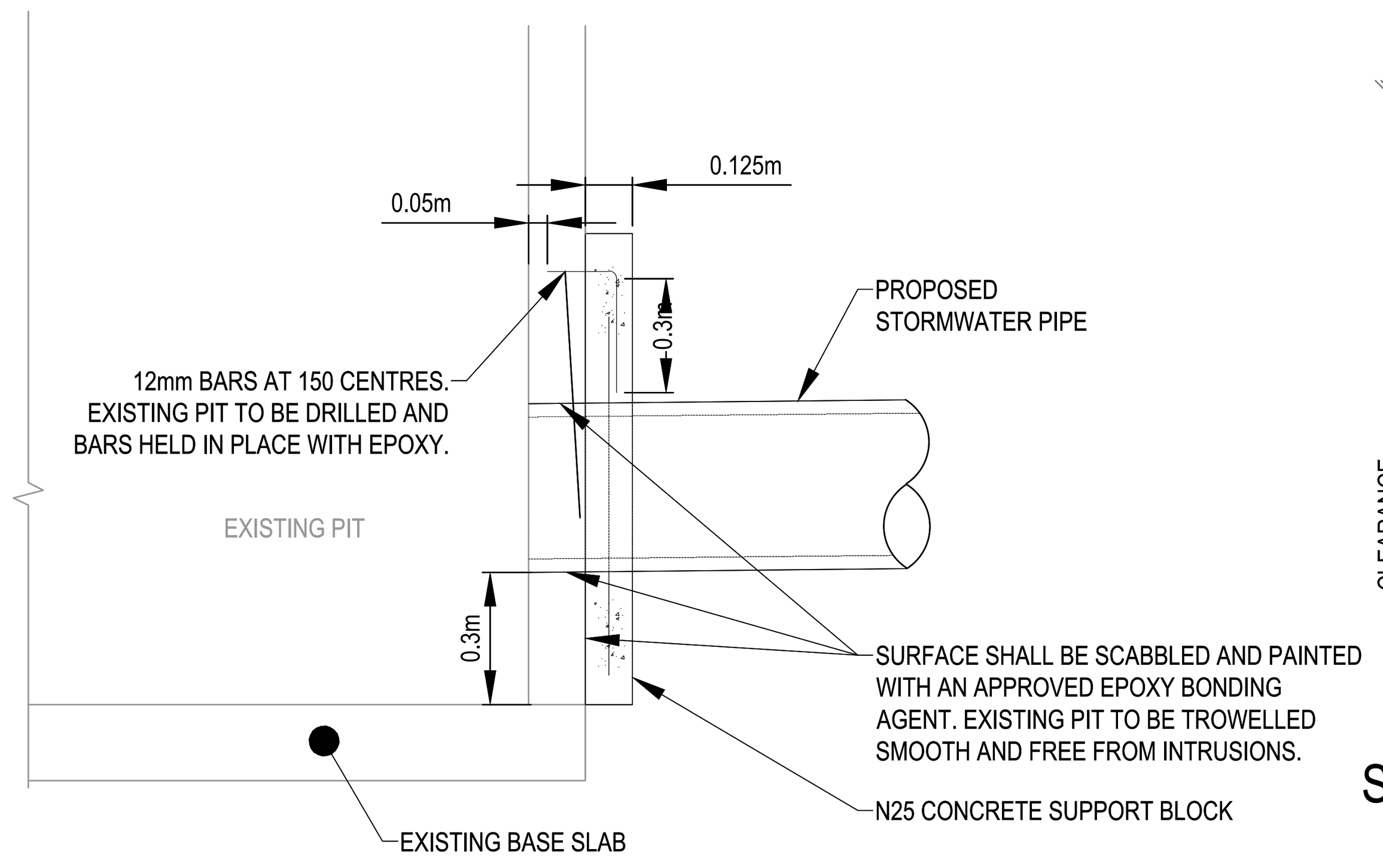
SECTION 2
SCALE 1:20

PROVIDE 3m LENGTH OF Ø100mm SUBSOIL DRAINAGE WRAPPED IN GEOTEXTILE FILTER FABRIC TO UPSTREAM SIDE OF PIT LAID WITHIN PIPE TRENCHING

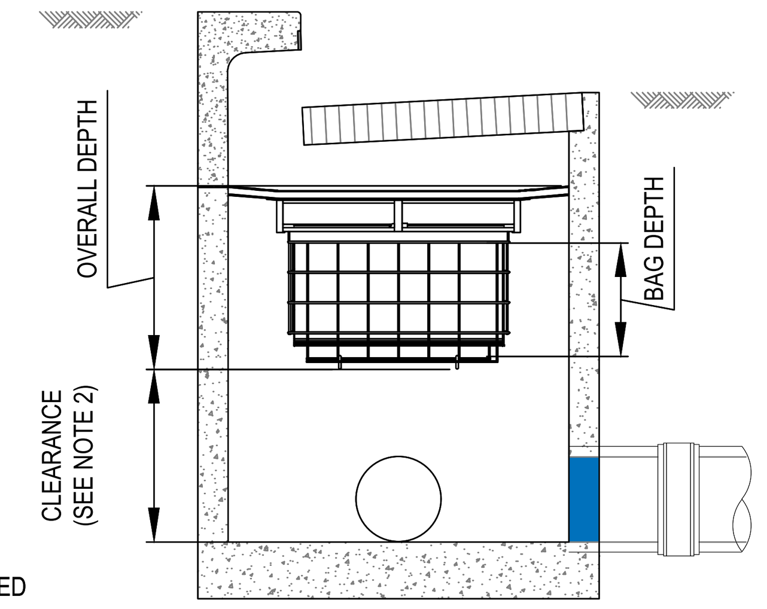
KERB INLET PIT
SCALE 1:20



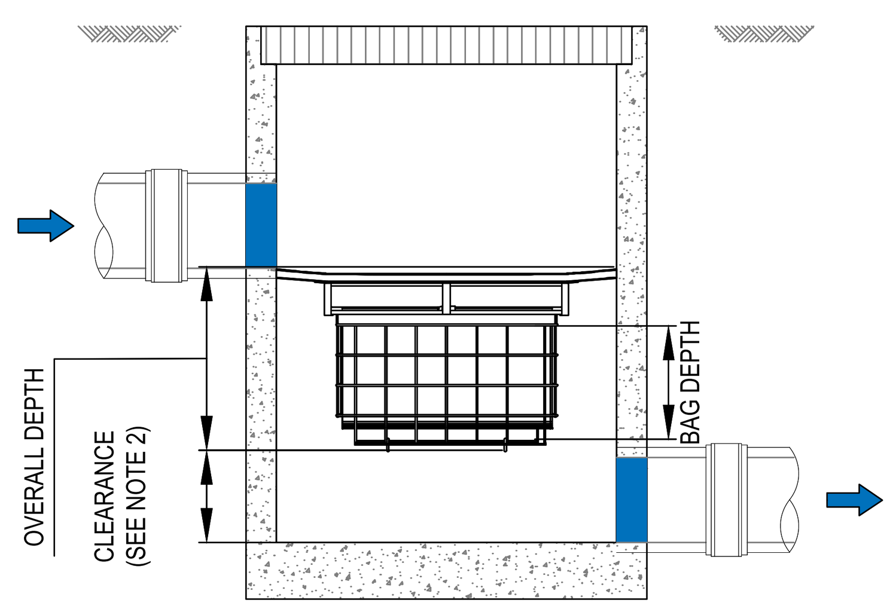
STORMWATER PIPE CONNECTION INTO EXISTING PIT
SCALE 1:20



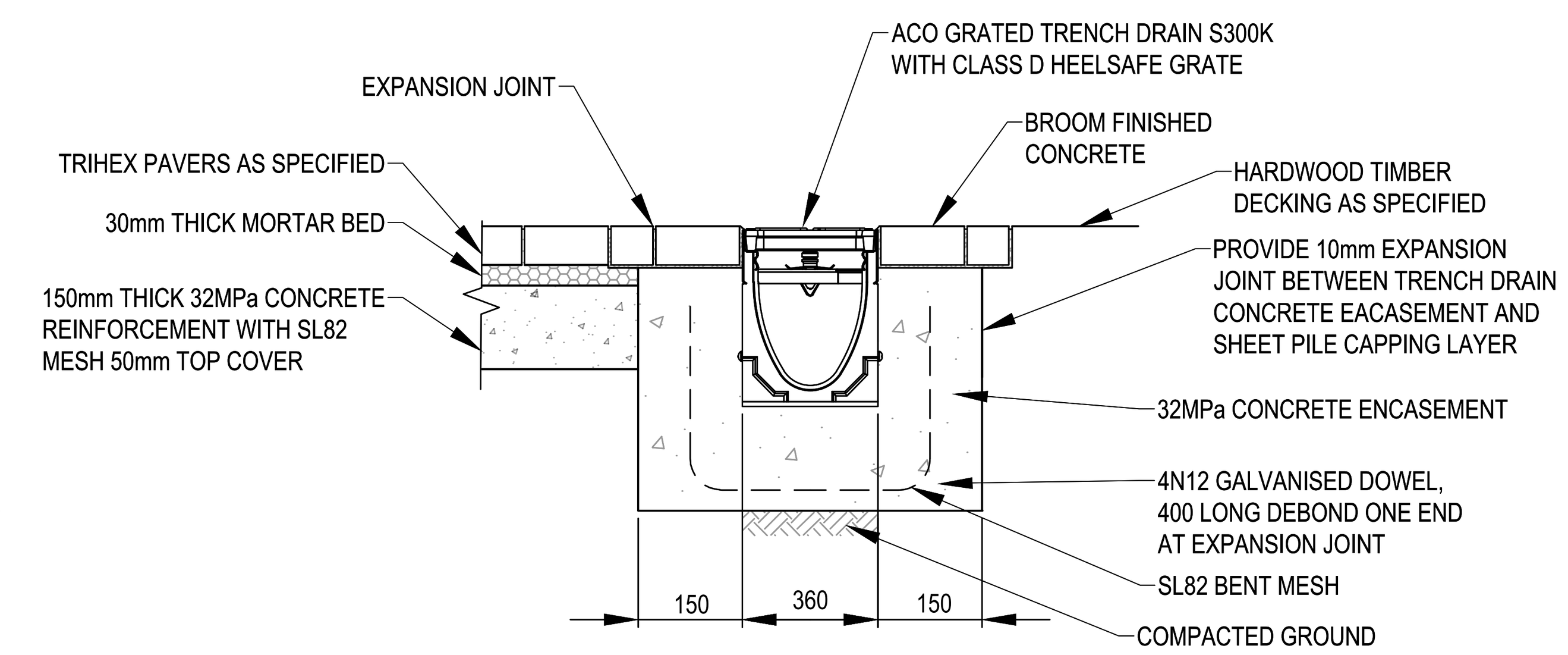
SECTION 4
SCALE 1:20



PIT FILTER BASKET
SURFACE FLOW CONFIGURATION
SCALE 1:20



PIT FILTER BASKET
PIPE FLOW CONFIGURATION
SCALE 1:20



TRENCH DRAIN DETAIL
(SCALE NTS)

1:20 0.2 0 0.2 0.4 0.6 0.8 1 A1
1:40 A3

Key Plan: (NTS)

H	ISSUED FOR DA	LPT	VE	2024.06.06
G	ISSUED FOR DA	LPT	VE	2024.05.21
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A	CONCEPT DESIGN	LPT	MDR	2023.03.31
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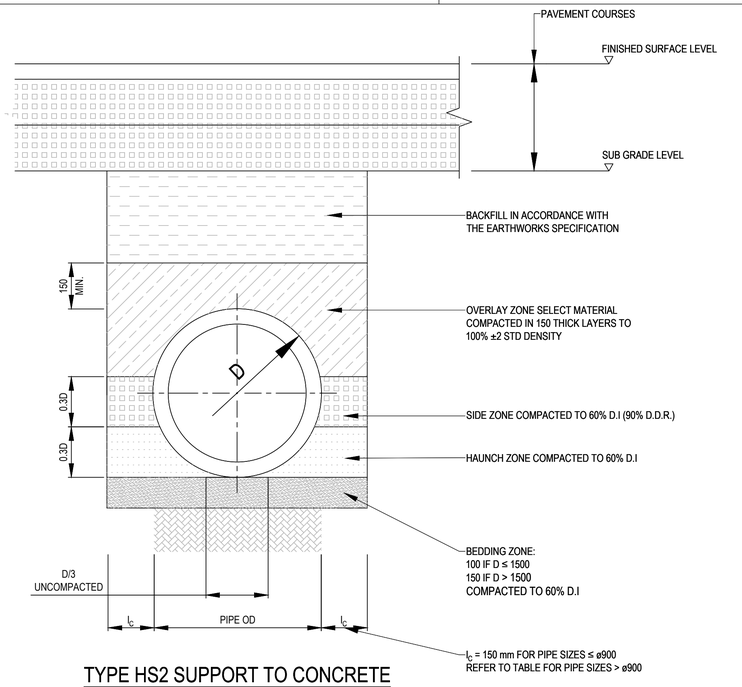
File Name: 304000720-CI-1-526-001.DWG — Dwn. - Dsgn. - Chkd. - 2023.03.31 YYYY.MM.DD

Title
STORMWATER DRAINAGE DETAILS
SHEET 1 OF 7

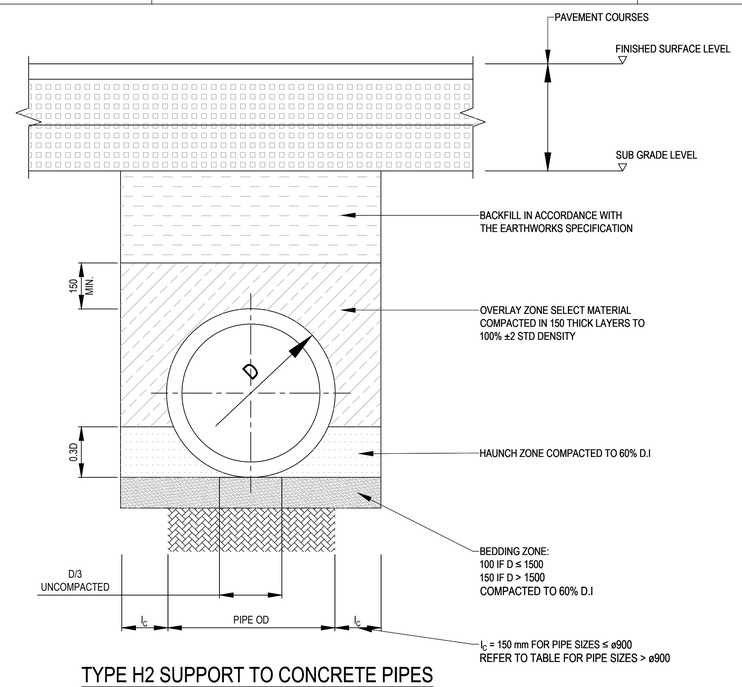
Project No. 304000720
Scale AS SHOWN
Revision H
Drawing No. CI-1-526-001

ORIGINAL SHEET - ISO A1 COORD - MGA/YY-Zone DATUM - mAHD



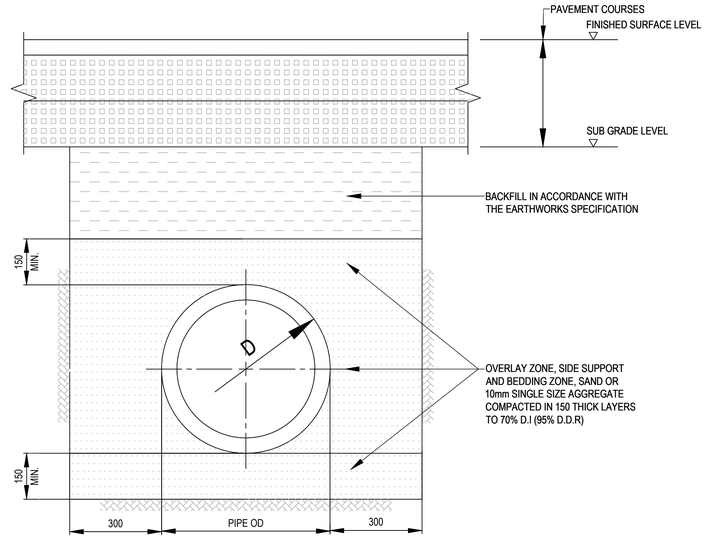
TYPE HS2 SUPPORT TO CONCRETE PIPES UNDER PAVEMENT (VEHICULAR)

SCALE 1:10



TYPE H2 SUPPORT TO CONCRETE PIPES UNDER PAVEMENT (NON-VEHICULAR)

SCALE 1:10



FLEXIBLE PIPES UNDER PAVEMENTS

SCALE 1:10

BEDDING & HAUNCH MATERIAL GRADING (TABLE 6 AS/NZS 3725)

SIEVE SIZE (mm)	WEIGHT PASSING (%)
19.00	100
2.36	100 TO 50
0.60	90 TO 20
0.30	60 TO 10
0.15	25 TO 0
0.075	10 TO 0

SIDE ZONE WIDTH

PIPE SIZE (mm)	l_c (mm)
≤ ø900	150
ø1050	175
ø1200	200
ø1350	225
ø1500	250
ø1650	275
ø1800	300

SIDE ZONE MATERIAL GRADING (TABLE 7 AS/NZS 3725)

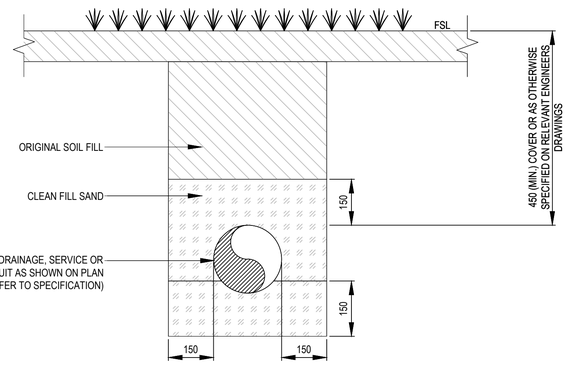
SIEVE SIZE (mm)	WEIGHT PASSING (%)
19.00	100
9.50	100 TO 50
2.60	100 TO 30
0.60	50 TO 15
0.075	25 TO 0

SAND GRADING (TABLE G3 AS 2566.2)

SIEVE SIZE (mm)	WEIGHT PASSING (%)
4.75	100 TO 90
2.36	90 TO 100
1.18	85 TO 100
0.60	70 TO 100
0.30	50 TO 100
0.15	0 TO 40
0.075	0 TO 5

10mm SINGLE-SIZE AGGREGATE GRADING (TABLE G2 AS 2566.2)

SIEVE SIZE (mm)	WEIGHT PASSING (%)
13.20	100
9.50	85 TO 100
4.75	0 TO 20
2.36	0 TO 5
0.075	0 TO 2



BACKFILL TO DRAINAGE, SERVICES AND CONDUITS IN LANDSCAPE AREAS (TYP.)

SCALE: NTS

NOTES

1. TYPICAL DETAIL TO BE USED FOR ALL DRAINAGE SERVICES RUNNING UNDER LANDSCAPE
2. DRAINAGE INCLUDES ALL GRAVITY SERVICES (INCLUDES CONCRETE AND PLASTIC PIPES)
3. SERVICES INCLUDES ALL PRESSURE PIPES
4. FOR NEW SERVICE PIPES OR CONDUITS, REFER TO PLANS FOR SIZES AND LOCATIONS

1:10 0.1 0 0.1 0.2 0.3 0.4 0.5 A1
1:20 A3

Key Plan: (NTS)

1:10 0.1 0 0.1 0.2 0.3 0.4 0.5 A1
1:20 A3

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File Name: 304000720-CI-1-526-001.DWG	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD
	-	-	-	2023.03.31

Title

STORMWATER DRAINAGE DETAILS
SHEET 2 OF 7

Project No. 304000720

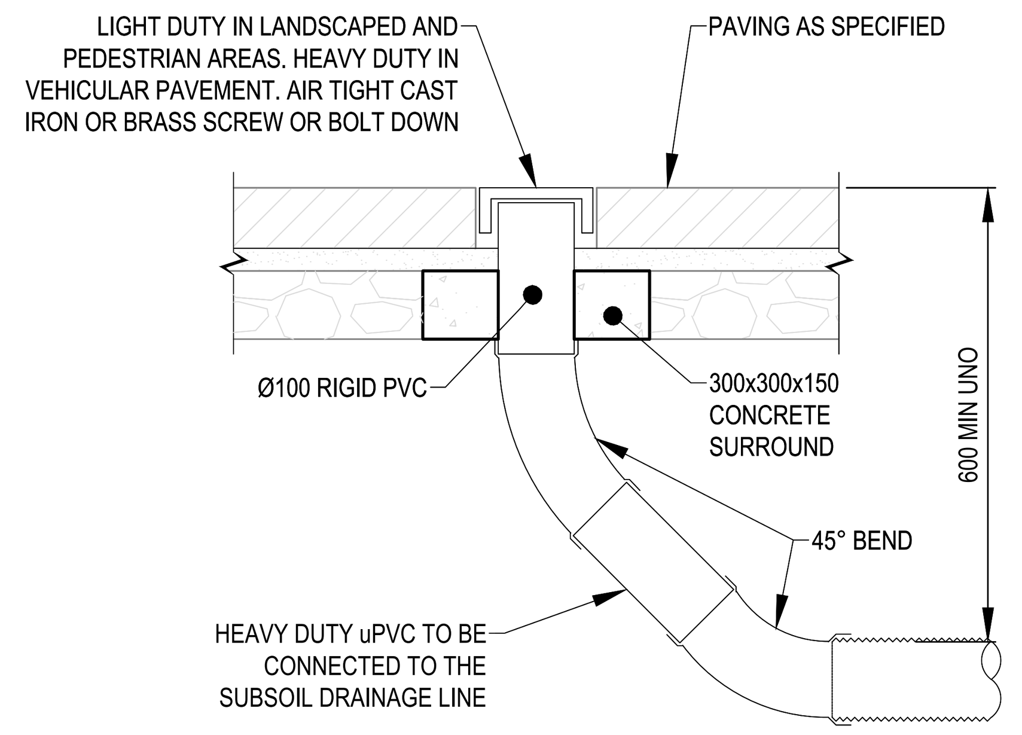
Scale 1:10

Revision H

Drawing No. CI-1-526-002

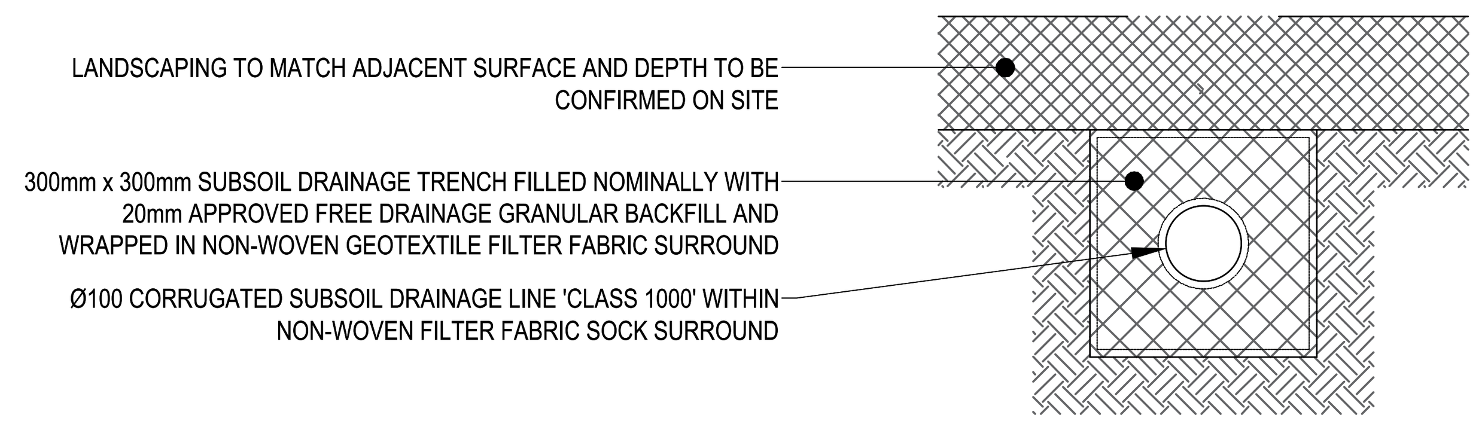
Plotted: 07-Jun-24 10:06:16 AM By: TODD, LAUREN
U:\304000720\PROJECT DOCUMENTATION\CIVIL\DRAWINGS & DESIGN\SHEET SET.DTST

ORIGINAL SHEET - ISO A1 COORD - MGA/YY-Zone DATUM - mAHD



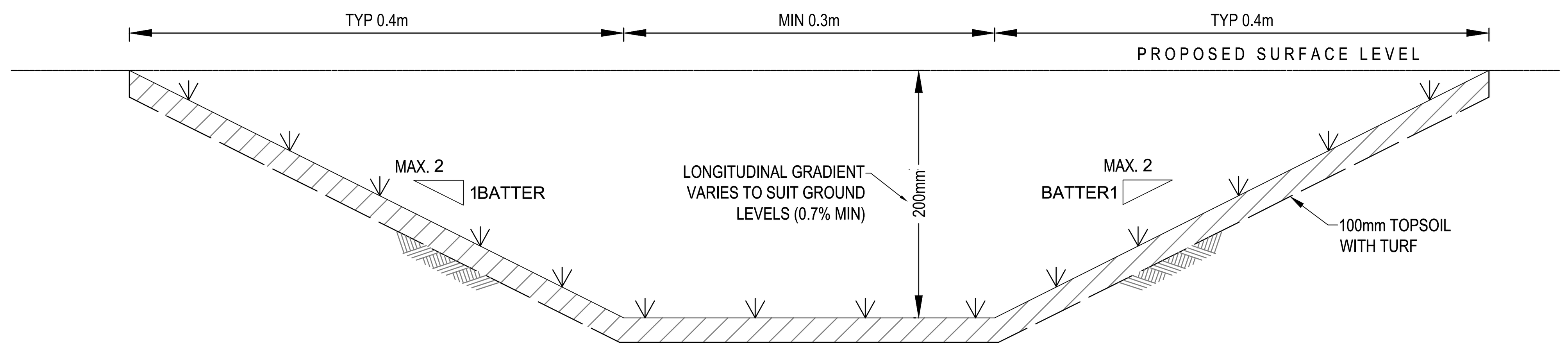
FLUSH OUT RISER IN PAVED AREAS

(SCALE 1:10)



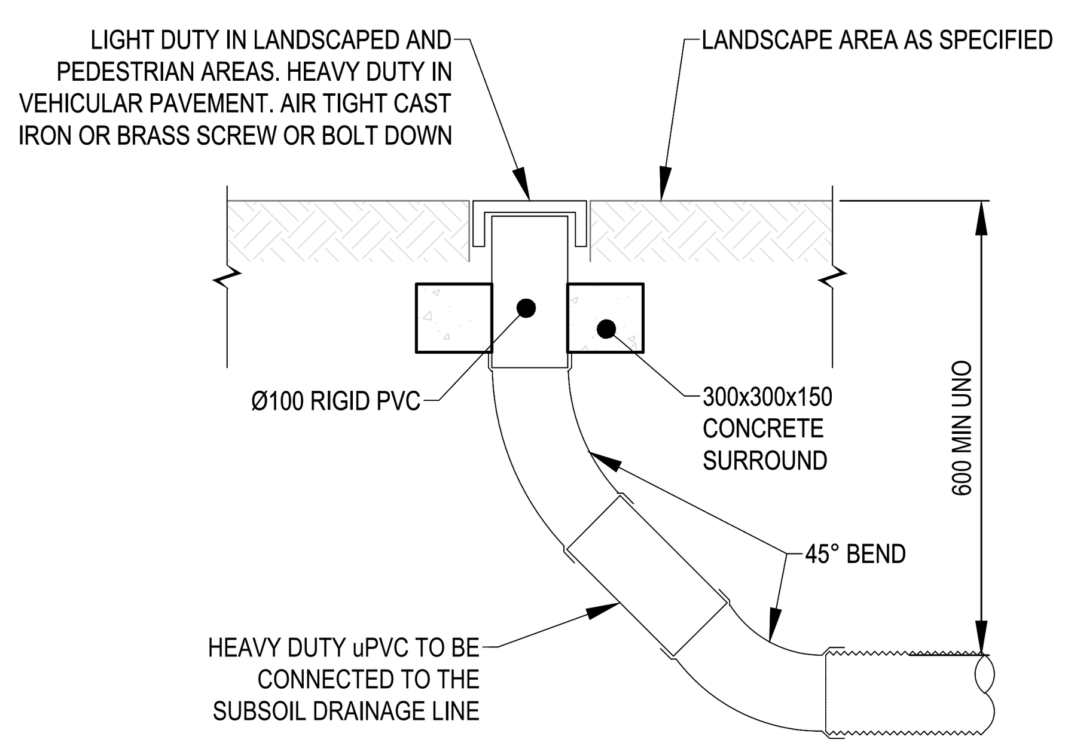
SUBSOIL DRAINAGE TRENCH DETAIL - UNDER LANDSCAPE AREAS

(SCALE 1:10)



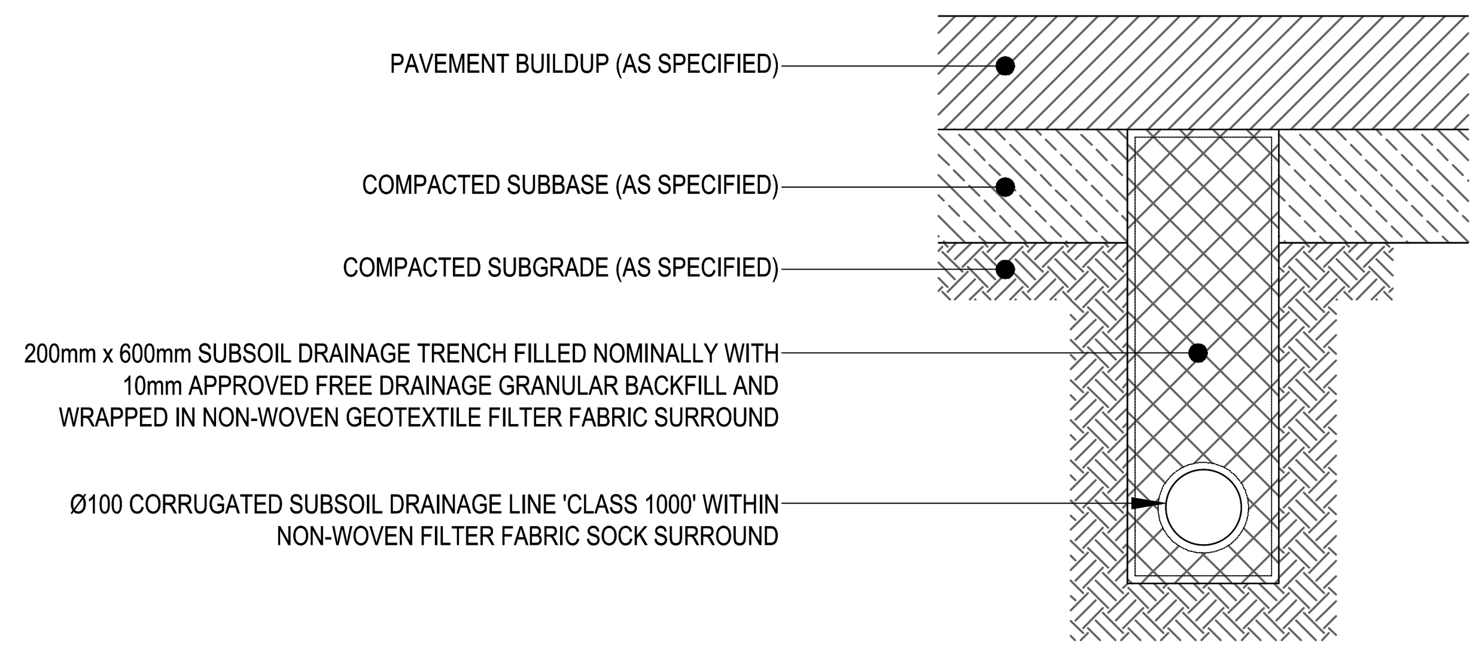
TYPICAL GRASS SWALE DETAIL

SCALE 1:10



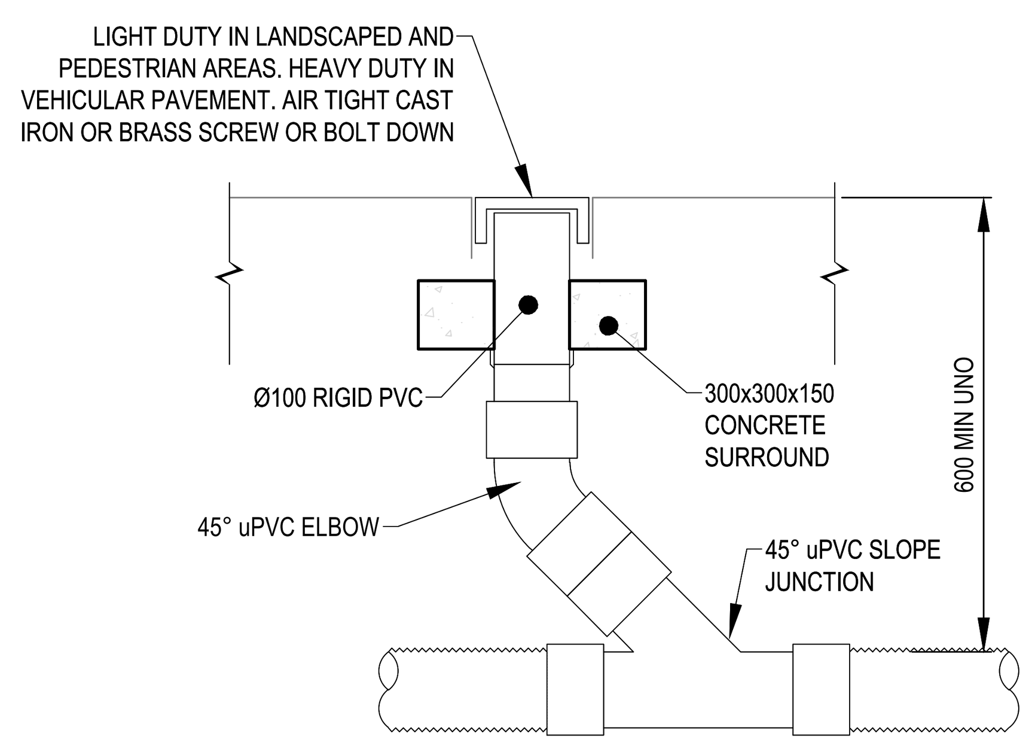
FLUSH OUT RISER IN LANDSCAPED AREAS

(SCALE 1:10)



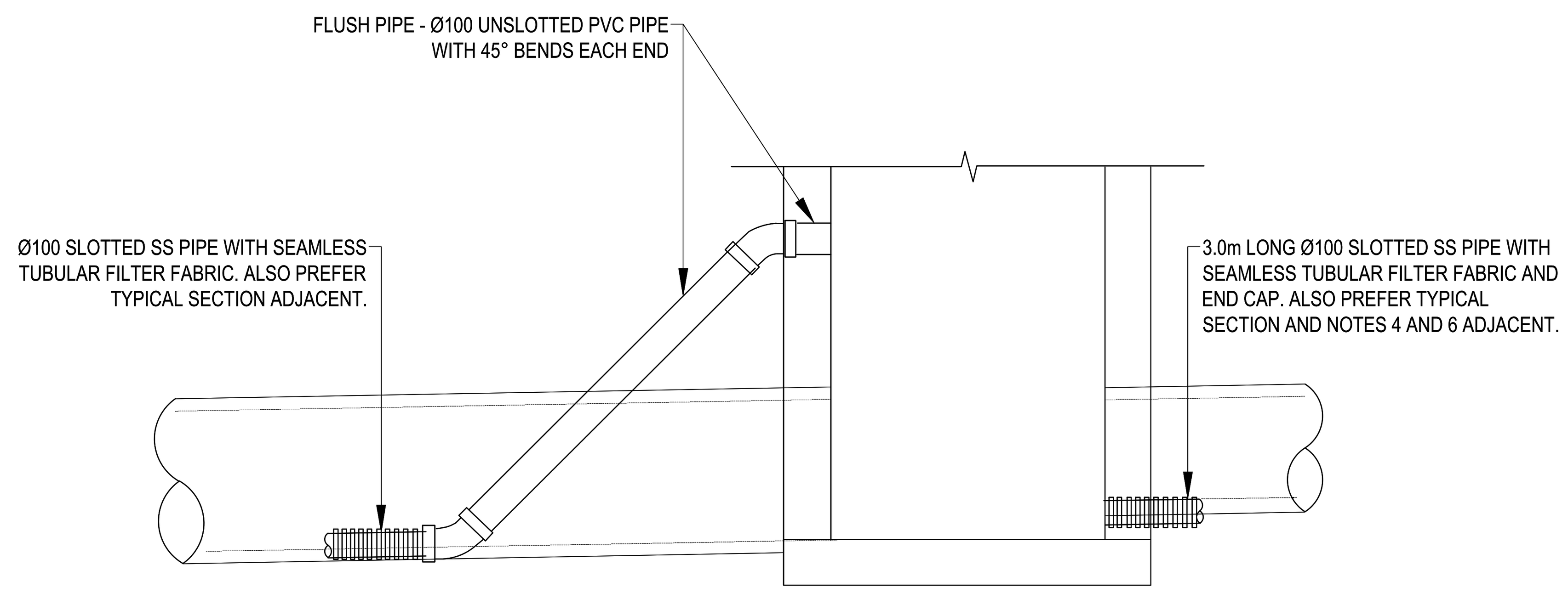
SUBSOIL DRAINAGE TRENCH DETAIL - UNDER PAVEMENT BUILTUP

(SCALE 1:10)



INTERMEDIATE FLUSH OUT RISER

(SCALE 1:10)



SUBSOIL DRAINAGE CONNECTION INTO STORMWATER PIT

NTS

1:10 0.1 0 0.1 0.2 0.3 0.4 0.5 A1
1:20 A3

Key Plan: (NTS)

Rev	Issued/Revision	By	Appd	YYYY.MM.DD
H	ISSUED FOR DA	LPT	VE	2024.06.06
G	ISSUED FOR DA	LPT	VE	2024.05.21
F	ISSUED FOR DA	LPT	JMB	2024.03.18
E	ISSUED FOR DA	LPT	JMB	2024.03.08
D	ISSUED FOR DA	LPT	JMB	2024.02.23
C	95% SCHEMATIC DESIGN	LPT	JMB	2023.02.02
B	50% SCHEMATIC DESIGN	LPT	MDR	2023.12.15
A	CONCEPT DESIGN	LPT	MDR	2023.03.31

Issue Status

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NSW Education School Infrastructure

Client/Project

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AUSTRAL PUBLIC SCHOOL

205 EDMONDSON AVENUE, AUSTRAL, NSW 2179

File Name: 304000720-CI-1-526-001.DWG

Dwn.	Dsgn.	Chkd.	YYYY.MM.DD
-	-	-	2023.03.31

Title

STORMWATER DRAINAGE DETAILS
SHEET 3 OF 7

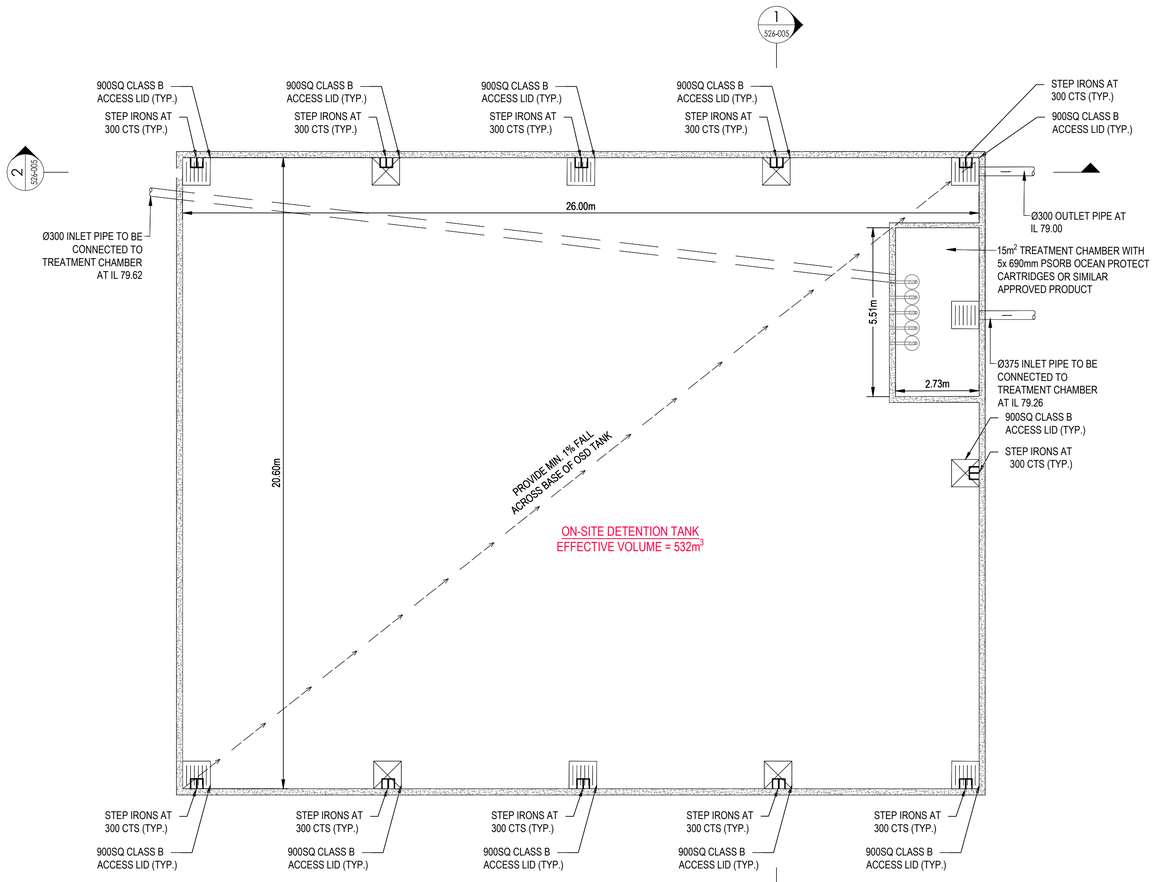
Project No. 304000720

Scale AS SPECFIED

Revision H

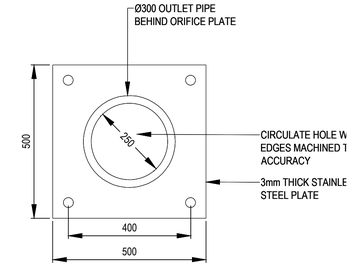
Drawing No. **CI-1-526-003**

ORIGINAL SHEET - ISO A1 COORD - MGA/YY-Zone DATUM - mAHD



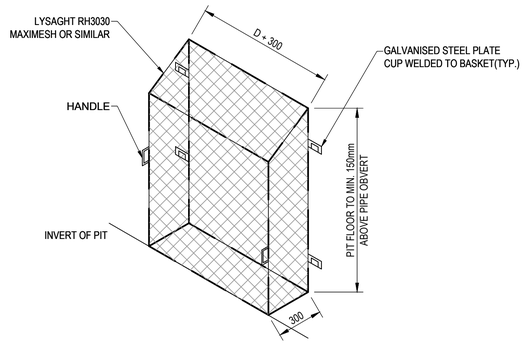
ON-SITE DETENTION (OSD) TANK PLAN 1

SCALE 1:100



ORIFICE PLATE DETAIL OSD TANK 1

SCALE 1:10



SCREEN MESH DETAIL

N.T.S.

1:10 0.1 0 0.1 0.2 0.3 0.4 0.5 A1
1:20 A3

1:100 1 0 1 2 3 4 5 A1
1:200 A3

Key Plan: (NTS)

H	ISSUED FOR DA	LPT	VE	2024.06.06
G	ISSUED FOR DA	LPT	VE	2024.05.21
F	ISSUED FOR DA	LPT	JMB	2024.03.18
E	ISSUED FOR DA	LPT	JMB	2024.03.08
D	ISSUED FOR DA	LPT	JMB	2024.02.23
C	95% SCHEMATIC DESIGN	LPT	JMB	2023.02.02
B	50% SCHEMATIC DESIGN	LPT	MDR	2023.12.15
A	CONCEPT DESIGN	LPT	MDR	2023.03.31
Issued/Revision		By	Appd	YYYY.MM.DD

Issue Status

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File Name: 304000720-CI-1-526-001.DWG | Dwn. - | Dsgn. - | Chkd. - | 2023.03.31 YYYY.MM.DD

Title

STORMWATER DRAINAGE DETAILS
SHEET 4 OF 7

Project No. 304000720

Scale 1:100

Revision H

Drawing No. **CI-1-526-004**

Plotted: 07 Jun 24 10:04:44 AM By: TODD LAVIERI
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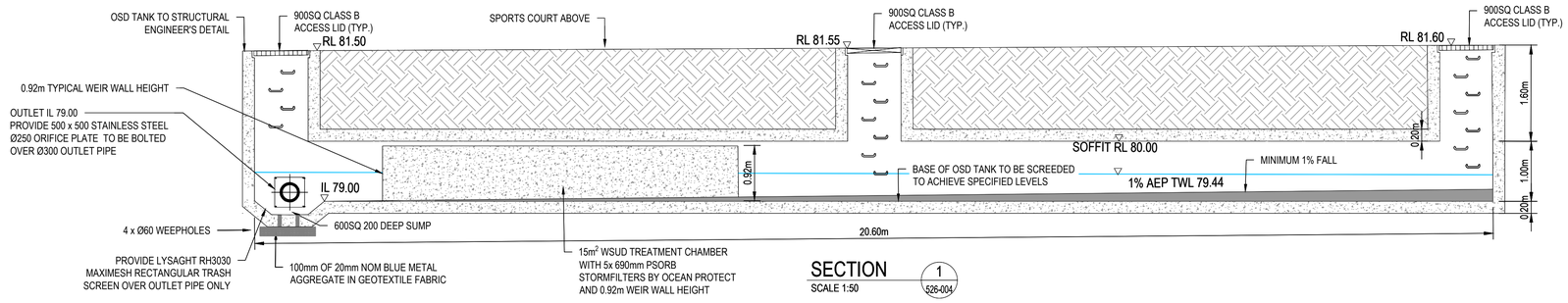
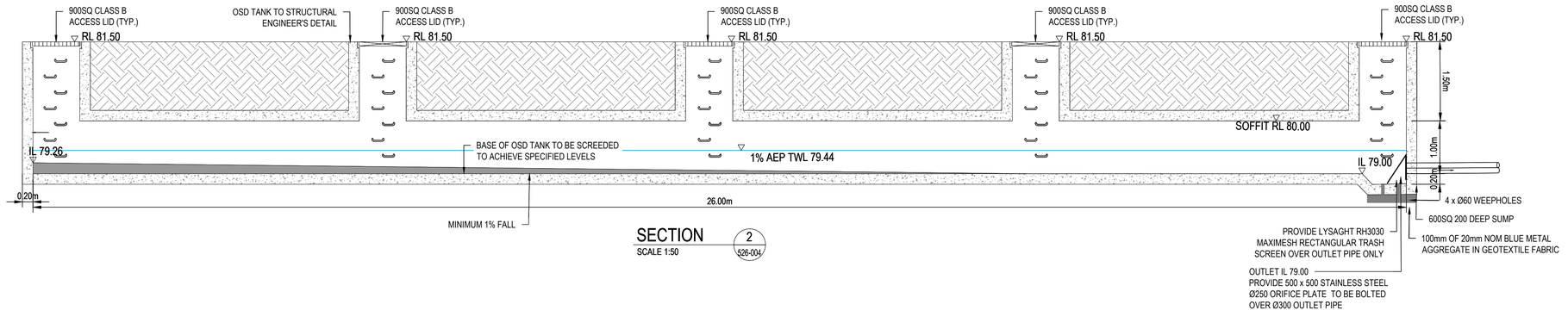
ORIGINAL SHEET - ISO A1 COORD - MGA/YY-Zone DATUM - mAHD



SECTION 1
SCALE 1:50
526-004



SECTION 2
SCALE 1:50
526-004

1:50 1 0.5 0 1 2 A1
1:100 A3

Key Plan: (NTS)

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G	ISSUED FOR DA	LPT	VE	2024.05.21
F	ISSUED FOR DA	LPT	JMB	2024.03.18
E	ISSUED FOR DA	LPT	JMB	2024.03.08
D	ISSUED FOR DA	LPT	JMB	2024.02.23
C	95% SCHEMATIC DESIGN	LPT	JMB	2023.02.02
B	50% SCHEMATIC DESIGN	LPT	MDR	2023.12.15
A	CONCEPT DESIGN	LPT	MDR	2023.03.31
Issued/Revision		By	Appd	YYYY.MM.DD

Issue Status

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File Name: 304000720-CI-1-526-001.DWG	Dwn.	Dsgn.	Chkd.	2023.03.31
	-	-	-	YYYY.MM.DD

Title
STORMWATER DRAINAGE DETAILS
SHEET 5 OF 7

Project No. 304000720
Scale NTS
Revision H
Drawing No. **CI-1-526-005**

Plotted: 07-Jun-24 10:06:51 AM By: TODD.LAUREN
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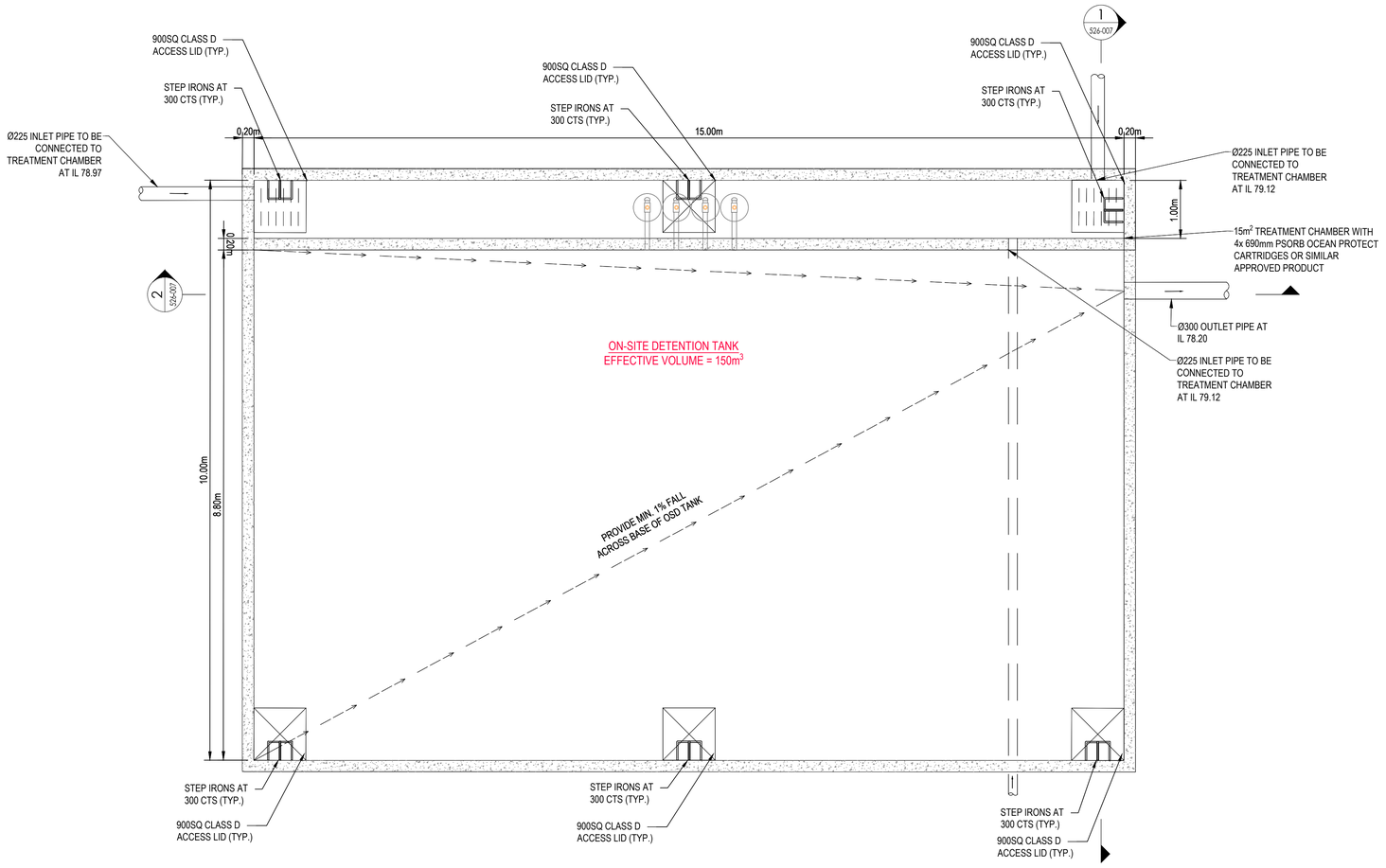
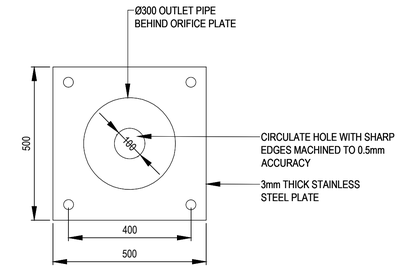
ORIGINAL SHEET - ISO A1 COORD - MGA/YY-Zone DATUM - mAHD



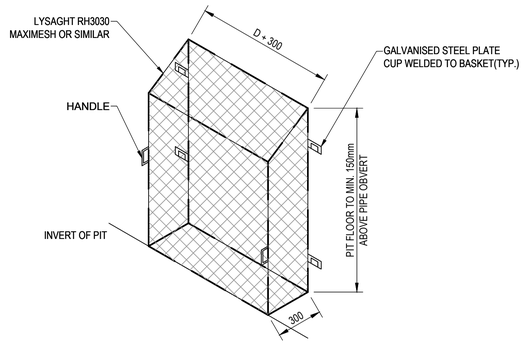
ON-SITE DETENTION (OSD) TANK PLAN 2

SCALE 1:50



ORIFICE PLATE DETAIL OSD TANK 2

SCALE 1:10



SCREEN MESH DETAIL

N.T.S.

1:10 0.1 0 0.1 0.2 0.3 0.4 0.5 A1
1:20 A3

1:50 1 0.5 0 1 2 A1
1:100 A3

Key Plan: (NTS)

F	ISSUED FOR DA	LPT	VE	2024.06.06
E	ISSUED FOR DA	LPT	VE	2024.05.21
D	ISSUED FOR DA	LPT	JMB	2024.03.18
C	ISSUED FOR DA	LPT	JMB	2024.03.08
B	ISSUED FOR DA	LPT	JMB	2024.02.23
A	95% SCHEMATIC DESIGN	LPT	JMB	2024.02.02
Issued/Revision		By	Appd	YYYY.MM.DD

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File Name: 304000720-CI-1-526-001.DWG	-	-	-	2024.02.02
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title

STORMWATER DRAINAGE DETAILS
SHEET 6 OF 7

Project No. 304000720

Scale 1:100

Revision F

Drawing No. **CI-1-526-006**

Plotted: 07 Jun 24 10:07:13 AM By: TODD LAUREN
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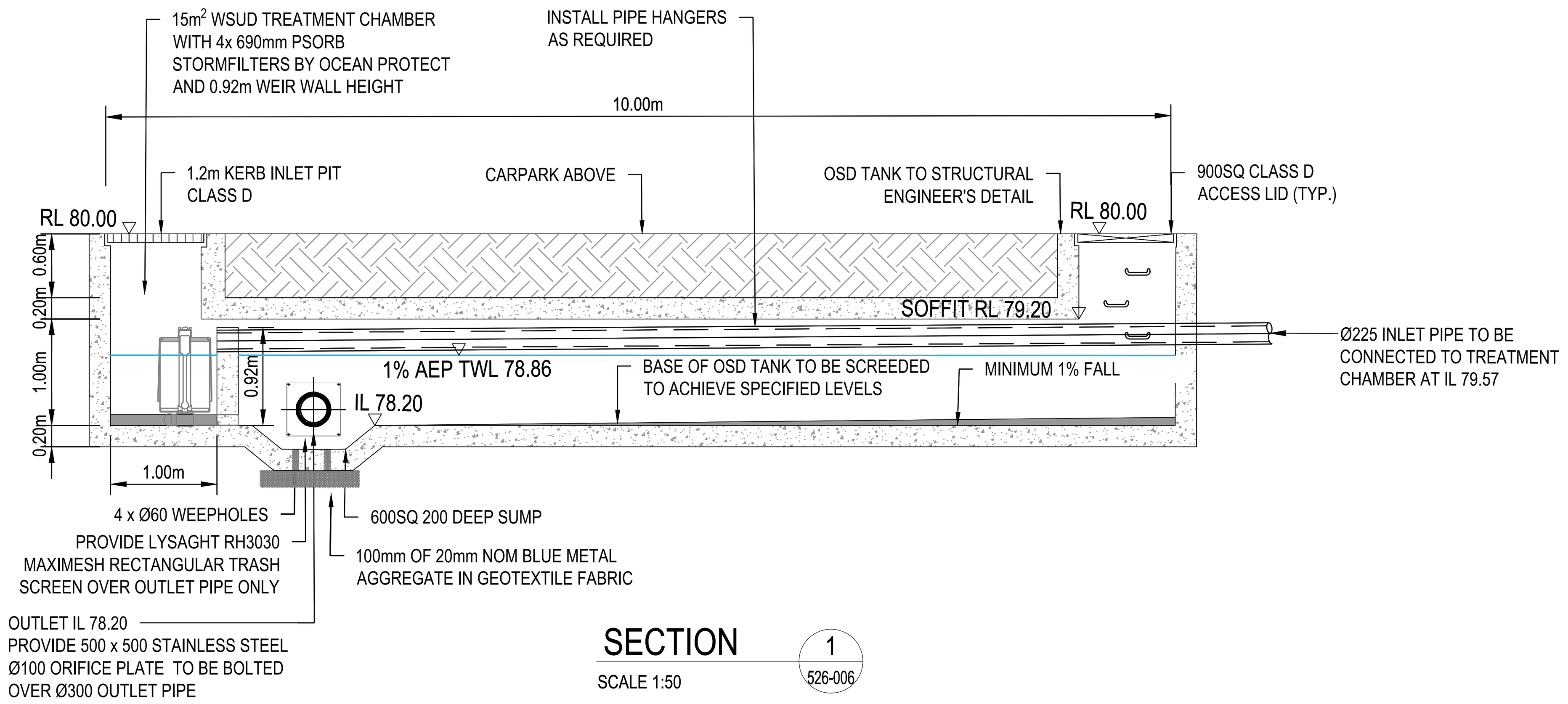
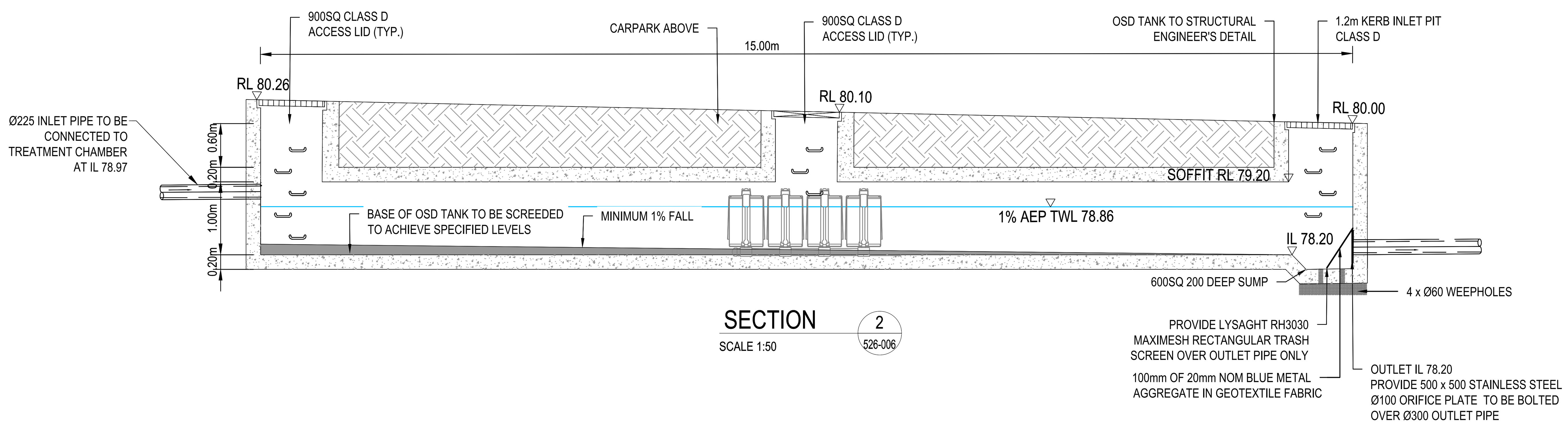
ORIGINAL SHEET - ISO A1 COORD - MGA/YY-Zone DATUM - mAHD



SECTION 1
SCALE 1:50 526-006



SECTION 2
SCALE 1:50 526-006

1:50 1 0.5 0 1 2 A1
1:100 A3

Key Plan: (NTS)

Rev	Description	By	Appd	YYYY.MM.DD
F	ISSUED FOR DA	LPT	VE	2024.06.06
E	ISSUED FOR DA	LPT	VE	2024.05.21
D	ISSUED FOR DA	LPT	JMB	2024.03.18
C	ISSUED FOR DA	LPT	JMB	2024.03.08
B	ISSUED FOR DA	LPT	JMB	2024.02.23
A	95% SCHEMATIC DESIGN	LPT	JMB	2024.02.02

Issued/Revision

Issue Status

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File Name: 304000720-CI-1-526-001.DWG

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Title

STORMWATER DRAINAGE DETAILS
SHEET 7 OF 7

Project No. 304000720

Scale 1:500

Revision F

Drawing No. CI-1-526-007

ORIGINAL SHEET - ISO A1 COORD - MGA/YY-Zone DATUM - mAHD

PITS	SL (m AHD)	IL	PIT DEPTHS (m)	PIT TYPE	PIT SIZE	PIT CLASS	COMMENTS
01\01	81.80	81.12	0.68	GRATED INLET PIT	600x600	CLASS B	-
01\02	81.46	80.76	0.70	GRATED INLET PIT	900x900	CLASS B	-
01\03	80.94	80.19	0.75	GRATED INLET PIT	900x900	CLASS B	-
01\04	81.65	79.98	1.67	GRATED INLET PIT	900x900	CLASS B	-
01\05	80.01	79.44	0.57	GRATED INLET PIT	600x600	CLASS B	-
01\06	81.15	79.30	1.85	GRATED INLET PIT	900x900	CLASS B	FIT WITH 1x OCEANPROTECT BASKET INSET
02\01	81.78	81.10	0.68	GRATED INLET PIT	600x600	CLASS B	-
02\02	81.68	80.79	0.89	GRATED INLET PIT	900x900	CLASS B	-
03\01	81.94	81.19	0.75	GRATED INLET PIT	600x600	CLASS B	-
03\02	81.50	80.75	0.75	JUNCTION PIT	600x600	CLASS B	-
04\01	81.51	78.93	2.58	JUNCTION PIT	900x900	CLASS B	-
04\02	79.76	78.70	1.06	JUNCTION PIT	900x900	CLASS B	-
04\03	78.87	78.32	0.55	GRATED INLET PIT	600x600	CLASS B	-
04\04	78.54	78.06	0.48	GRATED INLET PIT	600x600	CLASS B	-
05\01	80.36	79.53	0.83	2.4m KERB INLET PIT	900x450	CLASS D	-
06\01	80.00	79.17	0.83	2.4m KERB INLET PIT	900x450	CLASS D	-
07\01	79.31	78.48	0.83	2.4m KERB INLET PIT	900x450	CLASS D	-
07\02	79.14	78.34	0.80	2.4m KERB INLET PIT	900x450	CLASS D	-
07\03	79.20	78.11	1.09	GRATED INLET PIT	900x900	CLASS B	-
07\04	78.09	77.27	0.82	GRATED INLET PIT	600x600	CLASS B	FIT WITH 1x OCEANPROTECT BASKET INSET
08\01	77.93	77.33	0.60	GRATED INLET PIT	450x450	CLASS B	-

Key Plan: (NTS)

F ISSUED FOR DA	LPT	JMB	2024.06.06
E ISSUED FOR DA	LPT	VE	2024.05.21
D ISSUED FOR DA	LPT	JMB	2024.03.18
C ISSUED FOR DA	LPT	JMB	2024.03.08
B ISSUED FOR DA	LPT	JMB	2024.02.23
A 95% SCHEMATIC DESIGN	LPT	JMB	2024.02.02
Issued/Revision	By	Appd	YYYY.MM.DD

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File Name: 304000720-CI-1-527-001.DWG	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD
	-	-	-	2024.02.02

Title
STORMWATER PIT SCHEDULE

Project No.
304000720

Scale
NTS

Revision
F

Drawing No.
CI-1-527-001

Plotted: 07-Jun-24 10:06:49 AM By: TODD, LAUREN
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