WSU – Indigenous Centre of Excellence

171 Victoria Road, Parramatta

Stormwater SSD Report

State Significant Development No. 64916225

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For Western Sydney University

Revision 5, 28 November 2025

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1.0 Executive Summary

This report addresses the SEARs requirements related to stormwater with respect to the proposed Indigenous Centre of Excellence (ICoE) State Significant Development Application (SSDA) at Western Sydney University Parramatta Campus.

Stormwater

Stormwater will be collected on site, conveyed and discharged to the existing Council/WSU drainage network. On-site detention (OSD) is not proposed for the ICoE site due to the reduction of site imperviousness post-development and site is subject to flooding at 20% AEP as shown in 2024 Parramatta River Flood Study. Similarly, OSD is not proposed for the western carpark as the area is partially subject to flooding at 20% AEP. 110kL below ground OSD tank combined with above ground detention is proposed for the eastern carpark.

Water quality pollution reduction targets as per the City of Parramatta DCP are 90% gross pollutants, 85% total suspended solids, 65% total phosphorus, 45% total nitrogen. Water sensitive urban design (WSUD) elements included within the proposed development include a rainwater harvesting tank, swale, raingarden and wetland.

Flooding

The western carpark and ICoE sites are subject to flooding due to its proximity to the Vineyard Creek on the northern side of the Parramatta River.

Site levels are set to minimise net fill to retain flood storage and to not obstruct conveyance of flood water across the site. This ensures the development will not adversely impact upstream and downstream assets and watercourses.

Flood modelling has been undertaken by GRC Hydro confirming the proposed ICoE site levels result in no impact on current flooding condition.

Existing Utility Infrastructure

There is an existing Council stormwater drain traversing the new building and wetland. It is proposed to protect the existing drain in place with maintenance pits installed upstream and downstream side of the footprint to provide access.

2.0 Introduction

This report will address the SEARS stormwater requirements in relation to the Western Sydney University (WSU) – Indigenous Centre of Excellence (ICoE) development. The relevant requirements of City of Parramatta's Development Control Plan (DCP) and engineering specifications are also referenced.

2.1 Site Description and Location

The Western Sydney University South Parramatta Campus is located within the City of Parramatta Local Government Area (LGA).

The site comprises two (2) allotments, which is legally described as Lot 100 in DP 816829 and part Lot 101 in DP 816829. The project site comprises the P1 Car Park in the northern portion of the wider site campus and consists of the grassed area to the south and southwest of the P1 Car Park. The project site is approximately 20,035m^2 in area and is irregular in shape. It currently comprises of a hardstand area that accommodates approximately 284 car parking spaces and a grassed open space adjoining the Oval to the south. There is an existing single storey Central Energy Plant to the west of the development area which serves the wider campus; it remains outside of the scope of this SSDA.

The site is strategically positioned to the northern boundary of the Western Sydney University (University) South Parramatta Campus, fronting Victoria Road (the A40). The wider campus comprises a significant landholding size of approximately 20ha containing a series of buildings of differing heights and massing forms which are used for educational purposes. The buildings contained within the wider campus site are dissected by a series of open, at grade car parks, internal roads, pathways, and landscaped areas. The Campus sits to the north of the Parramatta River.

The site is located approximately 3km east of the Parramatta CBD, which is an area undergoing a process of significant transformation. It is also located approximately 500m to the Parramatta Light Rail Corridor, with the construction of new Yallamundi Light Rail now completed and awaiting operation by TfNSW.

The site location is identified in Figure 1.

Figure 1 – Western Sydney University Parramatta South Campus locational context

2.2 Project Description

The Applicant seeks development consent for the construction of a new state-of-the-art Indigenous Centre of Excellence as a new tertiary education facility on campus. The Indigenous Centre of Excellence project is funded by the NSW Government's Western Sydney Infrastructure Grants Program in association with Western Sydney University. The new Indigenous Centre of Excellence will be an important asset for both the University and local community alike, providing a space for the commitment to advancing Indigenous education, leadership, and reconciliation. The Indigenous Centre of Excellence will stand as a symbol of recognition of Indigenous land and the University's relationship with Indigenous communities. The Indigenous Centre of Excellence will represent a celebration of tens of thousands of years of Indigenous knowledges and histories, a legacy that the University is honoured to nurture and promote through further education opportunities for students and communities.

Through the Indigenous Centre of Excellence, the University will aim to drive positive change, increase Indigenous participation in higher education, and contribute to the preservation and sharing of Indigenous cultures.

This State Significant Development Application (SSDA) specifically seeks detailed approval for the following works:

- Site preparation including demolition of the existing car park, tree removal and installation of inground utility infrastructure services.

- Construction of a three-storey Indigenous Centre of Excellence encompassing:
  - Ground level facilities, including but not limited to; a dedicated arrival area, outdoor amphitheatre, multipurpose court and theatre, and gallery. Associated workspaces, teaching spaces, meeting areas, lounge areas and other amenities are to be provided throughout the ground floor.
  - First floor level comprising meeting space and dedicated educational facilities including learning areas and teaching spaces.
  - Second floor level comprising offices, and collaboration spaces.
  - Roof level plant and services.
- Construction of internal driveway and car parking spaces areas, including:
  - 13 with hardstand area spaces adjacent to the new dedicated arrival zone for the proposed ICoE development
  - 106 temporary replacement P1 spaces proposed in new western car park to the west of Bridge Street, adjacent to the existing oval
  - 181 temporary replacement P1 spaces proposed in new eastern car park on the southern side of Fifth Street
  - Associated land remediation, civil and electrical works.
- Landscaping works to provide outdoor educational and recreational spaces.

This report responds to the SSD-64916225 Secretary's Environmental Assessment Requirement (SEARs) which was issued by the Department of Planning, Housing and Infrastructure on 21 November 2023.

2.3 Project History

The SSDA was lodged with the NSW Department of Planning, Housing, and Infrastructure (DPHI) in August 2024. The SSDA sought development consent for the construction of a new four (4) storey tertiary educational facility comprising 5,543.3m2 of Gross Floor Area (GFA) to accommodate the new Indigenous Centre of Excellence. The SSDA was publicly exhibited by the DPHI from 20 August 2024 until 26 September 2024, with the subsequent request for response to submissions issued on 1 October 2024. Additional matters were raised by DPHI on 16 July 2025 and by Heritage NSW on 28 July 2025.

An Amendment Report and supporting documentation in response to the matters raised by DPHI, Heritage NSW and other agencies, was submitted on 27 August 2025 in accordance with the Environmental Planning and Assessment Regulation 2021 for WSU Indigenous Centre of Excellence (SSD-64916225).

On 13 October 2025, DPHI provided written correspondence outlining that all agency responses had been received apart from Crown Lands and the Conservation Programs, Heritage and Regulation branch of the NSW Department of Climate Change, Energy, Environment and Water. Notwithstanding, it was requested that a formal submissions report be prepared in response.

Following, the formal written correspondence from DPHI, ongoing liaison has occurred with DPHI and the relevant agencies to respond to the site constraints and matters relayed within the submissions received. The current proposal has been amended accordingly and results in a three (3) storey building, accommodating a site area of approximately 20,035m2. The particulars of the project have been expanded upon throughout this report.

2.4 Existing Council Stormwater Network

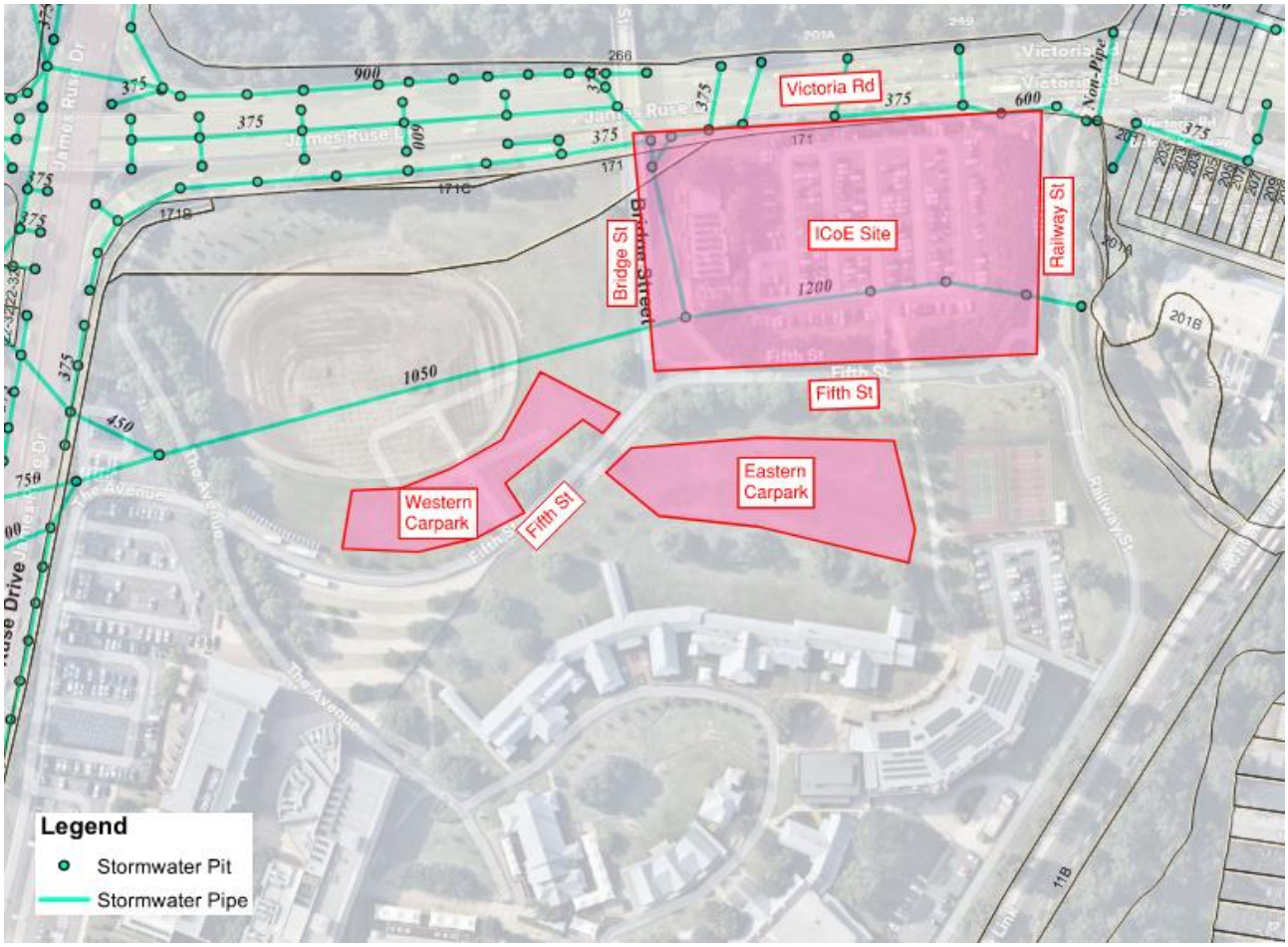

Figure 2 - City of Parramatta Council stormwater drainage system diagram.

The City of Parramatta Council Stormwater Drainage System Diagram (Figure 2) indicates that there is Council stormwater drainage network on the northern (Victoria Road) and western (Bridge Street) boundaries of the ICoE site, and a 1200dia pipe network through in the east-west direction discharging into Vineyard Creek.

2.5 Proposed Works

The proposed development includes construction of a four-storey building, two carparks, landscaping and associated infrastructure.

The proposed civil works component of the wider SSDA proposal comprise:

- New stormwater collection and treatment;
- Flood mitigation;
- New pavements;
- Coordination with existing services;
- Coordination with the flood planning levels which impact the site; and
- Compliance with Development Control Plan (DCP) requirements.

2.6 SEARS Requirements

The development falls under a State Significant Development (SSD) application (SSD No. 64916225). The stormwater related requirements for tertiary institutions required as part of the Industry Specific Planning Secretary's Environmental Assessment Requirements (SEARS) are included in Table 1 below. These requirements are addressed in the following sections to support the SSD submission.

Table 1 - Industry specific (tertiary institutions) SEARS.

SEARS Requirements	Refer Section
13. Ground and Water Conditions	
Provide a Surface and Groundwater Impact Assessment that assesses potential impacts on surface water resources (quality and quantity) including related infrastructure, hydrology, dependent ecosystems, drainage lines, downstream assets and watercourses.	3.0 Stormwater Management 4.0 Flooding Risk
14. Water Management	
Provide an Integrated Water Management Plan for the development that: ▪ Is prepared in consultation with the local council and any other relevant drainage or water authority. ▪ Details the proposed drainage design for the site including any on-site treatment, reuse and detention facilities, water quality measures, and the nominated discharge points. ▪ Demonstrates compliance with the local council or other drainage or water authority requirements and avoids adverse impacts.	3.0 Stormwater Management
Where drainage infrastructure works are required that would be handed over to local council, or other water drainage authority, provide full hydraulic details and detailed plans and specification of proposed works that have been prepared in consultation with, and comply with the relevant standards of, the local council or other drainage or water authority.	3.0 Stormwater Management Appendix A - Civil Drawings
22. Infrastructure Requirements and Utilities	
In consultation with relevant service providers: ▪ Assess the impacts of the development on existing utility infrastructure and service provider assets surrounding the site.	5.0 Existing Utility Infrastructure

2.7 Guidance documents

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

- City of Parramatta (CoP) Development Control Plan (DCP) 2023;
- CoP Development Engineering Design Guidelines 2018;
- CoP Storm Water Disposal;
- AS3500.3 Plumbing and Drainage Part 3

- Upper Parramatta River Catchment Trust (UPRCT) OSD Handbook
- Australian Rainfall and Runoff 2019; and
- Blue Book – Managing Urban Stormwater Soils and Construction (Landcom NSW);

3.0 Stormwater Management

3.1 Stormwater Quantity

Stormwater quantity controls are outlined in the City of Parramatta Storm Water Disposal. Stormwater discharge is to replicate pre-development flows where appropriate and is to be conveyed primarily through the street network in accordance with Council's Water Sensitive Urban Design Development Control Plan.

Stormwater flows are to be conveyed around site using site grading, surface inlet pits (SIP's) and in-ground pipes. Overland flow will be directed to inlet pits with exceedance flows directed safely. Roof catchments are to be collected through the use of gutters and downpipes directed to the rainwater harvesting tank for reuse.

Stormwater detention is not provided in the ICoE site and western carpark. A 110kL below ground on-site detention (OSD) tank is proposed for the eastern carpark. OSD requirements for the site are covered in the following section.

3.1.1 On-site Stormwater Detention (OSD)

ICoE Site and Western Carpark

CoP Development Engineering Design Guidelines 2018 Section 1.1 states that:

"Council will not accept b) On site detention system within areas affected by 100 year ARI mainstream flood events, subject to demonstration by an applicant that OSD would adversely impacted the catchment or have no hydrological benefit."

Figure 2.25 of the 2024 Parramatta River Flood Study (Figure 3) confirms that the ICoE site and partial western carpark are subject to flooding at a 20% AEP. As a result, On-Site Detention (OSD) would provide no meaningful hydrological benefit. Furthermore, the proposed ICoE development will reduce site imperviousness, further minimising the need for OSD. Given these factors, OSD is not proposed for the two development areas.

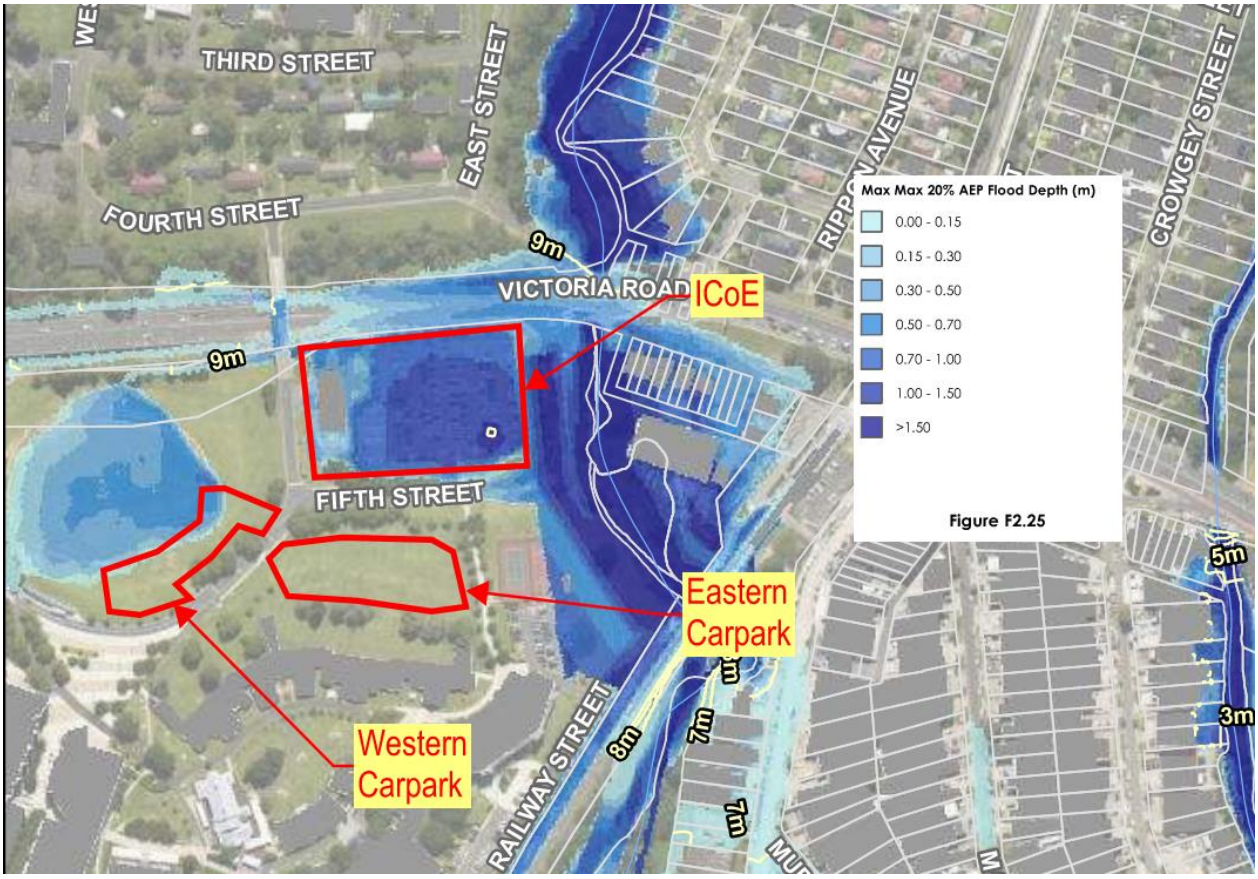

Figure 3. 2024 Parramatta River Flood Study 20% AEP flood depth

Eastern Carpark

CoP Development Control Plan outlines that OSD must be designed in accordance with either 3rd or 4th edition of the Upper Parramatta River Catchment Trust (UPRCT) OSD Handbook. All OSD systems shall be designed with consideration to the major/minor system design principle in Australian Rainfall & Runoff.

The map from CoP Engineer Design Guidelines below (Figure 4) outlines the 10 separate catchments in City of Parramatta LGA. WSU falls into 'Vineyard Creek' catchment.

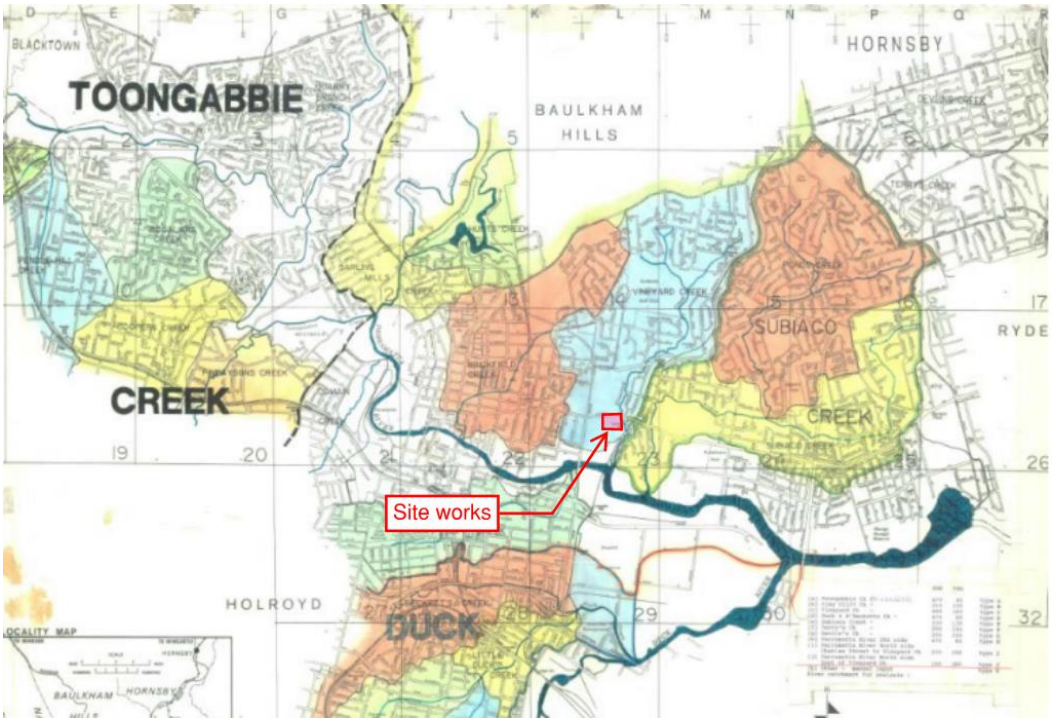

Figure 4 - OSD catchments of former Parramatta City Council area.

OSD is to be designed in line with the Council OSD requirement outlined in UPRCT OSD Handbook and provided below.

Table 2 – SSR & PSD for use with UPRCT OSD Handbook (3rd edition).

Catchment	SSR (m^3/ha)	PSD (L/s/ha)
Toongabbie Creek & Brickfield Creek	470	80
Clay Cliff Creek	215	235
Vineyard Creek	285	160
Duck Creek A'Becketts Creek	470	80
Subiaco Creek	330	130
Terry's Creek	250	210
Devlin's Creek	250	210
Parramatta River (South side)	470	80
Parramatta River North side (Charles Street to Vineyard Creek)	235	208
Parramatta River North side (East of Vineyard Creek)	190	280

SSR = Site Storage Requirement
PSD = Permissible Site Discharge

A 140kL total storage volume is required for the eastern carpark, provided by a 110kL below ground OSD tank combined with above ground detention. Refer to civil drawings for details.

3.2 Stormwater Quality

Stormwater quality treatment is required to comply with the requirements outlined in Table 5.1.2.2 of the Parramatta Development Control Plan 2023 Part 5 Environmental Management. Water quality treatment devices on site must therefore achieve the water quality targets outlined in Table 3 below.

Table 3 - Required Pollution Reduction Targets for City of Parramatta Council.

Table 5.1.2.2 – Water Pollution reduction targets

Parameter	Water pollution reduction targets
Gross Pollutants	90% Reduction in the post development mean annual load of total gross pollutants load (greater than 5mm).
Total Suspended Solids	85% reduction in the post development mean annual load of Total Suspended Solids (TSS).
Total Phosphorus	65% reduction in the post development mean annual load of Total Phosphorus (TP).
Total Nitrogen	45% reduction in the post development mean annual load of Total Nitrogen (TN).
Hydrocarbons, motor oils, oil and grease	90% reduction in the post development mean annual load of hydrocarbons, oils, and grease.

3.2.1 Water Sensitive Urban Design

Design and modelling of Water Sensitive Urban Design (WSUD) elements has been undertaken by E2. To achieve the reduction targets, the WSUD initiatives nominated includes the following:

a. Rainwater Tank (RWHT)

   A 100kL rainwater harvesting tank is proposed to collect roof runoff from the new building. Water collected in the RWHT will be used for toilet flushing and irrigation.

b. Swale

   1.5 m wide swale rock lined with ephemeral species planting is proposed to capture runoff from the building and landscape areas. The swale treats and conveys stormwater into the constructed wetland.

c. Wetland

   An approximately 250m^2 wetland is incorporated southeast of the site, corner of Railway Street and Fifth Street. The plants in the macrophyte zone removes fine particles and dissolved pollutants.

d. Raingarden

   A bio-retention raingarden is proposed near the loading bay to treat run-off from the west side of the building.

3.3 Stormwater Maintenance Plan

The following sections outlines the regular and long-term maintenance requirements for stormwater drainage including WSUD assets.

3.3.1 Stormwater Drainage (Pits and Pipes)

Routine Maintenance (monthly)

- Inspect and clear debris from grates and entry points.
- Remove any visible obstructions from pits to prevent clogging.
- Check for signs of standing water, which may indicate blockages.

Periodic Maintenance (quarterly – annually)

- Flush pipes with high-pressure water if buildup is observed.
- Inspect pits and pipes for structural integrity and repair cracks or damages.
- Remove accumulated sediment from pits and sumps.
- Ensure outlets are clear and properly connected to discharge points.

Major Maintenance (as needed, every 5 years)

- Conduct CCTV inspections to assess pipe conditions and identify blockages.
- Undertake major repairs or replacements for collapsed or deteriorating pipes.
- Upgrade drainage infrastructure where necessary to handle increased stormwater loads.

3.3.2 Swale

Routine Maintenance (monthly)

- Inspect for sediment buildup and remove accumulated debris.
- Check for erosion, particularly near inflows and outflows, and repair as needed.
- Mow grass to maintain a height of 50-100mm, ensuring it does not become overgrown.
- Remove weeds and invasive species.
- Clear blockages in flow paths to prevent water pooling and mosquito breeding.

Periodic Maintenance (quarterly – annually)

- Aerate compacted soil to maintain infiltration capacity.
- Replant any damaged or bare areas with native vegetation.
- Remove accumulated sediment when it exceeds 25mm depth.

Major Maintenance (as needed, every 5+ years)

- Undertake major regrading if erosion has significantly altered the swale's shape.
- Replace or repair damaged or ineffective erosion control measures such as check dams.

3.3.3 Raingarden

Routine Maintenance (monthly)

- Inspect inlets and outlets for clogging and remove debris.
- Check vegetation health and replace any dead plants.
- Remove weeds and invasive species.

- Ensure the mulch layer is intact and top up if needed.

Periodic Maintenance (quarterly – annually)

- Check for sediment accumulation in the basin and remove excess.
- Inspect underdrain system functionality.
- Verify that soil media is draining correctly and not becoming waterlogged.

Major Maintenance (as needed, every 5-10 years)

- Replace the top layer of filter media if infiltration slows significantly.
- Conduct deep aeration or soil replacement if compaction is identified.
- Replant or redesign the raingarden if structural integrity has been compromised.

3.3.4 Wetland

Routine Maintenance (monthly)

- Remove litter and floating debris.
- Inspect inflows and outflows for blockages and clear as needed.
- Monitor for algal blooms and take corrective action if necessary.
- Inspect vegetation health and replace any unhealthy plants.

Periodic Maintenance (quarterly – annually)

- Remove excessive aquatic weeds and invasive plants.
- Maintain and repair any erosion protection structures such as rock armoring.
- Check and maintain water levels to ensure proper function.

Major Maintenance (as needed, every 10+ years)

- Undertake large-scale dredging to remove accumulated sediments in deeper pools.
- Restore native vegetation in areas with dieback or loss.
- Assess and repair embankments and structural elements.

3.4 Construction Phase – Erosion and Sediment Control

During the construction stage of the project, an erosion and sediment control plan is to be implemented to prevent sediment laden stormwater from flowing into adjoining properties, landscape, roadways or receiving water bodies. Stormwater control onsite will be detailed in erosion and sediment control plans which will be in accordance with relevant regulatory authority guidelines including NSW's Managing Urban Stormwater, Soils and Construction ("Blue Book").

4.0 Flooding Risk

2024 Parramatta River Flood Study indicates that the ICoE site and partial western carpark are subject to flooding at 20% AEP (Figure 3) due to its proximately to Vineyard Creek. The following flood mitigation strategies are proposed for each development area.

ICoE Site

Suspended slabs for overland flow mitigation was not endorsed by Council, hence a slab on ground system with subfloor void filled has been proposed to avoid overland flow and flood water below building. Overland flow will be conveyed along the eastern boundary of the site towards Vineyard Creek.

Site levels have been set to minimise net fill to retain flood storage to not obstruct conveyance of flood water across the site and to not adversely impact both upstream and downstream watercourses. Flood models done by GRC hydro have confirmed that the proposed site levels result in no impact on current flooding condition.

Western carpark

Site levels have been set to achieve no net fill within the 1% AEP flood overlay zone to ensure no adverse impact to flood storage.

5.0 Existing Utility Infrastructure

An existing 1200dia Council stormwater drain traverses through the ICoE site in an east-west direction without a formal easement and sits within the footprint of the proposed building and wetland. This stormwater drain is proposed to be protected in place with new maintenance pit installed on the upstream and downstream side of the building footprint to provide access of the buildover. The current structural approach involves bridging over the existing drain using a suspended ground slab and pile foundations that are founded below the invert level of the pipe. This will minimise any increase in surcharge loading on the pipe compared to the current condition.

There are risks present if relocating the drain. Any works involving the diversion of the drain will require careful coordination with other inground services, particularly near the crossing of the authority sewer, which does not currently clash with the existing alignment. Additionally, geotechnical investigations indicate challenging site conditions, including shallow groundwater reaching up to 2m below ground level and the presence of reactive alluvial silty clay. These factors pose increased risks for any trenching works in the area.

Additionally, there is an existing Sydney Water sewer drain that services Western Sydney University that also runs under the footprint of the proposed building and wetland. Refer to services drawings for proposed arrangement of the sewer drain.

6.0 Conclusion

The following summarises the response to SEARS 13. Ground and Water Conditions:

- Slab on ground system with subfloor void filled has been proposed for the ICoE building to avoid overland flow and flood water below building.
- Site levels have been set to minimise net fill to retain flood storage to not obstruct conveyance of flood water across the site and to not adversely impact both upstream and downstream watercourses. The ICoE site levels has been verified with GRC Hydro flood models showing no impact on current flooding conditions.
- Refer to Appendix A for cut and fill plans.

The following summaries the response to SEAR 14. Water Management:

- OSD is not proposed for the ICoE site due to area being flooded at 20% AEP and the reduction in site imperviousness for the proposed development.
- OSD is not proposed for the western carpark due to area partially being flooded at 20% AEP.
- 110kL below ground OSD tank combined with above ground detention is proposed for the eastern carpark.
- WSUD elements include a rainwater harvesting tank, swale, raingarden and wetland.
- Proposed discharge points for the ICoE site are to the retained section of the Council drain located on the eastern boundary and to the existing Council grated pit at the north-west corner of the site.
- Proposed discharge point for the western carpark is the existing pit north of the carpark.
- Proposed discharge point for the eastern carpark is the existing pit on fifth street.
- Refer to Appendix A for civil site plans.

The following summaries the response to SEAR 22. Infrastructure and Utilities:

- The existing 1200mm diameter stormwater drain will be protected in place with new maintenance pit installed upstream and downstream side of the building footprint as per civil site plan.

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Appendix A

Civil Drawings

WSU - INDIGENOUS CENTRE OF EXCELLENCE

CIVIL DRAWINGS

LOCALITY PLAN

ICoE PROJECT - DRAWING INDEX

GENERAL

17475_PS_EC_TTW_CV_00001	GENERAL COVER SHEET, DRAWING INDEX AND LOCALITY PLAN
17475_PS_EC_TTW_CV_00002	GENERAL NOTES AND LEGEND SHEET 1
17475_PS_EC_TTW_CV_00003	GENERAL NOTES AND LEGEND SHEET 2

CIVIL

17475_PS_EC_TTW_CV_01011	CIVIL SITE PLAN

EARTHWORKS

17475_PS_EC_TTW_CV_02011	EARTHWORKS CUT AND FILL VOLUMES PLAN SHEET

P1 CARPARK RELOCATION PROJECT - DRAWING INDEX

GENERAL

234338-TTW-01-DR-CI-00001	GENERAL COVER SHEET, DRAWING INDEX AND LOCALITY PLAN
234338-TTW-01-DR-CI-00002	GENERAL NOTES AND LEGEND SHEET 1
234338-TTW-01-DR-CI-00003	GENERAL NOTES AND LEGEND SHEET 2
234338-TTW-01-DR-CI-00011	GENERAL ARRANGEMENT PLAN
234338-TTW-01-DR-CI-00012	GENERAL SURVEY AND SERVICES PLAN

GEOMETRY

234338-TTW-01-DR-CI-01011	GEOMETRY SITE PLAN SHEET 1
234338-TTW-01-DR-CI-01012	GEOMETRY SITE PLAN SHEET 2

EARTHWORKS

234338-TTW-01-DR-CI-02011	EARTHWORKS CUT AND FILL VOLUMES PLAN
234338-TTW-01-DR-CI-02021	EARTHWORKS SITE SECTIONS

PAVEMENT

234338-TTW-01-DR-CI-03011	PAVEMENT AND JOINTING PLAN SHEET 1
234338-TTW-01-DR-CI-03012	PAVEMENT AND JOINTING PLAN SHEET 2

STORMWATER

234338-TTW-01-DR-CI-04011	STORMWATER DRAINAGE PLAN SHEET 1
234338-TTW-01-DR-CI-04012	STORMWATER DRAINAGE PLAN SHEET 2
234338-TTW-01-DR-CI-04021	STORMWATER PIT SCHEDULE
234338-TTW-01-DR-CI-04041	STORMWATER DETAILS

TRAFFIC

234338-TTW-01-DR-CI-07011	TRAFFIC CONTROL SIGNAGE AND LINEMARKING SHEET 1
234338-TTW-01-DR-CI-07012	TRAFFIC CONTROL SIGNAGE AND LINEMARKING SHEET 2

CITY OF PARRAMATTA STANDARD DRAWINGS

STANDARD	DRAWING DESCRIPTION
DS1	KERBS AND LAYBACKS
DS3	FOOTPATH
DS8	VEHICULAR CROSSING
DS25	SURFACE INLET PIT GENERAL PURPOSE
DS9	HEAVY DUTY VEHICULAR CROSSING
DS10	VEHICULAR CROSSING PROFILES
DS19	STEP IRONS
DS21	KERB INLET PIT (ON GRADE)
DS25 SHT2	SURFACE INLET PIT GENERAL PURPOSE
DS26 SHT1	JUNCTION PIT
DS29	SURFACE INLET PIT FOR DRIVEWAYS
DS33	SUBSOIL DRAINAGE DETAILS
DS36 SHT1	HEADWALLS FOR PIPES UP TO 900 DIAMETER
DS37 SHT1	INSTALLATION OF PIPELINES AND RESTORATION OF TRENCHES
DS43	TREE PROTECTION TIMBER HOARDING
DS47	TYPICAL SECTIONS ROAD PAVEMENTS

NOT TO BE USED FOR CONSTRUCTION

Rev	Description	Eng Draft	Date
4	SSDA SUBMISSION	JLE	JLE 07.10.2025
3	SSDA SUBMISSION	JLE	JLE 06.06.2025
2	SSDA SUBMISSION	JLE	JLE 27.02.2025
1	SSDA SUBMISSION	JLE	AE 08.05.2024

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BEWARE OF UNDERGROUND SERVICES. THE LOCATION OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN

Client: WESTERN SYDNEY UNIVERSITY

Engineer: TTW www.ttwengineers.com

Project: WSU INDIGENOUS CENTRE OF EXCELLENCE

Drawing Title: GENERAL COVER SHEET, DRAWING INDEX, AND LOCALITY PLAN

Scale at A1	Drawn	Designed	Approved
NA	VV	JLE	RP

TTW Job number: 234338

Project Code	Campus	Building	Originator	Discipline	Sheet No.	Rev
17475	PS	EC	TTW	CV	00001	4

07.10.2025 2:06 PM

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GENERAL NOTES

1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL OTHER ENGINEERING AND ARCHITECTURAL DRAWINGS.
2. ANY OBSERVED DISCREPANCY IS TO BE REFERRED TO THE SUPERINTENDENT PRIOR TO COMMENCING WORKS.
3. THESE DRAWINGS SHALL ALSO BE READ IN CONJUNCTION WITH THE CIVIL SPECIFICATION.
4. DO NOT SCALE FROM THE DRAWINGS.
5. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE NOTED.
6. ALL LEVELS ARE EXPRESSED TO THE AUSTRALIAN HEIGHT DATUM (AHD).
7. THE CONTRACTOR SHALL SEEK APPROVAL FROM THE SUPERINTENDENT FOR ANY SUBSTITUTIONS OF PRODUCTS AND MATERIALS NOTED IN THE DRAWINGS.

SURVEY AND SERVICES INFORMATION

SURVEY

ORIGIN OF LEVELS : CONTACT THE SURVEYOR

DATUM OF LEVELS: CONTACT THE SURVEYOR

COORDINATE SYSTEM: MGA 2020

SURVEY PREPARED BY : LTS

SETOUT POINTS: CONTACT THE SURVEYOR

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

THE CONTRACTOR IS TO GET APPROVAL FROM THE RELEVANT STATE SURVEY DEPARTMENT, TO REMOVE/ADJUST ANY SURVEY MARK. THIS INCLUDES BUT IS NOT LIMITED TO; STATE SURVEY MARKS (SSM), PERMANENT MARKS (PM), CADASTRAL REFERENCE MARKS OR ANY OTHER SURVEY MARK WHICH IS TO BE REMOVED OR ADJUSTED IN ANY WAY.

TTW PLANS DO NOT INDICATE THE PRESENCE OF ANY SURVEY MARK. THE CONTRACTOR IS TO UNDERTAKE THEIR OWN SEARCH.

UNDERGROUND SERVICES - WARNING

THE LOCATIONS OF UNDERGROUND SERVICES SHOWN ON TTW'S DRAWINGS HAVE BEEN PLOTTED FROM DIAGRAMS PROVIDED BY SERVICE AUTHORITIES. THIS INFORMATION HAS BEEN PREPARED SOLELY FOR THE AUTHORITIES OWN USE AND MAY NOT NECESSARILY BE UPDATED OR ACCURATE.

THE POSITION OF SERVICES AS RECORDED BY THE AUTHORITY AT THE TIME OF INSTALLATION MAY NOT REFLECT CHANGES IN THE PHYSICAL ENVIRONMENT SUBSEQUENT TO INSTALLATION.

TTW DOES NOT GUARANTEE THAT THE SERVICES INFORMATION SHOWN ON THESE DRAWINGS SHOWS MORE THAN THE PRESENCE OR ABSENCE OF SERVICES, AND WILL ACCEPT NO LIABILITY FOR INACCURACIES IN THE SERVICES INFORMATION SHOWN FROM ANY CAUSE WHATSOEVER.

THE CONTRACTOR MUST CONFIRM THE EXACT LOCATION AND EXTENT OF SERVICES PRIOR TO CONSTRUCTION AND NOTIFY ANY CONFLICT WITH THE DRAWINGS IMMEDIATELY TO THE ENGINEER/SUPERINTENDENT.

THE CONTRACTOR SHALL NOTIFY THE RELEVANT SERVICE AUTHORITY FOR ANY REQUIRED MODIFICATION WORKS TO THEIR ASSETS. ALL SERVICE MODIFICATION WORKS SHALL BE UNDERTAKEN IN STRICT ACCORDANCE WITH THE REQUIREMENTS OF THE RELEVANT SERVICE AUTHORITY.THE CONTRACTOR SHALL PROVIDE ALL NECESSARY PROTECTION MEASURES TO EXISTING SERVICES THAT ARE TO BE RETAINED. THE CONTRACTOR IS LIABLE FOR RECTIFICATION/REINSTATEMENT COSTS FOR DAMAGE TO EXISTING SERVICES.

BOUNDARY AND EASEMENT NOTE

THE PROPERTY BOUNDARY AND EASEMENT LOCATIONS SHOWN ON TTW'S DRAWINGS HAVE BEEN BASED FROM INFORMATION RECEIVED FROM : LTS

TTW MAKES NO GUARANTEES THAT THE BOUNDARY OR EASEMENTINFORMATION SHOWN IS CORRECT. TTW WILL ACCEPT NO LIABILITIES FOR BOUNDARY INACCURACIES. THE CONTRACTOR/BUILDER IS ADVISED TO CHECK/CONFIRM ALL BOUNDARIES IN RELATION TO ALL PROPOSED WORK PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. BOUNDARY INACCURACIES FOUND ARE TO BE REPORTED TO THE SUPERINTENDENT PRIOR TO CONSTRUCTION STARTING.

KERBING NOTES

INCLUDES ALL KERBS, CHANNELS, SPOON DRAINS, CROSSINGS AND EDGES.

1. CONCRETE KERBS SHALL BE CONSTRUCTED USING GRADE 32MPA CONCRETE U.N.O.
2. ALL KERBS, CHANNELS, SPOON DRAINS AND CROSSINGS TO BE CONSTRUCTED ON MINIMUM 75MM GRANULAR BASECOURSE COMPACTED TO MINIMUM 98% MODIFIED MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289 5.2.1.
3. EXPANSION JOINTS (EJ) TO BE FORMED FROM 10MM COMPRESSIBLE FILLER BOARD FOR THE FULL DEPTH OF THE SECTION AND CUT TO PROFILE.
EXPANSION JOINTS TO BE LOCATED AT DRAINAGE PITS, ON TANGENT POINTS OF CURVES AND ELSEWHERE AT 12M CENTRES EXCEPT FOR INTEGRAL KERBS WHERE THE EXPANSION JOINTS ARE TO MATCH THE JOINT LOCATIONS IN SLABS.
4. SAW CUT JOINTS TO BE MIN 3MM WIDE AND LOCATED AT 3M CENTRES EXCEPT FOR INTEGRAL KERBS WHERE WEAKENED PLANE JOINTS ARE TO MATCH THE JOINT LOCATIONS IN SLABS.
5. BROOM FINISHED TO ALL RAMPED AND VEHICULAR CROSSINGS, ALL OTHER KERBING OR DISH DRAINS TO BE STEEL FLOAT FINISHED.
6. IN THE REPLACEMENT OF KERBS - EXISTING ROAD PAVEMENT IS TO BE SAWCUT 350MM FROM LIP OF UPON COMPLETION OF NEW KERBS, NEW BASECOURSE AND SURFACE IS TO BE LAID 350MM WIDE TO MATCH EXISTING MATERIALS AND THICKNESSES. EXISTING ALLOTMENT DRAINAGE PIPES ARE TO BE BUILT INTO THE NEW KERB WITH A 100MM DIA HOLE. EXISTING KERBS ARE TO BE COMPLETELY REMOVED WHERE NEW KERBS ARE SHOWN.

STORMWATER DRAINAGE NOTES

1. ALL NEW DRAINAGE PIPES EQUAL TO OR GREATER THAN 450Ø TO BE RUBBER RING JOINTED RCP UNLESS NOTED OTHERWISE IN DRAWINGS
   1.1. RCP PIPES SUBJECT TO PEDESTRIAN LOADING ONLY TO BE CLASS 3 UNLESS NOTED OTHERISE.
   1.2. RCP PIPES SUBJECT TO TRAFFIC LOADING TO BE MIN. CLASS 4 UNLESS NOTED OTHERWISE
2. PIPES UP TO 375Ø SHALL BE HDPE OR SEWER GRADE UPVC WITH SOLVENT WELDED JOINTS UNLESS NOTED OTHERWISE IN DRAWINGS. SOME OF OUR PIPES ARE CPP. IN AREAS OF EXPANSIVE SOILS, UPVC PIPES MUST BE RUBBER RING JOINTED.
3. EQUIVALENT STRENGTH VCP OR FRP PIPES MAY BE USED SUBJECT TO APPROVAL.
4. PRECAST PITS MAY BE USED EXTERNAL TO THE BUILDING SUBJECT TO APPROVAL BY THE SUPERINTENDENT.
5. ENLARGERS, CONNECTIONS AND JUNCTIONS TO BE MANUFACTURED FITTINGS WHERE PIPES ARE LESS THAN 300 DIA.
6. SUBSOIL DRAINS TO BE SLOTTED FLEXIBLE 100DIA UPVC U.N.O.
7. WHERE SUBSOIL DRAINS ARE SHOWN AS UNSLOTTED, UNSLOTTED 100DIA UPVC SEWER GRADE PIPE IS TO BE USED.
8. SUBSOIL DRAINS TO BE LOCATED BEHIND ALL RETAINING WALLS AND NEW KERBING SHALL BE CONNECTED TO NEAREST STORMWATER PIT.
9. GRATES AND COVERS SHALL CONFORM WITH AS 3996-2006, AND AS 1428.1 FOR ACCESS REQUIREMENTS. ALL PITS WITHIN FOOT TRAFFIABLE AREA TO HAVE MINIMUM SLIP RESISTANCE OF R10 OR R11.
10. CONCRETE PIPES ARE TO BE INSTALLED IN ACCORDANCE WITH AS 3725. ALL BEDDING TO BE TYPE H2 U.N.O.
11. CARE IS TO BE TAKEN WITH LEVELS OF STORMWATER LINES. GRADES SHOWN ARE NOT TO BE REDUCED WITHOUT APPROVAL.
12. ALL STORMWATER PIPES TO BE 150 DIA AT 1 IN 100 MIN FALL U.N.O.
13. ADOPT INVERT LEVELS FOR PIPE INSTALLATION (GRADES SHOWN ARE ONLY NOMINAL).
14. ALL DRAINS AND OTHER SERVICE INFRASTRUCTURE TRENCHES BENEATH ROAD PAVEMENTS, DRIVEWAYS, FOOTPATHS OR CONCRETE STRUCTURES SLABS, OR WITHIN 1.0M OF CONCRETE STRUCTURES OR OTHER COUNCIL ASSETS, INCLUDING KERB, FOOTPATH, DRAINS, ETC MUST BE BACKFILLED WITH CLASS 2 FCR, COMPACTED AND TESTED TO THE SATISFACTION OF THE SUPERINTENDENT.
15. LITTER TRAPS TO BE INSTALLED IN ALL NEW GRATED PITS WITHIN LANDSCAPE AREAS.
16. ALL GRATED PITS WITHIN PAVED PEDESTRIAN AREAS TO BE HEEL GUARD BOLT DOWN COVER UNLESS SPECIFIED OTHERWISE ON PLANS.
17. ALL DOWNPIPES TO BE CONNECTED TO ADJACENT INGROUND STORMWATER DRAINAGE INFRASTRUCTURE. REFER TO HYDRAULIC DRAWINGS FOR DOWN PIPE LOCATION IF NOT DETAILED ON CIVIL PLANS.
18. ALL EXISTING ACTIVE DOWNPIPES, WHERE INGROUND STORMWATER HAS BEEN ABANDONED, TO BE CONNECTED TO NEW INGROUND STORMWATER DRAINAGE NETWORK.
19. PRIOR TO COMMENCING ANY STORMWATER DRAINAGE WORKS ON SITE THE CONTRACTOR MUST CONFIRM THE CONNECTION TO THE LEGAL POINT OF DISCHARGE AUTHORITY DRAIN AS DOCUMENTED BY:
   19.1. VERIFICATION OF THE EXISTING INVERT LEVEL OF THE LEGAL POINT OF DISCHARGE TO COUNCIL DRAIN.
   19.2. VERIFICATION THAT THE PROPOSED STORMWATER DRAIN INVERT LEVELS CAN ACHIEVE THE COUNCIL STANDARD CONNECTION DETAIL IN ACCORDANCE WITH COUNCIL STANDARDS
   19.3. VERIFICATION THAT THE ROUTE IS CLEAR OF ALL OBSTRUCTIONS AND EXISTING SERVICES.

   THE CONTRACTOR SHALL NOTIFY THE SUPERINTENDENT IF ANY OF THE ABOVE CANNOT BE ACHIEVED PRIOR TO COMMENCING WORKS ON SITE.
20. THE INTERNAL BASE OF ALL DRAINAGE PITS SHALL BE BENCHED AND SHAPED TO ALLOW FREE FLOW OF WATER THROUGH TO THE PIT OUTLET PIPE.
21. PITS DEEPER THAN 1.0M SHALL BE FITTED WITH STEP IRONS.

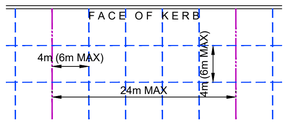
CONCRETE FINISHING NOTES

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

JOINTING NOTES

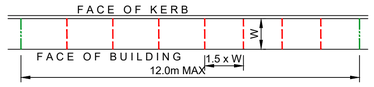
VEHICULAR PAVEMENT JOINTING

1. ALL VEHICULAR PAVEMENTS TO BE JOINTED AS SHOWN ON DRAWINGS.
2. SAWCUT JOINTS SHOULD GENERALLY BE LOCATED AT A MAXIMUM OF 6.0M CENTRES.
3. SAW CUT JOINTS SHOULD GENERALLY BE LOCATED AT A MAXIMUM OF 6.0M CENTRES OR 1.5 X THE SPACING OF KEYED JOINTS, WHERE KEY JOINT SPACING IS LESS THAN 4.0M, WITH DOWELLED EXPANSION JOINTS AT MAXIMUM OF 24M CENTRES.
4. PROVIDE 10MM WIDE FULL DEPTH ISOLATION JOINTS BETWEEN BUILDINGS, STRUCTURES AND KERBS.
5. THE TIMING OF THE SAW CUT IS TO BE CONFIRMED BY THE CONTRACTOR ON SITE. SITE CONDITIONS WILL DETERMINE HOW MANY HOURS AFTER THE CONCRETE POUR BEFORE THE SAW CUTS ARE COMMENCED. REFER TO THE SPECIFICATION FOR WEATHER CONDITIONS AND TEMPERATURES REQUIRED.
6. INDICATIVE VEHICULAR PAVEMENT JOINTING AS FOLLOWS.



PEDESTRIAN FOOTPATH JOINTING

1. SAWCUT JOINTS ARE TO BE LOCATED WHERE POSSIBLE AT TANGENT POINTS OF CURVES AND ELSEWHERE.
2. SAW CUT JOINTS ARE TO BE LOCATED AT A MAX 1.5 X WIDTH OF THE PAVEMENT.
3. WHERE POSSIBLE JOINTS SHOULD BE LOCATED TO MATCH KERBING AND / OR ADJACENT PAVEMENT JOINTS.
4. ALL PEDESTRIAN FOOTPATH JOINTINGS AS FOLLOWS (U.N.O).
5. JOINTS SPACING ARE INDICATIVE ONLY AND THE CONTRACTOR TO REFER LANDSCAPE ARCHITECTURAL PLAN FOR FINAL LOCATION.



Design base thickness, D (mm)	Dowel diameter (mm)
150 < D ≤ 175	24
175 < D ≤ 200	28
200 < D ≤ 260	32
D > 260	36

BULK EARTHWORKS NOTES

1. CONTRACTOR TO REFERENCE GEOTECHNICAL REPORTS BY DOUGLAS PARTNERS 227190.00.R.001.Rev1 DATED 2 MAY 2024 AND 227191.00.R.001.Rev0 DATE 15 NOVEMBER 2024 FOR SUBGRADE PREPARATION REQUIREMENTS.
2. ALL BATTERS AT A MAXIMUM SLOPE TO BE CONFIRMED AND SUBJECT TO GEOTECHNICAL ENGINEER ADVICE. REFER TO GEOTECHNICAL REPORTS BY DOUGLAS PARTNERS 227190.00.R.001.Rev1 DATED 2 MAY 2024 AND 227191.00.R.001.Rev0 DATE 15 NOVEMBER 2024.
3. EXCAVATED MATERIAL MAY BE USED AS STRUCTURAL FILL PROVIDED,
   3.1. IT COMPLIES WITH THE SPECIFICATION REQUIREMENTS FOR FILL MATERIAL,
   3.2. THE PLACEMENT MOISTURE CONTENT COMPLIES WITH THE GEOTECHNICAL CONSULTANTS REQUIREMENTS, AND ALLOWS FILLING TO BE PLACED AND PROOF-ROLLED IN ACCORDANCE WITH THE SPECIFICATION. WHERE NECESSARY THE CONTRACTOR MUST MOISTURE CONDITION THE EXCAVATED MATERIAL TO MEET THESE REQUIREMENTS.

4. COMPACT FILL AREAS AND SUBGRADE TO NOT LESS THAN:		
LOCATION	STANDARD DRY DENSITY (AS 1289 5.1.1)	OPTIMUM MOISTURE CONTENT (OMC)
UNDER BUILDING SLABS ON GROUND	98%	±2%
UNDER ROADS AND CARPARKS	98%	±2%
LANDSCAPE AREAS:	95%	±2%

5. BEFORE PLACING FILL, PROOF ROLL EXPOSED SUBGRADE WITH A 10 TONNE MINIMUM ROLLER TO TEST SUBGRADE AND THEN REMOVE SOFT SPOTS (AREAS WITH MORE THAN 3MM MOVEMENT UNDER ROLLER). SOFT SPOTS TO BE REPLACED WITH GRANULAR FILL UNLESS NOTED OTHERWISE.
6. CONTRACTOR SHALL PLACE SAFETY BARRIERS AROUND EXCAVATIONS IN ACCORDANCE WITH RELEVANT SAFETY REGULATIONS.
7. BULK EARTHWORKS DRAWINGS ARE NOT TO BE USED FOR DETAILED EXCAVATION IN LANDSCAPE ZONES. CONTRACTOR TO MAKE ALLOWANCE FOR ADDITIONAL FILL OR CUT THROUGH LANDSCAPE ZONES.
8. CONTRACTOR TO REVIEW LANDSCAPE DRAWINGS TO CONFIRM SOFTSCAPE PROFILE DEPTHS.
9. STRIP ALL TOPSOIL FROM THE CONSTRUCTION AREA. ALL STRIPPED TOPSOIL SHALL BE DISPOSED OF OFFSITE UNLESS DIRECTED OTHERWISE.
10. MAKE SMOOTH CONNECTION WITH ALL EXISTING WORKS
11. COMPACT SUBGRADE UNDER BUILDINGS AND PAVEMENTS TO MINIMUM 98% STANDARD MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS1289.5.1.1. COMPACTION UNDER BUILDINGS TO EXTEND 2.0M MINIMUM BEYOND BUILDING FOOTPRINT.
12. TEMPORARY STORMWATER CONTROL AND CONNECTIONS TO BE MANAGED ONSITE BY THE BUILDER/CONTRACTOR.
13. SITE TO BE FREE DRAINING AND SUBGRADE TO BE PROTECTED FROM MOISTURE INGRESS.
14. DEWATERING TO BE MANAGED BY CONTRACTOR AT ALL TIMES.
15. QUANTITIES TO UNDERLYING GEOLOGY SUCH AS ROCK OR NATURAL CLAY ARE INDICATIVE ONLY AND BASED ON THE GEOTECHNICAL INFORMATION AVAILABLE AT THE TIME OF ISSUE. UNDERLYING NATURAL CLAY AND ROCK LEVELS CAN BE HIGHLY VARIABLE BETWEEN GEOTECH SAMPLE LOCATIONS.
16. ALL EARTHWORKS ACTIVITIES SHALL BE UNDERTAKEN WITH LEVEL 1 SUPERVISION IN ACCORDANCE WITH AS3798 (2007) BY A SUITABLY QUALIFIED GEOTECHINICAL INSPECTION AND TESTING AUTHORITY (GITA) ENGAGED BY THE CONTRACTOR. AS A MINIMUM, THE FREQUENCY AND LOCATION OF TESTING SHALL BE IN ACCORDANCE WITH TABLE 8.1 OF AS3798 (2007). THE GITA IS TO MAINTAIN DAILY SITE RECORD SHEETS AS SET OUT IN AS3798 (2007).

EROSION AND SEDIMENT CONTROL

THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL OTHER ENGINEERING AND ARCHITECTURAL DRAWINGS.

1. ALL WORK SHALL BE GENERALLY CARRIED OUT IN ACCORDANCE WITH:
   1.1. LOCAL AUTHORITY REQUIREMENTS
   1.2. EPA - POLLUTION CONTROL MANUAL FOR URBAN STORMWATER,
2. EROSION AND SEDIMENT CONTROL ARE TO BE PROVIDED FOR THE WHOLE OF THE WORKS BY THE CONTRACTOR. SHOULD THE CONTRACTOR STAGE THESE WORKS THEN THE DESIGN MAY BE REQUIRED TO BE MODIFIED. VARIATION TO THESE DETAILS MAY REQUIRE APPROVAL BY THE RELEVANT AUTHORITIES. THE EROSION AND SEDIMENT CONTROL SHALL BE IMPLEMENTED AND ADOPTED TO MEET RELEVANT EPA AND/OR AUTHORITY GUIDELINES
3. MAINTAIN ALL EROSION AND SEDIMENT CONTROL DEVICES TO THE SATISFACTION OF THE SUPERINTENDENT AND THE LOCAL AUTHORITY.
4. WHEN STORMWATER PITS ARE CONSTRUCTED PREVENT SITE RUNOFF ENTERING THE PITS UNLESS SILT FENCES ARE ERECTED AROUND PITS.
5. MINIMISE THE AREA OF SITE BEING DISTURBED AT ANY ONE TIME.
6. PROTECT ALL STOCKPILES OF MATERIALS FROM SCOUR AND EROSION. DO NOT STOCKPILE LOOSE MATERIAL IN ROADWAYS, NEAR DRAINAGE PITS OR IN WATERCOURSES.
7. ALL SOIL AND WATER CONTROL MEASURES ARE TO BE PUT BACK IN PLACE AT THE END OF EACH WORKING DAY, AND MODIFIED TO BEST SUIT SITE CONDITIONS.
8. CONTROL WATER FROM UPSTREAM OF THE SITE SUCH THAT IT DOES NOT ENTER THE DISTURBED SITE.
9. ALL CONSTRUCTION VEHICLES SHALL ENTER AND EXIT THE SITE VIA THE TEMPORARY CONSTRUCTION ENTRY/EXIT.
10. ALL VEHICLES LEAVING THE SITE SHALL BE CLEANED AND INSPECTED BEFORE LEAVING.
11. MAINTAIN ALL STORMWATER PIPES AND PITS CLEAR OF DEBRIS AND SEDIMENT. INSPECT STORMWATER SYSTEM AND CLEAN OUT AFTER EACH STORM EVENT.
12. CLEAN OUT ALL EROSION AND SEDIMENT CONTROL DEVICES AFTER EACH STORM EVENT.

SEQUENCE OF WORKS

1. PRIOR TO COMMENCEMENT OF EXCAVATION THE FOLLOWING SOIL MANAGEMENT DEVICES MUST BE INSTALLED.
   1.1. CONSTRUCT SILT FENCES BELOW THE SITE AND ACROSS ALL POTENTIAL RUNOFF SITES.
   1.2. CONSTRUCT TEMPORARY CONSTRUCTION ENTRY/EXIT AND DIVERT RUNOFF TO SUITABLE CONTROL SYSTEMS.
   1.3. CONSTRUCT MEASURES TO DIVERT UPSTREAM FLOWS INTO EXISTING STORMWATER SYSTEM.
   1.4. CONSTRUCT SEDIMENTATION TRAPS/BASIN INCLUDING OUTLET CONTROL AND OVERFLOW.
   1.5. CONSTRUCT TURF LINED SWALES.
   1.6. PROVIDE SANDBAG SEDIMENT TRAPS UPSTREAM OF EXISTING PITS.
2. CONSTRUCT GEOTEXTILE FILTER PIT SURROUND AROUND ALL PROPOSED PITS AS THEY ARE CONSTRUCTED.
3. ON COMPLETION OF PAVEMENT PROVIDE SAND BAG KERB INLET SEDIMENT TRAPS AROUND PITS.
4. PROVIDE AND MAINTAIN A STRIP OF TURF ON BOTH SIDES OF ALL ROADS AFTER THE CONSTRUCTION OF KERBS.

NOT TO BE USED FOR CONSTRUCTION

Rev	Description	Eng Draft	Date
3	SSDA SUBMISSION	JLE	JLE 07.10.2025
2	SSDA SUBMISSION	JLE	JLE 27.02.2025
1	SSDA SUBMISSION	JLE	AE 08.05.2024

BEFORE YOU DIG www.byda.com.au
BEWARE OF UNDERGROUND SERVICES. THE LOCATION OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN

Client: WESTERN SYDNEY UNIVERSITY

Engineer: TTW www.ttwengineers.com

Project: WSU INDIGENOUS CENTRE OF EXCELLENCE

Drawing Title: GENERAL NOTES AND LEGEND SHEET 1

Scale at A1	Drawn	Designed	Approved
NA	VV	JLE	RP

TTW Job number: 234338

Project Code	Campus	Building	Originator	Discipline	Sheet No.	Rev
17475	PS	EC	TTW	CV	00002	3

06.10.2025 3:36 PM

SERVICE TRENCHES

EXCAVATION

1. BEFORE EXCAVATING TRENCHES THROUGH EXISTING PAVEMENT, SAW-CUT EXISTING CONCRETE AND BITUMINOUS SURFACES ON EACH SIDE OF THE TRENCH TO PROVIDE A STRAIGHT EVEN JOINT. LIFT AND STORE UNIT PAVING FOR LATER REINSTATEMENT.

2. EXCAVATE FOR UNDERGROUND SERVICES, TO REQUIRED LINES, LEVELS AND GRADES. GENERALLY MAKE THE TRENCHES STRAIGHT BETWEEN MANHOLES, INSPECTION POINTS AND JUNCTIONS, WITH VERTICAL SIDES AND UNIFORM GRADES. EXCAVATION OF SERVICE TRENCHES SHALL BE COMPLETED PRIOR TO LIME STABILIZATION OF THE SUBGRADE. NOTIFY THE CONTRACT ADMINISTRATOR IF ANY TRENCHES ARE BE TO EXCAVATED IN STABILISED GROUND. ANY TRENCHES IN STABILISED GROUND TO BE BACKFILLED AS SPECIFIED IN THE "BACKFILLING" NOTES.

3. KEEP TRENCH WIDTHS TO THE MINIMUM CONSISTENT WITH THE LAYING AND BEDDING OF THE RELEVANT SERVICE AND CONSTRUCTION OF PERSONNEL ACCESS WAYS AND PITS.

4. EXCAVATE TRENCHES IN SECTIONS OF SUITABLE LENGTH.

5. TRENCH DEPTHS TO BE CONSTRUCTED AS REQUIRED BY THE RELEVANT SERVICE AND ITS BEDDING METHOD.

6. IF EXCAVATION IS NECESSARY BELOW THE LEVEL OF ADJACENT FOOTINGS, GIVE NOTICE, AND PROVIDE NECESSARY SUPPORT FOR THE FOOTINGS.

7. CLEAR TRENCHES OF SHARP PROJECTIONS. CUT BACK ROOTS ENCOUNTERED IN TRENCHES TO AT LEAST 600MM CLEAR OF SERVICES. REMOVE OTHER OBSTRUCTIONS INCLUDING STUMPS AND BOULDERS WHICH MAY INTERFERE WITH SERVICES OR BEDDING.

8. KEEP TRENCHES FREE OF WATER. PLACE BEDDING MATERIAL, SERVICES AND BACKFILLING ON FIRM GROUND FREE OF SURFACE WATER.

9. IF TRENCH EXCAVATION EXCEEDS THE CORRECT DEPTH, REINSTATE TO THE CORRECT DEPTH AND BEARING VALUE USING COMPACTED BEDDING MATERIAL OR GRADE 20MPA CONCRETE.

BACKFILLING

THESE REQUIREMENTS APPLY TO BACKFILL TO STORMWATER DRAINAGE TRENCHES AND SERVICE ACCESS POINTS. BEDDING AND OVERLAY TO A MINIMUM DEPTH OF 200MM ABOVE THE SERVICE SHALL BE PIPE BEDDING AS SPECIFIED BELOW UNLESS SPECIFIED OTHERWISE IN RELEVANT SERVICE SPECIFICATION. TRENCH BACKFILL ABOVE THIS LEVEL SHALL BE BACKFILL MATERIAL AS SPECIFIED BELOW. BEDDING, OVERLAY AND TRENCH BACKFILL TO BE COMPACTED IN ACCORDANCE WITH THE COMPACTION SCHEDULE. PLACE FILLING IN LAYERS NOT EXCEEDING 200MM COMPACTED LAYER THICKNESS.

PIPE BEDDING

UNLESS NOTED OTHERWISE IN "STORMWATER DRAINAGE" NOTES, PIPE BEDDING TO BE GRANULAR MATERIAL (CLEAN SHARP WASHED RIVER SAND OR CLEAN UNWEATHERED HARD BASALTIC OR SEDIMENTARY CRUSHED ROCK, FREE OF SALT, CLAY OR ORGANIC CONTAMINANTS) OR CEMENTITIOUS MATERIAL (MORTAR OR CONCRETE) AS SPECIFIED.

CRUSHED ROCK:

SLEVE APERTURE (mm) TO AS 1152	PERCENTAGE PASSING (BY MASS)
9.50	98 TO 100
6.70	50 TO 100
4.75	15 TO 75
2.36	0 TO 40
1.16	0 TO 5

CEMENT MORTAR BEDDING: 1 PORTLAND CEMENT: 4 SAND.
CONCRETE BEDDING: NOT LESS THAN 20 MPA.

BACKFILL MATERIAL

GENERAL: GENERAL FILL EXCEPT WITH NO STONES GREATER THAN 25 MM OCCURRING WITHIN 150 MM OF THE SERVICE, OR OTHER MATERIALS AS REQUIRED FOR PARTICULAR SERVICES OR LOCATIONS. WELL GRADED, INORGANIC, NON-PERISHABLE MATERIAL, MAXIMUM SIZE 75 MM, PLASTICITY INDEX * 55% AND CLASSIFIED AS CLASS A OR CLASS S MATERIAL IN TABLE 2.1 OF AS 2870. FILL MATERIAL TO HAVE A MINIMUM 4 DAY SOAKED CBR OF 4% IN ACCORDANCE WITH AS 1239.6.1.1 UNLESS NOTED OTHERWISE ON DRAWINGS. MATERIAL TO BE NON-DISPERSIVE (A RATING OF NIL AS DEFINED BY THE DISPERSION TEST AS 1239.3.8.1).

UNDER ROADS AND PAVED AREAS: COARSE SAND, FINE CRUSHED ROCK, OR 3% CEMENT STABILISED SAND.

IN TOPSOIL AREAS: COMPLETE THE BACKFILLING WITH TOPSOIL FOR AT LEAST THE TOP 50 MM.

AREA	COMPACTION RATIO % OF MAXIMUM DRY DENSITY OR DENSITY INDEX (DI)	MOISTURE % FROM OPTIMUM*
LANDSCAPE AREA		
BEDDING AND OVERLAY	70 (DI)	±2
TRENCH BACKFILL	70 (DI) OR 95% STANDARD	±2
UNDER OR WITHIN LINE OF INFLUENCE OF PAVEMENTS, STRUCTURES OR BUILDING SLABS		
BEDDING AND OVERLAY	80 (DI)	±2
TRENCH BACKFILL	80 (DI) OR 98% STANDARD	±2
PAVEMENT ZONE	98% MODIFIED	±2

SIGNS AND LINE MARKING

1. PAVEMENT MARKING AND SIGN POSTING ON PUBLIC ROADS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE RELEVANT ROAD AUTHORITY. THE CONTRACTOR SHALL OBTAIN THESE REQUIREMENTS FROM THE ROAD AUTHORITY.
2. PAVEMENT MARKING AND SIGN POSTING TO BE IN ACCORDANCE WITH R.T.A. 'INTERIM GUIDE TO SIGNS AND MARKINGS'.
3. CONTRACTOR IS TO PROVIDE GUIDE POSTS, SPACED IN ACCORDANCE WITH AS1742.2. THEY ARE TO BE LOCATED NEAR ALL HEAD WALLS AND PIPE OUTLETS.
4. RAISED PAVEMENT MARKERS TO BE IN ACCORDANCE WITH AS1742.2
5. WHERE EXISTING PAVEMENT MARKING CONFLICTS WITH PROPOSED, IT IS TO BE REMOVED.
6. LANE WIDTHS DO NOT INCLUDE WIDTH OF GUTTER.
7. LINE MARKING PLAN DOES NOT DEFINE BOUNDARIES.
8. ERECT TEMPORARY SIGN 'CHANGED TRAFFIC CONDITIONS AHEAD' 120M AHEAD OF NEW WORK IN BOTH DIRECTIONS.
9. ESTABLISH THE LOCATION OF EXISTING UTILITY SERVICES AND LOCATE NEW SIGNS CLEAR OF THESE INSTALLATIONS.
10. THE SLOPED FACE OF THE SF MEDIAN KERBS WHICH ADJOIN THROUGH LANES, ARE TO BE PAINTED WHITE IN LIEU OF AN E3 EDGE LINE. THE REFLECTIVE PAVEMENT MARKERS NORMALLY ASSOCIATED WITH AN E3 EDGE LINE ARE TO BE LOCATED ON THE PAVEMENT ADJACENT TO THE SF KERB.
11. BICYCLE PAVEMENT MARKINGS AND SIGN POSTING TO BE IN ACCORDANCE WITH AUSTROADS STANDARDS.
12. THE DESIGN OF MAJOR DIRECTIONAL SIGN POSTING TO BE PREPARED AND ASSESSED BY THE RELAVENT ROAD AUTHORITY

SAFETY IN DESIGN

EXISTING SERVICES
BEFORE EXCAVATING TRENCHES THROUGH EXISTING PAVEMENT, SAW-CUT EXISTING CONCRETE AND BITUMINOUS SURFACES ON EACH SIDE OF THE TRENCH TO PROVIDE A STRAIGHT EVEN JOINT. LIFT AND STORE UNIT PAVING FOR LATER REINSTATEMENT.

EXISTING STRUCTURES
CONTRACTOR TO BE AWARE EXISTING STRUCTURES MAY EXIST WITHIN THE SITE. TO PREVENT DAMAGE TO EXISTING STRUCTURE(S) AND/OR PERSONNEL, SITE WORKS TO BE CARRIED OUT AS FAR AS PRACTICABLY POSSIBLE FROM EXISTING STRUCTURE(S).

EXISTING TREES
CONTRACTOR TO BE AWARE EXISTING TREES EXIST WITHIN THE SITE WHICH NEED TO BE PROTECTED. TO PREVENT DAMAGE TO TREES AND/OR PERSONNEL, SITE WORKS TO BE CARRIED OUT AS FAR AS PRACTICABLY POSSIBLE FROM EXISTING TREES. ADVICE NEEDS TO BE SOUGHT FROM ARBORIST AND/OR LANDSCAPE ARCHITECT ON MEASURES REQUIRED TO PROTECT TREES.

GROUNDWATER
CONTRACTOR TO BE AWARE OF GROUNDWATER LEVELS CLOSE TO EXISTING SURFACE LEVEL. TEMPORARY DE-WATERING MAY BE REQUIRED DURING CONSTRUCTION WORKS.

EXCAVATIONS
DEEP EXCAVATIONS DUE TO STORMWATER DRAINAGE WORKS IS REQUIRED. CONTRACTOR TO ENSURE SAFE WORKING PROCEDURES ARE IN PLACE FOR WORKS. ALL EXCAVATIONS TO BE FENCED OFF AND BATTERS ADEQUATELY SUPPORTED TO APPROVAL OF GEOTECHNICAL ENGINEER.

GROUND CONDITIONS
CONTRACTOR TO BE AWARE OF THE SITE GEOTECHNICAL CONDITIONS. REFER TO THE GEOTECHNICAL REPORT FOR FURTHER INFORMATION.

HAZARDOUS MATERIALS
EXISTING ASBESTOS PRODUCTS & CONTAMINATED MATERIAL MAY BE PRESENT ON SITE. CONTRACTOR TO ENSURE ALL HAZARDOUS MATERIALS ARE IDENTIFIED PRIOR TO COMMENCING WORKS. SAFE WORKING PRACTISES AS PER RELEVANT AUTHORITY TO BE ADOPTED AND APPROPRIATE PPE TO BE USED WHEN HANDLING ALL HAZARDOUS MATERIALS. REFER TO GEOTECHNICAL REPORT FOR FURTHER INFORMATION.

CONFINED SPACES
CONTRACTOR TO BE AWARE OF POTENTIAL HAZARDS DUE TO WORKING IN CONFINED SPACES SUCH AS STORMWATER PITS, TRENCHES AND/OR TANKS. CONTRACTOR TO PROVIDE SAFE WORKING METHODS AND USE APPROPRIATE PPE WHEN ENTERING CONFINED SPACES.

MANUAL HANDLING
CONTRACTOR TO BE AWARE MANUAL HANDLING MAY BE REQUIRED DURING CONSTRUCTION. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ENSURE MANUAL HANDLING PROCEDURES AND ASSESSMENTS ARE IN PLACE PRIOR TO COMMENCING WORKS.

WATER POLLUTION
CONTRACTOR TO ENSURE APPROPRIATE MEASURES ARE TAKEN TO PREVENT POLLUTANTS FROM CONSTRUCTION WORKS CONTAMINATING THE SURROUNDING ENVIRONMENT, INCLUDING COUNCIL STORMWATER DRAINAGE SYSTEM.

SITE ACCESS/EGRESS
CONTRACTOR TO BE AWARE SITE WORKS OCCUR IN CLOSE PROXIMITY TO FOOTPATHS AND ROADWAYS. CONTRACTOR TO ERECT APPROPRIATE BARRIERS AND SIGNAGE TO PROTECT SITE PERSONNEL AND PUBLIC.

VEHICLE MOVEMENT
CONTRACTOR TO SUPPLY AND COMPLY WITH TRAFFIC MANAGEMENT PLAN AND PROVIDE ADEQUATE SITE TRAFFIC CONTROL INCLUDING A CERTIFIED TRAFFIC MARSHALL TO SUPERVISE VEHICLE MOVEMENTS WHERE NECESSARY.

ABBREVIATIONS

TOK	TOP OF KERB	EX	EXISTING LEVEL
IOK	INVERT OF KERB	FL	FINISHED LEVEL
BOK	BACK OF KERB	F*	FUTURE LEVEL
RCL	ROAD CENTRE LINE		
BDY	BOUNDARY	FFL	FINISHED FLOOR LEVEL
		SSL	STRUCTURAL SLAB LEVEL
TOW	TOP OF WALL		
BOW	BOTTOM OF WALL		
CL	COVER LEVEL		
IL	INVERT LEVEL		

SITEWORKS LEGEND

- × F22.20 — Finished surface level
- 22.00 — Finished major contour
- 22.10 — Finished minor contour
- Property Boundary
- KG — Kerb and Gutter
- KO — Kerb Only
- ES — Edge Strip
- DD — Dish Drain
- Vehicular Crossing
- Pedestrian Kerb Ramp
- IL 10.20 — Stormwater pit and drain
- GT — Grated Trench
- AG — Ag Drain
- GI — Grated Inlet / Floor Waste
- Concrete Endwall
- GPT — Gross Pollutant Trap
- WQ — Water Quality Treatment
- IO — Inspection Opening with subsoil drainage line (100 dia) to be provided at the start of all AG
- FP — Flushout point with subsoil drainage line (100 dia)
- DP — Down pipe
- RP — Rodding point
- Concrete encased stormwater line
- Overland Flowpath
- Wheelstop
- RW — Retaining wall
- Batter
- Tool Joint
- Expansion Joint
- Dowelled Tool Joint
- Dowelled Expansion Joint
- Grass Swale
- Guard Rail
- Fence
- TPZ — TPZ — Tree Protection Zone
- SRZ — SRZ — Structural Root Zone

EXISTING SERVICES LEGEND

- TELECOMS
- GAS
- ELECTRICAL
- ELECTRICAL (OVERHEAD)
- WATER
- STORMWATER (WSU)
- STORMWATER (CoP)
- SEWER

DRAWINGS TO BE PRINTED IN COLOUR

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Rev	Description	Eng Draft	Date
3	SSDA SUBMISSION	JLE	07.10.2025
2	SSDA SUBMISSION	JLE	27.02.2025
1	SSDA SUBMISSION	JLE	08.05.2024

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BEWARE OF UNDERGROUND SERVICES. THE LOCATION OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN

Client: WESTERN SYDNEY UNIVERSITY

Engineer: TTW www.ttwengineers.com

Project: WSU INDIGENOUS CENTRE OF EXCELLENCE

Drawing Title: GENERAL NOTES AND LEGEND SHEET 2

Scale at A1	Drawn	Designed	Approved
NA	VV	JLE	RP

TTW Job number: 234338

Project Code	Campus	Building	Originator	Discipline	Sheet No.	Rev
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NOTE: DESIGN INPUTS TO BE CONFIRMED
- DETAIL OF FRENCH DRAIN AND LOCATIONS AT BASE OF FACADE
- LOCATION OF EAVES GUTTER DOWNPIPE CONNECTION POINTS TO CIVIL STORMWATER DRAINAGE
- LOCATION AND ARRANGEMENT OF RAINWATER HARVESTING TANK AND OVERFLOW CONNECTION TO CIVIL STORMWATER DRAINAGE
- BIO-RETENTION RAINGARDEN ARRANGEMENT
- WETLAND POND AREA AND ARRANGEMENT

CONTRACTOR TO MAKE APPROPRIATE ALLOWANCES FOR SUBSURFACE DRAINS BEHIND ALL RETAINING WALLS, WITHIN LANDSCAPE PLANTERS, TREE PLOTS, BIORETENTION ZONES AND AT EDGES OF PAVEMENT (TYP.)

VICTORIA ROAD

BRIDGE STREET

RAILWAY STREET

FIFTH STREET

I.L. 6.87 @ 2-2
I.L. 6.73 @ 2-1
225Ø UPVC 1:200

I.L. 7.07 @ 2-3
I.L. 6.89 @ 2-2
225Ø UPVC 1:74

I.L. 7.20 @ 2-4
I.L. 7.09 @ 2-3
225Ø UPVC 1:100

I.L. 6.71 @ 2-1
I.L. 6.68 @ Ex GP
225Ø UPVC 1:200

MIN. 3 m² BIORETENTION RAINGARDEN. ALLOW FOR MIN. 0.6m CLEARANCE FROM BUILDING/LOADING DOCK.

RAINWATER HARVESTING TANK LOCATION AS PER HYDRAULIC ENGINEER'S SPECIFICATION. RWHT OVERFLOW TO DISCHARGE INTO SWALE VIA STONE HEADWALL

SUBSOIL DRAINS (FRENCH DRAINS) ARRANGEMENT AROUND PERIMETER OF BUILDING TO BE FURTHER COORDINATED (TYP.)

CONNECT NEW DRAINAGE INTO EXISTING GRATED PIT. CONTRACTOR TO VERIFY LOCATION AND INVERT LEVELS PRIOR TO WORK

RETAINING WALL TO BE FURTHER COORDINATED.

PROVIDE SUBSOIL (AGI) DRAINS BEHIND RETAINING WALL AND CONNECT TO STORMWATER (TYP.)

PROPOSED OVERLAND FLOW PATH (TYP.)

SW2-1 CL 8.09
SW2-2 CL 8.35
SW2-3 CL 8.03
SW2-4 CL 8.05
SW1-1 CL 6.98
SW1-2 CL 7.10
SW1-3 CL 7.86
SW1-4 CL 7.93
SW1-5 CL 8.01
SW1-6 CL 8.78
SW1-7 CL 8.89

I.L. 7.35 @
I.L. 7.26 @ 2-3
150Ø UPVC 1:100

I.L. 8.25 @
I.L. 8.13 @ 1-7
150Ø UPVC 1:100

I.L. 8.11 @ 1-7
I.L. 7.99 @ 1-6
225Ø UPVC 1:100

I.L. 7.97 @ 1-6
I.L. 7.31 @ 1-5
225Ø UPVC 1:18

I.L. 7.29 @ 1-5
I.L. 7.24 @ 1-4
225Ø UPVC 1:200

I.L. 7.22 @ 1-4
I.L. 7.13 @ 1-3
225Ø UPVC 1:137

I.L. 7.11 @ 1-3
I.L. 7.05 @
225Ø UPVC 1:200

I.L. 6.50 @ 1-2
I.L. 5.97 @ 1-1
450Ø CPP 1:15

EXHIBITION
FFL 9.00

LOADING BAY

THEATRE
FFL 9.00

COMMUNITY ARRIVAL
FFL 9.00

OUTDOOR AMPHITHEATRE
FFL 8.00

CENTRAL ENERGY PLANT

EXISTING 1,200Ø COUNCIL STORMWATER DRAIN TO BE PROTECTED IN PLACE BELOW PROPOSED BUILDING. STRUCTURE TO BRIDE ACROSS EXISTING DRAIN TO AVOID SURCHARGE LOAD

SWALE DETAILS TO BE FURTHER COORDINATED

CONSTRUCT MAINTENANCE PIT OVER EXISTING 1200Ø DRAIN. LOCATION TO BE COORDINATED WITH LANDSCAPE ARCHITECT

PROVIDE DISCRETE STONE HEADWALL TO LANDSCAPE DETAILS

SERVICES TRENCH REFER TO SERVICES DRAWING

CONSTRUCT MAINTENANCE PIT OVER EXISTING 1200Ø DRAIN

MODIFY EXISTING GRATED PIT TO SUIT PROPOSED LEVEL AT RL 8.54 AND CHANGE GRATE TO CLASS D. INVERT LEVEL OF EXISTING 150DIA PIPE TO BE MODIFIED TO IL 7.89. CONTRACTOR TO VERIFY LOCATION AND INVERT LEVELS PRIOR TO WORK

MODIFY EXISTING GRATED PIT TO SUIT PROPOSED LEVEL AT RL 8.63 AND CHANGE GRATE TO CLASS D. CONTRACTOR TO VERIFY LOCATION AND INVERT LEVELS PRIOR TO WORK

CARPARKS TO BE DESIGNED IN ACCORDANCE WITH AS2890

RETAINING WALL TO BE FURTHER COORDINATED.

PROVIDE SUBSOIL (AGI) DRAINS BEHIND RETAINING WALL AND CONNECT TO STORMWATER(TYP.)

WIDEN EXISTING VEHICLE CROSSING TO MIN. 7.0 m WIDTH IN ACCORDANCE WITH CITY OF PARRAMATTA STANDARD DRAWING DS9

PROVIDE OVERLAND FLOW PATH BETWEEN BUILDING AND FIFTH STREET

MODIFY EXITING GRATED PIT TO SUIT PROPOSED LEVEL AT RL 8.02

WETLAND POND OVERFLOW PIT

WETLAND DETAILS TO BE FURTHER COORDINATED

CONSTRUCT PIT OVER EXISTING 1200Ø PIPE

TIE INTO EXISTING PAVEMENT

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

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Rev	Description	Eng Draft	Date
5	SSDA SUBMISSION	JLE	JLE 28.11.2025
4	SSDA SUBMISSION	JLE	JLE 07.10.2025
3	SSDA SUBMISSION	JLE	JLE 01.04.2025
2	SSDA SUBMISSION	JLE	JLE 27.02.2025
1	SSDA SUBMISSION	JLE	AE 08.05.2024

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BEWARE OF UNDERGROUND SERVICES. THE LOCATION OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN

Client: WESTERN SYDNEY UNIVERSITY

Engineer: TTW www.ttwengineers.com

Project: WSU INDIGENOUS CENTRE OF EXCELLENCE

Drawing Title: CIVIL SITE PLAN

Scale at A1	Drawn	Designed	Approved
1:250	VV	JLE	RP

TTW Job number: 234338

Project Code	Campus	Building	Originator	Discipline	Sheet No.	Rev
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VICTORIA ROAD

BRIDGE STREET

RAILWAY STREET

FIFTH STREET

EXHIBITION
FFL 9.00

THEATRE
FFL 9.00

LOADING BAY

CENTRAL ENERGY PLANT

COMMUNITY ARRIVAL
FFL 9.00

OUTDOOR AMPHITHEATRE
FFL 8.00

CUT AND FILL VOLUME ESTIMATES

ICOE
CUT 1600 m^3
FILL 6700 m^3

FX.XX DENOTES CUT AND FILL DEPTH FROM THE NATURAL SURFACE TO THE DESIGN FINISHED SURFACE

NOTES:

1. NO BULKING FACTOR APPLIED.
2. CUT AND FILL VOLUME ESTIMATES CALCULATED FROM THE NATURAL SURFACE TO THE DESIGNED FINISHED SURFACE.
3. NO VOLUME ALLOWANCE HAS BEEN MADE FOR EXCAVATIONS REQUIRED FOR STRUCTURAL SLABS, BENCHING FOR PAVEMENTS, **REMOVAL OF EXISTING TOP SOIL/UNCONTROLLED FILL,** STRUCTURAL FOOTINGS, THICKENING, EDGE BEAMS, SERVICE TRENCHING, GRUBBING OF TREES ETC.
4. FOR RE-USE OF SITE WON MATERIAL, REFERENCE SHOULD BE MADE TO THE GEOTECHNICAL REPORT. THE CONTRACTOR IS TO MAKE ALLOWANCE FOR SORTING/TESTING AND HANDLING OF ANY FILL MATERIAL PROPOSED FOR RE-USE. ALL TESTING SHALL BE AT THE CONTRACTOR'S EXPENSE.
5. REFER TO GEOTECHNICAL REPORT PREPARED BY DOUGLAS PARTNERS 227190.00.R.001.REV1 DATED 2 MAY 2024 FOR EARTHWORKS, SUBGRADE PREPARATION REQUIREMENTS (SECTION 8.3) AND GROUND SLABS & PAVEMENTS (SECTION 8.11). THE CONTRACTORS SHALL FAMILIARISE THEMSELVES WITH THE EXISTING SITE CONDITIONS PRIOR TO COMMENCING WORKS.
6. WORKS WITHIN CLOSE PROXIMITY TO EXISTING RETAINED TREES TO BE SUPERVISED BY A SUITABLY QUALIFIED ARBORIST.
7. CONTRACTORS SHALL UNDERTAKE APPROPRIATE MEASURES TO LIMIT EXPOSURE AND MOISTURE INGRESS INTO THE EXPOSED NATURAL SUBGRADE (ALLUVIAM HIGH PLASTICITY CLAY) DURING WORKS.
8. THE CONTRACTOR SHALL UNDERTAKE A DILAPIDATION SURVEY OF EXISTING PAVEMENTS AROUND THE EXTENT OF WORKS PRIOR TO COMMENCING WORKS. DAMAGE TO EXISTING PAVEMENTS OUTSIDE THE LIMIT OF WORKS SHALL BE REMEDIATED AND MADE GOOD AT THE CONTRACTOR'S EXPENSE. CONTRACTOR TO OBTAIN ALL NECESSARY AUTHORITY PERMITS & APPROVALS.

LEVELS TABLE

No.	FROM LEVEL (m)	TO LEVEL (m)	COLOUR
1	-2.00	-1.50	
2	-1.50	-1.00	
3	-1.00	-0.50	
4	-0.50	-0.15	
5	0.15	0.50	
6	0.50	1.00	
7	1.00	1.50	
8	1.50	2.00	

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

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Rev	Description	Eng Draft	Date
4	SSDA SUBMISSION	JLE	JLE 28.11.2025
3	SSDA SUBMISSION	JLE	JLE 07.10.2025
2	SSDA SUBMISSION	JLE	JLE 27.02.2025
1	SSDA SUBMISSION	JLE	AE 08.05.2024

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BEWARE OF UNDERGROUND SERVICES. THE LOCATION OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN

Client: WESTERN SYDNEY UNIVERSITY

Engineer: TTW www.ttwengineers.com

Project: WSU INDIGENOUS CENTRE OF EXCELLENCE

Drawing Title: EARTHWORKS CUT AND FILL VOLUMES PLAN

Scale at A1	Drawn	Designed	Approved
1:250	VV	JLE	RP

TTW Job number: 234338

Project Code	Campus	Building	Originator	Discipline	Sheet No.	Rev
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WSU - CARPARK RELOCATION PROJECT

CIVIL DRAWINGS

DRAWING INDEX

GENERAL	
234338-TTW-01-DR-CI-00001	GENERAL COVER SHEET, DRAWING INDEX AND LOCALITY PLAN
234338-TTW-01-DR-CI-00002	GENERAL NOTES AND LEGEND SHEET 1
234338-TTW-01-DR-CI-00003	GENERAL NOTES AND LEGEND SHEET 2
234338-TTW-01-DR-CI-00011	GENERAL ARRANGEMENT PLAN
234338-TTW-01-DR-CI-00012	GENERAL SURVEY AND SERVICES PLAN
GEOMETRY	
234338-TTW-01-DR-CI-01011	GEOMETRY SITE PLAN SHEET 1
234338-TTW-01-DR-CI-01012	GEOMETRY SITE PLAN SHEET 2
EARTHWORKS	
234338-TTW-01-DR-CI-02011	EARTHWORKS CUT AND FILL VOLUMES PLAN
234338-TTW-01-DR-CI-02021	EARTHWORKS SITE SECTIONS
PAVEMENT	
234338-TTW-01-DR-CI-03011	PAVEMENT AND JOINTING PLAN SHEET 1
234338-TTW-01-DR-CI-03012	PAVEMENT AND JOINTING PLAN SHEET 2
STORMWATER	
234338-TTW-01-DR-CI-04011	STORMWATER DRAINAGE PLAN SHEET 1
234338-TTW-01-DR-CI-04012	STORMWATER DRAINAGE PLAN SHEET 2
234338-TTW-01-DR-CI-04021	STORMWATER PIT SCHEDULE
234338-TTW-01-DR-CI-04041	STORMWATER DETAILS
TRAFFIC	
234338-TTW-01-DR-CI-07011	TRAFFIC CONTROL SIGNAGE AND LINEMARKING SHEET 1
234338-TTW-01-DR-CI-07012	TRAFFIC CONTROL SIGNAGE AND LINEMARKING SHEET 2

CITY OF PARRAMATTA STANDARD DRAWINGS

STANDARD	DRAWING DESCRIPTION
DS1	KERBS AND LAYBACKS
DS8	VEHICULAR CROSSING
DS19	STEP IRONS
DS21	KERB INLET PIT (ON GRADE)
DS25	SURFACE INLET PIT GENERAL PURPOSE
DS29	SURFACE INLET PIT FOR DRIVEWAYS
DS33	SUBSOIL DRAINAGE DETAILS
DS37	INSTALLATION OF PIPELINES AND RESTORATION OF TRENCHES
DS43	TREE PROTECTION TIMBER HOARDING
DS47	TYPICAL SECTIONS ROAD PAVEMENTS

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BEWARE OF UNDERGROUND SERVICES.
THE LOCATION OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN

NOT FOR CONSTRUCTION

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Rev	Description	Eng Draft	Date
T4	TENDER ADDENDUM ISSUE	RP	KN 02.05.2025
T3	TENDER ADDENDUM ISSUE	RP	KN 19.12.2024
T2	TENDER ISSUE	RP	JLE 08.10.2024
T1	TENDER ISSUE	RP	JLE 03.10.2024
P2	PRELIMINARY ISSUE	RP	JLE 23.09.2024
P1	PRELIMINARY ISSUE	RP	PB 13.09.2024

Rev	Description	Eng Draft	Date
T5	TENDER ADDENDUM ISSUE	RP	KN 14.08.2025

Client: WESTERN SYDNEY UNIVERSITY

Engineer: TTW www.ttwengineers.com

Project: WSU CARPARK RELOCATION PROJECT

Drawing Title: GENERAL COVER SHEET DRAWING INDEX AND LOCALITY PLAN

Scale at A1	Drawn	Designed	Approved
	KN	JLE	RP

Project No	Originator	Zone	Type	Role	Sheet No.	Rev
234338	TTW		01	DR	CI-00001	T5

14.08.2025 10:36 AM

GENERAL NOTES

1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL OTHER ENGINEERING AND ARCHITECTURAL DRAWINGS.
2. ANY OBSERVED DISCREPANCY IS TO BE REFERRED TO THE SUPERINTENDENT PRIOR TO COMMENCING WORKS.
3. THESE DRAWINGS SHALL ALSO BE READ IN CONJUNCTION WITH THE CIVIL SPECIFICATION.
4. DO NOT SCALE FROM THE DRAWINGS.
5. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE NOTED.
6. ALL LEVELS ARE EXPRESSED TO THE AUSTRALIAN HEIGHT DATUM (AHD).
7. THE CONTRACTOR SHALL SEEK APPROVAL FROM THE SUPERINTENDENT FOR ANY SUBSTITUTIONS OF PRODUCTS AND MATERIALS NOTED IN THE DRAWINGS.

SURVEY AND SERVICES INFORMATION

SURVEY

ORIGIN OF LEVELS : CONTACT THE SURVEYOR

DATUM OF LEVELS: CONTACT THE SURVEYOR

COORDINATE SYSTEM: MGA 2020

SURVEY PREPARED BY : LTS

SETOUT POINTS: CONTACT THE SURVEYOR

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

THE CONTRACTOR IS TO GET APPROVAL FROM THE RELEVANT STATE SURVEY DEPARTMENT, TO REMOVE/ADJUST ANY SURVEY MARK. THIS INCLUDES BUT IS NOT LIMITED TO; STATE SURVEY MARKS (SSM), PERMANENT MARKS (PM), CADASTRAL REFERENCE MARKS OR ANY OTHER SURVEY MARK WHICH IS TO BE REMOVED OR ADJUSTED IN ANY WAY.

TTW PLANS DO NOT INDICATE THE PRESENCE OF ANY SURVEY MARK. THE CONTRACTOR IS TO UNDERTAKE THEIR OWN SEARCH.

UNDERGROUND SERVICES - WARNING

THE LOCATIONS OF UNDERGROUND SERVICES SHOWN ON TTW'S DRAWINGS HAVE BEEN PLOTTED FROM DIAGRAMS PROVIDED BY SERVICE AUTHORITIES. THIS INFORMATION HAS BEEN PREPARED SOLELY FOR THE AUTHORITIES OWN USE AND MAY NOT NECESSARILY BE UPDATED OR ACCURATE.

THE POSITION OF SERVICES AS RECORDED BY THE AUTHORITY AT THE TIME OF INSTALLATION MAY NOT REFLECT CHANGES IN THE PHYSICAL ENVIRONMENT SUBSEQUENT TO INSTALLATION.

TTW DOES NOT GUARANTEE THAT THE SERVICES INFORMATION SHOWN ON THESE DRAWINGS SHOWS MORE THAN THE PRESENCE OR ABSENCE OF SERVICES, AND WILL ACCEPT NO LIABILITY FOR INACCURACIES IN THE SERVICES INFORMATION SHOWN FROM ANY CAUSE WHATSOEVER.

THE CONTRACTOR MUST CONFIRM THE EXACT LOCATION AND EXTENT OF SERVICES PRIOR TO CONSTRUCTION AND NOTIFY ANY CONFLICT WITH THE DRAWINGS IMMEDIATELY TO THE ENGINEER/SUPERINTENDENT.

THE CONTRACTOR SHALL NOTIFY THE RELEVANT SERVICE AUTHORITY FOR ANY REQUIRED MODIFICATION WORKS TO THEIR ASSETS. ALL SERVICE MODIFICATION WORKS SHALL BE UNDERTAKEN IN STRICT ACCORDANCE WITH THE REQUIREMENTS OF THE RELEVANT SERVICE AUTHORITY.THE CONTRACTOR SHALL PROVIDE ALL NECESSARY PROTECTION MEASURES TO EXISTING SERVICES THAT ARE TO BE RETAINED. THE CONTRACTOR IS LIABLE FOR RECTIFICATION/REINSTATEMENT COSTS FOR DAMAGE TO EXISTING SERVICES.

BOUNDARY AND EASEMENT NOTE

THE PROPERTY BOUNDARY AND EASEMENT LOCATIONS SHOWN ON TTW'S DRAWINGS HAVE BEEN BASED FROM INFORMATION RECEIVED FROM : LTS

TTW MAKES NO GUARANTEES THAT THE BOUNDARY OR EASEMENTINFORMATION SHOWN IS CORRECT. TTW WILL ACCEPT NO LIABILITIES FOR BOUNDARY INACCURACIES. THE CONTRACTOR/BUILDER IS ADVISED TO CHECK/CONFIRM ALL BOUNDARIES IN RELATION TO ALL PROPOSED WORK PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. BOUNDARY INACCURACIES FOUND ARE TO BE REPORTED TO THE SUPERINTENDENT PRIOR TO CONSTRUCTION STARTING.

KERBING NOTES

INCLUDES ALL KERBS, CHANNELS, SPOON DRAINS, CROSSINGS AND EDGES.

1. CONCRETE KERBS SHALL BE CONSTRUCTED USING GRADE 32MPA CONCRETE U.N.O.
2. ALL KERBS, CHANNELS, SPOON DRAINS AND CROSSINGS TO BE CONSTRUCTED ON MINIMUM 75MM GRANULAR BASECOURSE COMPACTED TO MINIMUM 98% MODIFIED MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289 5.2.1.
3. EXPANSION JOINTS (EJ) TO BE FORMED FROM 10MM COMPRESSIBLE FILLER BOARD FOR THE FULL DEPTH OF THE SECTION AND CUT TO PROFILE.
EXPANSION JOINTS TO BE LOCATED AT DRAINAGE PITS, ON TANGENT POINTS OF CURVES AND ELSEWHERE AT 12M CENTRES EXCEPT FOR INTEGRAL KERBS WHERE THE EXPANSION JOINTS ARE TO MATCH THE JOINT LOCATIONS IN SLABS.
4. SAW CUT JOINTS TO BE MIN 3MM WIDE AND LOCATED AT 3M CENTRES EXCEPT FOR INTEGRAL KERBS WHERE WEAKENED PLANE JOINTS ARE TO MATCH THE JOINT LOCATIONS IN SLABS.
5. BROOM FINISHED TO ALL RAMPED AND VEHICULAR CROSSINGS, ALL OTHER KERBING OR DISH DRAINS TO BE STEEL FLOAT FINISHED.
6. IN THE REPLACEMENT OF KERBS - EXISTING ROAD PAVEMENT IS TO BE SAWCUT 350MM FROM LIP OF UPON COMPLETION OF NEW KERBS, NEW BASECOURSE AND SURFACE IS TO BE LAID 350MM WIDE TO MATCH EXISTING MATERIALS AND THICKNESSES. EXISTING ALLOTMENT DRAINAGE PIPES ARE TO BE BUILT INTO THE NEW KERB WITH A 100MM DIA HOLE. EXISTING KERBS ARE TO BE COMPLETELY REMOVED WHERE NEW KERBS ARE SHOWN.

STORMWATER DRAINAGE NOTES

1. ALL NEW DRAINAGE PIPES EQUAL TO OR GREATER THAN 450Ø TO BE RUBBER RING JOINTED RCP UNLESS NOTED OTHERWISE IN DRAWINGS
   1.1. RCP PIPES SUBJECT TO PEDESTRIAN LOADING ONLY TO BE CLASS 3 UNLESS NOTED OTHERWISE.
   1.2. RCP PIPES SUBJECT TO TRAFFIC LOADING TO BE MIN. CLASS 4 UNLESS NOTED OTHERWISE
2. PIPES UP TO 375Ø SHALL BE HDPE OR SEWER GRADE UPVC WITH SOLVENT WELDED JOINTS UNLESS NOTED OTHERWISE IN DRAWINGS. SOME OF OUR PIPES ARE CPP. IN AREAS OF EXPANSIVE SOILS, UPVC PIPES MUST BE RUBBER RING JOINTED.
3. EQUIVALENT STRENGTH VCP OR FRP PIPES MAY BE USED SUBJECT TO APPROVAL.
4. PRECAST PITS MAY BE USED EXTERNAL TO THE BUILDING SUBJECT TO APPROVAL BY THE SUPERINTENDENT.
5. ENLARGERS, CONNECTIONS AND JUNCTIONS TO BE MANUFACTURED FITTINGS WHERE PIPES ARE LESS THAN 300 DIA.
6. SUBSOIL DRAINS TO BE SLOTTED FLEXIBLE 100DIA UPVC U.N.O.
7. WHERE SUBSOIL DRAINS ARE SHOWN AS UNSLOTTED, UNSLOTTED 100DIA UPVC SEWER GRADE PIPE IS TO BE USED.
8. SUBSOIL DRAINS TO BE LOCATED BEHIND ALL RETAINING WALLS AND NEW KERBING SHALL BE CONNECTED TO NEAREST STORMWATER PIT.
9. GRATES AND COVERS SHALL CONFORM WITH AS 3996-2006, AND AS 1428.1 FOR ACCESS REQUIREMENTS. ALL PITS WITHIN FOOT TRAFFIABLE AREA TO HAVE MINIMUM SLIP RESISTANCE OF R10 OR R11.
10. CONCRETE PIPES ARE TO BE INSTALLED IN ACCORDANCE WITH AS 3725. ALL BEDDING TO BE TYPE H2 U.N.O.
11. CARE IS TO BE TAKEN WITH LEVELS OF STORMWATER LINES. GRADES SHOWN ARE NOT TO BE REDUCED WITHOUT APPROVAL.
12. ALL STORMWATER PIPES TO BE 150 DIA AT 1 IN 100 MIN FALL U.N.O.
13. ADOPT INVERT LEVELS FOR PIPE INSTALLATION (GRADES SHOWN ARE ONLY NOMINAL).
14. ALL DRAINS AND OTHER SERVICE INFRASTRUCTURE TRENCHES BENEATH ROAD PAVEMENTS, DRIVEWAYS, FOOTPATHS OR CONCRETE STRUCTURES SLABS, OR WITHIN 1.0M OF CONCRETE STRUCTURES OR OTHER COUNCIL ASSETS, INCLUDING KERB, FOOTPATH, DRAINS, ETC MUST BE BACKFILLED WITH CLASS 2 FCR, COMPACTED AND TESTED TO THE SATISFACTION OF THE SUPERINTENDENT.
15. LITTER TRAPS TO BE INSTALLED IN ALL NEW GRATED PITS WITHIN LANDSCAPE AREAS.
16. ALL GRATED PITS WITHIN PAVED PEDESTRIAN AREAS TO BE HEEL GUARD BOLT DOWN COVER UNLESS SPECIFIED OTHERWISE ON PLANS.
17. ALL DOWNPIPES TO BE CONNECTED TO ADJACENT INGROUND STORMWATER DRAINAGE INFRASTRUCTURE. REFER TO HYDRAULIC DRAWINGS FOR DOWN PIPE LOCATION IF NOT DETAILED ON CIVIL PLANS.
18. ALL EXISTING ACTIVE DOWNPIPES, WHERE INGROUND STORMWATER HAS BEEN ABANDONED, TO BE CONNECTED TO NEW INGROUND STORMWATER DRAINAGE NETWORK.
19. PRIOR TO COMMENCING ANY STORMWATER DRAINAGE WORKS ON SITE THE CONTRACTOR MUST CONFIRM THE CONNECTION TO THE LEGAL POINT OF DISCHARGE AUTHORITY DRAIN AS DOCUMENTED BY:
    19.1. VERIFICATION OF THE EXISTING INVERT LEVEL OF THE LEGAL POINT OF DISCHARGE TO COUNCIL DRAIN.
    19.2. VERIFICATION THAT THE PROPOSED STORMWATER DRAIN INVERT LEVELS CAN ACHIEVE THE COUNCIL STANDARD CONNECTION DETAIL IN ACCORDANCE WITH COUNCIL STANDARDS
    19.3. VERIFICATION THAT THE ROUTE IS CLEAR OF ALL OBSTRUCTIONS AND EXISTING SERVICES.

    THE CONTRACTOR SHALL NOTIFY THE SUPERINTENDENT IF ANY OF THE ABOVE CANNOT BE ACHIEVED PRIOR TO COMMENCING WORKS ON SITE.
20. THE INTERNAL BASE OF ALL DRAINAGE PITS SHALL BE BENCHED AND SHAPED TO ALLOW FREE FLOW OF WATER THROUGH TO THE PIT OUTLET PIPE.
21. PITS DEEPER THAN 1.0M SHALL BE FITTED WITH STEP IRONS.

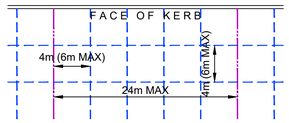
CONCRETE FINISHING NOTES

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

JOINTING NOTES

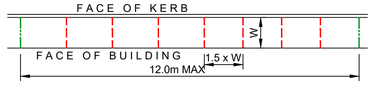
VEHICULAR PAVEMENT JOINTING

1. ALL VEHICULAR PAVEMENTS TO BE JOINTED AS SHOWN ON DRAWINGS.
2. SAW CUT JOINTS SHOULD GENERALLY BE LOCATED AT A MAXIMUM OF 6.0M CENTRES OR 1.5 X THE SPACING OF KEYED JOINTS, WHERE KEY JOINT SPACING IS LESS THAN 4.0M, WITH DOWELLED EXPANSION JOINTS AT MAXIMUM OF 24M CENTRES.
3. PROVIDE 10MM WIDE FULL DEPTH ISOLATION JOINTS BETWEEN BUILDINGS, STRUCTURES AND KERBS.
4. THE TIMING OF THE SAW CUT IS TO BE CONFIRMED BY THE CONTRACTOR ON SITE. SITE CONDITIONS WILL DETERMINE HOW MANY HOURS AFTER THE CONCRETE POUR BEFORE THE SAW CUTS ARE COMMENCED. REFER TO THE SPECIFICATION FOR WEATHER CONDITIONS AND TEMPERATURES REQUIRED.
5. INDICATIVE VEHICULAR PAVEMENT JOINTING AS FOLLOWS.



PEDESTRIAN FOOTPATH JOINTING

1. SAWCUT JOINTS ARE TO BE LOCATED WHERE POSSIBLE AT TANGENT POINTS OF CURVES AND ELSEWHERE.
2. SAW CUT JOINTS ARE TO BE LOCATED AT A MAX 1.5 X WIDTH OF THE PAVEMENT.
3. WHERE POSSIBLE JOINTS SHOULD BE LOCATED TO MATCH KERBING AND / OR ADJACENT PAVEMENT JOINTS.
4. ALL PEDESTRIAN FOOTPATH JOINTINGS AS FOLLOWS (U.N.O).
5. JOINTS SPACING ARE INDICATIVE ONLY AND THE CONTRACTOR TO REFER LANDSCAPE ARCHITECTURAL PLAN FOR FINAL LOCATION.



Design base thickness, D (mm)	Dowel diameter (mm)
150 < D ≤ 175	24
175 < D ≤ 200	28
200 < D ≤ 260	32
D > 260	36

BULK EARTHWORKS NOTES

1. CONTRACTOR TO REFERENCE GEOTECHNICAL REPORT BY DOUGLAS PARTNERS 227191.00.R.001Rev0 DATED 15 NOVEMBER 2024 FOR SUBGRADE PREPARATION REQUIREMENTS.
2. ALL BATTERS AT A MAXIMUM SLOPE TO BE CONFIRMED AND SUBJECT TO GEOTECHNICAL ENGINEER ADVICE. REFER TO GEOTECHNICAL REPORT BY DOUGLAS PARTNERS 227191.00.R.001Rev0 DATED 15 NOVEMBER 2024.
3. EXCAVATED MATERIAL MAY BE USED AS STRUCTURAL FILL PROVIDED,
   3.1. IT COMPLIES WITH THE SPECIFICATION REQUIREMENTS FOR FILL MATERIAL,
   3.2. THE PLACEMENT MOISTURE CONTENT COMPLIES WITH THE GEOTECHNICAL CONSULTANTS REQUIREMENTS, AND ALLOWS FILLING TO BE PLACED AND PROOF-ROLLED IN ACCORDANCE WITH THE SPECIFICATION. WHERE NECESSARY THE CONTRACTOR MUST MOISTURE CONDITION THE EXCAVATED MATERIAL TO MEET THESE REQUIREMENTS.

4. COMPACT FILL AREAS AND SUBGRADE TO NOT LESS THAN:		
LOCATION	STANDARD DRY DENSITY (AS 1289 5.1.1)	OPTIMUM MOISTURE CONTENT (OMC)
UNDER BUILDING SLABS ON GROUND	98%	±2%
UNDER ROADS AND CARPARKS	98%	±2%
LANDSCAPE AREAS:	95%	±2%

5. BEFORE PLACING FILL, PROOF ROLL EXPOSED SUBGRADE WITH A 10 TONNE MINIMUM ROLLER TO TEST SUBGRADE AND THEN REMOVE SOFT SPOTS (AREAS WITH MORE THAN 3MM MOVEMENT UNDER ROLLER). SOFT SPOTS TO BE REPLACED WITH GRANULAR FILL UNLESS NOTED OTHERWISE.
6. CONTRACTOR SHALL PLACE SAFETY BARRIERS AROUND EXCAVATIONS IN ACCORDANCE WITH RELEVANT SAFETY REGULATIONS.
7. BULK EARTHWORKS DRAWINGS ARE NOT TO BE USED FOR DETAILED EXCAVATION IN LANDSCAPE ZONES. CONTRACTOR TO MAKE ALLOWANCE FOR ADDITIONAL FILL OR CUT THROUGH LANDSCAPE ZONES.
8. CONTRACTOR TO REVIEW LANDSCAPE DRAWINGS TO CONFIRM SOFTSCAPE PROFILE DEPTHS.
9. STRIP ALL TOPSOIL FROM THE CONSTRUCTION AREA. ALL STRIPPED TOPSOIL SHALL BE DISPOSED OF OFFSITE UNLESS DIRECTED OTHERWISE.
10. MAKE SMOOTH CONNECTION WITH ALL EXISTING WORKS
11. COMPACT SUBGRADE UNDER BUILDINGS AND PAVEMENTS TO MINIMUM 98% STANDARD MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS1289.5.1.1. COMPACTION UNDER BUILDINGS TO EXTEND 2.0M MINIMUM BEYOND BUILDING FOOTPRINT.
12. TEMPORARY STORMWATER CONTROL AND CONNECTIONS TO BE MANAGED ONSITE BY THE BUILDER/CONTRACTOR.
13. SITE TO BE FREE DRAINING AND SUBGRADE TO BE PROTECTED FROM MOISTURE INGRESS.
14. DEWATERING TO BE MANAGED BY CONTRACTOR AT ALL TIMES.
15. QUANTITIES TO UNDERLYING GEOLOGY SUCH AS ROCK OR NATURAL CLAY ARE INDICATIVE ONLY AND BASED ON THE GEOTECHNICAL INFORMATION AVAILABLE AT THE TIME OF ISSUE. UNDERLYING NATURAL CLAY AND ROCK LEVELS CAN BE HIGHLY VARIABLE BETWEEN GEOTECH SAMPLE LOCATIONS.
16. ALL EARTHWORKS ACTIVITIES SHALL BE UNDERTAKEN WITH LEVEL 1 SUPERVISION IN ACCORDANCE WITH AS3798 (2007) BY A SUITABLY QUALIFIED GEOTECHINICAL INSPECTION AND TESTING AUTHORITY (GITA) ENGAGED BY THE CONTRACTOR. AS A MINIMUM, THE FREQUENCY AND LOCATION OF TESTING SHALL BE IN ACCORDANCE WITH TABLE 8.1 OF AS3798 (2007). THE GITA IS TO MAINTAIN DAILY SITE RECORD SHEETS AS SET OUT IN AS3798 (2007).

EROSION AND SEDIMENT CONTROL

THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL OTHER ENGINEERING AND ARCHITECTURAL DRAWINGS.

1. ALL WORK SHALL BE GENERALLY CARRIED OUT IN ACCORDANCE WITH:
   1.1. LOCAL AUTHORITY REQUIREMENTS
   1.2. EPA - POLLUTION CONTROL MANUAL FOR URBAN STORMWATER,
2. EROSION AND SEDIMENT CONTROL ARE TO BE PROVIDED FOR THE WHOLE OF THE WORKS BY THE CONTRACTOR. SHOULD THE CONTRACTOR STAGE THESE WORKS THEN THE DESIGN MAY BE REQUIRED TO BE MODIFIED. VARIATION TO THESE DETAILS MAY REQUIRE APPROVAL BY THE RELEVANT AUTHORITIES. THE EROSION AND SEDIMENT CONTROL SHALL BE IMPLEMENTED AND ADOPTED TO MEET RELEVANT EPA AND/OR AUTHORITY GUIDELINES
3. MAINTAIN ALL EROSION AND SEDIMENT CONTROL DEVICES TO THE SATISFACTION OF THE SUPERINTENDENT AND THE LOCAL AUTHORITY.
4. WHEN STORMWATER PITS ARE CONSTRUCTED PREVENT SITE RUNOFF ENTERING THE PITS UNLESS SILT FENCES ARE ERECTED AROUND PITS.
5. MINIMISE THE AREA OF SITE BEING DISTURBED AT ANY ONE TIME.
6. PROTECT ALL STOCKPILES OF MATERIALS FROM SCOUR AND EROSION. DO NOT STOCKPILE LOOSE MATERIAL IN ROADWAYS, NEAR DRAINAGE PITS OR IN WATERCOURSES.
7. ALL SOIL AND WATER CONTROL MEASURES ARE TO BE PUT BACK IN PLACE AT THE END OF EACH WORKING DAY, AND MODIFIED TO BEST SUIT SITE CONDITIONS.
8. CONTROL WATER FROM UPSTREAM OF THE SITE SUCH THAT IT DOES NOT ENTER THE DISTURBED SITE.
9. ALL CONSTRUCTION VEHICLES SHALL ENTER AND EXIT THE SITE VIA THE TEMPORARY CONSTRUCTION ENTRY/EXIT.
10. ALL VEHICLES LEAVING THE SITE SHALL BE CLEANED AND INSPECTED BEFORE LEAVING.
11. MAINTAIN ALL STORMWATER PIPES AND PITS CLEAR OF DEBRIS AND SEDIMENT. INSPECT STORMWATER SYSTEM AND CLEAN OUT AFTER EACH STORM EVENT.
12. CLEAN OUT ALL EROSION AND SEDIMENT CONTROL DEVICES AFTER EACH STORM EVENT.

SEQUENCE OF WORKS

1. PRIOR TO COMMENCEMENT OF EXCAVATION THE FOLLOWING SOIL MANAGEMENT DEVICES MUST BE INSTALLED.
   1.1. CONSTRUCT SILT FENCES BELOW THE SITE AND ACROSS ALL POTENTIAL RUNOFF SITES.
   1.2. CONSTRUCT TEMPORARY CONSTRUCTION ENTRY/EXIT AND DIVERT RUNOFF TO SUITABLE CONTROL SYSTEMS.
   1.3. CONSTRUCT MEASURES TO DIVERT UPSTREAM FLOWS INTO EXISTING STORMWATER SYSTEM.
   1.4. CONSTRUCT SEDIMENTATION TRAPS/BASIN INCLUDING OUTLET CONTROL AND OVERFLOW.
   1.5. CONSTRUCT TURF LINED SWALES.
   1.6. PROVIDE SANDBAG SEDIMENT TRAPS UPSTREAM OF EXISTING PITS.
2. CONSTRUCT GEOTEXTILE FILTER PIT SURROUND AROUND ALL PROPOSED PITS AS THEY ARE CONSTRUCTED.
3. ON COMPLETION OF PAVEMENT PROVIDE SAND BAG KERB INLET SEDIMENT TRAPS AROUND PITS.
4. PROVIDE AND MAINTAIN A STRIP OF TURF ON BOTH SIDES OF ALL ROADS AFTER THE CONSTRUCTION OF KERBS.

SERVICE TRENCHES

EXCAVATION

1. BEFORE EXCAVATING TRENCHES THROUGH EXISTING PAVEMENT, SAW-CUT EXISTING CONCRETE AND BITUMINOUS SURFACES ON EACH SIDE OF THE TRENCH TO PROVIDE A STRAIGHT EVEN JOINT. LIFT AND STORE UNIT PAVING FOR LATER REINSTATEMENT.

2. EXCAVATE FOR UNDERGROUND SERVICES, TO REQUIRED LINES, LEVELS AND GRADES. GENERALLY MAKE THE TRENCHES STRAIGHT BETWEEN MANHOLES, INSPECTION POINTS AND JUNCTIONS, WITH VERTICAL SIDES AND UNIFORM GRADES. EXCAVATION OF SERVICE TRENCHES SHALL BE COMPLETED PRIOR TO LIME STABILIZATION OF THE SUBGRADE. NOTIFY THE CONTRACT ADMINISTRATOR IF ANY TRENCHES ARE BE TO EXCAVATED IN STABILISED GROUND. ANY TRENCHES IN STABILISED GROUND TO BE BACKFILLED AS SPECIFIED IN THE "BACKFILLING" NOTES.

3. KEEP TRENCH WIDTHS TO THE MINIMUM CONSISTENT WITH THE LAYING AND BEDDING OF THE RELEVANT SERVICE AND CONSTRUCTION OF PERSONNEL ACCESS WAYS AND PITS.

4. EXCAVATE TRENCHES IN SECTIONS OF SUITABLE LENGTH.

5. TRENCH DEPTHS TO BE CONSTRUCTED AS REQUIRED BY THE RELEVANT SERVICE AND ITS BEDDING METHOD.

6. IF EXCAVATION IS NECESSARY BELOW THE LEVEL OF ADJACENT FOOTINGS, GIVE NOTICE, AND PROVIDE NECESSARY SUPPORT FOR THE FOOTINGS.

7. CLEAR TRENCHES OF SHARP PROJECTIONS. CUT BACK ROOTS ENCOUNTERED IN TRENCHES TO AT LEAST 600MM CLEAR OF SERVICES. REMOVE OTHER OBSTRUCTIONS INCLUDING STUMPS AND BOULDERS WHICH MAY INTERFERE WITH SERVICES OR BEDDING.

8. KEEP TRENCHES FREE OF WATER. PLACE BEDDING MATERIAL, SERVICES AND BACKFILLING ON FIRM GROUND FREE OF SURFACE WATER.

9. IF TRENCH EXCAVATION EXCEEDS THE CORRECT DEPTH, REINSTATE TO THE CORRECT DEPTH AND BEARING VALUE USING COMPACTED BEDDING MATERIAL OR GRADE 20MPA CONCRETE.

BACKFILLING

THESE REQUIREMENTS APPLY TO BACKFILL TO STORMWATER DRAINAGE TRENCHES AND SERVICE ACCESS POINTS. BEDDING AND OVERLAY TO A MINIMUM DEPTH OF 200MM ABOVE THE SERVICE SHALL BE PIPE BEDDING AS SPECIFIED BELOW UNLESS SPECIFIED OTHERWISE IN RELEVANT SERVICE SPECIFICATION. TRENCH BACKFILL ABOVE THIS LEVEL SHALL BE BACKFILL MATERIAL AS SPECIFIED BELOW. BEDDING, OVERLAY AND TRENCH BACKFILL TO BE COMPACTED IN ACCORDANCE WITH THE COMPACTION SCHEDULE. PLACE FILLING IN LAYERS NOT EXCEEDING 200MM COMPACTED LAYER THICKNESS.

PIPE BEDDING

UNLESS NOTED OTHERWISE IN "STORMWATER DRAINAGE" NOTES, PIPE BEDDING TO BE GRANULAR MATERIAL (CLEAN SHARP WASHED RIVER SAND OR CLEAN UNWEATHERED HARD BASALTIC OR SEDIMENTARY CRUSHED ROCK, FREE OF SALT, CLAY OR ORGANIC CONTAMINANTS) OR CEMENTITIOUS MATERIAL (MORTAR OR CONCRETE) AS SPECIFIED.

CRUSHED ROCK:

SLEVE APERTURE (mm) TO AS 1152	PERCENTAGE PASSING (BY MASS)
9.50	98 TO 100
6.70	50 TO 100
4.75	15 TO 75
2.36	0 TO 40
1.16	0 TO 5

CEMENT MORTAR BEDDING: 1 PORTLAND CEMENT: 4 SAND.
CONCRETE BEDDING: NOT LESS THAN 20 MPA.

BACKFILL MATERIAL

GENERAL: GENERAL FILL EXCEPT WITH NO STONES GREATER THAN 25 MM OCCURRING WITHIN 150 MM OF THE SERVICE, OR OTHER MATERIALS AS REQUIRED FOR PARTICULAR SERVICES OR LOCATIONS. WELL GRADED, INORGANIC, NON-PERISHABLE MATERIAL, MAXIMUM SIZE 75 MM, PLASTICITY INDEX * 55% AND CLASSIFIED AS CLASS A OR CLASS S MATERIAL IN TABLE 2.1 OF AS 2870. FILL MATERIAL TO HAVE A MINIMUM 4 DAY SOAKED CBR OF 4% IN ACCORDANCE WITH AS 1239.6.1.1 UNLESS NOTED OTHERWISE ON DRAWINGS. MATERIAL TO BE NON-DISPERSIVE (A RATING OF NIL AS DEFINED BY THE DISPERSION TEST AS 1239.3.8.1).

UNDER ROADS AND PAVED AREAS: COARSE SAND, FINE CRUSHED ROCK, OR 3% CEMENT STABILISED SAND.

IN TOPSOIL AREAS: COMPLETE THE BACKFILLING WITH TOPSOIL FOR AT LEAST THE TOP 50 MM.

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NOT FOR CONSTRUCTION

Rev	Description	Eng Draft	Date
T4	TENDER ADDENDUM ISSUE	RP	KN 02.05.2025
T3	TENDER ADDENDUM ISSUE	RP	KN 19.12.2024
T2	TENDER ISSUE	RP	JLE 08.10.2024
T1	TENDER ISSUE	RP	JLE 03.10.2024
P2	PRELIMINARY ISSUE	RP	JLE 23.09.2024
P1	PRELIMINARY ISSUE	RP	PB 13.09.2024

Client: WESTERN SYDNEY UNIVERSITY

Engineer: TTW www.ttwengineers.com

Project: WSU CARPARK RELOCATION PROJECT

Drawing Title: GENERAL NOTES AND LEGENDS SHEET 1

Scale at A1	Drawn	Designed	Approved
	KN	JLE	RP

Project No	Originator	Zone	Type	Role	Sheet No.	Rev
234338	TTW	01	DR	CI	00002	T4

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AREA	COMPACTION RATIO % OF MAXIMUM DRY DENSITY OR DENSITY INDEX (DI)	MOISTURE % FROM OPTIMUM*
LANDSCAPE AREA		
BEDDING AND OVERLAY	70 (DI)	±2
TRENCH BACKFILL	70 (DI) OR 95% STANDARD	±2
UNDER OR WITHIN LINE OF INFLUENCE OF PAVEMENTS, STRUCTURES OR BUILDING SLABS		
BEDDING AND OVERLAY	80 (DI)	±2
TRENCH BACKFILL	80 (DI) OR 98% STANDARD	±2
PAVEMENT ZONE	98% MODIFIED	±2

SIGNS AND LINE MARKING

1. PAVEMENT MARKING AND SIGN POSTING ON PUBLIC ROADS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE RELEVANT ROAD AUTHORITY. THE CONTRACTOR SHALL OBTAIN THESE REQUIREMENTS FROM THE ROAD AUTHORITY.
2. PAVEMENT MARKING AND SIGN POSTING TO BE IN ACCORDANCE WITH R.T.A. 'INTERIM GUIDE TO SIGNS AND MARKINGS'.
3. CONTRACTOR IS TO PROVIDE GUIDE POSTS, SPACED IN ACCORDANCE WITH AS1742.2. THEY ARE TO BE LOCATED NEAR ALL HEAD WALLS AND PIPE OUTLETS.
4. RAISED PAVEMENT MARKERS TO BE IN ACCORDANCE WITH AS1742.2
5. WHERE EXISTING PAVEMENT MARKING CONFLICTS WITH PROPOSED, IT IS TO BE REMOVED.
6. LANE WIDTHS DO NOT INCLUDE WIDTH OF GUTTER.
7. LINE MARKING PLAN DOES NOT DEFINE BOUNDARIES.
8. ERECT TEMPORARY SIGN 'CHANGED TRAFFIC CONDITIONS AHEAD' 120M AHEAD OF NEW WORK IN BOTH DIRECTIONS.
9. ESTABLISH THE LOCATION OF EXISTING UTILITY SERVICES AND LOCATE NEW SIGNS CLEAR OF THESE INSTALLATIONS.
10. THE SLOPED FACE OF THE SF MEDIAN KERBS WHICH ADJOIN THROUGH LANES, ARE TO BE PAINTED WHITE IN LIEU OF AN E3 EDGE LINE. THE REFLECTIVE PAVEMENT MARKERS NORMALLY ASSOCIATED WITH AN E3 EDGE LINE ARE TO BE LOCATED ON THE PAVEMENT ADJACENT TO THE SF KERB.
11. BICYCLE PAVEMENT MARKINGS AND SIGN POSTING TO BE IN ACCORDANCE WITH AUSTROADS STANDARDS.
12. THE DESIGN OF MAJOR DIRECTIONAL SIGN POSTING TO BE PREPARED AND ASSESSED BY THE RELAVENT ROAD AUTHORITY

SAFETY IN DESIGN

EXISTING SERVICES
BEFORE EXCAVATING TRENCHES THROUGH EXISTING PAVEMENT, SAW-CUT EXISTING CONCRETE AND BITUMINOUS SURFACES ON EACH SIDE OF THE TRENCH TO PROVIDE A STRAIGHT EVEN JOINT. LIFT AND STORE UNIT PAVING FOR LATER REINSTATEMENT.

EXISTING STRUCTURES
CONTRACTOR TO BE AWARE EXISTING STRUCTURES MAY EXIST WITHIN THE SITE. TO PREVENT DAMAGE TO EXISTING STRUCTURE(S) AND/OR PERSONNEL, SITE WORKS TO BE CARRIED OUT AS FAR AS PRACTICABLY POSSIBLE FROM EXISTING STRUCTURE(S).

EXISTING TREES
CONTRACTOR TO BE AWARE EXISTING TREES EXIST WITHIN THE SITE WHICH NEED TO BE PROTECTED. TO PREVENT DAMAGE TO TREES AND/OR PERSONNEL, SITE WORKS TO BE CARRIED OUT AS FAR AS PRACTICABLY POSSIBLE FROM EXISTING TREES. ADVICE NEEDS TO BE SOUGHT FROM ARBORIST AND/OR LANDSCAPE ARCHITECT ON MEASURES REQUIRED TO PROTECT TREES.

GROUNDWATER
CONTRACTOR TO BE AWARE OF GROUNDWATER LEVELS CLOSE TO EXISTING SURFACE LEVEL. TEMPORARY DE-WATERING MAY BE REQUIRED DURING CONSTRUCTION WORKS.

EXCAVATIONS
DEEP EXCAVATIONS DUE TO STORMWATER DRAINAGE WORKS IS REQUIRED. CONTRACTOR TO ENSURE SAFE WORKING PROCEDURES ARE IN PLACE FOR WORKS. ALL EXCAVATIONS TO BE FENCED OFF AND BATTERS ADEQUATELY SUPPORTED TO APPROVAL OF GEOTECHNICAL ENGINEER.

T5

GROUND CONDITIONS
CONTRACTOR TO BE AWARE OF THE SITE GEOTECHNICAL CONDITIONS. REFER TO THE GEOTECHNICAL REPORT BY DOUGLAS PARTNERS 227191.00.R.001.REV0 DATED 15 NOVEMBER 2024 FOR FURTHER INFORMATION.

HAZARDOUS MATERIALS
EXISTING ASBESTOS PRODUCTS & CONTAMINATED MATERIAL ARE PRESENT ON SITE. CONTRACTOR TO ENSURE ALL HAZARDOUS MATERIALS ARE IDENTIFIED PRIOR TO COMMENCING WORKS. SAFE WORKING PRACTISES AS PER RELEVANT AUTHORITY TO BE ADOPTED AND APPROPRIATE PPE TO BE USED WHEN HANDLING ALL HAZARDOUS MATERIALS. REFER TO REMEDIATION ACTION PLAN BY DOUGLAS PARTNERS 227190.04.R.001.REV0 DATED 14 AUGUST 2025 FOR FURTHER INFORMATION.

CONFINED SPACES
CONTRACTOR TO BE AWARE OF POTENTIAL HAZARDS DUE TO WORKING IN CONFINED SPACES SUCH AS STORMWATER PITS, TRENCHES AND/OR TANKS. CONTRACTOR TO PROVIDE SAFE WORKING METHODS AND USE APPROPRIATE PPE WHEN ENTERING CONFINED SPACES.

MANUAL HANDLING
CONTRACTOR TO BE AWARE MANUAL HANDLING MAY BE REQUIRED DURING CONSTRUCTION. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ENSURE MANUAL HANDLING PROCEDURES AND ASSESSMENTS ARE IN PLACE PRIOR TO COMMENCING WORKS.

WATER POLLUTION
CONTRACTOR TO ENSURE APPROPRIATE MEASURES ARE TAKEN TO PREVENT POLLUTANTS FROM CONSTRUCTION WORKS CONTAMINATING THE SURROUNDING ENVIRONMENT, INCLUDING COUNCIL STORMWATER DRAINAGE SYSTEM.

SITE ACCESS/EGRESS
CONTRACTOR TO BE AWARE SITE WORKS OCCUR IN CLOSE PROXIMITY TO FOOTPATHS AND ROADWAYS. CONTRACTOR TO ERECT APPROPRIATE BARRIERS AND SIGNAGE TO PROTECT SITE PERSONNEL AND PUBLIC.

VEHICLE MOVEMENT
CONTRACTOR TO SUPPLY AND COMPLY WITH TRAFFIC MANAGEMENT PLAN AND PROVIDE ADEQUATE SITE TRAFFIC CONTROL INCLUDING A CERTIFIED TRAFFIC MARSHALL TO SUPERVISE VEHICLE MOVEMENTS WHERE NECESSARY.

ABBREVIATIONS

TOK	TOP OF KERB	EX	EXISTING LEVEL
IOK	INVERT OF KERB	FL	FINISHED LEVEL
BOK	BACK OF KERB	F*	FUTURE LEVEL
RCL	ROAD CENTRE LINE		
BDY	BOUNDARY	FFL	FINISHED FLOOR LEVEL
		SSL	STRUCTURAL SLAB LEVEL
TOW	TOP OF WALL		
BOW	BOTTOM OF WALL		
CL	COVER LEVEL		
IL	INVERT LEVEL		

SITEWORKS LEGEND

- × F22.20 — Finished surface level
- 22.00 — Finished major contour
- 22.10 — Finished minor contour
- Property Boundary
- KG — Kerb & Gutter
- KO — Kerb Only
- ES — Edge Strip
- DD — Dish Drain
- Vehicular Crossing
- Pedestrian Kerb Ramp
- IL 10.20 — Stormwater pit and drain
- GT — Grated Trench
- AG — Ag Drain
- GI — Grated Inlet / Floor Waste
- Concrete Endwall
- IO — Inspection Opening with subsoil drainage line (100 dia) to be provided at the start of all AG
- FP — Flushout point with subsoil drainage line (100 dia)
- Concrete encased stormwater line
- Overland Flowpath
- Wheelstop
- RW — Retaining wall
- Batter
- Tool Joint
- Expansion Joint
- Dowelled Tool Joint
- Dowelled Expansion Joint
- Grass Swale
- Guard Rail
- Fence
- TPZ — Tree Protection Zone
- SRZ — Structural Root Zone
- Low Priority for Retention (TPZ)
- Medium Priority for Retention (TPZ)
- High Priority for Retention (TPZ)
- Tree to be Demolished
- Indicative 1% AEP Flood Extent

EXISTING SERVICES LEGEND

- bCOMM — TELECOMS
- bG — GAS
- bE — ELECTRICAL
- bHV — ELECTRICAL (OVERHEAD)
- bW — WATER
- bSW — STORMWATER
- bS — SEWER

DRAWINGS TO BE PRINTED IN COLOUR
Y M C R G B K

NOT FOR CONSTRUCTION

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T4	TENDER ADDENDUM ISSUE	RP	KN 02.05.2025
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Client: WESTERN SYDNEY UNIVERSITY

Engineer: TTW www.ttwengineers.com

Project: WSU CARPARK RELOCATION PROJECT

Drawing Title: GENERAL NOTES AND LEGENDS SHEET 2

Scale at A1	Drawn	Designed	Approved
	KN	JLE	RP

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234338	TTW		DR	CI	00003	T5

14.08.2025 10:48 AM

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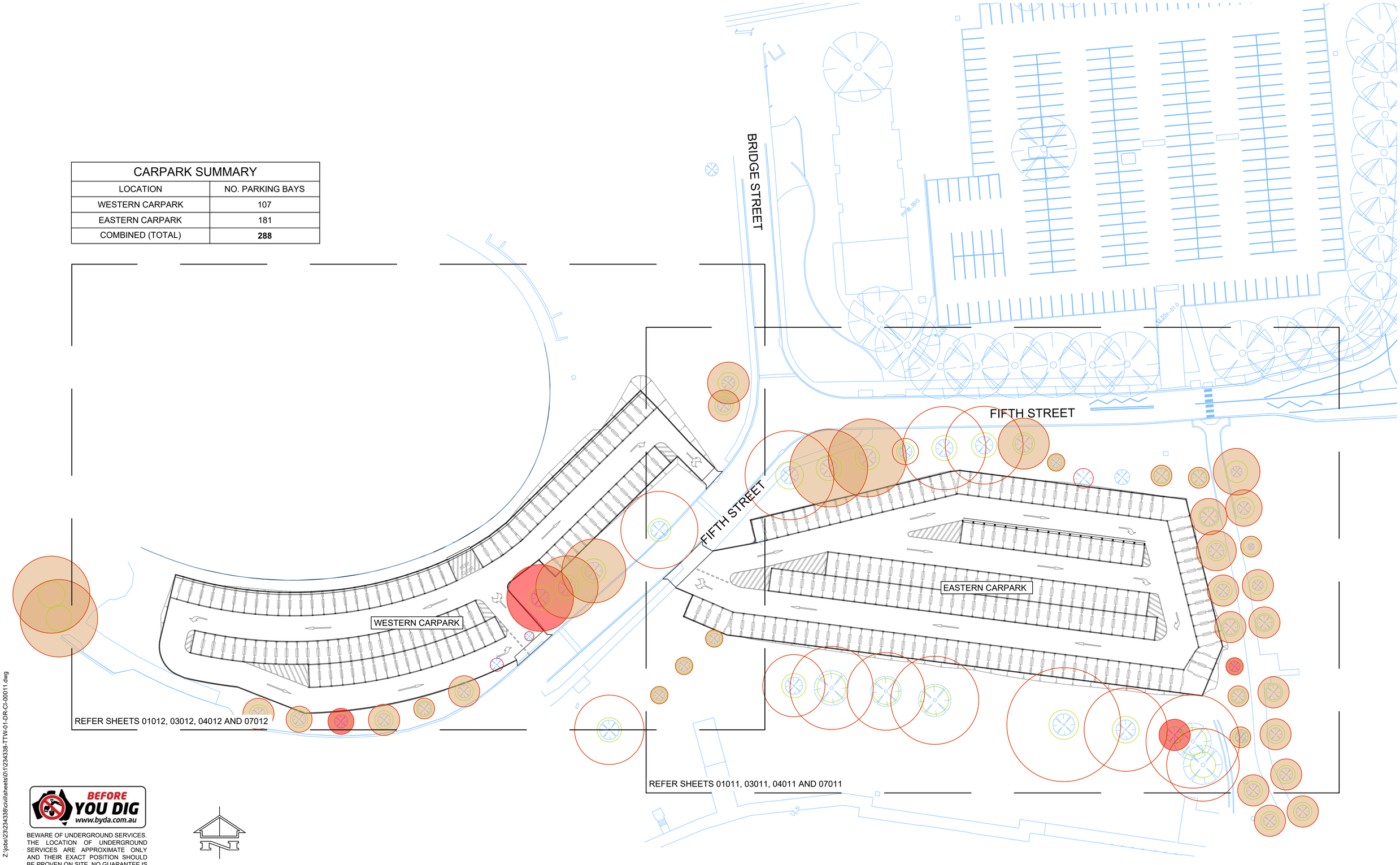
CARPARK SUMMARY	
LOCATION	NO. PARKING BAYS
WESTERN CARPARK	107
EASTERN CARPARK	181
COMBINED (TOTAL)	**288**



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BEWARE OF UNDERGROUND SERVICES. THE LOCATION OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN

0.0 8.0 16.0 24.0 32.0m
1:400 A1 1:800 A3

NOT FOR CONSTRUCTION

Rev	Description	Eng Draft	Date
T4	TENDER ADDENDUM ISSUE	RP KN	02.05.2025
T3	TENDER ADDENDUM ISSUE	RP KN	19.12.2024
T2	TENDER ISSUE	RP JLE	08.10.2024
T1	TENDER ISSUE	RP JLE	03.10.2024
P2	PRELIMINARY ISSUE	RP JLE	23.09.2024
P1	PRELIMINARY ISSUE	RP PB	13.09.2024

Client: WESTERN SYDNEY UNIVERSITY

Engineer: TTW www.ttwengineers.com

Project: WSU CARPARK RELOCATION PROJECT

Drawing Title: GENERAL ARRANGEMENT PLAN

Scale at A1	Drawn	Designed	Approved
1:400	KN	JLE	RP

Project No	Originator	Zone	Type	Role	Sheet No.	Rev
234338	TTW		01	DR	CI-00011	T4

14.08.2025 10:53 AM

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0.0 8.0 16.0 24.0 32.0m
1:400 A1 1:800 A3

NOT FOR CONSTRUCTION

Rev	Description	Eng	Draft	Date
T3	TENDER ADDENDUM ISSUE	RP	KN	02.05.2025
T2	TENDER ADDENDUM ISSUE	RP	KN	19.12.2024
T1	TENDER ISSUE	RP	JLE	08.10.2024

Client: WESTERN SYDNEY UNIVERSITY

Engineer: TTW
www.ttwengineers.com

Project: WSU CARPARK RELOCATION PROJECT

Drawing Title: GENERAL SURVEY AND SERVICES PLAN

Scale at A1	Drawn	Designed	Approved
1:400	KN	JLE	RP

Project No Originator Zone Type Role Sheet No. Rev

234338-TTW-01-DR-CI-00012-T3

14.08.2025 10:54 AM

NOTE: WORKS WITHIN CLOSE PROXIMITY TO EXISTING RETAINED TREES TO BE SUPERVISED BY A SUITABLY QUALIFIED ARBORIST. REFER TO PRELIMINARY TREE ASSESSMENT (PTA) DATED 25/08/24 BY TREE SURVEY FOR INFORMATION ON EXISTING TREES. IMPLEMENT APPROPRIATE TREE PROTECTION MEASURES IN ACCORDANCE WITH ARBORIST REQUIREMENTS. MAXIMUM 10% ENCROACHMENT INTO TPZ FOR TREES TO BE RETAINED.

FIFTH STREET

EXISTING SERVICES PIT TO BE MODIFIED TO SUIT FINISHED LEVEL AT RL 9.82. COVER TO BE CHANGED TO CLASS C

EXISTING TREE TO BE REMOVED AND GRUBBED

KERB ONLY (KO) TO BE PROVIDED ALONG THE EDGE OF THE PARKING

EXISTING SERVICES PIT TO BE MODIFIED TO SUIT FINISHED LEVEL AT RL 10.16. COVER TO BE CHANGED TO CLASS C

EXISTING POLE TO BE PROTECTED IN PLACE

CCTV POLE TO BE PROTECTED IN PLACE

FIFTH STREET

PROPOSED BORROW PIT TO CAP AND CONTAIN ASBESTOS CONTAMINATED MATERIALS (FILL CATEGORY 1 & 2). REFER DRG CI-02011 FOR DETAILS

MODIFY EXISTING KERB & GUTTER AND PROVIDE NEW VEHICULAR CROSSING OF WIDTH 11.0m IN ACCORDANCE WITH CITY OF PARRAMATTA STANDARD DRAWING DS8

EXISTING SERVICES TO BE PROTECTED DURING WORKS

EXISTING SERVICE TO BE RELOCATED. REFER TO SERVICES DRAWINGS

EXISTING REDUNDANT POWER SUPPLY TO LIGHT POLE TO BE REMOVED

EXISTING LIGHT POLE IN MIDDLE OF THE CARPARK TO BE RELOCATED. REFER TO SERVICES DRAWINGS FOR DETAILS

MODIFY SEWER PIT TO SUIT FINISHED LEVEL AT RL 11.17. COVER TO BE CHANGED TO CLASS C

1:2 MAXIMUM CUT BATTER TYPICAL TO TIE INTO EXISTING LEVELS

1:4 MAXIMUM FILL BATTER TYPICAL TO TIE INTO EXISTING LEVELS

BEWARE OF UNDERGROUND SERVICES. THE LOCATION OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN

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

NOT FOR CONSTRUCTION

Rev	Description	Eng Draft	Date
T4	TENDER ADDENDUM ISSUE	RP KN	02.05.2025
T3	TENDER ADDENDUM ISSUE	RP KN	19.12.2024
T2	TENDER ISSUE	RP JLE	08.10.2024
T1	TENDER ISSUE	RP JLE	03.10.2024
P2	PRELIMINARY ISSUE	RP JLE	23.09.2024
P1	PRELIMINARY ISSUE	RP PB	13.09.2024
T6	TENDER ADDENDUM ISSUE	RP KN	27.10.2025
T5	TENDER ADDENDUM ISSUE	RP KN	14.08.2025

Client: WESTERN SYDNEY UNIVERSITY

Engineer: TTW www.ttwengineers.com

Project: WSU CARPARK RELOCATION PROJECT

Drawing Title: GEOMETRY SITE PLAN SHEET 1

Scale at A1	Drawn	Designed	Approved
1:200	KN	JLE	RP

Project No	Originator	Zone	Type	Role	Sheet No.	Rev
234338	TTW		01	DR	CI-01011	T6

27.10.2025 3:04 PM

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NOTE: WORKS WITHIN CLOSE PROXIMITY TO EXISTING RETAINED TREES TO BE SUPERVISED BY A SUITABLY QUALIFIED ARBORIST. REFER TO PRELIMINARY TREE ASSESSMENT (PTA) DATED 25/08/24 BY TREE SURVEY FOR INFORMATION ON EXISTING TREES. IMPLEMENT APPROPRIATE TREE PROTECTION MEASURES IN ACCORDANCE WITH ARBORIST REQUIREMENTS. MAXIMUM 10% ENCROACHMENT INTO TPZ FOR TREES TO BE RETAINED.

1:2 MAXIMUM CUT BATTER TYPICAL

EXISTING COUNCIL STORMWATER DRAIN

INDICATIVE 1% AEP FLOOD EXTENT

NO NET FILL WITHIN THE FLOOD OVERLAY ZONE TO ENSURE NO ADVERSE IMPACT TO FLOOD STORAGE

EXISTING SERVICE TO BE RELOCATED. REFER TO SERVICES DRAWINGS

PROVIDE NEW VEHICULAR CROSSING OF WIDTH 4.0m IN ACCORDANCE WITH CITY OF PARRAMATTA STANDARD DRAWING DS8

HERITAGE PICKET FENCE TO BE PROTECTED DURING WORKS. MINIMUM CLEARANCE OF 1.5m TO BE PROVIDED AT ALL TIMES

PROPOSED BORROW PIT TO CAP AND CONTAIN ASBESTOS CONTAMINATED MATERIALS (FILL CATEGORY 1 & 2). REFER DRG CI-02011 FOR DETAILS

KERB AND GUTTER TO BE PROVIDED ALONG THE EDGE OF THE PARKING

DISH DRAIN TO ALIGN TO EXISTING OVAL GATE

MAINTAIN CLEAR ACCESS TO EXISTING OVAL GATE

EXISTING TREES TO BE REMOVED AND GRUBBED

MODIFY SEWER PIT TO SUIT FINISHED LEVEL AT RL 9.84. COVER TO BE CHANGED TO CLASS C

MODIFY EXISTING KERB & GUTTER AND PROVIDE NEW VEHICULAR CROSSING OF WIDTH 9.0m IN ACCORDANCE WITH CITY OF PARRAMATTA STANDARD DRAWING DS8

FIFTH STREET

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BEWARE OF UNDERGROUND SERVICES. THE LOCATION OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN

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

NOT FOR CONSTRUCTION

Rev	Description	Eng Draft	Date
T4	TENDER ADDENDUM ISSUE	RP KN	02.05.2025
T3	TENDER ADDENDUM ISSUE	RP KN	19.12.2024
T2	TENDER ISSUE	RP JLE	08.10.2024
T1	TENDER ISSUE	RP JLE	03.10.2024
P2	PRELIMINARY ISSUE	RP JLE	23.09.2024
P1	PRELIMINARY ISSUE	RP PB	13.09.2024
T5	TENDER ADDENDUM ISSUE	RP KN	14.08.2025

Client: WESTERN SYDNEY UNIVERSITY

Engineer: TTW www.ttwengineers.com

Project: WSU CARPARK RELOCATION PROJECT

Drawing Title: GEOMETRY SITE PLAN SHEET 2

Scale at A1	Drawn	Designed	Approved
1:200	KN	JLE	RP

Project No	Originator	Zone	Type	Role	Sheet No.	Rev
234338	TTW	01	DR	CI	01012	T5

14.08.2025 2:27 PM

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CUT AND FILL VOLUME ESTIMATES

EASTERN CARPARK
CUT 940 m³
FILL 110 m³

WESTERN CARPARK
CUT 310 m³
FILL 190 m³

FX.XX DENOTES CUT AND FILL DEPTH FROM THE NATURAL SURFACE TO THE DESIGN FINISHED SURFACE

DENOTES PROPOSED ACM BORROW PIT EXTENT AS PER RAP REQUIREMENTS - SEE NOTE 4 & ASBESTOS CONTAMINATED MATERIALS VOLUMES AND BORROW PIT NOTES

NOTES:
1. NO BULKING FACTOR APPLIED.
2. CUT AND FILL VOLUME ESTIMATES CALCULATED FROM THE NATURAL SURFACE TO THE DESIGNED FINISHED SURFACE.
3. NO VOLUME ALLOWANCE HAS BEEN MADE FOR EXCAVATIONS REQUIRED FOR SERVICE TRENCHINGS, THICKENINGS, BORROW PITS TO CAP AND CONTAIN ASBESTOS CONTAMINATED MATERIALS AS DESCRIBED IN THE REMEDIATION ACTION PLAN (RAP) BY DOUGLAS PARTNERS ETC. THE CONTRACTOR SHALL MAKE THEIR OWN ALLOWANCE AS REQUIRED TO COMPLETE BULK EARTHWORKS.
4. CONTRACTOR TO BE AWARE OF ASBESTOS CONTAMINATED MATERIALS (ACM) PRESENT ON SITE. REMEDIATION OF ACM EXPOSED ON SITE SHALL BE UNDERTAKEN IN ACCORDANCE WITH THE REQUIREMENTS NOTED IN THE REMEDIATION ACTION PLAN BY DOUGLAS PARTNERS. ACM VOLUMES ARE INDICATIVE ONLY AND ARE BASED ON REPORT BY DOUGLAS PARTNERS. ACTUAL VOLUME OF ACM MAY VARY. REFER ASBESTOS CONTAMINATED MATERIALS VOLUME AND BORROW PIT NOTES FOR ADDITIONAL REQUIREMENTS.
5. CONTRACTOR TO MAKE ALLOWANCE FOR DISPOSAL OF SITE WON MATERIAL. FOR RE-USE OF SITE WON MATERIAL, REFERENCE SHOULD BE MADE TO THE GEOTECHNICAL REPORT. THE CONTRACTOR IS TO MAKE ALLOWANCE FOR SORTING/TESTING AND HANDLING OF ANY FILL MATERIAL PROPOSED FOR RE-USE.
6. REFER TO GEOTECHNICAL REPORT PREPARED BY DOUGLAS PARTNERS 227191.00.R.001.REV0 DATED 15 NOVEMBER 2024 FOR SUBGRADE PREPARATION.
7. WORKS WITHIN CLOSE PROXIMITY TO EXISTING RETAINED TREES TO BE SUPERVISED BY A SUITABLY QUALIFIED ARBORIST.
8. THE CONTRACTOR SHALL UNDERTAKE A DILAPIDATION SURVEY OF EXISTING PAVEMENTS AROUND THE EXTENT OF WORKS PRIOR TO COMMENCING WORKS. DAMAGE TO EXISTING PAVEMENTS OUTSIDE THE LIMIT OF WORKS SHALL BE REMEDIATED AND MADE GOOD AT THE CONTRACTOR'S EXPENSE. CONTRACTOR TO OBTAIN ALL NECESSARY AUTHORITY PERMITS & APPROVALS.

LEVELS TABLE

No.	FROM LEVEL (m)	TO LEVEL (m)	COLOUR
1	-2.00	-1.50	
2	-1.50	-1.00	
3	-1.00	-0.50	
4	-0.50	0.00	
5	0.00	0.50	
6	0.50	1.00	

ASBESTOS CONTAMINATED MATERIALS VOLUMES AND BORROW PIT NOTES

ASBESTOS CONTAMINATED MATERIALS (ACM) VOLUMES SHOWN ARE PRELIMINARY ESTIMATES ONLY, DERIVED FROM AVAILABLE ENVIRONMENTAL INVESTIGATIONS AND GEOTECHNICAL TEST PIT DATA PROVIDED BY DOUGLAS PARTNERS.

ESTIMATES ARE BASED ON ASSUMED CONTAMINATION EXTENTS FROM THE REMEDIATION ACTION PLAN (RAP) AND MAY NOT REFLECT ACTUAL SITE CONDITIONS. ACTUAL VOLUME OF ACM MAY VARY.

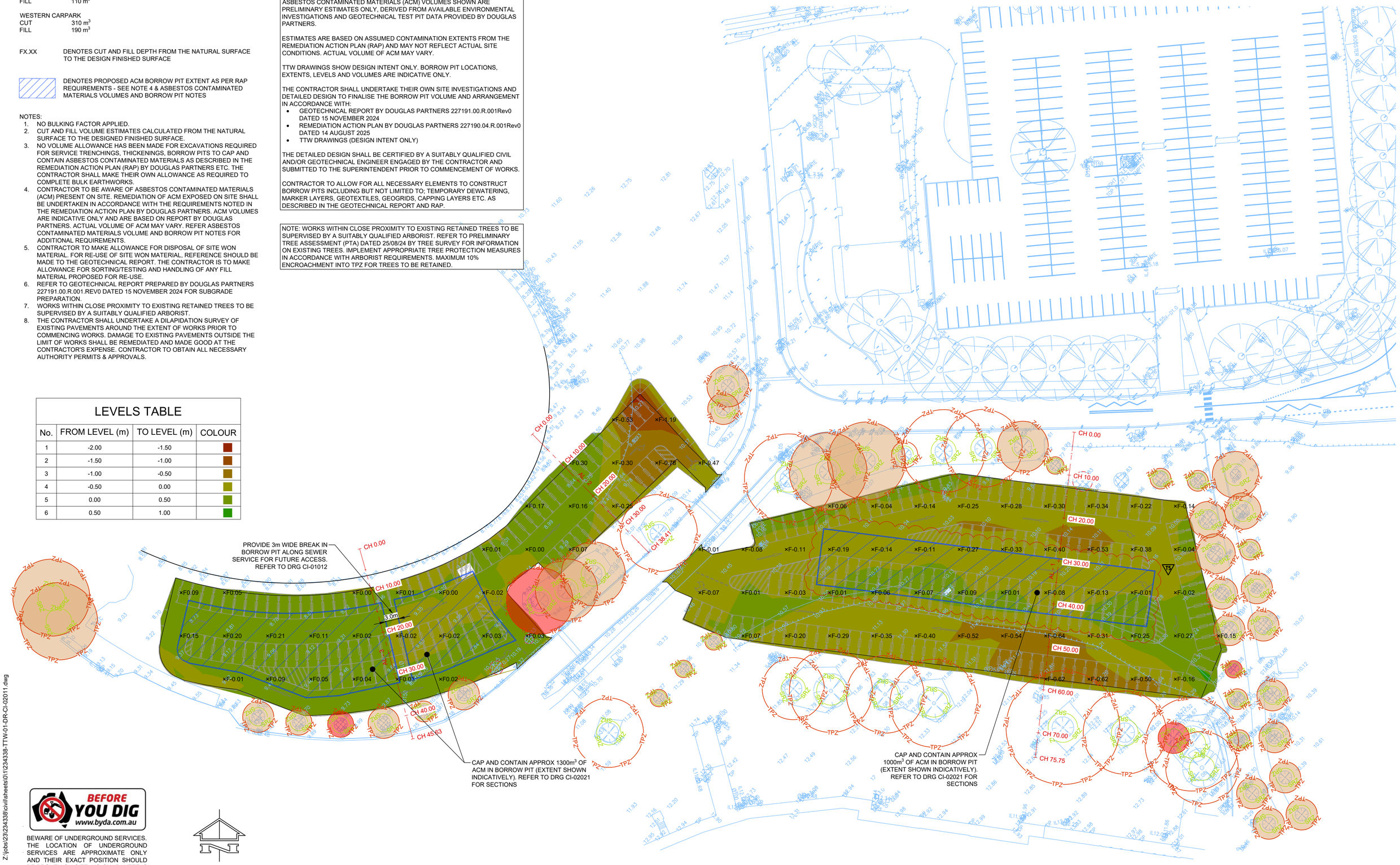
TTW DRAWINGS SHOW DESIGN INTENT ONLY. BORROW PIT LOCATIONS, EXTENTS, LEVELS AND VOLUMES ARE INDICATIVE ONLY.

THE CONTRACTOR SHALL UNDERTAKE THEIR OWN SITE INVESTIGATIONS AND DETAILED DESIGN TO FINALISE THE BORROW PIT VOLUME AND ARRANGEMENT IN ACCORDANCE WITH:
- GEOTECHNICAL REPORT BY DOUGLAS PARTNERS 227191.00.R.001Rev0 DATED 15 NOVEMBER 2024
- REMEDIATION ACTION PLAN BY DOUGLAS PARTNERS 227190.04.R.001Rev0 DATED 14 AUGUST 2025
- TTW DRAWINGS (DESIGN INTENT ONLY)

THE DETAILED DESIGN SHALL BE CERTIFIED BY A SUITABLY QUALIFIED CIVIL AND/OR GEOTECHNICAL ENGINEER ENGAGED BY THE CONTRACTOR AND SUBMITTED TO THE SUPERINTENDENT PRIOR TO COMMENCEMENT OF WORKS.

CONTRACTOR TO ALLOW FOR ALL NECESSARY ELEMENTS TO CONSTRUCT BORROW PITS INCLUDING BUT NOT LIMITED TO; TEMPORARY DEWATERING, MARKER LAYERS, GEOTEXTILES, GEOGRIDS, CAPPING LAYERS ETC. AS DESCRIBED IN THE GEOTECHNICAL REPORT AND RAP.

NOTE: WORKS WITHIN CLOSE PROXIMITY TO EXISTING RETAINED TREES TO BE SUPERVISED BY A SUITABLY QUALIFIED ARBORIST. REFER TO PRELIMINARY TREE ASSESSMENT (PTA) DATED 25/08/24 BY TREE SURVEY FOR INFORMATION ON EXISTING TREES. IMPLEMENT APPROPRIATE TREE PROTECTION MEASURES IN ACCORDANCE WITH ARBORIST REQUIREMENTS. MAXIMUM 10% ENCROACHMENT INTO TPZ FOR TREES TO BE RETAINED.



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BEWARE OF UNDERGROUND SERVICES. THE LOCATION OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN

0.0 8.0 16.0 24.0 32.0m
1:400 A1 1:800 A3

NOT FOR CONSTRUCTION

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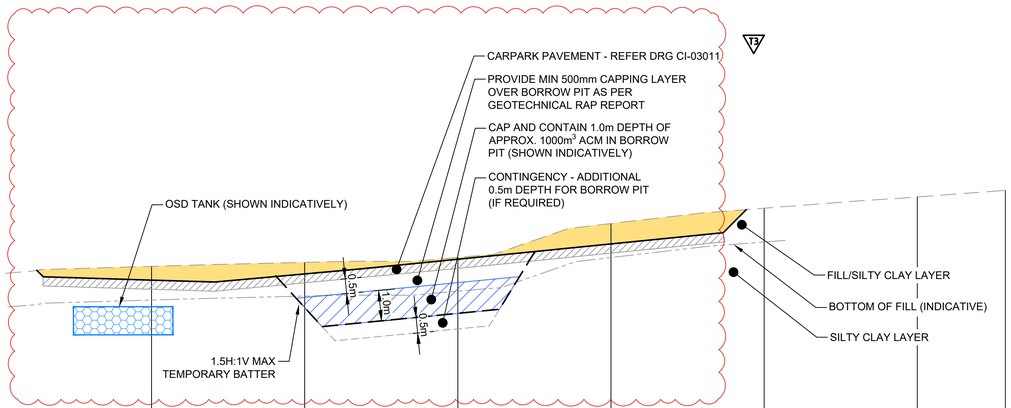
Rev	Description	Eng Draft	Date
T5	TENDER ADDENDUM ISSUE	RP KN	27.10.2025
T4	TENDER ADDENDUM ISSUE	RP KN	14.08.2025
T3	TENDER ADDENDUM ISSUE	RP KN	02.05.2025
T2	TENDER ADDENDUM ISSUE	RP KN	19.12.2024
T1	TENDER ISSUE	RP JLE	08.10.2024

Client: WESTERN SYDNEY UNIVERSITY
Engineer: TTW www.ttwengineers.com
Project: WSU CARPARK RELOCATION PROJECT
Drawing Title: EARTHWORKS CUT AND FILL VOLUMES PLANS

Scale at A1	Drawn	Designed	Approved
1:400	KN	JLE	RP

Project No	Originator	Zone	Type	Role	Sheet No.	Rev
234338	TTW	01	DR	CI	02011	T5

27.10.2025 3:02 PM



CUT
FILL

DATUM R.L. 4.00

DESIGN SURFACE (mAHD)		9.63	9.83	10.31	10.81				
EXISTING SURFACE (mAHD)	9.18	9.80	10.08	10.21	10.37	11.47	11.97	12.34	12.56
CUT/FILL DEPTH (m)			-0.45	-0.38	-0.06	-0.66			
CHAINAGE (m)	0.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00	75.75

LONGITUDINAL SECTION AL - 1

SCALES: HORIZONTAL 1:200 VERTICAL 1:100

ASBESTOS CONTAMINATED MATERIALS VOLUMES AND BORROW PIT NOTES

ASBESTOS CONTAMINATED MATERIALS (ACM) VOLUMES SHOWN ARE PRELIMINARY ESTIMATES ONLY, DERIVED FROM AVAILABLE ENVIRONMENTAL INVESTIGATIONS AND GEOTECHNICAL TEST PIT DATA PROVIDED BY DOUGLAS PARTNERS.

ESTIMATES ARE BASED ON ASSUMED CONTAMINATION EXTENTS FROM THE REMEDIATION ACTION PLAN (RAP) AND MAY NOT REFLECT ACTUAL SITE CONDITIONS. ACTUAL VOLUME OF ACM MAY VARY.

TTW DRAWINGS SHOW DESIGN INTENT ONLY. BORROW PIT LOCATIONS, EXTENTS, LEVELS AND VOLUMES ARE INDICATIVE ONLY.

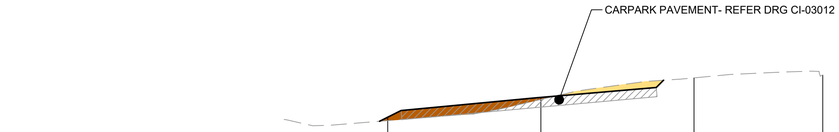
THE CONTRACTOR SHALL UNDERTAKE THEIR OWN SITE INVESTIGATIONS AND DETAILED DESIGN TO FINALISE THE BORROW PIT VOLUME AND ARRANGEMENT IN ACCORDANCE WITH:

- GEOTECHNICAL REPORT BY DOUGLAS PARTNERS 227191.00.R.001Rev0 DATED 15 NOVEMBER 2024
- REMEDIATION ACTION PLAN BY DOUGLAS PARTNERS 227190.04.R.001Rev0 DATED 14 AUGUST 2025
- TTW DRAWINGS (DESIGN INTENT ONLY)

THE DETAILED DESIGN SHALL BE CERTIFIED BY A SUITABLY QUALIFIED CIVIL AND/OR GEOTECHNICAL ENGINEER ENGAGED BY THE CONTRACTOR AND SUBMITTED TO THE SUPERINTENDENT PRIOR TO COMMENCEMENT OF WORKS.

CONTRACTOR TO ALLOW FOR ALL NECESSARY ELEMENTS TO CONSTRUCT BORROW PITS INCLUDING BUT NOT LIMITED TO; TEMPORARY DEWATERING, MARKER LAYERS, GEOTEXTILES, GEOGRIDS, CAPPING LAYERS ETC. AS DESCRIBED IN THE GEOTECHNICAL REPORT AND RAP.

THE NATURAL SILTY CLAY/BOTTOM OF FILL LEVEL SHOWN IN THE LONGITUDINAL SECTIONS ARE INDICATIVE ONLY BASED ON GEOTECHNICAL BOREHOLE INFORMATION AND IS NOT GUARANTEED TO BE CORRECT OR COMPLETE. CONTRACTOR SHALL CONFIRM EXACT DEPTH TO THE NATURAL SILTY CLAY ON SITE. DEPTH MAY VARY ACROSS SITE.



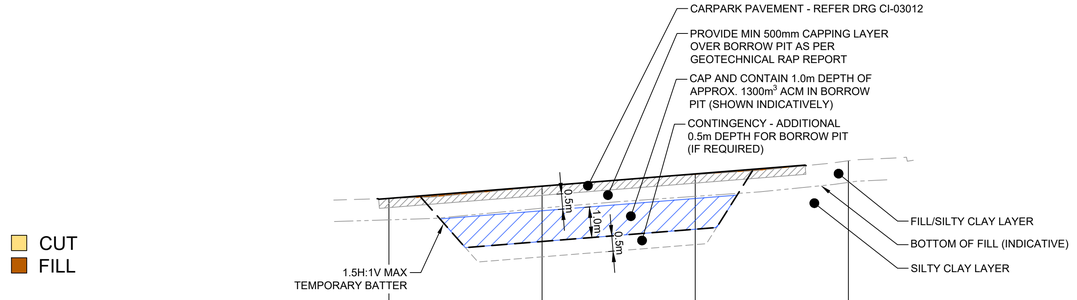
CUT
FILL

DATUM R.L. 4.00

DESIGN SURFACE (mAHD)	8.62	9.26			
EXISTING SURFACE (mAHD)	8.51	9.20	9.90	9.99	
CUT/FILL DEPTH (m)	0.11	0.07			
CHAINAGE (m) 0.00	10.00	20.00	30.00	38.41	

LONGITUDINAL SECTION AL - 2

SCALES: HORIZONTAL 1:200 VERTICAL 1:100



CUT
FILL

DATUM R.L. 4.00

DESIGN SURFACE (mAHD)	8.91	9.31	9.71			
EXISTING SURFACE (mAHD)	8.91	9.30	9.69	10.14		
CUT/FILL DEPTH (m)	0.00	0.02	0.02			
CHAINAGE (m) 0.00	10.00	20.00	30.00	40.00	45.63	

LONGITUDINAL SECTION AL - 3

SCALES: HORIZONTAL 1:200 VERTICAL 1:100

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1:100 A1 1:200 A3

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1:200 A1 1:400 A3

NOT FOR CONSTRUCTION

Rev	Description	Eng	Draft	Date
T3	TENDER ADDENDUM ISSUE	RP	KN	27.10.2025
T2	TENDER ADDENDUM ISSUE	RP	KN	14.08.2025
T1	TENDER ADDENDUM ISSUE	RP	KN	02.05.2025

Client: WESTERN SYDNEY UNIVERSITY

Engineer: TTW www.ttwengineers.com

Project: WSU CARPARK RELOCATION PROJECT

Drawing Title: EARTHWORKS SITE SECTIONS

Scale at A1	Drawn	Designed	Approved
AS SHOWN	KN	JLE	RP

Project No	Originator	Zone	Type	Role	Sheet No.	Rev
234338	TTW	01	DR	CI	02021	T3

27.10.2025 1:03 PM

PAVEMENT LEGEND

P1 — VEHICULAR ASPHALT PAVEMENT
REFER TO CITY OF PARRAMATTA COUNCIL STANDARD DRAWING DS47 PAVEMENT FOR OFF-STREET CAR PARK.
PROVIDE BIDIM A29 GEOTEXTILE.

P2 — VEHICULAR CONCRETE PAVEMENT
REFER TO CITY OF PARRAMATTA COUNCIL STANDARD DRAWING DS8

P3 — ATLANTIS TURF CELL (OR SIMILAR APPROVED)
REFER TO PRODUCT SPECIFICATIONS

NOTES:
1. ANY UNCONTROLLED / SOFT SPOT TO BE REMOVED AND BACKFILL WITH ENGINEERING FILL / PROOF ROLL AND COMPACTED IN ACCORDANCE WITH GEOTECHNICAL ENGINEER'S RECOMMENDATION.

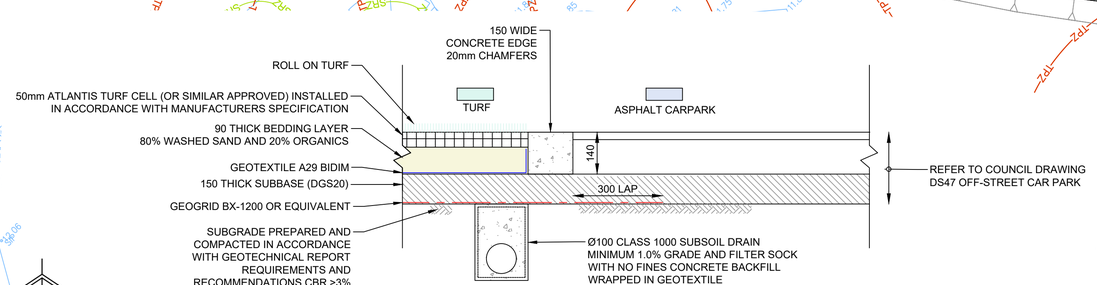
FIFTH STREET

FIFTH STREET

REFER TO PAVEMENT EDGE DETAIL BELOW FOR INTERFACE DETAIL

NOTE: WORKS WITHIN CLOSE PROXIMITY TO EXISTING RETAINED TREES TO BE SUPERVISED BY A SUITABLY QUALIFIED ARBORIST. REFER TO PRELIMINARY TREE ASSESSMENT (PTA) DATED 25/08/24 BY TREE SURVEY FOR INFORMATION ON EXISTING TREES. IMPLEMENT APPROPRIATE TREE PROTECTION MEASURES IN ACCORDANCE WITH ARBORIST REQUIREMENTS. MAXIMUM 10% ENCROACHMENT INTO TPZ FOR TREES TO BE RETAINED.

PROPOSED BORROW PIT TO CAP AND CONTAIN ASBESTOS CONTAMINATED MATERIALS (FILL CATEGORY 1 & 2). REFER DRG CI-02011 FOR DETAILS



PAVEMENT EDGE DETAIL
ASPHALT VEHICULAR AND ATLANTIS TURF CELL INTERFACE
SCALE N.T.S

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

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T1	TENDER ISSUE	RP	JLE	03.10.2024
P2	PRELIMINARY ISSUE	RP	JLE	23.09.2024
P1	PRELIMINARY ISSUE	RP	PB	13.09.2024
T7	TENDER ADDENDUM ISSUE	RP	KN	27.10.2025
T6	TENDER ADDENDUM ISSUE	RP	KN	14.08.2025
T5	TENDER ADDENDUM ISSUE	RP	SFU	06.05.2025

Client: WESTERN SYDNEY UNIVERSITY

Engineer: TTW www.ttwengineers.com

Project: WSU CARPARK RELOCATION PROJECT

Drawing Title: PAVEMENT AND JOINTING PLAN SHEET 1

Scale at A1	Drawn	Designed	Approved
1:200	KN	JLE	RP

Project No	Originator	Zone	Type	Role	Sheet No.	Rev
234338	TTW		01	DR	CI-03011	T7

27.10.2025 2:58 PM

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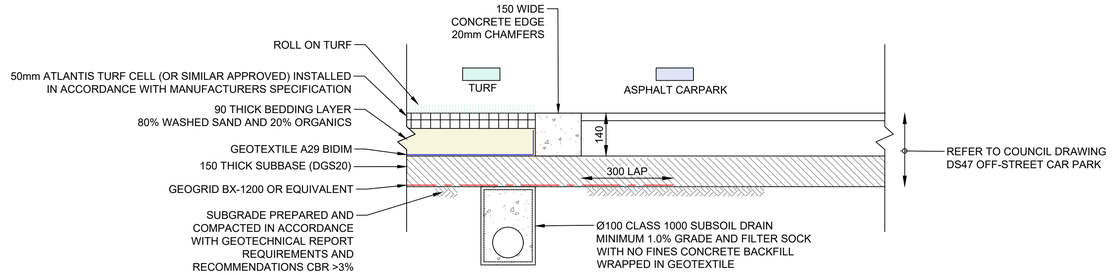
PAVEMENT LEGEND

P1 — VEHICULAR ASPHALT PAVEMENT
REFER TO CITY OF PARRAMATTA COUNCIL STANDARD DRAWING DS47 PAVEMENT FOR OFF-STREET CAR PARK.
PROVIDE BIDIM A29 GEOTEXTILE.

P2 — VEHICULAR CONCRETE PAVEMENT
REFER TO CITY OF PARRAMATTA COUNCIL STANDARD DRAWING DS8

P3 — ATLANTIS TURF CELL (OR SIMILAR APPROVED)
REFER TO PRODUCT SPECIFICATIONS

NOTES:
1. ANY UNCONTROLLED / SOFT SPOT TO BE REMOVED AND BACKFILL WITH ENGINEERING FILL / PROOF ROLL AND COMPACTED IN ACCORDANCE WITH GEOTECHNICAL ENGINEER'S RECOMMENDATION.



PAVEMENT EDGE DETAIL
ASPHALT VEHICULAR AND ATLANTIS TURF CELL INTERFACE
SCALE N.T.S

NOTE: WORKS WITHIN CLOSE PROXIMITY TO EXISTING RETAINED TREES TO BE SUPERVISED BY A SUITABLY QUALIFIED ARBORIST. REFER TO PRELIMINARY TREE ASSESSMENT (PTA) DATED 25/08/24 BY TREE SURVEY FOR INFORMATION ON EXISTING TREES. IMPLEMENT APPROPRIATE TREE PROTECTION MEASURES IN ACCORDANCE WITH ARBORIST REQUIREMENTS. MAXIMUM 10% ENCROACHMENT INTO TPZ FOR TREES TO BE RETAINED.

PROPOSED BORROW PIT TO CAP AND CONTAIN ASBESTOS CONTAMINATED MATERIALS (FILL CATEGORY 1 & 2). REFER DRG CI-02011 FOR DETAILS

REFER TO PAVEMENT EDGE DETAIL ABOVE FOR INTERFACE DETAIL

FIFTH STREET

KEEP CLEAR

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Rev	Description	Eng Draft	Date
T4	TENDER ADDENDUM ISSUE	RP KN	02.05.2025
T3	TENDER ADDENDUM ISSUE	RP KN	19.12.2024
T2	TENDER ISSUE	RP JLE	08.10.2024
T1	TENDER ISSUE	RP JLE	03.10.2024
P2	PRELIMINARY ISSUE	RP JLE	23.09.2024
P1	PRELIMINARY ISSUE	RP PB	13.09.2024
T6	TENDER ADDENDUM ISSUE	RP KN	14.08.2025
T5	TENDER ADDENDUM ISSUE	RP SFU	06.05.2025

Client: WESTERN SYDNEY UNIVERSITY

Engineer: TTW www.ttwengineers.com

Project: WSU CARPARK RELOCATION PROJECT

Drawing Title: PAVEMENT AND JOINTING PLAN SHEET 2

Scale at A1	Drawn	Designed	Approved
1:200	KN	JLE	RP

Project No	Originator	Zone	Type	Role	Sheet No.	Rev
234338	TTW		01	DR	CI-03012	T6

14.08.2025 4:24 PM

CONTRACTOR MUST VERIFY DEPTH OF ALL EXISTING SERVICES CROSSING PROPOSED DRAINAGE ALIGNMENT TO QL-A PRIOR TO UNDERTAKING DRAINAGE WORKS (TYP.)

REINSTATE KERB IMPACTED BY STORMWATER DRAINAGE WORKS (TYP.)

CONNECT PROPOSED PIPE TO EXISTING STORMWATER PIT. CONTRACTOR TO CONFIRM LOCATION AND INVERT LEVELS PRIOR TO WORKS

BAFFLE PIT DETAIL REFER TO SHEET 04041

FIFTH STREET

110kL BELOW GROUND TANK COMBINED WITH ABOVE GROUND DETENTION

1 LAYER OF 'ACO STORMBRIXX SD' OR SIMILAR APPROVED BELOW GROUND TANK. INSTALLED IN ACCORDANCE WITH MANUFACTURERS REQUIREMENTS. 1:200 MIN FALL TO BASE OF TANK TOWARDS OUTLET AT RL 7.84

OSD SIZED IN ACCORDANCE WITH CITY OF PARRAMATTA DEVELOPMENT ENGINEERING DESIGN GUIDELINES

REFER TO COUNCIL STANDARD DRAWING DS33 FOR SUBSOIL DETAILS

SW1-1
CL 8.87

S I.L. 7.52 @ 1-1
E I.L. 7.34 @
∅ 375 RCRRJ
52.7m 1:300

S I.L. 7.81 @ 1-2
E I.L. 7.54 @ 1-1
∅ 300 RCRRJ
14.6m 1:54

S I.L. 8.61 @ 1-4
E I.L. 8.44 @
∅ 300 RCRRJ
13.3m 1:80

SW1-2
CL 9.88

S I.L. 7.84 @
E I.L. 7.83 @ 1-2
∅ 450 RCRRJ
3.0m 1:300

S I.L. 8.60 @ 1-3
E I.L. 8.44 @
∅ 300 RCRRJ
2.8m 1:17

SW1-4
CL 9.51

SW1-3
CL 9.60

900x900 SQUARE CLASS C MAINTENANCE ACCESS FOR OSD TANK

GRADE SPOON DRAIN TO GRATED PITS AND PROVIDE LOCAL WIDENING AT PIT

PROPOSED BORROW PIT TO CAP AND CONTAIN ASBESTOS CONTAMINATED MATERIALS (FILL CATEGORY 1 & 2). REFER DRG CI-02011 FOR DETAILS

FIFTH STREET

IO

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T4	TENDER ADDENDUM ISSUE	RP KN	02.05.2025
T3	TENDER ADDENDUM ISSUE	RP KN	19.12.2024
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P1	PRELIMINARY ISSUE	RP PB	13.09.2024
T6	TENDER ADDENDUM ISSUE	RP KN	27.10.2025
T5	TENDER ADDENDUM ISSUE	RP KN	14.08.2025

Client: WESTERN SYDNEY UNIVERSITY

Engineer: TTW www.ttwengineers.com

Project: WSU CARPARK RELOCATION PROJECT

Drawing Title: STORMWATER DRAINAGE PLAN SHEET 1

Scale at A1	Drawn	Designed	Approved
1:200	KN	JLE	RP

Project No	Originator	Zone	Type	Role	Sheet No.	Rev
234338	TTW		01	DR	CI-04011	T6

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EXISTING COUNCIL STORMWATER DRAIN

CONNECT PROPOSED PIPE TO EXISTING PIT. CONTRACTOR TO CONFIRM LOCATION AND INVERT LEVELS PRIOR TO WORKS

MODIFY EXISTING GRATED PIT TO SUIT PROPOSED VEHICLE CROSSOVER IN ACCORDANCE WITH COUNCIL STANDARD DRAWING DS29

S I.L. 7.23 @ 2-1
E I.L. 7.07 @
∅ 375 RCRRJ
11.7m 1:73

S I.L. 8.02 @ 2-7
E I.L. 7.97 @ 2-1
∅ 225 uPVC
10.2m 1:200

SW2-7
CL 8.85

S I.L. 7.28 @ 2-2
E I.L. 7.25 @ 2-1
∅ 375 RCRRJ
9.0m 1:300

SW2-1
CL 8.83

SW2-2
CL 8.86

S I.L. 7.38 @ 2-3
E I.L. 7.30 @ 2-2
∅ 375 RCRRJ
25.0m 1:300

INDICATIVE 1% AEP FLOOD EXTENT

REFER TO COUNCIL STANDARD DRAWING DS33 FOR SUBSOIL DETAILS

T5

PROPOSED BORROW PIT TO CAP AND CONTAIN ASBESTOS CONTAMINATED MATERIALS (FILL CATEGORY 1 & 2). REFER DRG CI-02011 FOR DETAILS

S I.L. 7.80 @ 2-6
E I.L. 7.68 @ 2-5
∅ 225 uPVC
24.2m 1:200

S I.L. 7.66 @ 2-5
E I.L. 7.52 @ 2-4
∅ 225 uPVC
27.5m 1:200

S I.L. 7.50 @ 2-4
E I.L. 7.40 @ 2-3
∅ 300 RCRRJ
26.1m 1:250

SW2-3
CL 8.88

SW2-6
CL 8.63

SW2-5
CL 8.76

SW2-4
CL 8.95

FIFTH STREET

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T4	TENDER ADDENDUM ISSUE	RP	KN 02.05.2025
T3	TENDER ADDENDUM ISSUE	RP	KN 19.12.2024
T2	TENDER ISSUE	RP	JLE 08.10.2024
T1	TENDER ISSUE	RP	JLE 03.10.2024
P2	PRELIMINARY ISSUE	RP	JLE 23.09.2024
P1	PRELIMINARY ISSUE	RP	PB 13.09.2024
T5	TENDER ADDENDUM ISSUE	RP	KN 14.08.2025

Client: WESTERN SYDNEY UNIVERSITY

Engineer: TTW www.ttwengineers.com

Project: WSU CARPARK RELOCATION PROJECT

Drawing Title: STORMWATER DRAINAGE PLAN SHEET 2

Scale at A1	Drawn	Designed	Approved
1:200	KN	JLE	RP

Project No	Originator	Zone	Type	Role	Sheet No.	Rev
234338	TTW	01	DR	CI	04012	T5

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STORMWATER STRUCTURE SCHEDULE

STRUCTURE ID	PIT TYPE	COVER	SETOUT COORDS	WIDTH	LENGTH	INLET DIA	INLET I.L.	OUTLET DIA	OUTLET I.L.	COVER RL	PIT DEPTH [m]	REMARKS
SW TEMP CARPARK-1-1	JUNCTION PIT	D	E: 79.085 N:-125.818	900	900	300	7.54	375	7.52	8.87	1.36	IN ACCORDANCE WITH COUNCIL STANDARD DRAWING DS26
SW TEMP CARPARK-1-2	BAFFLE PIT	C	E: 79.390 N:-140.370	1300	900	450	7.83	300	7.81	9.88	2.07	REFER TO SHEET 04041 FOR DETAILS
SW TEMP CARPARK-1-3	GRATED PIT	C	E: 77.840 N:-152.420	900	900			300	8.60	9.50	0.97	IN ACCORDANCE WITH COUNCIL STANDARD DRAWING DS25
SW TEMP CARPARK-1-4	GRATED PIT	C	E: 48.082 N:-148.627	900	900			300	8.61	9.51	0.97	IN ACCORDANCE WITH COUNCIL STANDARD DRAWING DS25
SW TEMP CARPARK-2-1	JUNCTION PIT	B	E: -35.706 N:-125.974	900	900	375 225	7.25 7.97	375	7.23	8.83	1.63	IN ACCORDANCE WITH COUNCIL STANDARD DRAWING DS26
SW TEMP CARPARK-2-2	KERB INLET PIT	C	E: -40.673 N:-133.461	850	675	375	7.30	375	7.28	8.86	1.60	IN ACCORDANCE WITH COUNCIL STANDARD DRAWING DS21
SW TEMP CARPARK-2-3	KERB INLET PIT	C	E: -58.748 N:-150.748	850	675	300	7.40	375	7.38	8.88	1.50	IN ACCORDANCE WITH COUNCIL STANDARD DRAWING DS21
SW TEMP CARPARK-2-4	KERB INLET PIT	C	E: -82.178 N:-162.205	850	675	225	7.52	300	7.50	8.95	1.45	IN ACCORDANCE WITH COUNCIL STANDARD DRAWING DS21
SW TEMP CARPARK-2-5	KERB INLET PIT	C	E: -109.421 N:-165.677	850	675	225	7.68	225	7.66	8.76	1.10	IN ACCORDANCE WITH COUNCIL STANDARD DRAWING DS21
SW TEMP CARPARK-2-6	KERB INLET PIT	C	E: -133.326 N:-161.745	850	675			225	7.80	8.63	0.83	IN ACCORDANCE WITH COUNCIL STANDARD DRAWING DS21
SW TEMP CARPARK-2-7	KERB INLET PIT	C	E: -27.314 N:-120.095	850	675			225	8.02	8.85	0.83	IN ACCORDANCE WITH COUNCIL STANDARD DRAWING DS21

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Rev	Description	Eng	Draft	Date
T4	TENDER ADDENDUM ISSUE	RP	KN	02.05.2025
T3	TENDER ADDENDUM ISSUE	RP	KN	19.12.2024
T2	TENDER ISSUE	RP	JLE	08.10.2024
T1	TENDER ISSUE	RP	JLE	03.10.2024

Client: WESTERN SYDNEY UNIVERSITY

Engineer: TTW www.ttwengineers.com

Project: WSU CARPARK RELOCATION PROJECT

Drawing Title: STORMWATER PIT SCHEDULE

Scale at A1	Drawn	Designed	Approved
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Project No	Originator	Zone	Type	Role	Sheet No.	Rev
234338	TTW	01	DR	CI	04021	T4

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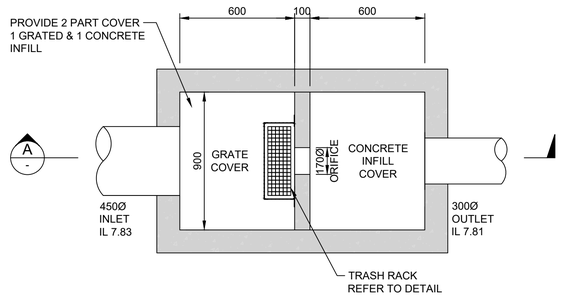

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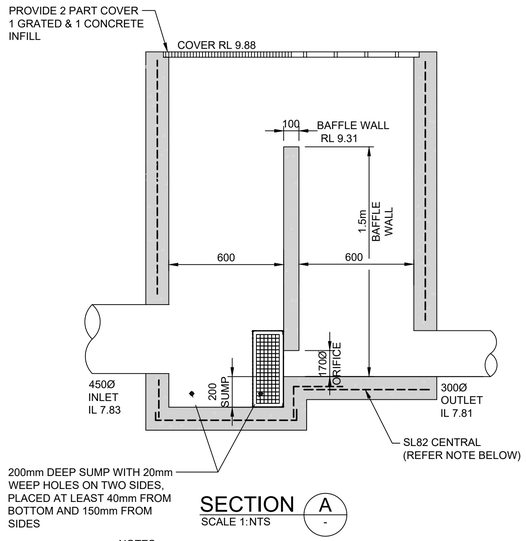

SECTION A
SCALE 1:NTS

NOTES:
1. REINFORCEMENT NOT REQUIRED IF DEPTH OF PIT IS LESS THAN 1000mm.
2. PROVIDE STEP IRONS AT 300mm MAX. CTS. IF DEPTH OF PIT EXCEEDS 1000mm.
3. PRECAST PITS ARE TO BE APPROVED BY ENGINEER.

BAFFLE DRAINAGE PIT 1-2 DETAIL
SCALE 1:NTS

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T1	TENDER ISSUE	RP	JLE	03.10.2024
P1	PRELIMINARY ISSUE	RP	PB	13.09.2024

Client: WESTERN SYDNEY UNIVERSITY

Engineer: TTW www.ttwengineers.com

Project: WSU CARPARK RELOCATION PROJECT

Drawing Title: STORMWATER DETAILS

Scale at A1	Drawn	Designed	Approved
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Project No	Originator	Zone	Type	Role	Sheet No.	Rev
234338	TTW	01	DR	CI	04041	T4

02.05.2025 12:42 PM

FIFTH STREET

FIFTH STREET

ALL PARKING BAYS TO BE 5.4m LONG x 2.5m WIDE

LINEMARK KERB AT START AND END OF PARKING BAY TO DELINEATE INDIVIDUAL BAYS (TYPICAL). INTERMITTENT AT KERB/EDGE STRIP ONLY

ALLOW FOR 14 FIXED BOLLARDS IN HATCH AREAS OF THE EASTERN CARPARK TO PREVENT PARKING. LOCATIONS TO BE CONFIRMED IN CONSTRUCTION DOCUMENTATION

5.4

2.5

ONE WAY R2-17(A)

ONE WAY R2-17(A)

R2-17(A)

ONLY R2-14(A)R

R4-1(A)

10

R4-1(A)

10

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T1	TENDER ISSUE	RP AE	03.10.2024

Client: WESTERN SYDNEY UNIVERSITY

Engineer: TTW www.ttwengineers.com

Project: WSU CARPARK RELOCATION PROJECT

Drawing Title: TRAFFIC CONTROL SIGNAGE AND LINEMARKING SHEET 1

Scale at A1	Drawn	Designed	Approved
1:200	KN	JLE	RP

Project No	Originator	Zone	Type	Role	Sheet No.	Rev
234338	TTW		01	DR	CI-07011	T4

14.08.2025 2:42 PM

KEEP CLEAR LINEMARKING FOR ACCESS TO OVAL

ALLOW FOR 9 FIXED AND 3 REMOVABLE BOLLARDS IN HATCH AREAS OF THE WESTERN CARPARK TO PREVENT PARKING. LOCATIONS TO BE CONFIRMED IN CONSTRUCTION DOCUMENTATION

ALL PARKING BAYS TO BE 5.4m LONG x 2.5m WIDE

LINEMARK KERB AT START AND END OF PARKING BAY TO DELINEATE INDIVIDUAL BAYS. (TYPICAL) INTERMITTENT AT KERB/EDGE STRIP ONLY

5.4

2.5

KEEP CLEAR

ONE WAY

R2-17(A)

ONE WAY

R2-17(A)

GIVE WAY

R1-2

ONLY

R2-14(A)L

FIFTH STREET

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Client: WESTERN SYDNEY UNIVERSITY

Engineer: TTW www.ttwengineers.com

Project: WSU CARPARK RELOCATION PROJECT

Drawing Title: TRAFFIC CONTROL SIGNAGE AND LINEMARKING SHEET 2

Scale at A1	Drawn	Designed	Approved
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Project No	Originator	Zone	Type	Role	Sheet No.	Rev
234338	TTW		DR	CI	07012	T4

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