Western Sydney University Bankstown City Campus Development

Civil Design Report

Issued for:

State Significant Development Application

Revision:01

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Report Amendment Register

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1. EXECUTIVE SUMMARY

Meinhardt Bonacci Group have been engaged to prepare this Civil Design Report for the new Western Sydney University Bankstown City Campus at 74 Rickard Road Bankstown. This report is to be read in conjunction with the Flood report and the Flood emergency Response Plan prepared by Meinhardt-Bonacci. The proposed development consists of a new building and 2 levels of basement carparking. The site is situated at a low point on a major overland flood path and is subsequently impacted by the 100-year ARI overland flood flow. The requirements from a civil perspective include the following in accordance with Canterbury Bankstown Council DCP, SEARS, Green building Code of Australia and Canterbury Bankstown Stormwater System Report:

1. Habitable floor levels are to be 500mm above the 100 year ARI flood level;

2. Driveways to basement car parking areas are to incorporate a crest point with a surface level of at least 100mm above the 100 year ARI water surface level

3. Determine impact of the development on 100 year inundation levels and on adjoining properties

4. On-Site Detention (OSD) must be designed and constructed to control stormwater runoff from development sites such that for 5 to 100 year ARI events, peak stormwater discharges from the site do not exceed pre-development stormwater discharges

5. Water quality pollutant reduction targets as per Green Building Council Australia to the following:

    - Gross Pollutants 85%
    - Total Suspended Solids 80%
    - Total Nitrogen 30%
    - Total Phosphorous 30%

Preliminary findings from the hydrologic and hydraulic modelling of the site for the existing and proposed scenarios have been documented in this report. Water quantity, water quality and flooding requirements have been modelled using DRAINS, MUSIC and TUFLOW computer software respectively and findings demonstrated that it will be possible to achieve the above criteria.

2. INTRODUCTION

This civil report has been prepared by Meinhardt Bonacci Group (NSW) Pty Ltd to describe the civil systems associated with the Western Sydney University Bankstown City Campus Development, including civil cut/fill works, stormwater quantity, water quality and flooding.

2.1. Objectives

The objective of this report is to demonstrate compliance with *SEARS for New Western Sydney University Bankstown City Campus, Canterbury Bankstown Council DCP, Bankstown City Council 2009 Development Engineering Standards, Green Building Council of Australia Green Star- Design & As built Stormwater, Bankstown Development Control Plan 2015 Part B12 Flood Risk Management, Canterbury Bankstown Stormwater System Report* and *Landcom 2004 Soils and Water Managing Urban Stormwater*. The objectives are:

- To design a stormwater drainage system for the site to accommodate the stormwater runoff up to and including 20 year ARI storm events.
- To maintain the permissible site discharge (peak flows from existing site) for the site due to development from 5 year ARI (minor storm events) up to and including 100 year ARI (major storm events) storm events.
- To design an on-site detention (OSD) tank up to and including the 100 year ARI storm events and to design a safe overflow conveyance measure from the OSD tank.
- To provide functional Water Sensitive Urban Design (WSUD) treatment for the site to improve water quality and achieve water quality requirements as nominated by Canterbury Bankstown Council.
- To provide functional WSUD measure for the site to improve water quality and achieve water quality targets nominated by Green Building Code of Australia.
- Habitable floor levels are to be 500mm above the 100 year ARI flood level;
- Driveways to basement car parking areas are to incorporate a crest point with a surface level of at least 100mm above the 100 year ARI water surface level;
- To demonstrate that the development will not increase flooding effects elsewhere.

3. Site Description

3.1. Location

The site is located at 74 Rickard Road Bankstown within the Canterbury-Bankstown Council Local Government Area (LGA). As per the updated deposited land survey plans the site of 74 Rickard Road has been incorporated into Lot 15 DP1256167 dated June 10, 2020 and is approximately 3,673m². Previously the lots that which now have been incorporated into Lot 15 DP1256167 included 74 Rickard Road (being Lot 5 DP 777510) a portion of 375 Chapel Street (being Lot 6 DP 777510). In addition, public domain works which are proposed to Rickard Road, 70 Rickard Road (being part Lot 7 DP777510) with access proposed via 80 Rickard Road (being Lot 12 DP566924). The site is bordered by Rickard Road to the north, Paul Keating Park to the south, Bankstown Library to the west and Appian Way and Bankstown Community Services Centre to the east. The locality map of the site is shown in *Figure 3-1* below.

Figure 3-1: The Locality Map of the Site (Source: Nearmaps)

3.2. Existing Topography and Drainage

The existing site consists of carparking and associated landscaping, driveway and footpath. The site slopes down from north to south, particularly on Appian Way which forms a major overland flow path from a sag pit located on Rickard Road. The site is impacted by 100 year overland flooding. Much of the site sheet-flows across the carpark, landscaping and Appian Way to the south where stormwater is captured by a pit and pipe network. The pit and pipe network are assumed to ultimately discharge to the 2.4m(W) x 1.5m(H) culvert running north to

south located east of the site. The new culvert 2.4m (W) and 0.9m (H) is being installed by Sydney Water in Appian way. Refer to Sydney Water drawing Case No 171153SW. The main discharge point for the site stormwater, which is incorporated into the proposed building design is located at the south east corner of the site. An existing OSD tank is located at the south west corner of the site and is assumed to service Bankstown Library. The existing OSD is not believed to be impacted by the proposed development.

Survey drawings have shown a twin 1200mm RCP going through the site from Rickard Road. MGP Building and Infrastructure services Pty Ltd (project appointed Water Servicing Coordinator) has provided work-as-constructed plans showing disuse of the pipe. It is believed that the pipe have been replaced by the 2.4mx1.5m culvert.

3.3. Existing Documentation

The following relevant existing documentation has been referenced for the proposed design:

- Topographical survey including in ground services by RPS Australia East Pty Ltd.
- Report on Detail Site Investigation (Ref: 86462.00.R.003.Rev1) by Douglas Partners Pty Ltd, August 2018.
- Canterbury Bankstown Council response letter titled “Re: Western Sydney University Bankstown City Campus Development” reference PLAN-101-4902 dated 25 January 2018
- Canterbury Bankstown Council Stormwater System Report 74 Rickard Road Bankstown NSW 2200
- Sydney Water Drawing Case No. 171153SW
- As-Built box culvert drawing SWC-85/18 by Gutteridge Haskins & Davey.

4. PROPOSED DEVELOPMENT

The proposed development consists of a new building with retail space on the ground floor and 2 levels of basement carparking with driveway access on the west side of the building. Shared pedestrian zone and a drop off zone is provided on Appian Way. The Architectural ground plan for the proposed development is shown in *Figure 4-1* below.

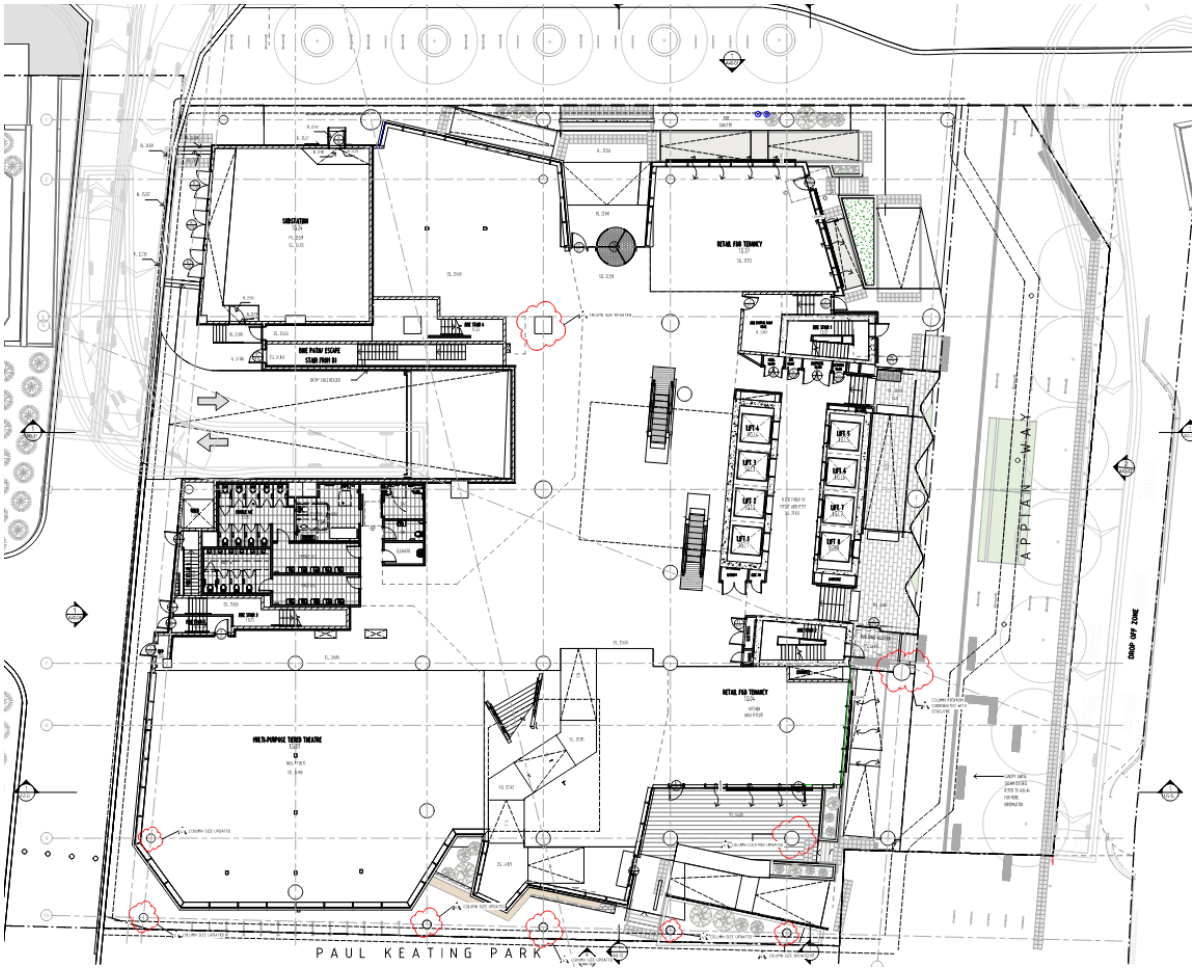


Figure 4-1: The Architectural Site Plan –Ground Floor (Lyons Architects dated 31/07/2020)

4.1. Water Quantity

4.1.1. Catchment Delineation

The Proposed Site is approximately 3673m^2 in area. The existing site is approximately 41% pervious (due to existing landscaping, road verge and plantation). The existing catchment plan is shown in Figure 4-2. The site will be redeveloped into a new educational commercial building. Refer to architectural plans for details. Majority of the post developed site is roofed/impervious with some areas of landscaping on Appian Way and green space on upper levels of the building. It has been assumed for the design of the OSD that the proposed non-roofed area is 95% impervious. The proposed catchment plan is shown in Figure 4-3.

Figure 4-2: Existing Catchment Plan

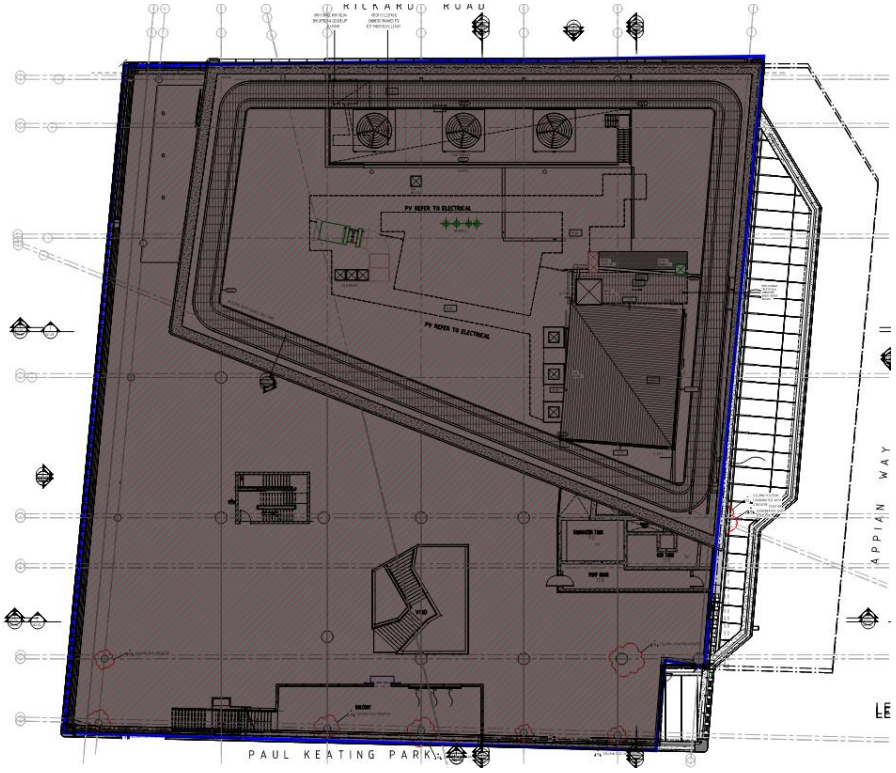


Figure 4-3: Combined Floor Plans for Roof Catchment (Lyons Architects dated 31/07/2020)

4.1.2. Hydrology and Hydraulics

Canterbury Bankstown Council has on-site detention (OSD) requirements. Bankstown City Council Development Engineering Standards states the following:

OSD must be designed and constructed to control stormwater runoff from development sites such that for 5 to 100 year ARI events, peak stormwater discharges from the site do not exceed pre-development stormwater discharges.

OSD storage volume shall be provided such that the total OSD discharge and bypass flow from the site does not exceed the maximum permissible site discharge determined using one of the Council approved calculation methods.

Much of the site is subject to 100 year overland flooding and an OSD is required to be situated above the 100 year ARI flood extent for it to operate. Dispensation for the requirement of an OSD has been requested to Council however disapproved in the letter dated 25 January 2018 on the basis that the OSD would be concealed within the building. Based on this condition, the proposed OSD is shown located on level 1, above the 100 year flood level (refer to civil stormwater drawing).

The hydrology and hydraulic analysis for the proposed site was established using a DRAINS (computer program for hydrological and hydraulic assessment) model in accordance with Council Development Engineering Standards. The Kinematic Wave Equation was used to calculate the time of concentration for each storm event.

However, given the relatively small site catchment, the time of concentration of 5 minutes (minimum in accordance with Australian Rainfall & Runoff) has been adopted.

The intensity-frequency-duration (IFD) data for the site was extracted from Bureau of Meterorology's data from Australian Rainfall and Runoff 2016 with 10 temporal patterns for each storm duration. The IFD data is provided in **Appendix B**. The percent impervious area for the existing and proposed site was calculated using survey plans by RPS Australia East Pty Ltd and architectural Ground Floor plan revision 38 dated 09.07.2020.

The DRAINS model was used to obtain permissible site discharge (PSD) for existing scenarios in accordance with Bankstown City Council 2009 Development Engineering Standards and as well as to design the on-site detention tank located in level 1 maintaining PSD. The DRAINS model flows were obtained for 5 year, 20 year and 100 year ARI storm events.

With regard to the tailwater level, the OSD outlets to a new stormwater pit constructed over an existing stormwater line. From a flood analysis of the site, the 100 year flood level at the connection pit is nominally RL24.20. This level sets the tail water level at the outlet for hydraulic analysis using DRAINS for the 100 year ARI storms. The 5 year ARI tail water level has been set to freely discharge to atmosphere tailwater level in the 5 year as it is not expected to produce significant backwater effects to an OSD located on level 1. The DRAINS results are provided in **Appendix B**. The Civil and Stormwater Drawings for the site is provided in **Appendix A**.

4.1.3. Permissible Site Discharge (PSD)

The 5, 20 and 100 year permissible site discharges (existing site discharge) are summarised in a tabular format below. As catchments external to the site do not drain to the proposed OSD (located within the building), external catchments have been excluded from the OSD design and DRAINS modelling. A schematic diagram of DRAINS model for the existing and proposed scenario is shown below in Figure 4-4. The 5 and 100 year PSD DRAINS results are shown in Figure 4-5,Figure 4-6 and Table 4-1.

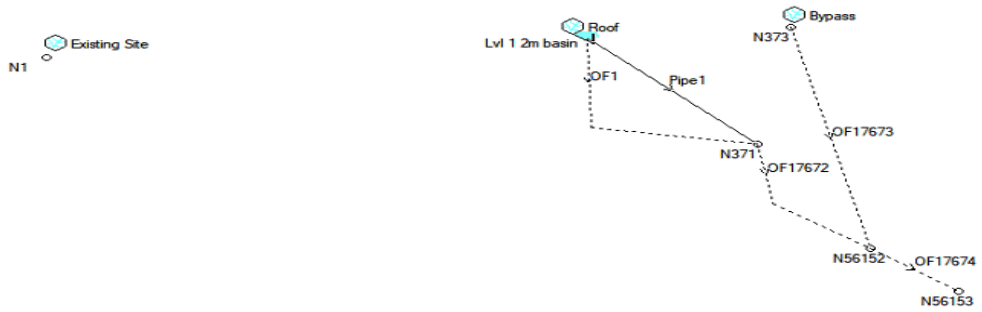


Figure 4-4: A Schematic diagram of DRAINS (Hydrological and Hydraulics) Model for existing and proposed scenario

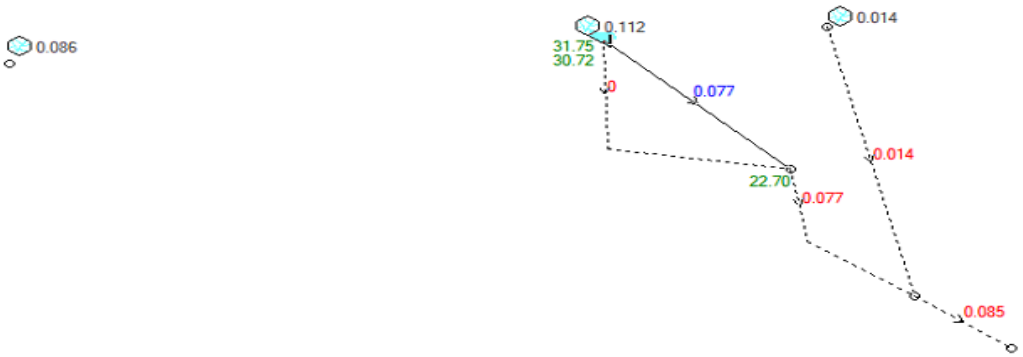


Figure 4-5 5 year DRAINS result

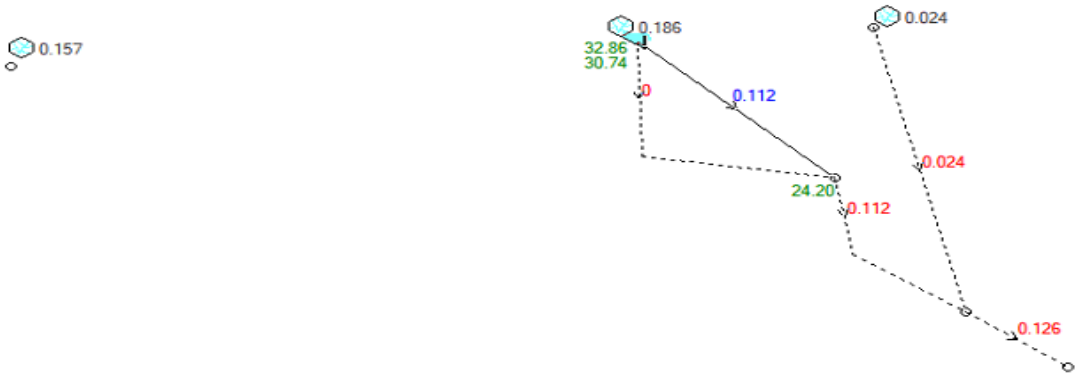


Figure 4-6 100 year DRAINS result

Table 4-1: Summary of PSD for the Site

Nodes	Area (ha)	PSD (Permissible Site Discharge) (m3/s)			Time of Concentration (t_c) minutes
		5yr	20yr	100yr	
Existing	0.3673	0.086	0.122	0.157	5

4.1.4. On-Site Detention (OSD)

The proposed on-site detention tank (OSD) is located on level 1 within the proposed building. The OSD accepts overflows from the rainwater tank which captures runoff from the entire roof catchment. The rainwater tank is assumed full when modelling 5, 20 and 100 year storm events. All the stormwater runoff from building roof and terraces (approximately 3600m^2 including vertical catchment confirmed with hydraulics) drain to proposed OSD through downpipes (to be designed by the hydraulic engineer). On grade areas outside the footprint of the building (which are subject to overland flooding) bypasses the OSD. A comparison in peak flows from the site are summarised in Table 4-2 below showing that there is a reduction in peak flows with provision of the OSD tank.

Table 4-2: Summary of the Existing and Proposed Peak Flows at Site Outlet

Scenarios	Area (ha)	PSD (Permissible Site Discharge)* (m3/s)			Time of Concentration (t_c) minutes
		5yr	20yr	100yr	
Existing	0.3673	0.086	0.122	0.157	5
Proposed OSD + bypass	0.4057	0.085	0.107	0.126	5

The details of proposed OSD system to detain peak flows and provide storage requirements are summarised in a tabular format below.

Table 4-3: The proposed OSD System (Designed using DRAINS Model)

Items		Design Storm Events (ARI)		
		5yr	20yr	100yr
Peak Flows from OSD (m^3/s)		0.077	0.095	0.112
Total volume provided (m^3)		35		
Top water Levels (m AHD)		31.75	32.30	32.86
Discharge Control Outlets	Primary	190mm dia. Orifice @ RL 30.75 centre		
	Secondary	N/A		
High Early Discharge [HED] Pit		N/A		
Surcharge Pit		1 x 900mm x 900mm SQ Stormwater Pit		
Maintenance Hatch		900mm x900mm SQ Stormwater access to provide maintenance and access to the OSD		

The above results demonstrate that, the proposed OSD has reduced the peak flows to PSD. The OSD design is in accordance with *Development Engineering Standards, 2009 by Bankstown City Council* and fulfils the following SEARs requirements:

1. Stormwater plans detailing proposed methods of drainage without impacting on the downstream properties.

2. The EIS must assess the impact of the development on hydrology including mitigating effects of the proposed stormwater after construction on hydrological attributes such as volumes, flow rates, management methods and re-use options (refer to water quality section for re-use).

4.2. Water Quality

SSD9831 SEARS state the following:

- *Detail measures to minimize operation water quality impacts on surface waters and groundwater.*

- *The EIS must assess the impacts of the development on water quality including the nature and degree of impact on receiving waters for both surface and groundwater, demonstrating how the development protects the water quality objectives where they are currently being achieved, and contributes towards achievement of the water quality objectives over time where they are currently not being achieved. This should include an assessment of the mitigating effects of proposed stormwater during (refer to Sediment Erosion Section of this report) and after construction.*

- *The EIS should assess, quantify and report on water conservation, including practical opportunities to implement water sensitive urban design principles.*

The requirements from section 9.3.8 of Bankstown City Council 2009 *Development Engineering Standards* in relation to stormwater quality and pollution control specify that trash screens and silt arrestors are to be provided at the last stormwater pit discharging to the Council's drainage network. Whilst there are no specific pollutant reduction targets specified in Bankstown City Council Development Engineering Standards, Column A of Green Building Council of Australia *Green Star- Design & As built Stormwater* specify the following pollutant reduction targets in order to qualify for green star credit. These targets provide greater controls on stormwater quality than Council and as such, the proposed development shall be demonstrated to meet these pollutant reduction targets by Green Building Council of Australia:

- *Reduction of Mean annual Load of Gross Pollutants – 85%*
- *Reduction of Mean annual Load of Total Suspended Solids – 80%*
- *Reduction of Mean annual Load of Total Phosphorous –30%*
- *Reduction of Mean annual Load of Total Nitrogen – 30%*

4.2.1. Water Quality Strategy

Majority of the site is currently used for carparking. The site does not currently have any water quality treatment measures. The conversion of the carpark into a new building with roofed catchments already provides significant water quality improvements to the existing situation due to the reduction of motor vehicle contaminants being discharged directly from the site. The proposed development shall demonstrate water sensitive urban design (WSUD) and shall demonstrate further improvements to water quality by meeting the water quality targets specified above by Green Building Council of Australia.

The proposed site has been distributed into sub-catchments based on the specific WSUD measures required for the site. The sub catchments include a roofed area of approximately 0.3600 ha (including vertical catchments) and remaining pedestrian area along Appian Way. The entire roof area drains to a 45kL rainwater tank where

treatment is provided in the form of rainwater reuse (reuse data supplied by the Hydraulic Engineer which indicated nominally 12959.1kL/yr). Overflow from rainwater tank is routed to the OSD tank before discharging to an enviropod located on Appian Way and then discharging out of the site. The remaining site area (Appian Way) drains to the same stormwater pit fitted with an enviropod. Refer to civil siteworks and stormwater plan for detail. This strategy provides water quality measures for the roof as well as treatment measures for Appian Way.

The water quality model for the site is established using MUSIC (version 6.3). For water quality modelling purposes, only site catchment areas are modelled, and the upstream external catchments have been excluded as treatments only pertain to the subject development No Council MUSIC Link models are available therefore the closest available 6 minute rainfall and evapotranspiration data, being Sydney Airport, has been adopted for the model. The rainfall runoff parameters have been adopted from Sydney Catchment Authority *Using MUSIC in Sydney's Drinking Water* Catchment with silty clay being the dominant soil description as per Douglas Partners Geotechnical Report. The pollutant generation parameters, rainwater tank, enviropod and soil properties adopted in MUSIC are provided in **Appendix C.** A screenshot of the MUSIC model is shown in Figure 4-7. Table 4-4 summarises the water quality catchments used in the MUSIC model.

Table 4-4: Summary of Sub-catchments and Water Quality Measures for overall Site

Sub-catchments	Area (ha)	Impervious Fraction (%)	WSUD Treatment Measures	Comments
Roof	0.3600	100	Rainwater Reuse, Enviropod	
Urban (Appian Way)	0.0457	95	Enviropod	
Total	0.4057			

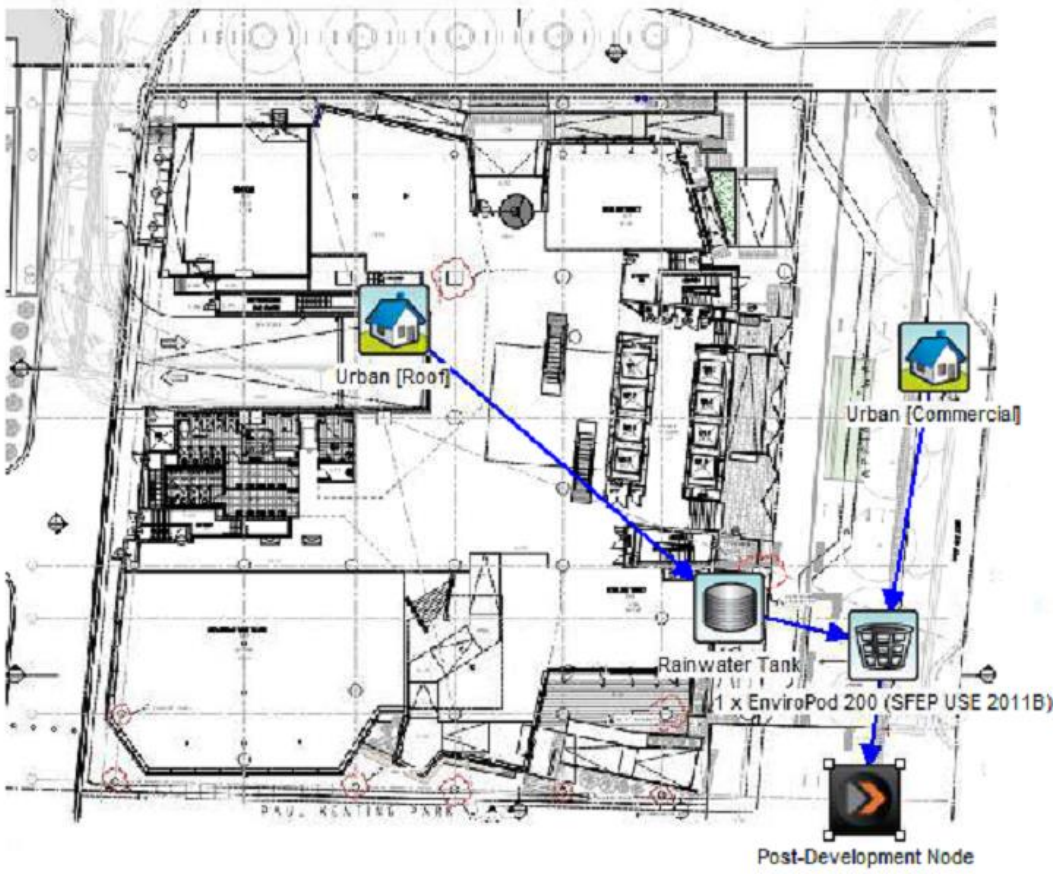
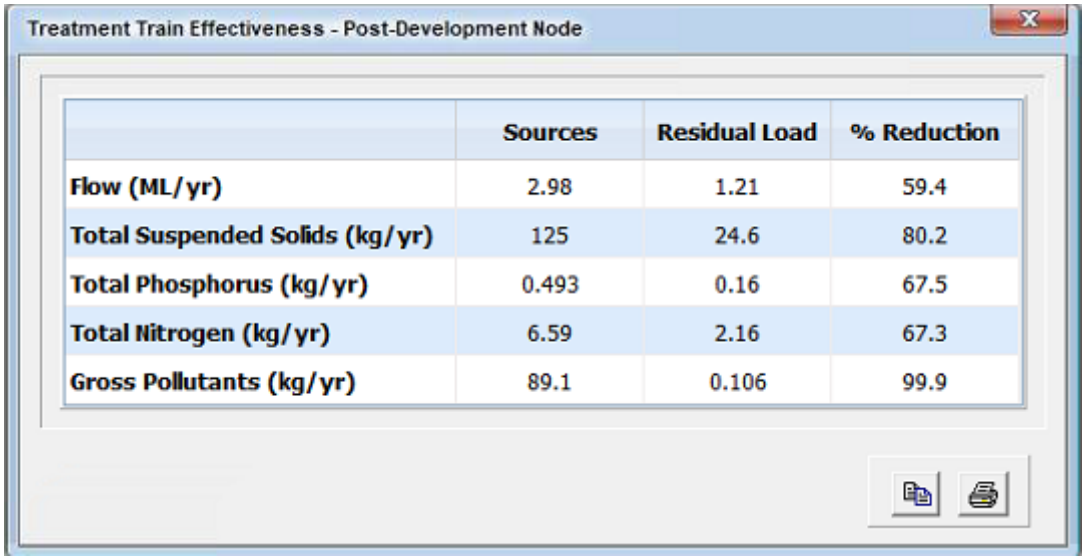


Figure 4-7: A Schematic Diagram of the Music Model Showing Existing and Proposed Scenario

4.2.2. Water Quality Results

The results of MUSIC modelling show that surface waters have been treated and the pollutant removal rate achieves pollutant reduction targets provided in *Section 4.2*. The results from the MUSIC model are shown below in Figure 4-8 as a screen shot. Douglas Partners Geotechnical report has indicated that ground water is sufficiently deep (approx. 8m below). It is not envisaged that the development would have any negative impacts on groundwater quality.



	Sources	Residual Load	% Reduction
Flow (ML/yr)	2.98	1.21	59.4
Total Suspended Solids (kg/yr)	125	24.6	80.2
Total Phosphorus (kg/yr)	0.493	0.16	67.5
Total Nitrogen (kg/yr)	6.59	2.16	67.3
Gross Pollutants (kg/yr)	89.1	0.106	99.9

Figure 4-8: Music model Results

4.3. Flooding

For all Council and SEARS requirements regarding Flooding, refer to the Flood Assessment Report.

4.3.1. Flood Emergency Response Plan

For the following SEARs requirements, refer to the Flood Emergency Response Plan.

- *Any impacts the development may have upon existing community emergency management arrangements for flooding. These matters are to be discussed with the NSW SES and Council.*
- *Whether the proposal incorporates specific measures to management risk to life from flood. These matters are to be discussed with the NSW SES and Council.*
- *Emergency management, evacuation and access, and contingency measures for the development considering the full range or flood risk (based upon the probable maximum flood). These matters are to be discussed with and have the support of Council and the NSW SES.*

4.4. Bulk Earthworks and Sediment Erosion

The Secretary's Environmental Assessment Requirements state the following:

3. Detail measures and procedures to minimise and manage the generation and off-set transmission of sediment, dust and fine particles.

4. The EIS must include sediment and erosion control plan.

5. The EIS should assess, quantify and report on runoff impacts during demolition, site preparation, bulk excavation, construction and construction related work.

The bulk earthworks for the proposed building are detailed on Drawing No. **C00-10**. Shoring walls are to be provided around the perimeter of basement for excavation. The approximate volume of cut is 21,815m^3.

The erosion and sediment control measures for the site will be implemented during construction. The design of these measures is in accordance with the Landcom "Blue Book". Refer to drawings **C00-05** and **C00-06** for the erosion and sediment control plans and typical Detailing.

For erosion and sediment control of the site, the following measures are provided to minimise the risk of sediments being washed into neighbourhood property and erosion of the site.

- *A sediment fence/site hoarding to be provided around the site*
- *catch drain (or diversion bund) diverting external catchment away from site*
- *Temporary access to site with shaker pad*
- *An indicative stockpile area with sediment fence around it during construction. The stockpile must be located out of water flow paths (and be protected by earth banks/drains as required).*
- *Field inlet pit filters or sandbags to be placed around existing stormwater pits.*
- *The excavation of the basement can be used as temporary sediment basin to ensure sediment laden waters are settled/flocculated prior to discharge.*
- *Water cart to spray excavated surfaces to reduce dust pollution.*

5. SUMMARY

The civil design described in this report complies with Canterbury Bankstown Council DCP, SEARS, Bankstown City Council 2009 Development Engineering Standards, Green Building Council of Australia Green Star- Design & As built Stormwater, Australian Standards and best-practiced principles.

The proposed stormwater strategy for this SSDA addresses water quantity by providing an on-site detention tank to reduce peak flow limiting PSD for events up to and including 100 year ARI storm.

The proposed water quality improvement measures (demonstrated in *Section 4.2*) not only improves the existing water quality condition but also meets Green Building Council of Australia "Green Star- Design & As built" Stormwater pollutant reduction targets which provides greater water quality control over and above the requirements from Canterbury Bankstown Council.

Appendix A – Civil and Stormwater Drawings

WESTERN SYDNEY UNIVERSITY
BANKSTOWN CITY CAMPUS DEVELOPMENT

DRAWING No.	DESCRIPTION
C00-01	DRAWING REGISTER AND CONSTRUCTION NOTES
C00-05	SEDIMENT AND EROSION CONTROL PLAN
C00-06	SEDIMENT AND EROSION CONTROL DETAILS
C00-10	BULK EARTHWORKS PLAN
C00-20	BULK EARTHWORKS LONGITUDINAL SECTIONS - SHEET 1
C00-21	BULK EARTHWORKS LONGITUDINAL SECTIONS - SHEET 2
C00-22	BULK EARTHWORKS LONGITUDINAL SECTIONS - SHEET 3
C00-40	GENERAL ARRANGEMENTS AND KEY PLAN
C00-41	SITEWORKS AND STORMWATER DRAINAGE PLAN - SHEET 1
C00-42	SITEWORKS AND STORMWATER DRAINAGE PLAN - SHEET 2
C00-43	SITEWORKS AND STORMWATER DRAINAGE PLAN - SHEET 3
C00-44	SITEWORKS AND STORMWATER DRAINAGE PLAN - SHEET 4
~~C00-50~~	~~OSD PLAN & SECTION DETAILS~~
C00-60	SITEWORKS AND STORMWATER DRAINAGE DETAILS - SHEET 1
C00-61	SITEWORKS AND STORMWATER DRAINAGE DETAILS - SHEET 2
C00-62	TYPICAL SITEWORKS SECTIONS
C00-65	COUNCIL STANDARD LAYBACK
C00-70	OVERALL PAVEMENT PLAN
C00-75	PAVEMENT DETAILS
C00-80	BASEMENT RAMP LONGITUDINAL SECTIONS
C00-81	ROAD SETOUT PLAN
C00-82	ROAD LONGITUDINAL SECTIONS
C00-83	ROAD MC01 CROSS SECTIONS - SHEET 1
C00-84	ROAD MC01 CROSS SECTIONS - SHEET 2
C00-85	ROAD MC02 CROSS SECTIONS - SHEET 1
C00-86	ROAD MC02 CROSS SECTIONS - SHEET 2
~~C00-90~~	~~RICKARD ROAD SIGNPOST AND LINEMARKING PLAN~~

GENERAL NOTES

G1 THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ARCHITECTURAL AND OTHER CONSULTANTS DRAWINGS AND SPECIFICATIONS AND WITH SUCH OTHER WRITTEN INSTRUCTIONS OR SKETCHES AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ANY DISCREPANCY SHALL BE REFERRED TO THE SUPERINTENDENT BEFORE PROCEEDING WITH WORK.

G2 MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE SPECIFICATION, CURRENT SAA CODES, BUILDING REGULATIONS AND THE REQUIREMENTS OF ANY OTHER RELEVANT STATUTORY AUTHORITIES.

G3 THESE DRAWINGS MUST NOT BE SCALED. ALL DIMENSIONS ARE IN METERS. ALL SET OUT DIMENSIONS AND LEVELS, INCLUDING THOSE SHOWN ON THESE DRAWINGS SHALL BE IN ACCORDANCE WITH THE ARCHITECT'S DRAWINGS AND VERIFIED ON SITE.

G4 ALL SETOUT AND DIMENSIONS OF THE STRUCTURE INCLUDING KERBS AND RETAINING WALLS, AND BULK EARTHWORKS MUST BE TAKEN FROM THE ARCHITECT'S DRAWINGS. SETOUT OF THE STORMWATER PITS BY OTHERS. CONTRACTOR TO CONFIRM SETOUT OF SERVICE TRENCHING INCLUDING SUBSOIL ON SITE.

G5 THE CONTRACTOR SHALL COMPLY WITH ALL REGULATIONS OF AUTHORITIES HAVING JURISDICTON OVER THE WORKS. REFER TO GEOTECHNICAL REPORT BY DOUGLAS PARTNERS, PROJECT NO. 86462.00, DATED AUGUST 2018.

G6 ALL DIMENSIONS AND REDUCED LEVELS MUST BE VERIFIED ON SITE BEFORE THE COMMENCEMENT OF ANY WORK.

G7 THE APPROVAL OF A SUBSTITUTION SHALL BE SOUGHT FROM THE SUPERINTENDENT BUT IS NOT AN AUTHORISATION OF A COST VARIATION. THE SUPERINTENDENT MUST APPROVE ANY COST VARIATION INVOLVED BEFORE ANY WORK STARTS.

G8 ALL LEVELS SHOWN ARE TO THE AUSTRALIAN HEIGHT DATUM.

G9 SERVICE INFORMATION SHOWN IS APPROXIMATE ONLY. PRIOR TO COMMENCEMENT OF ANY WORKS, THE CONTRACTOR SHALL LOCATE ALL UNDERGROUND SERVICES AND COMPLY WITH ALL REQUIREMENTS OF THOSE AUTHORITIES.

G10 EXISTING SURFACE CONTOURS, WHERE SHOWN, ARE INTERPOLATED AND MAY NOT BE ACCURATE.

G11 UNLESS NOTED OTHERWISE, ALL VEGETATION SHALL BE STRIPPED TO A MINIMUM DEPTH OF 150mm UNDER ALL PROPOSED PAVEMENT AND BUILDING AREAS.

G12 MAKE SMOOTH CONNECTION WITH ALL EXISTING WORKS.

KERBING NOTES

K1 ALL CONCRETE TO HAVE A MINIMUM COMPRESSIVE STRENGTH OF 32 MPa U.N.O.

K2 ALL KERBS, GUTTERS, DISH DRAINS AND CROSSINGS TO BE CONSTRUCTED ON 75mm GRANULAR BASECOURSE COMPACTED TO A MINIMUM 98% MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS1289 5.2.1.

K3 EXPANSION JOINTS (EJ) TO BE FORMED FROM 10mm COMPRESSIBLE CORK FILLER BOARD FOR THE FULL DEPTH OF THE SECTION AND CUT TO PROFILE. EXPANSION JOINTS TO BE LOCATED AT DRAINAGE PITS, ON TANGENT POINTS OF CURVES AND ELSEWHERE AT MAX 12m CENTRES EXCEPT FOR INTEGRAL KERBS WHERE THE EXPANSION JOINTS ARE TO MATCH THE JOINT LOCATIONS IN THE SLAB.

K4 WEAKENED PLANE JOINTS TO BE MIN 3mm WIDE AND LOCATED AT 3m CENTRES EXCEPT FOR INTEGRAL KERBS WHERE THE WEAKENED PLANE JOINTS ARE TO MATCH THE JOINT LOCATIONS IN THE SLAB.

K5 BROOMED FINISH TO ALL RAMPED AND VEHICULAR CROSSINGS. ALL OTHER KERBING OR DISH DRAINS TO BE STEEL FLOAT FINISHED.

K6 IN THE REPLACEMENT OF KERBS:-
- EXISTING ROAD PAVEMENT IS TO BE SAWCUT 900mm U.N.O. FROM THE LIP OF GUTTER. UPON COMPLETION OF THE NEW KERB AND GUTTER, NEW BASECOURSE AND SURFACE TO BE LAID 600mm WIDE U.N.O.
- EXISTING KERBS ARE TO BE COMPLETELY REMOVED WHERE NEW KERBS ARE SHOWN.

STORMWATER DRAINAGE NOTES

SW1 UNLESS NOTED OTHERWISE BY HYDRAULIC ENGINEERS DRAWINGS, ALL DOWNPIPES & GRATED INLETS SHALL BE CONNECTED TO PITS OR MAIN STORMWATER DRAINS WITH 150 DIA. UPVC PIPES LAID AT A MINIMUM GRADE OF 1 IN 100. FOR SYPHONIC ROOF DRAINAGE SYSTEMS ALL DOWNPIPES CONNECTION DRAIN SIZES TO BE CONNECTED INTO MAIN STORMWATER DRAINS SHALL BE IN ACCORDANCE WITH HYDRAULIC ENGINEERS DRAWINGS.

SW2 ALL MAIN STORMWATER DRAINS SHALL BE CONSTRUCTED USING MATERIALS AS SPECIFIED ON THE DRAWINGS IN ACCORDANCE WITH THE APPROPRIATE A.S. IF NOT SPECIFIED THEN CLASS 2 RRJ RCP SHALL BE USED FOR DIAMETERS > 225mm. SEWER CLASS SEH UPVC IN ACCORDANCE WITH AS1260 SHALL BE USED FOR Ø225mm OR SMALLER.

SW3 ALL PIPEWORK TO BE INSTALLED IN ACCORDANCE WITH AS3725 FOR RCP AND AS2032 FOR PVC. ALL BEDDING TO BE TYPE H2 UNLESS NOTED OTHERWISE.

SW4 FOR ALL PITS > 1.2m DEEP, STEP IRONS SHALL BE INSTALLED.

SW5 PRECAST PITS MAY BE USED EXTERNAL TO THE BUILDING SUBJECT TO APPROVAL BY BONACCI GROUP.

SW6 ENLARGERS, CONNECTIONS AND JUNCTIONS TO BE PREFABRICATED FITTINGS WHERE PIPES ARE LESS THAN 300 DIA.

SW7 WHERE SUBSOIL DRAINS PASS UNDER FLOOR SLABS AND VEHICULAR PAVEMENTS, UNSLOTTED uPVC SEWER GRADE PIPE IS TO BE USED.

SW8 GRATES AND COVERS SHALL CONFORM WITH AS 3996 AND AS 1428.1 FOR ACCESS REQUIREMENTS.

SW9 CARE IS TO BE TAKEN WITH LEVELS OF STORMWATER LINES. GRADES ARE NOT TO BE REDUCED WITHOUT APPROVAL.

SW10 AT ALL TIMES DURING CONSTRUCTION OF STORMWATER PITS, ADEQUATE SAFETY PROCEDURES SHALL BE TAKEN TO ENSURE AGAINST THE POSSIBILITY OF PERSONNEL FALLING DOWN PITS.

SW11 ALL EXISTING STORMWATER DRAINAGE LINES AND PITS THAT ARE TO REMAIN ARE TO BE INSPECTED AND CLEANED. DURING THIS PROCESS ANY PART OF THE STORMWATER DRAINAGE SYSTEM THAT WARRANTS REPAIR SHALL BE REPORTED TO THE SUPERINTENDENT/ENGINEER FOR FURTHER DIRECTIONS.

SITEWORKS NOTES

S1 PRIOR TO THE PLACEMENT OF ANY PAVEMENTS, BUILDINGS OR DRAINS THE EXPOSED SUBGRADE SHALL BE COMPACTED TO A MINIMUM OF 98% STANDARD COMPACTION IN ACCORDANCE WITH TEST 'E1.1' OF A.S. 1289 FOR THE TOP 300mm. ANY SOFT SPOTS SHALL BE REMOVED AND REPLACED WITH GRANULAR FILL TO THE ENGINEERS APPROVAL AND COMPACTED IN ACCORDANCE WITH THE COMPACTION REQUIREMENTS SET OUT BELOW. ON HIGHLY REACTIVE CLAY AREAS SITE EXCAVATED MATERIAL MAY BE USED WITH THE PRIOR AUTHORISATION OF THE ENGINEER.

S2 ALL FILL AND PAVEMENT MATERIALS SHALL BE COMPACTED IN ACCORDANCE WITH GEOTECHNICAL REPORT BY DOUGLAS PARTNERS, PROJECT 86462.00 DATED AUGUST 2018 MOISTURE CONTENT TO BE MAINTAINED AT +/- 2% OMC. MINIMUM COMPACTION REQUIREMENTS ARE DETAILED BELOW FOR (ALL REQUIREMENTS ARE TO VERIFIED BY A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER):

- LANDSCAPED AREAS 95% STD.
- FILL UNDER ANY FOOTINGS AND FLOOR SLABS FOR ANY STRUCTURE TO SUBGRADE LEVEL;
  - FINE CRUSHED ROCK 98% STD.
  - SELECTED FILL WITHOUT CONSPICUOUS CLAY CONTENT 98% STD.
- BUILDING BASECOURSE 98% MOD
- FILL UNDER ROAD PAVEMENTS;
  - TO WITHIN 500mm OF FINISHED SUBGRADE LEVEL 98% STD.
  - UP TO FINISHED SUBGRADE LEVEL 98% STD.
- ROAD PAVEMENT MATERIALS;
  - SUB BASE 98% MOD.
  - BASE COURSE 98% MOD.

THE MAXIMUM COMPACTION IS TO BE NO GREAT THAN 4% ON TOP OF THE ABOVE MENTION VALUES.

S3 GRADE EVENLY BETWEEN FINISHED SURFACE SPOT LEVELS. FINISHED SURFACE CONTOURS ARE SHOWN FOR CLARITY. WHERE FINISHED SURFACE LEVELS ARE NOT SHOWN, THE SURFACE SHALL BE GRADED SMOOTHLY SO THAT IT WILL DRAIN AND MATCH ADJACENT SURFACES OR STRUCTURES.

S4 ALL DIMENSIONS GIVEN ARE TO FACE OF KERB, CENTER OF PIPE OR EXTERIOR FACE OF BUILDING UNLESS NOTED OTHERWISE.

S5 ANY STRUCTURES, PAVEMENTS OR SURFACES DAMAGED, DIRTIED OR MADE UNSERVICABLE DUE TO CONSTRUCTION WORK SHALL BE REINSTATED TO THE SATISFACTION OF THE ENGINEER.

S6 ANY FILL REQUIRED SHALL BE APPROVED BY THE ENGINEER / GEOTECHNICAL CONSULTANT

S7 CONTRACTOR IS TO ENSURE THAT ALL EXCAVATIONS ARE MAINTAINED IN A DRY CONDITION WITH NO WATER ALLOWED TO REMAIN IN THE EXCAVATIONS.

S8 ALL FINISHES AND COLOURS TO BE IN ACCORDANCE WITH ARCHITECTURAL SPECIFICATIONS.

S9 REFER TO STRUCTURAL DRAWINGS FOR CONCRETE, REINFORCEMENT AND RETAINING WALL DETAILS.

S10 GENERALLY FOR TRENCHING WORKS THE CONTRACTOR MUST:
A) COMPLY WITH THE GENERAL PROVISIONS OF PART 3.1 "MANAGING RISKS TO HEALTH AND SAFETY" OF NSW WORK AND HEALTH AND SAFETY REGULATION 2011

B) COMPLY PART 6.3 DIVISION 3 "EXCAVATION WORK" OF NSW WORK HEALTH AND SAFETY REGULATION NSW 2011

S11 PRIOR TO THE EXCAVATION OF ANY TRENCH DEEPER THAN 1.5 METRES THE CONTRACTOR MUST:
A) NOTIFY THE OCCUPATIONAL HEALTH AND SAFETY AUTHORITY ON THE APPROPRIATE FORM.

JOINTING NOTES

PEDESTRIAN FOOTPATH JOINTS

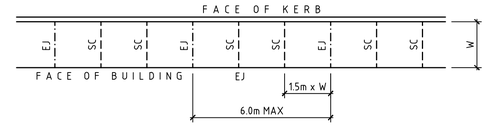
J1 EXPANSION JOINTS (EJ) ARE TO BE LOCATED WHERE POSSIBLE AT TANGENT POINTS OF CURVES AND ELSEWHERE AT 6m CENTRES.

J2 SAWCUT JOINTS (SC) ARE TO BE LOCATED AT A MAX 1.5m x WIDTH OF PAVEMENT. THE TIMING OF THE SAWCUT 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.

J3 WHERE POSSIBLE JOINTS SHOULD BE LOCATED TO MATCH KERBING AND / OR ADJACENT PAVEMENT JOINTS.

J4 PROVIDE 10mm WIDE FULL DEPTH EXPANSION JOINTS (EJ) BETWEEN BUILDINGS AND ALL CONCRETE OR UNIT PAVERS

J5 ALL PEDESTRIAN FOOTPATH JOINTINGS AS FOLLOWS (U.N.O.).



VEHICULAR PAVEMENT JOINTS

J6 ALL VEHICULAR PAVEMENTS TO BE JOINTED AS SHOWN ON DRAWINGS.

J7 LONGITUDINAL WARPING JOINTS (LWJ) SHOULD GENERALLY BE LOCATED AT A MAXIMUM OF 3m TO 4.5m MAX CENTERS. ALL LWJ's SHOULD BE TIED UP TO A MAXIMUM TOTAL WIDTH OF 30m.

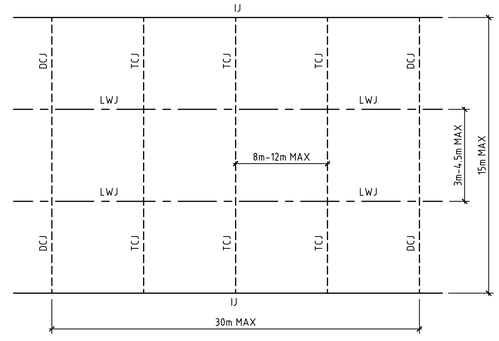
J8 TRANSVERSE CONTRACTION JOINTS (TCJ) SHOULD GENERALLY BE LOCATED AT A MAXIMUM OF 8m TO 12m MAX CENTERS. TCJ's CAN BE SPACED AT SUITABLE INTERVALS UP TO A RECOMMENDED MAXIMUM LENGTH OF 15m.

J9 TRANSVERSE DOWELLED CONSTRUCTION JOINTS (DCJ) TO BE PROVIDED FOR PLANNED INTERRUPTIONS SUCH AS AT THE END OF EACH DAY'S OPERATIONS (POUR BREAK), AT BLOCK OUTS FOR BRIDGES AND INTERSECTIONS OR FOR UNEXPECTED DELAYS WHEN THE SUSPENSION OF OPERATIONS IS LIKELY TO CREATE A JOINT.

J10 ISOLATION JOINTS WITH SUB-GRADE BEAM (IJ) TO BE PROVIDED AT INTERSECTIONS OR AT THE JUNCTION OF A POUR BREAK.

J11 ALL VEHICULAR PAVEMENTS TO BE JOINTED IN ACCORDANCE WITH AUSTROADS AGPT02-12 GUIDE TO PAVEMENT TECHNOLOGY PART 2 STRUCTURAL PAVEMENT DESIGN AND SUPPLEMENT AP-T36-06 PAVEMENT DESIGN FOR LIGHT TRAFFIC

J12 VEHICULAR PAVEMENT JOINTING AS FOLLOWS (U.N.O.)



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REV.	DETAILS	DATE
01	PRELIMINARY DRAFT ISSUE	25.02.19
02	SCHEMATIC DESIGN	12.03.19
03	FOR SEARS	12.03.19
04	ISSUED FOR DETAILED DESIGN	28.06.19
05	FOR SEARS	19.07.19
06	FOR SEARS	23.08.19
07	SSDA SUBMISSION	31.01.20

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GENERAL NOTES

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PROJECT
NEW WESTERN SYDNEY UNIVERSITY
BANKSTOWN CITY CAMPUS
74 RICKARD ROAD ALONG WITH A PORTION OF 375 CHAPEL ROAD

DRAWING TITLE
DRAWING REGISTER & CONSTRUCTION NOTES

SSDA SUBMISSION

NORTH

SCALE
NTS

JOB No.	DRAWN	CHECKED	DATE
1097901C	PA	-	-

DRAWING No.
C00-01

REVISION
07

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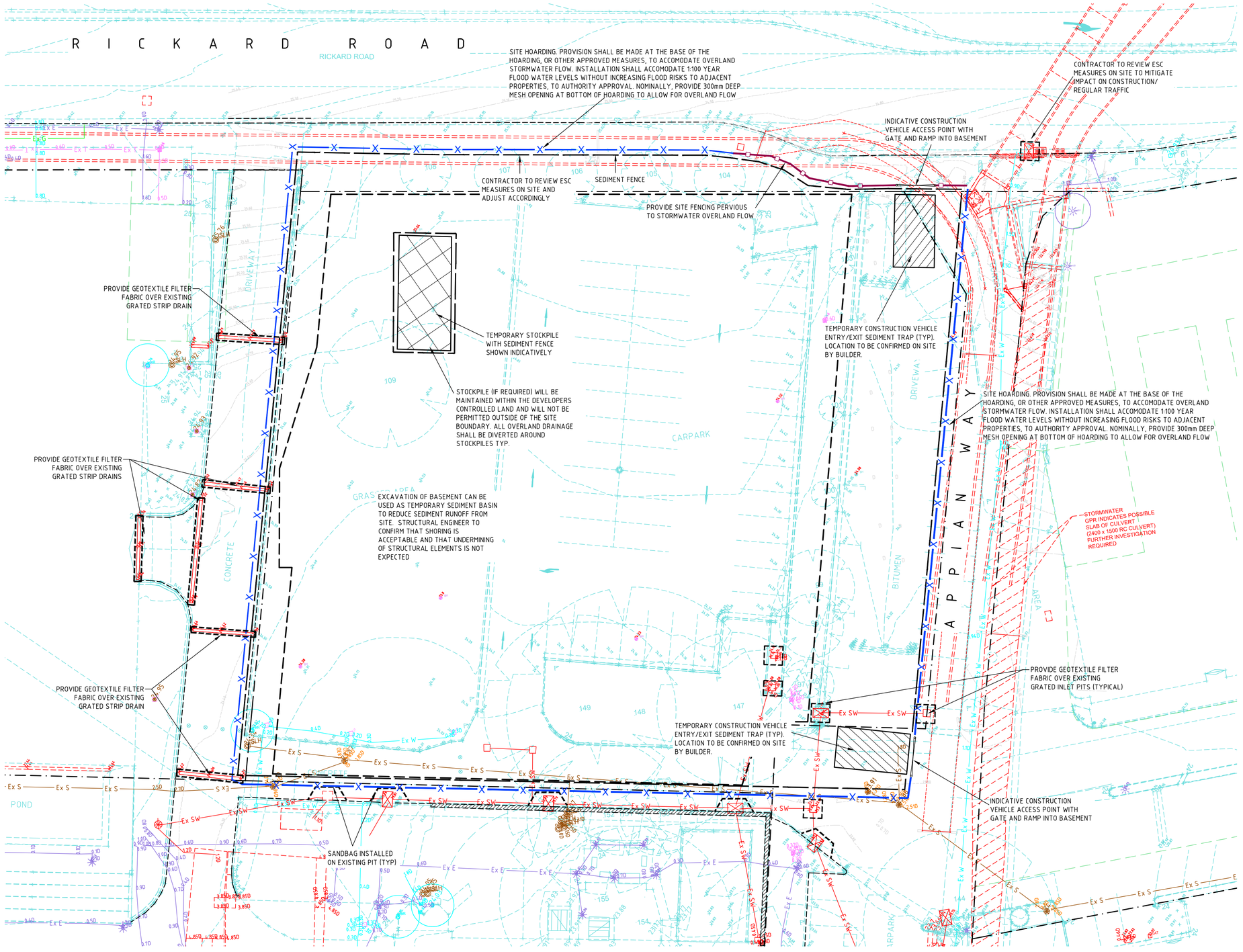

SEDIMENT& EROSION CONTROL LEGEND

- TYPE A HOARDING
- SEDIMENT FENCE
- TYPE B HOARDING
- TEMPORARY SHAKER RAMP FOR ENTRY/EXIT
- TEMPORARY STOCKPILE (LOCATION TBC ON-SITE)
- SANDBAGS INSTALLED ON EXISTING PIT
- GEOTEXTILE PIT FILTER / FILTER SURROUND INSTALLED ON EXISTING PIT

SURVEY LEGEND

- SITE BOUNDARY
- EX SURFACE LEVEL
- EX SURFACE CONTOUR
- EX TREE
- EXISTING STORMWATER DRAINAGE LINE
- EXISTING SEWER LINE
- EXISTING WATER MAIN
- EXISTING GAS LINE
- EXISTING TELECOMMUNICATIONS LINE
- EXISTING ELECTRICAL LINE
- EXISTING UNKNOWN SERVICE
- EXISTING SERVICE TO BE MADE REDUNDANT

GENERAL NOTE
DUE TO SITE CONDITIONS, THE CONTRACTOR SHALL RECEIVE PERMISSION TO ENCROACH ONTO PRIVATE/PUBLIC ROADS TO UNDERTAKE ANY WORKS. THE CONTRACTOR MUST OBTAIN WRITTEN PERMISSION PRIOR TO ENTERING THE PRIVATE ROADS TO PERFORM WORKS. COPIES OF THIS CONSENT MUST BE SUBMITTED TO COUNCIL AND THE ENGINEER, PRIOR TO ANY WORKS BEING PERFORMED, FAILURE TO COMPLY IS AT THE CONTRACTORS OWN RISK.

SOIL AND WATER MANAGEMENT NOTES

1. IT HAS BEEN ASSUMED THAT SEDIMENT FENCING WILL BE PROVIDED TO THE STAGE BOUNDARY SUFFICIENT TO PREVENT SEDIMENT RUNOFF FROM LEAVING SITE (EXCEPT IN THE CASE OF ENTRY/EXIT LOCATIONS WHERE TEMPORARY CONSTRUCTION ENTRY/EXIT SEDIMENT TRAP ARE PROVIDED). IF THIS IS NOT THE CASE, PROVIDE SEDIMENT FENCE TO STANDARD DETAIL BELOW AS REQUIRED TO PREVENT SEDIMENT FROM LEAVING SITE, DIRECT RUNOFF TO SEDIMENT BASIN.
2. ALL SEDIMENT CONTROL MEASURES TO BE INSTALLED IN ACCORDANCE WITH LANDCOM MANAGING URBAN STORMWATER "BLUE BOOK".
3. MINIMISE CLEARING OUTSIDE BASEMENT EXTENT.
4. SEDIMENT CONTROL FOR LANDSCAPED WORKS DOWNSTREAM OF THE BUILDING TO INCLUDE A SILTFENCE AND SANDBAGS AS REQUIRED. TO BE MANAGED AT A RATE OF 50L/S BY THE CONTRACTOR ON SITE. INSTALL CATCH DRAIN TO DIVERT UPSTREAM CATCHMENT AWAY FROM DISTURBED SOIL AREA.

SEDIMENT CONTROL CONDITIONS

1. SEDIMENT FENCES WILL BE INSTALLED AS SHOWN AND ELSEWHERE AT THE DISCRETION OF THE SITE MANAGER TO CONTAIN COARSER SEDIMENT FRACTIONS INCLUDING AGGREGATED FINES) AS NEAR AS POSSIBLE TO THEIR SOURCE.
2. SEDIMENT REMOVED FROM ANY TRAPPING DEVICE WILL BE RELOCATED WHERE FURTHER POLLUTION TO DOWNSLOPE LANDS & WATERWAYS CANNOT OCCUR.
3. STOCKPILES WILL BE PLACED WHERE SHOWN ON DRAWING OR ELSEWHERE AT THE DISCRETION OF THE SITE MANAGER AND NOT WITHIN 5m OF HAZARD AREAS INCLUDING LIKELY AREAS OF HIGH VELOCITY FLOWS SUCH AS WATERWAYS, PAVED AREAS & DRIVEWAYS.
4. WATER WILL BE PREVENTED FROM DIRECTLY ENTERING THE PERMANENT DRAINAGE SYSTEM WITH INLET FILTERS (SEE DETAILS) UNLESS IT IS SEDIMENT FREE.
5. TEMPORARY SEDIMENT TRAPS WILL BE RETAINED UNTIL AFTER THE LANDS THEY ARE PROTECTING ARE COMPLETELY REHABILITATED.
6. CONTRACTOR TO DESIGN/SIZE/CONSTRUCT TEMPORARY SEDIMENT BASIN, WATER SHOULD BE ALLOWED TO SETTLE BEFORE DISCHARGE. CONTRACTOR MUST VERIFY THAT WATER QUALITY MEETS AUTHORITIES REQUIREMENTS PRIOR TO DISCHARGE . ACCUMULATED SEDIMENT SHOULD THEN BE REMOVED & DISPOSED OF IN ACCORDANCE WITH ENVIRONMENTAL MANAGEMENT PROCEDURES.

WARNING
BEWARE OF UNDERGROUND SERVICES
THE LOCATIONS OF UNDERGROUND SERVICES SHOWN ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE.

WARNING
NO DRAINAGE WORKS SHALL COMMENCE UNTIL THE CONTRACTOR CONFIRMS THE I.L. OF ALL EXISTING DRAINS, AND CONFIRMS IN WRITING WITH THE ENGINEERING SUPERVISOR.

ALL EXISTING PROPERTY SERVICES' LOCATIONS AND DEPTHS ARE APPROXIMATE AND MUST BE VERIFIED ON SITE.
THE CONTRACTOR SHOULD SUPPLY PRECISE LOCATIONS AND DEPTHS TO THE ENGINEER FOR REVIEW PRIOR TO ANY WORKS THAT MAY AFFECT THESE SERVICES.

DIAL BEFORE YOU DIG www.1100.com.au The Essential First Step

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PROJECT
NEW WESTERN SYDNEY UNIVERSITY BANKSTOWN CITY CAMPUS
74 RICKARD ROAD ALONG WITH A PORTION OF 375 CHAPEL ROAD

DRAWING TITLE
SEDIMENT AND EROSION CONTROL PLAN

SSDA SUBMISSION

NORTH

SCALE 1:200 @ A1

JOB No.	DRAWN	CHECKED	DATE
1097901C	PA	-	-

DRAWING No. C00-05
REVISION 08

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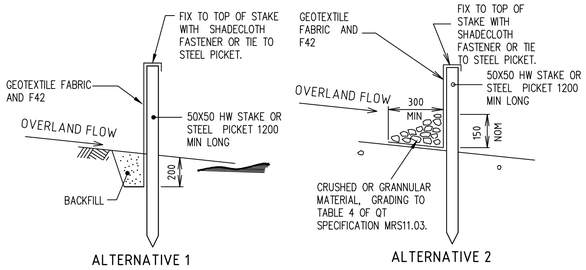
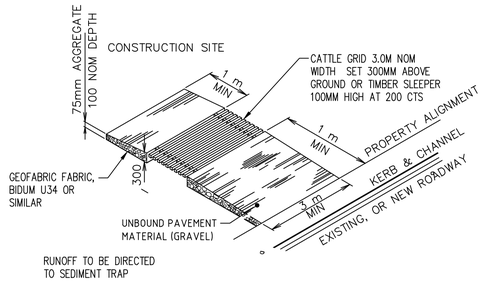
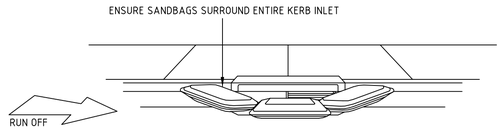




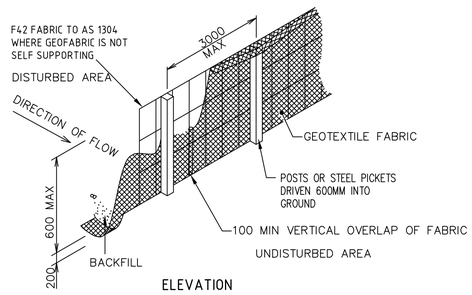
TEMPORARY CONSTRUCTION VEHICLE ENTRY/EXIT SEDIMENT TRAP

NOT TO SCALE



SANDBAG KERB INLET SEDIMENT TRAP

NOT TO SCALE



SEDIMENT FENCE

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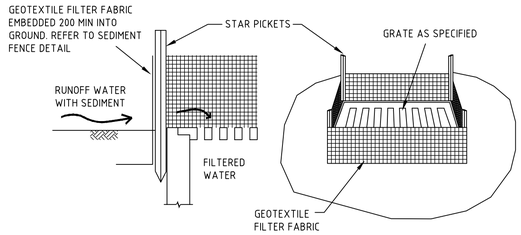

GEOTEXTILE PIT FILTER 1

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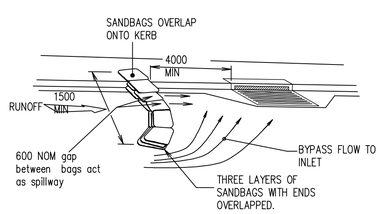
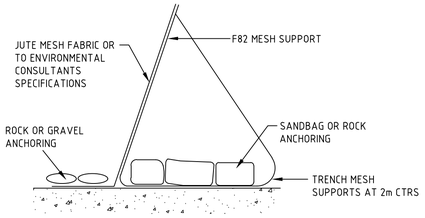


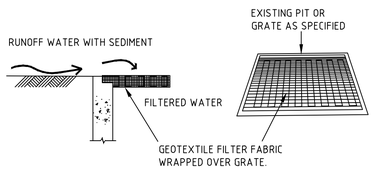
ON GRADE KERB INLET SEDIMENT TRAP

NOT TO SCALE



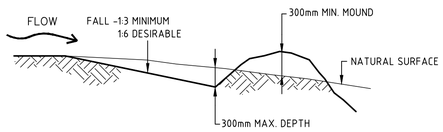
ALTERNATIVE SEDIMENT FENCE

NOT TO SCALE



GEOTEXTILE PIT FILTER 2

NOT TO SCALE



CATCH DRAIN

NOT TO SCALE

ALTERNATIVE SEDIMENT FENCE NOTES

1. INSTALL THIS TYPE OF SEDIMENT FENCE WHEN USE OF SUPPORT POSTS IS NOT DESIRABLE OR NOT POSSIBLE. SUCH CONDITIONS MIGHT APPLY, FOR EXAMPLE, WHERE APPROVAL IS GRANTED FROM THE APPROPRIATE AUTHORITIES TO PLACE THESE FENCES IN HIGHLY SENSITIVE ESTUARINE AREAS.
2. USE BENT TRENCH MESH TO SUPPORT THE F82 WELDED MESH FACING AS SHOWN ON THE DRAWING ABOVE. ATTACH THE JUTE MESH TO THE WELDED MESH FACING USING UV-RESISTANT CABLE TIES.
3. STABILISE THE WHOLE STRUCTURE WITH SANDBAG OR ROCK ANCHORING OVER THE TRENCH MESH AND THE LEADING EDGE OF THE JUTE MESH. THE ANCHORING SHOULD BE SUFFICIENTLY LARGE TO ENSURE STABILITY OF THE STRUCTURE IN THE DESIGN STORM EVENT, USUALLY THE 10 YEAR EVENT.

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REV.	DETAILS	DATE
01	PRELIMINARY DRAFT ISSUE	25.02.19
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03	FOR SEARS	21.06.19
04	ISSUED FOR DETAILED DESIGN	28.06.19
05	FOR SEARS	19.07.19
06	FOR SEARS	23.08.19
07	SSDA SUBMISSION	31.07.20

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GENERAL NOTES

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PROJECT
NEW WESTERN SYDNEY UNIVERSITY BANKSTOWN CITY CAMPUS
74 RICKARD ROAD ALONG WITH A PORTION OF 375 CHAPEL ROAD

DRAWING TITLE
SEDIMENT AND EROSION CONTROL DETAILS

SSDA SUBMISSION

NORTH

SCALE
NTS

JOB No.	DRAWN	CHECKED	DATE
1097901C	PA	-	-

DRAWING No.
C00-06

REVISION
07

A1 841 x 594
File: G:\Job\1097901\1. Civil\Issued\Dwg\C00-06-CAD[07].dwg
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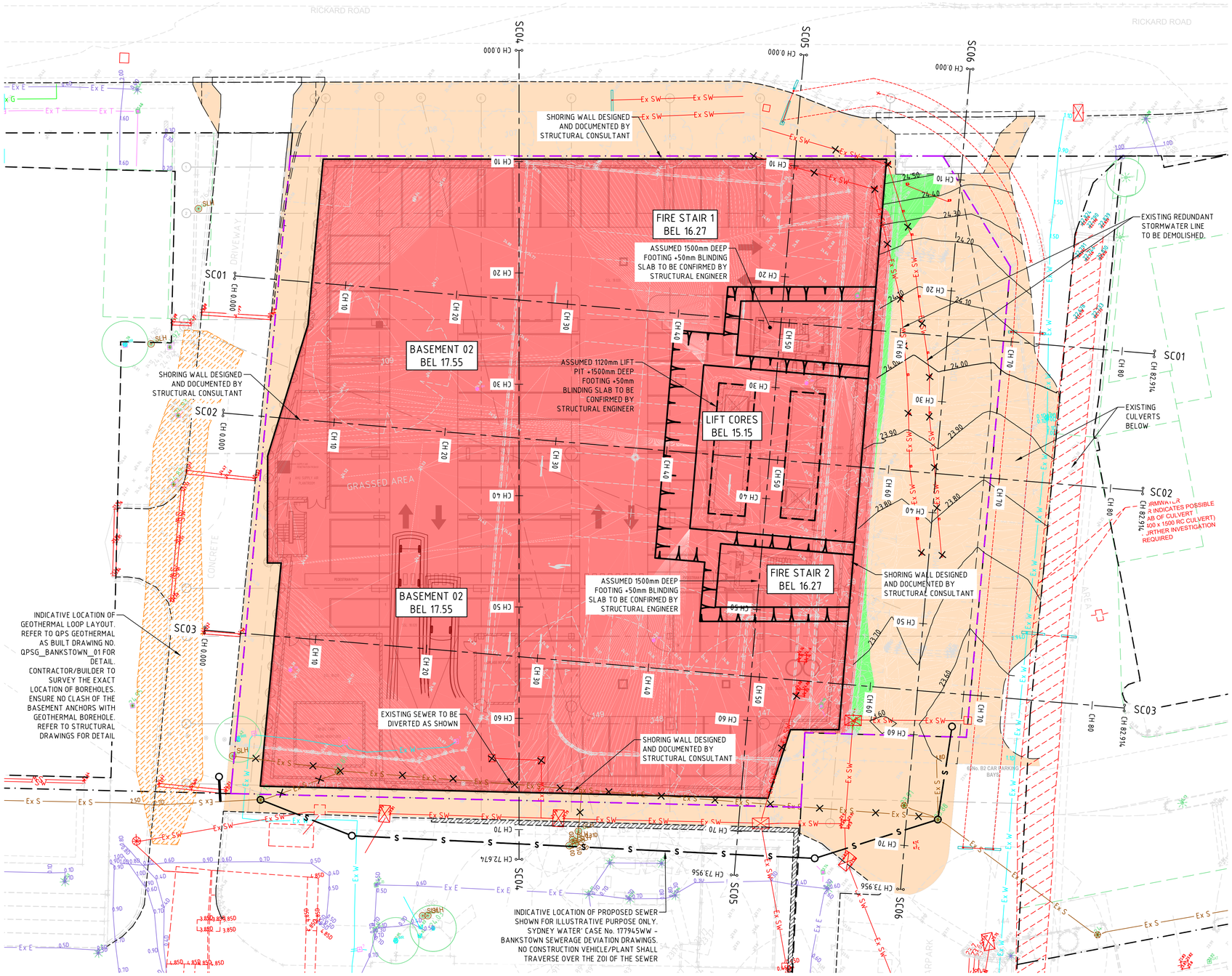
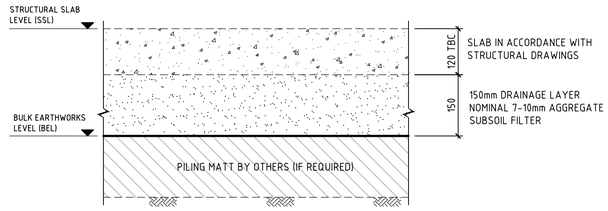
FOR ILLUSTRATIVE PURPOSE ONLY. BULK EARTHWORKS SUBJECT TO SEPARATE DEVELOPMENT APPLICATION





BUILDING BULK EARTHWORKS DETAIL

SCALE 1:10

EXCAVATION NOTES

E1 VOLUMES ARE APPROXIMATE ONLY AND DO NOT INCORPORATE BULKING FACTORS AND OVER EXCAVATION. VOLUMES HAVE BEEN CALCULATED BETWEEN 150mm STRIPPED SURFACE LEVELS AND BULK EARTHWORKS LEVELS.

E2 GROUND WATER SEEPAGE MAY OCCUR IN EXCAVATED AREAS. DE-WATERING MAY BE REQUIRED IN THIS INSTANCE.

E3 THIS DRAWING ONLY DETAILS EXCAVATION ASSOCIATED WITH THE BUILDING SLAB (IGNORING STRUCTURAL FOOTINGS, BEAMS AND COLUMNS).

E4 PROVIDE TEMPORARY MAXIMUM 1 IN 1 BATTERS U.N.O. GEOTECH TO CONFIRM BATTER ACCEPTABILITY DURING CONSTRUCTION.

E5 REFER TO ARBORIST REPORT FOR TREE PROTECTION MEASURES IF REQUIRED.

E6 THE STRUCUTRAL ENGINEER IS TO CHECK AND VERIFY THAT THE SHORING WALL WILL NOT BE UNDERMINDED BY LARGE RAINFALL EVENTS FILLING THE EXCAVATION AND CAN WITHSTAND ANY FORCES OR UNDERMINING

E7 NOMINAL SLAB AND GRANULAR THICKNESSES OF BELOW THE BASEMENT SLAB FINISH LEVEL HAVE BEEN ALLOWED FOR IN THE BULK EARTHWORKS AS PER THE BUILDING BULK EARTHWORKS DETAIL ABOVE

E8 THE CONTRACTOR SHALL BE MADE AWARE AND REMINDED OF THE SITES POTENTIAL TO FLOOD IN LARGE RAINFALL EVENTS AND THE ABILITY OF THE FLOODWATERS TO INUNDATE THE SITE. THEY SHALL ENSURE TO POST SIGNS, CREATE A WARNING SYSTEM/ALARMS AND TRAIN THEIR STAFF AND SITE VISITORS ON EVACUATION PROCEDURES FROM THE SITE IN CASE OF SUCH A SCENARIO. THE CONTRACTOR SHALL ALSO ENSURE TO MOVE ALL PLANT HIRES INCLUDING ELECTRICITY, GENERATORS, AND VEHICLES TO HIGH GROUND WITHIN THE SITE AT THE END OF EACH DAY AND BEFORE LARGE RAINFALL EVENTS TO MINIMISE THE POTENTIAL FOR DAMAGE.

E9 SITE SURVEY SUPPLIED BY 'RPS AUSTRALIA EAST' PTY LTD JOB No. PR140676 ISSUE D DATED 21.07.20 DRAWING No. PR140676-DS-001D

E10 EXISTING SERVICES SURVEY SUPPLIED BY 'RPS AUSTRALIA EAST' PTY LTD JOB No. PR140676 ISSUE E DATED 21.07.20 DRAWING No. PR140676-SERVICES-001-E

BULK EARTHWORKS QUANTITIES SUMMARY (IN-PLACE)

150mm STRIPPED SURFACE (ASSUMED TO BE REMOVED OFF-SITE)	= 600m³
TOTAL CUT VOLUME	= 21,000m³
VOLUME INCLUDES THE FOLLOWING:	
• BASEMENT EXCAVATION = 20,490m³	
• APPIAN WAY AND PUBLIC REALM = 130m³	
TOTAL FILL VOLUME	= 3m³
VOLUME INCLUDES THE FOLLOWING:	
• BACKFILL TO UNDERSIDE OF PAVEMENT IN APPIAN WAY	
TOTAL EXPORT CUT REQUIRED	= 20,997m³

SURVEY LEGEND

- SITE BOUNDARY
- EX SURFACE LEVEL
- EX SURFACE CONTOUR
- EX TREE
- Ex SW — EXISTING STORMWATER DRAINAGE LINE
- Ex S — EXISTING SEWER LINE
- Ex W — EXISTING WATER MAIN
- Ex G — EXISTING GAS LINE
- Ex T — EXISTING TELECOMMUNICATIONS LINE
- Ex E — EXISTING ELECTRICAL LINE
- EXISTING UNKNOWN SERVICE
- Ex S — EXISTING SERVICE TO BE MADE REDUNDANT
- S — INDICATIVE LOCATION OF PROPOSED SEWER SHOWN FOR ILLUSTRATIVE PURPOSE ONLY. SYDNEY WATER' CASE No. 177945WW - BANKSTOWN SEWERAGE DEVIATION DRAWINGS. NO CONSTRUCTION VEHICLE/PLANT SHALL TRAVERSE OVER THE ZOI OF THE SEWER

BULK EARTHWORKS LEGEND

- EXTENT OF BASEMENT CUT TO BULK EARTHWORKS LEVEL
- EXTENT OF EXTERNAL WORKS CUT TO BULK EARTHWORKS LEVEL
- EXTENT OF FILL TO BULK EARTHWORKS LEVEL
- BEL 17.55 — FINISHED BULK EXCAVATION LEVEL
- 24.10 — BULK EARTHWORKS MINOR SURFACE CONTOUR
- 24.00 — BULK EARTHWORKS MAJOR SURFACE CONTOUR

WARNING

BEWARE OF UNDERGROUND SERVICES

THE LOCATIONS OF UNDERGROUND SERVICES SHOWN ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE.

ALL EXISTING PROPERTY SERVICES' LOCATIONS AND DEPTHS ARE APPROXIMATE AND MUST BE VERIFIED ON SITE. THE CONTRACTOR SHOULD SUPPLY PRECISE LOCATIONS AND DEPTHS TO THE ENGINEER FOR REVIEW PRIOR TO ANY WORKS THAT MAY AFFECT THESE SERVICES.

WARNING
NO DRAINAGE WORKS SHALL COMMENCE UNTIL THE CONTRACTOR CONFIRMS THE I.L. OF ALL EXISTING DRAINS, AND CONFIRMS IN WRITING WITH THE ENGINEERING SUPERVISOR.

DIAL BEFORE YOU DIG www.1100.com.au The Essential First Step

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07	ISSUED FOR TENDER	07.04.20
08	SSDA SUBMISSION	31.07.20
09	SSDA SUBMISSION	14.08.20
10	SSDA SUBMISSION	24.08.20

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PROJECT
NEW WESTERN SYDNEY UNIVERSITY BANKSTOWN CITY CAMPUS
74 RICKARD ROAD ALONG WITH A PORTION OF 375 CHAPEL ROAD

DRAWING TITLE
BULK EARTHWORKS PLAN

SSDA SUBMISSION

NORTH

SCALE 1:200@ A1

JOB No.	DRAWN	CHECKED	DATE
1097901C	JF	-	-

DRAWING No. C00-10

REVISION 10

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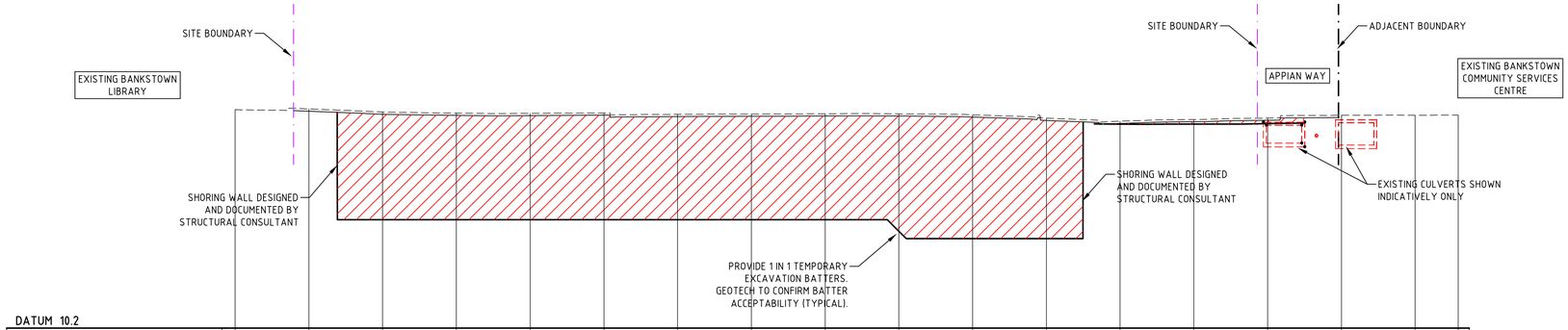
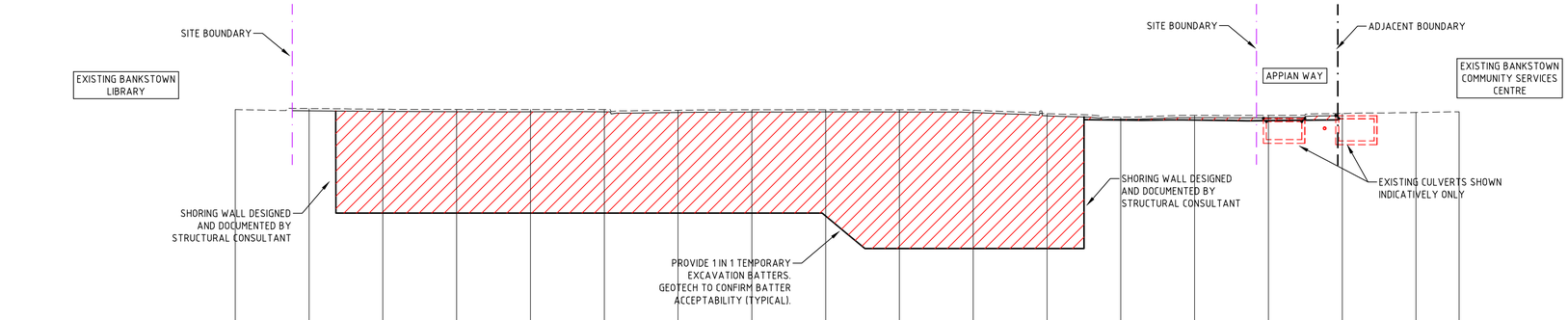


DATUM 10.2

SC01																			
BULK EARTHWORKS SURFACE			17.550	17.550	17.550	17.550	17.550	17.550	17.550	16.773	16.270	16.270	24.044	24.048	24.075				
STRIPPED SURFACE (150mm)		24.923	24.709	24.636	24.619	24.648	24.551	24.573	24.594	24.589	24.524	24.298	24.089	24.202	24.299				
EXISTING SURFACE	25.019	25.073	24.859	24.786	24.769	24.798	24.701	24.723	24.744	24.739	24.674	24.448	24.239	24.352	24.449	24.638	24.647	24.652	
CHAINAGES	0.000	5.000	10.000	15.000	20.000	25.000	30.000	35.000	40.000	45.000	50.000	55.000	60.000	65.000	70.000	75.000	80.000	82.914	

1 in 200 HORIZONTAL
1 in 200 VERTICAL

SC01 LONGITUDINAL SECTION



DATUM 9.1

SC02																			
BULK EARTHWORKS SURFACE			17.550	17.550	17.550	17.550	17.550	17.550	17.349	15.150	15.150	15.150	23.852	23.856	23.817				
STRIPPED SURFACE (150mm)		24.480	24.436	24.420	24.409	24.415	24.365	24.395	24.404	24.399	24.359	24.138	23.904	24.011	24.019				
EXISTING SURFACE	24.558	24.630	24.586	24.570	24.559	24.565	24.515	24.545	24.554	24.549	24.509	24.288	24.054	24.161	24.169	24.296	24.366	24.411	
CHAINAGES	0.000	5.000	10.000	15.000	20.000	25.000	30.000	35.000	40.000	45.000	50.000	55.000	60.000	65.000	70.000	75.000	80.000	82.914	

1 in 200 HORIZONTAL
1 in 200 VERTICAL

SC02 LONGITUDINAL SECTION

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08	SSDA SUBMISSION	31.07.20

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GENERAL NOTES

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PROJECT
NEW WESTERN SYDNEY UNIVERSITY
BANKSTOWN CITY CAMPUS
74 RICKARD ROAD ALONG WITH A PORTION OF 375 CHAPEL ROAD

DRAWING TITLE
BULK EARTHWORKS
LONGITUDINAL SECTIONS
SHEET 1

SSDA SUBMISSION

NORTH

SCALE
1:200 @ A1

JOB No.	DRAWN	CHECKED	DATE
1097901C	JF	-	-

DRAWING No.
C00-20

REVISION
08

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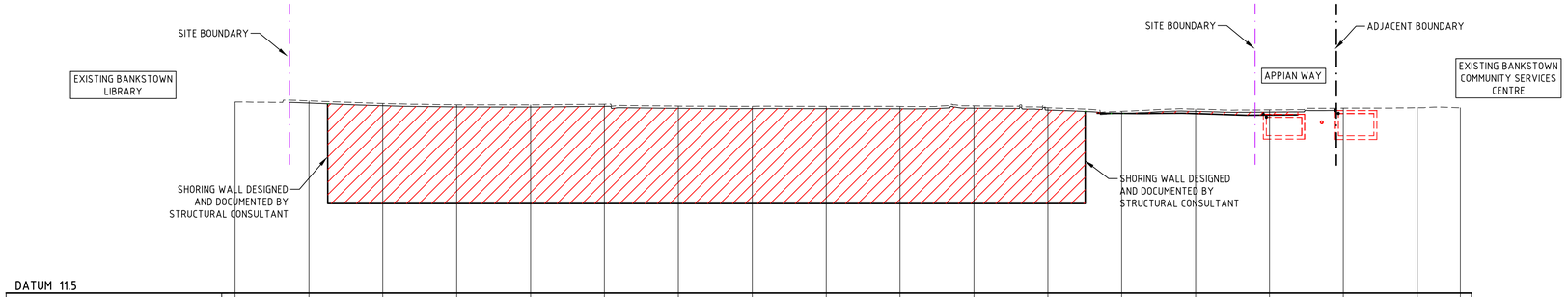
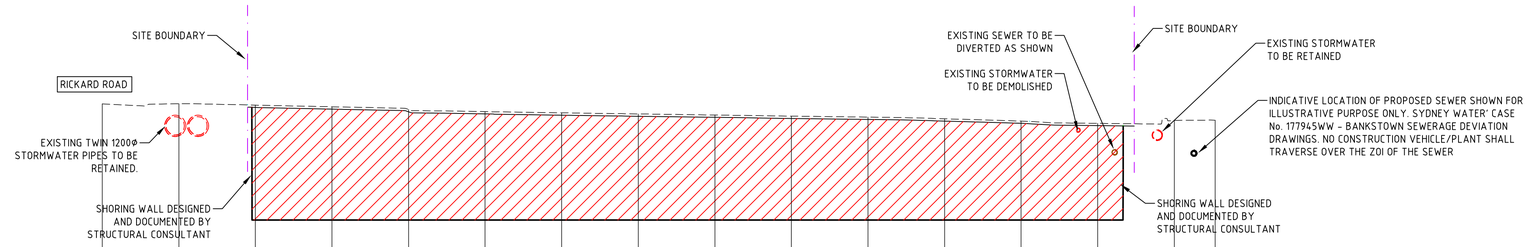


DATUM 11.5

SC03																		
BULK EARTHWORKS SURFACE			17.550	17.550	17.550	17.550	17.550	17.550	17.550	17.550	17.550	17.550	23.663	23.645	23.546			
STRIPPED SURFACE (150mm)		24.350	24.176	24.089	24.083	24.127	24.003	23.987	23.981	23.975	24.013	23.886	23.652	23.805	23.750			
EXISTING SURFACE	24.424	24.500	24.326	24.239	24.233	24.277	24.153	24.137	24.131	24.125	24.163	24.036	23.802	23.955	23.900	24.012	24.041	24.047
CHAINAGES	0.000	5.000	10.000	15.000	20.000	25.000	30.000	35.000	40.000	45.000	50.000	55.000	60.000	65.000	70.000	75.000	80.000	82.914

1 in 200 HORIZONTAL
1 in 200 VERTICAL

SC03 LONGITUDINAL SECTION



DATUM 11.5

SC04																	
BULK EARTHWORKS SURFACE			17.550	17.550	17.550	17.550	17.550	17.550	17.550	17.550	17.550	17.550	17.550	17.550			
STRIPPED SURFACE (150mm)			24.901	24.792	24.614	24.473	24.396	24.323	24.254	24.180	24.117	24.004	23.858	23.710			
EXISTING SURFACE	25.132	25.140	25.051	24.942	24.764	24.623	24.546	24.473	24.404	24.330	24.267	24.154	24.008	23.860	24.044	24.068	
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1 in 200 VERTICAL

SC04 LONGITUDINAL SECTION

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08	SSDA SUBMISSION	31.07.20

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PROJECT
NEW WESTERN SYDNEY UNIVERISTY
BANKSTOWN CITY CAMPUS
74 RICKARD ROAD ALONG WITH A PORTION OF 375 CHAPEL ROAD

DRAWING TITLE
BULK EARTHWORKS
LONGITUDINAL SECTIONS
SHEET 2

SSDA SUBMISSION

NORTH

SCALE
NOTED

JOB No.	DRAWN	CHECKED	DATE
1097901C	JF	-	-

DRAWING No. **C00-21**

REVISION **08**

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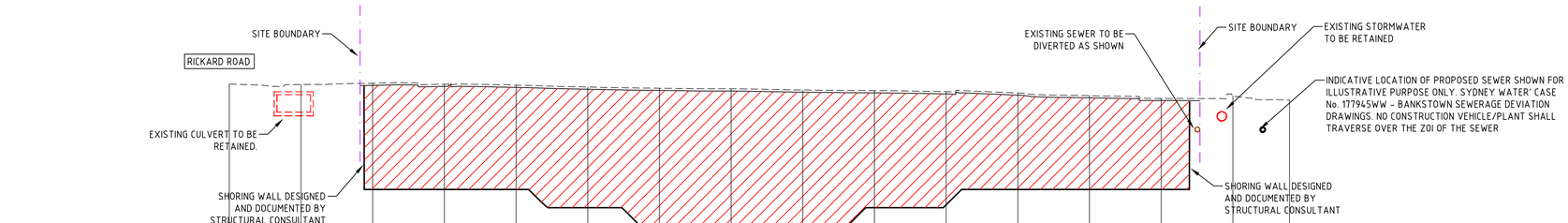
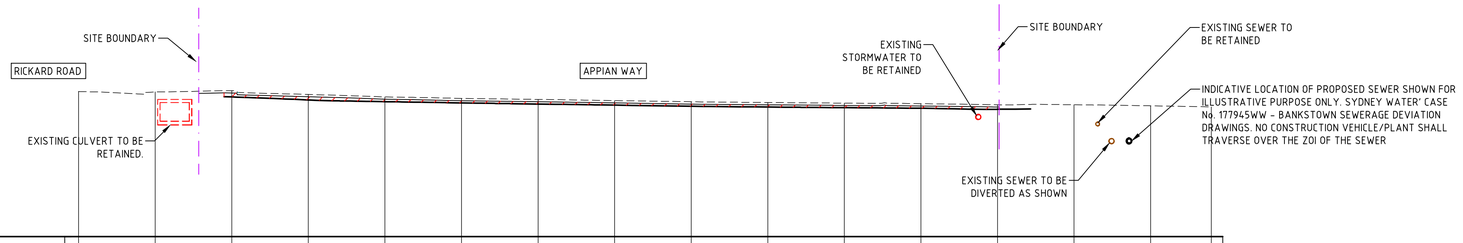


DATUM 9.1

SC05																
BULK EARTHWORKS SURFACE			17.550	17.550	17.550	16.270	15.150	15.150	15.150	16.270	16.477	17.550	17.550	17.550		
STRIPPED SURFACE (150mm)			24.797	24.726	24.659	24.529	24.447	24.405	24.325	24.284	24.208	24.117	23.929	23.736		
EXISTING SURFACE	24.888	24.855	24.947	24.876	24.809	24.679	24.597	24.555	24.475	24.434	24.358	24.267	24.079	23.886	24.042	23.780
CHAINAGES	0.000	5.000	10.000	15.000	20.000	25.000	30.000	35.000	40.000	45.000	50.000	55.000	60.000	65.000	70.000	73.956

1 in 200 HORIZONTAL
1 in 200 VERTICAL

SC05 LONGITUDINAL SECTION



DATUM 15.3

SC06																
BULK EARTHWORKS SURFACE			24.424	24.228	24.115	24.034	23.960	23.889	23.813	23.764	23.722	23.683	23.618			
STRIPPED SURFACE (150mm)			24.684	24.434	24.273	24.179	24.111	24.034	23.958	23.909	23.868	23.834	23.760			
EXISTING SURFACE	24.775	24.751	24.834	24.584	24.423	24.329	24.261	24.184	24.108	24.059	24.018	23.984	23.910	23.912	23.845	23.778
CHAINAGES	0.000	5.000	10.000	15.000	20.000	25.000	30.000	35.000	40.000	45.000	50.000	55.000	60.000	65.000	70.000	73.956

1 in 200 HORIZONTAL
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SC06 LONGITUDINAL SECTION

NOT FOR CONSTRUCTION

FOR ILLUSTRATIVE PURPOSE ONLY. BULK EARTHWORKS SUBJECT TO SEPARATE DEVELOPMENT APPLICATION

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REV.	DETAILS	DATE
01	SSDA SUBMISSION	31.07.20

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PROJECT
NEW WESTERN SYDNEY UNIVERISTY
BANKSTOWN CITY CAMPUS
74 RICKARD ROAD ALONG WITH A PORTION OF 375 CHAPEL ROAD

DRAWING TITLE
BULK EARTHWORKS
LONGITUDINAL SECTIONS
SHEET 3

SSDA SUBMISSION

NORTH

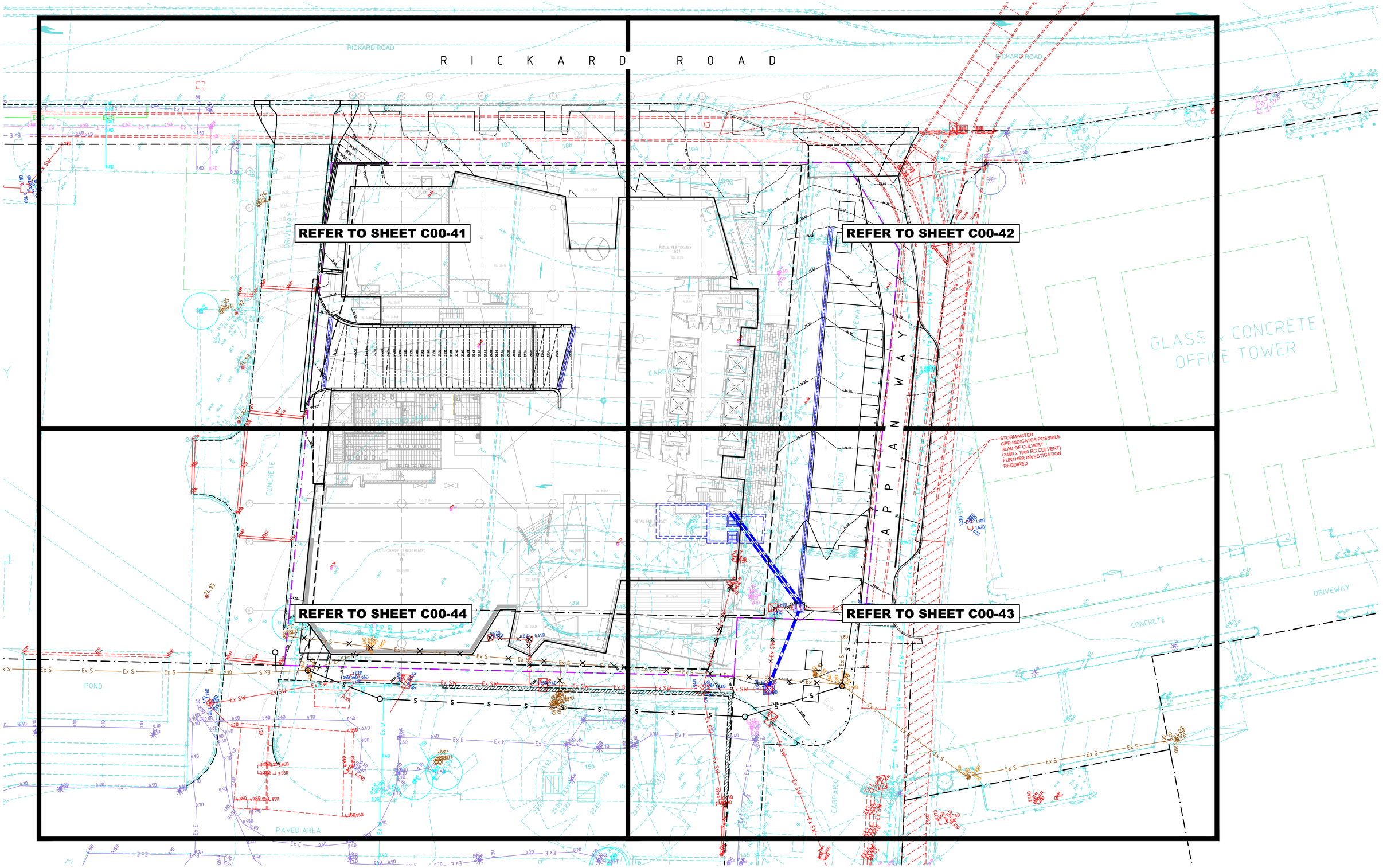
SCALE 1:200 @ A1

JOB No.	DRAWN	CHECKED	DATE
1097901C	JF	-	-

DRAWING No. **C00-22**

REVISION **01**

A1 841 x 594
File: G:\Job\1097901_Civil\Issued\Dwg\C00-22-CAD[01].dwg
Plotted: 31.07.20 at 3:47 PM



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REV.	DETAILS	DATE
01	SSDA SUBMISSION	31.07.20
02	SSDA SUBMISSION	14.08.20

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PROJECT
NEW WESTERN SYDNEY UNIVERSITY
BANKSTOWN CITY CAMPUS
74 RICKARD ROAD ALONG WITH A PORTION OF 375 CHAPEL ROAD

DRAWING TITLE
GENERAL SITE PLAN

SSDA SUBMISSION

NORTH

SCALE
1:200 @ A1

JOB No.	DRAWN	CHECKED	DATE
1097901C	PA	-	-

DRAWING No.
C00-40

REVISION
02

A1 841 x 594
File: G:\Job\1097901_Civil\Issued\Dwg\C00-40-CAD[02].dwg
Plotted: 14.08.20 at 9:49 AM

RICKARD ROAD

EXTEND EXISTING VFC IN ACCORDANCE WITH 'CITY OF CANTERBURY BANKSTOWN' COUNCIL STANDARD DRAWING No. S-009A (STANDARD HEAVY DUTY SPLAYED VEHICULAR FOOTWAY CROSSING)

8.00m EXISTING VEHICULAR FOOTWAY CROSSING

0.80m WING | 1.75m | 2.10m | 0.80m WING

GARDEN BED TO BE RETAINED TO MATCH EXISTING ADJACENT ACCESS ROAD

EXISTING CREST IN ACCESS ROAD TO REMAIN PROVIDING 100mm FREEBOARD ABOVE 1% AEP FLOOD RL 25.60

CREST

CONCRETE UPTURN (MAX 320mm HIGH)

CONCRETE DOWNTURN (MAX 320mm HIGH)

MATCH TO EX KERB LEVEL

CONCRETE STEPS 3 RISERS @ 163mm HIGH 250mm WIDE TREAD

MAX 500mm HIGH RETAINING WALL

VEHICULAR FOOTWAY CROSSING IN ACCORDANCE WITH 'CITY OF CANTERBURY BANKSTOWN STANDARD DRAWING No. S-009

EXISTING KERB TO REMAIN

DRIVEWAY

SUBSTATION 1.G.24

SUBSTATION FFL 25.53

RETAIL RL 25.40

RETAIL F&B TENANCY 1.G.27

PROVIDE LANDING AT RL 25.75 FOR 500mm FREEBOARD ABOVE 1% AEP FLOOD RL 25.25

RETAIL FFL 25.40 PROVIDES 500mm FREEBOARD ABOVE 1% AEP FLOOD RL 24.85 AT THIS LOCATION

PROVIDE LANDING AT RL 25.10 FOR 100mm FREEBOARD ABOVE 1% AEP RL 25.00 FOR PROTECTION OF FIRE STAIR ENTRANCE TO BASEMENT

GROUND FLOOR FFL 25.70

GROUND FLOOR FFL 25.70

CARPARK

GRASSED AREA

REFER TO DRAWING C042 FOR CONTINUATION

REFER TO DRAWING C044 FOR CONTINUATION

SURVEY LEGEND

- SITE BOUNDARY
- EX SURFACE LEVEL
- EX SURFACE CONTOUR
- EX TREE
- Ex SW — EXISTING STORMWATER DRAINAGE LINE
- Ex S — EXISTING SEWER LINE
- Ex W — EXISTING WATER MAIN
- Ex G — EXISTING GAS LINE
- Ex T — EXISTING TELECOMMUNICATIONS LINE
- Ex E — EXISTING ELECTRICAL LINE
- EXISTING UNKNOWN SERVICE
- Ex E — EXISTING SERVICE TO BE MADE REDUNDANT

SITEWORKS LEGEND

- EX RL 7.25 + — EXISTING FINISHED SURFACE LEVEL
- RL 7.25 + — FINISHED SURFACE SPOT LEVEL
- XX% FALL — DIRECTION AND GRADE OF FALL
- FINISHED MINOR SURFACE CONTOUR
- 5.00 — FINISHED MINOR SURFACE CONTOUR
- KO — KERB ONLY
- VC — VEHICULAR CROSSING
- FK — FLUSH KERB
- B — BOLLARD IN ACCORDANCE WITH ARCHITECTURAL SPECIFICATIONS

DRAINAGE LEGEND

- SURFACE INLET PIT
- JUNCTION PIT
- IL 0.00 PIPE ø IL 0.00 — STORMWATER DRAINAGE LINE
- GD — GRATED DRAIN

NOTE: REFER TO HYDRAULIC DRAWINGS FOR DOWNPIPE LOCATION AND CONNECTION TO RAINWATER TANK

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REV.	DETAILS	DATE
01	PRELIMINARY DRAFT ISSUE	25.02.19
02	SCHEMATIC DESIGN	12.03.19
03	FOR SEARS	21.06.19
04	ISSUED FOR DETAILED DESIGN	28.06.19
05	FOR SEARS	19.07.19
06	FOR SEARS	23.08.19
07	DRAFT SSDA	22.07.20
08	SSDA SUBMISSION	31.07.20
09	SSDA SUBMISSION	14.08.20

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PROJECT
NEW WESTERN SYDNEY UNIVERSITY BANKSTOWN CITY CAMPUS
74 RICKARD ROAD ALONG WITH A PORTION OF 375 CHAPEL ROAD

DRAWING TITLE
SITEWORKS AND STORMWATER DRAINAGE PLAN-SHEET 1

SSDA SUBMISSION

NORTH

SCALE 1:100 @ A1

JOB No.	DRAWN	CHECKED	DATE
1097901C	PA	-	-

DRAWING No. C00-41

REVISION 09

A1 841 x 594
File: G:\ssh\1097901\1_Civil\Issued\Dwg\C00-41-CA[09].dwg
Plotted: 14.08.20 at 9:49 AM

REFER TO DRAWING C041 FOR CONTINUATION

RICKARD ROAD

RAISED THRESHOLD AS PER CITY OF CANTERBURY BANKSTOWN COUNCIL CONSTRUCTION DRAWINGS - PROJECT No. CBC00002

RICKARD ROAD SLIP LANE TO BE REPURPOSED AS 24 HOUR LOADING ZONE (SUBJECT TO COUNCIL APPROVAL). REFER TO DRAWING C00-90 FOR LINEMARKING DETAIL

EXISTING LAYBACK AND RAISED THRESHOLD (SHOWN HATCHED) TO REMAIN

EXTEND LAYBACK AND RAISED THRESHOLD AS SHOWN

EXISTING KERB INLET PIT TO REMAIN

JUNCTION PIT A/2 CONNECTION TO EXISTING CULVERT. FOR DETAILS REFER TO 'SYDNEY WATER' DRAWINGS CASE No. 171153SW

JUNCTION PIT A/3 CONNECTION TO EXISTING CULVERT. FOR DETAILS REFER TO 'SYDNEY WATER' DRAWINGS CASE No. 171153SW

TRANSITION 150mm HIGH KERB (KOa) TO FLUSH KERB (FK) OVER 2000mm

TRANSITION 150mm HIGH KERB (KOa) TO 100mm HIGH KERB (KOb) OVER 2000mm

RETAIL FFL 25.40 PROVIDES 500mm FREEBOARD ABOVE 1% AEP FLOOD RL 24.85 AT THIS LOCATION

RETAIL RL 25.40

RETAIL F&B TENANCY 1.G.27

PROVIDE LANDING AT RL 25.75 FOR 500mm FREEBOARD ABOVE 1% AEP FLOOD RL 25.25

PROVIDE LANDING AT RL 25.10 FOR 100mm FREEBOARD ABOVE 1% AEP RL 25.00 FOR PROTECTION OF FIRE STAIR ENTRANCE TO BASEMENT

GROUND FLOOR FFL 25.70

GROUND FLOOR FFL 25.70

CARPARK

MIN 300mm CLEAR FROM BOLLARD TO KERB (TYPICAL)

200mm WIDE STRIP DRAIN (PROVIDE HEELGUARD GRATE AND FRAME)

MIN 300mm CLEAR FROM BOLLARD TO KERB (TYPICAL)

APPIAN WAY LEVELS SHOWN AIMED TO ACHIEVE FLOOD AND DDA COMPLIANCE. FURTHER COORDINATION REQUIRED BETWEEN LANDSCAPE ARCHITECT, TRAFFIC CONSULTANT, HYDRAULIC ENGINEER AND COUNCIL FLOOD MODELLING FEEDBACK.

NOTE: REFER TO HYDRAULIC DRAWINGS FOR DOWNPIPE LOCATION AND CONNECTION TO RAINWATER TANK

REFER TO DRAWING C043 FOR CONTINUATION

SURVEY LEGEND

- SITE BOUNDARY
- EX SURFACE LEVEL
- EX SURFACE CONTOUR
- EX TREE
- EXISTING STORMWATER DRAINAGE LINE
- EXISTING SEWER LINE
- EXISTING WATER MAIN
- EXISTING GAS LINE
- EXISTING TELECOMMUNICATIONS LINE
- EXISTING ELECTRICAL LINE
- EXISTING UNKNOWN SERVICE
- EXISTING SERVICE TO BE MADE REDUNDANT

SITEWORKS LEGEND

- EX RL 7.25 — EXISTING FINISHED SURFACE LEVEL
- RL 7.25 — FINISHED SURFACE SPOT LEVEL
- XX% FALL — DIRECTION AND GRADE OF FALL
- FINISHED MINOR SURFACE CONTOUR
- 5.00 — FINISHED MINOR SURFACE CONTOUR
- KO — KERB ONLY
- VC — VEHICULAR CROSSING
- FK — FLUSH KERB
- B∘ — BOLLARD IN ACCORDANCE WITH ARCHITECTURAL SPECIFICATIONS

DRAINAGE LEGEND

- SURFACE INLET PIT
- JUNCTION PIT
- IL 0.00 PIPE ø IL 0.00 — STORMWATER DRAINAGE LINE
- GD — GRATED DRAIN

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REV.	DETAILS	DATE
01	FOR SEARS	19.07.19
02	FOR SEARS	23.08.19
03	DRAFT SSDA	22.07.20
04	SSDA SUBMISSION	31.07.20
05	SSDA SUBMISSION	14.08.20

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NEW WESTERN SYDNEY UNIVERSITY BANKSTOWN CITY CAMPUS
74 RICKARD ROAD ALONG WITH A PORTION OF 375 CHAPEL ROAD

DRAWING TITLE
SITEWORKS AND STORMWATER DRAINAGE PLAN-SHEET 2

SSDA SUBMISSION

NORTH

SCALE 1:100 @ A1

JOB No.	DRAWN	CHECKED	DATE
1097901C	PA	-	-

DRAWING No. C00-42

REVISION 05

A1 841 x 594
File: G:\Job\10979\01\ Civil\Issued\Dwg\C00-42-CA[05].dwg
Plotted: 14.08.20 at 9:50 AM

REFER TO DRAWING C042 FOR CONTINUATION

REFER TO DRAWING C044 FOR CONTINUATION

FOR TANK DETAILS REFER TO DRAWING SHEET C00-50

GROUND FLOOR FFL 25.70

GROUND FLOOR FFL 25.70

ON-SITE DETENTION TANK (LEVEL 1)
BASE RL 30.66
OSD ASSUMED TO CAPTURE ENTIRE ROOF CATACHMENT
EFFECTIVE VOLUME 35m³
(TANK STRUCTURE DESIGNED AND DOCUMENTED BY OTHERS)

RAINWATER TANK (LEVEL 1)
BASE RL 30.66
EFFECTIVE VOLUME 45m³
(TANK STRUCTURE DESIGNED AND DOCUMENTED BY OTHERS)

PROVIDE OVERFLOW FROM RAINWATER TANK TO ON-SITE DETENTION TANK WITH WEIR RL 33.08

225ϕ OUTLET DOWNPIPE IL 30.66. PROVIDE 190mm ORIFICE PLATE

225ϕ EMERGENCY OUTLET DOWNPIPE IL 32.935

OUTLET DOWNPIPES FROM EMERGENCY OVERFLOW PIT TO BE SUSPENDED TO UNDERSIDE OF BASEMENT ROOF SLAB AND CONNECTED TO STORMWATER PIT ON GROUND LEVEL ON APPIAN WAY.

RETAIL FFL 24.60

FFL 24.60

CONSTRUCT INLET SAG PIT CL 23.88 OVER EXISTING 300mm PIPE AT EXISTING IL 22.94 (TBC). PROVIDE ENVIROPOD TO MEET WATER QUALITY OBJECTIVES SET BY GREEN BUILDING COUNCIL OF AUSTRALIA.

EXISTING SEWER TO BE DIVERTED SUBJECT TO EARLY WORKS DEVELOPMENT APPLICATION

RETAIL FFL 24.60 PROVIDES 500mm FREEBOARD ABOVE 1% AEP FLOOD RL 24.10 AT BOTTOM OF RAMP

EXISTING GRATED INLET PIT TO REMAIN

INDICATIVE LOCATION OF PROPOSED SEWER SHOWN FOR ILLUSTRATIVE PURPOSE ONLY. SYDNEY WATER' CASE No. 177945WW – BANKSTOWN SEWERAGE DEVIATION DRAWINGS. NO CONSTRUCTION VEHICLE/PLANT SHALL TRAVERSE OVER THE ZOI OF THE SEWER

EXISTING STORMWATER LINE TO BE CAPPED SUBJECT TO EARLY WORKS DEVELOPMENT APPLICATION

EXISTING GRATED INLET PIT TO REMAIN

EXISTING KERB INLET PIT TO REMAIN

APPIAN WAY

APPIAN WAY LEVELS SHOWN AIMED TO ACHIEVE FLOOD AND DDA COMPLIANCE. FURTHER COORDINATION REQUIRED BETWEEN LANDSCAPE ARCHITECT, TRAFFIC CONSULTANT, HYDRAULIC ENGINEER AND COUNCIL FLOOD MODELLING FEEDBACK.

MIN 300mm CLEAR FROM BOLLARD TO KERB (TYPICAL)

200mm WIDE STRIP DRAIN (PROVIDE HEELGUARD GRATE AND FRAME)

200mm WIDE STRIP DRAIN (PROVIDE HEELGUARD GRATE AND FRAME)

EXISTING INLET PIT TO BE RECONSTRUCTED. CL 23.87

EXISTING JUNCTION PIT (EX CL 23.90) TO BE RECONSTRUCTED IF REQUIRED

EXISTING STORMWATER PIT AND PIPE TO BE DEMOLISHED DURING EARLY WORKS CONSTRUCTION AND DIVERTED AS SHOWN

TRANSITION 100mm HIGH KERB (KOb) TO FLUSH KERB (FK) TO SUIT EXISTING PAVEMENT LEVELS

MATCH TO EXISTING SURFACE LEVELS

STORMWATER GPR INDICATES POSSIBLE SLAB OF CULVERT (2400 x 1500 RC CULVERT) FURTHER INVESTIGATION REQUIRED

SURVEY LEGEND

- SITE BOUNDARY
- EX SURFACE LEVEL
- EX SURFACE CONTOUR
- EX TREE
- EXISTING STORMWATER DRAINAGE LINE
- EXISTING SEWER LINE
- EXISTING WATER MAIN
- EXISTING GAS LINE
- EXISTING TELECOMMUNICATIONS LINE
- EXISTING ELECTRICAL LINE
- EXISTING UNKNOWN SERVICE
- EXISTING SERVICE TO BE MADE REDUNDANT

SITEWORKS LEGEND

- EX RL 7.25 — EXISTING FINISHED SURFACE LEVEL
- RL 7.25 — FINISHED SURFACE SPOT LEVEL
- XX % FALL — DIRECTION AND GRADE OF FALL
- FINISHED MINOR SURFACE CONTOUR
- 5.00 — FINISHED MINOR SURFACE CONTOUR
- KO — KERB ONLY
- VC — VEHICULAR CROSSING
- FK — FLUSH KERB
- B o — BOLLARD IN ACCORDANCE WITH ARCHITECTURAL SPECIFICATIONS

DRAINAGE LEGEND

- SURFACE INLET PIT
- JUNCTION PIT
- IL 0.00 PIPE ϕ IL 0.00 — STORMWATER DRAINAGE LINE
- GD — GRATED DRAIN

NOTE: REFER TO HYDRAULIC DRAWINGS FOR DOWNPIPE LOCATION AND CONNECTION TO RAINWATER TANK

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03	DRAFT SSDA	22.07.20
04	SSDA SUBMISSION	31.07.20
05	SSDA SUBMISSION	14.08.20

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DRAWING TITLE
SITEWORKS AND STORMWATER DRAINAGE PLAN-SHEET 3

SSDA SUBMISSION

NORTH

SCALE 1:100 @ A1

JOB No.	DRAWN	CHECKED	DATE
1097901C	PA	-	-

DRAWING No. C00-43

REVISION 05

A1 841 x 594
File: G:\Job\1097901\...\Civil\Issued\Dwg\C00-43-CAD[05].dwg
Plotted: 14.08.20 at 9:51 AM

REFER TO DRAWING C041 FOR CONTINUATION

REFER TO DRAWING C043 FOR CONTINUATION

GROUND FLOOR
FFL 25.70

GROUND FLOOR
FFL 25.70

THEATRE
FFL 24.90

RETAIL
FFL 24.60

FFL 24.60

RAINWATER TANK (LEVEL 1)
BASE RL 30.66
EFFECTIVE VOLUME 45m³
(TANK STRUCTURE DESIGNED AND DOCUMENTED BY OTHERS)

ON-SITE DETENTION TANK (LEVEL 1)
BASE RL 30.66
OSD ASSUMED TO CAPTURE ENTIRE ROOF CATACHMENT
EFFECTIVE VOLUME 35m³
(TANK STRUCTURE DESIGNED AND DOCUMENTED BY OTHERS)

PROVIDE OVERFLOW FROM RAINWATER TANK TO ON-SITE DETENTION TANK WITH WEIR RL 33.08

225ø EMERGENCY OUTLET DOWNPIPE IL 32.935

225ø OUTLET DOWNPIPE IL 30.66. PROVIDE 190mm ORIFICE PLATE

CONSTRUCT INLET SAG PIT CL 23.88 OVER EXISTING 300mm PIPE AT EXISTING IL 22.94 (TBC). PROVIDE ENVIROPOD TO MEET WATER QUALITY OBJECTIVES SET BY GREEN BUILDING COUNCIL OF AUSTRALIA.

RETAIL FFL 24.60 PROVIDES 500mm FREEBOARD ABOVE 1% AEP FLOOD RL 24.10 AT BOTTOM OF RAMP

EXISTING SEWER TO BE DIVERTED SUBJECT TO EARLY WORKS DEVELOPMENT APPLICATION

EXISTING SEWER TO BE DIVERTED SUBJECT TO EARLY WORKS DEVELOPMENT APPLICATION

EXISTING STORMWATER LINE TO BE CAPPED SUBJECT TO EARLY WORKS DEVELOPMENT APPLICATION

EXISTING STORMWATER LINE TO BE CAPPED SUBJECT TO EARLY WORKS DEVELOPMENT APPLICATION

EXISTING KERB TO REMAIN

EXISTING KERB TO REMAIN

EXISTING KERB INLET PIT TO REMAIN

EXISTING GRATED INLET PIT TO REMAIN

EXISTING GRATED INLET PIT TO REMAIN

EXISTING GRA INLET PIT TO R

INDICATIVE LOCATION OF PROPOSED SEWER SHOWN FOR ILLUSTRATIVE PURPOSE ONLY. SYDNEY WATER' CASE No. 177945WW - BANKSTOWN SEWERAGE DEVIATION DRAWINGS. NO CONSTRUCTION VEHICLE/PLANT SHALL TRAVERSE OVER THE ZOI OF THE SEWER

MULTI-PURPOSE TIERED THEATRE 1.G.07

SURVEY LEGEND

- SITE BOUNDARY
- EX SURFACE LEVEL
- EX SURFACE CONTOUR
- EX TREE
- EXISTING STORMWATER DRAINAGE LINE
- EXISTING SEWER LINE
- EXISTING WATER MAIN
- EXISTING GAS LINE
- EXISTING TELECOMMUNICATIONS LINE
- EXISTING ELECTRICAL LINE
- EXISTING UNKNOWN SERVICE
- EXISTING SERVICE TO BE MADE REDUNDANT

SITEWORKS LEGEND

- EX RL 7.25 — EXISTING FINISHED SURFACE LEVEL
- RL 7.25 — FINISHED SURFACE SPOT LEVEL
- XX% FALL — DIRECTION AND GRADE OF FALL
- FINISHED MINOR SURFACE CONTOUR
- 5.00 — FINISHED MINOR SURFACE CONTOUR
- KO — KERB ONLY
- VC — VEHICULAR CROSSING
- FK — FLUSH KERB
- B — BOLLARD IN ACCORDANCE WITH ARCHITECTURAL SPECIFICATIONS

DRAINAGE LEGEND

- SURFACE INLET PIT
- JUNCTION PIT
- IL 0.00 PIPE ø IL 0.00 — STORMWATER DRAINAGE LINE
- GD — GRATED DRAIN

NOTE: REFER TO HYDRAULIC DRAWINGS FOR DOWNPIPE LOCATION AND CONNECTION TO RAINWATER TANK

WARNING
BEWARE OF UNDERGROUND SERVICES
THE LOCATIONS OF UNDERGROUND SERVICES SHOWN ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE.

WARNING
NO DRAINAGE WORKS SHALL COMMENCE UNTIL THE CONTRACTOR CONFIRMS THE I.L. OF ALL EXISTING DRAINS, AND CONFIRMS IN WRITING WITH THE ENGINEERING SUPERVISOR.

ALL EXISTING PROPERTY SERVICES' LOCATIONS AND DEPTHS ARE APPROXIMATE AND MUST BE VERIFIED ON SITE. THE CONTRACTOR SHOULD SUPPLY PRECISE LOCATIONS AND DEPTHS TO THE ENGINEER FOR REVIEW PRIOR TO ANY WORKS THAT MAY AFFECT THESE SERVICES.

DIAL BEFORE YOU DIG www.1100.com.au The Essential First Step

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REV.	DETAILS	DATE
01	FOR SEARS	19.07.19
02	FOR SEARS	23.08.19
03	DRAFT SSDA	22.07.20
04	SSDA SUBMISSION	31.07.20
05	SSDA SUBMISSION	14.08.20

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PROJECT
NEW WESTERN SYDNEY UNIVERSITY BANKSTOWN CITY CAMPUS
74 RICKARD ROAD ALONG WITH A PORTION OF 375 CHAPEL ROAD

DRAWING TITLE
SITEWORKS AND STORMWATER DRAINAGE PLAN-SHEET 4

SSDA SUBMISSION

NORTH

SCALE 1:100 @ A1

JOB No.	DRAWN	CHECKED	DATE
1097901C	PA	-	-

DRAWING No. C00-44

REVISION 05

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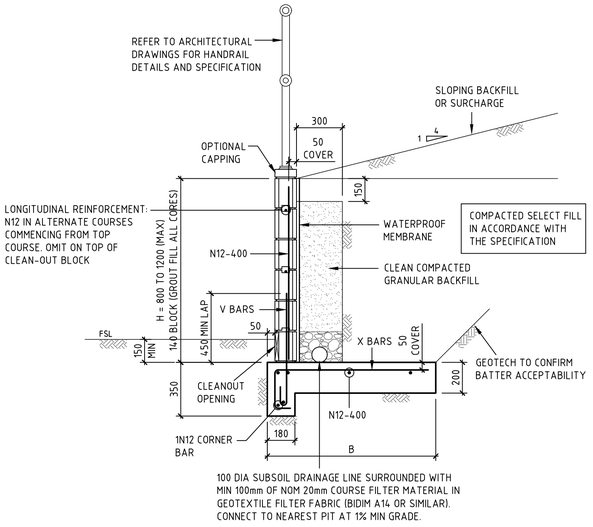
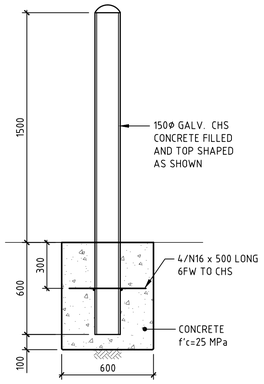


BLOCK RETAINING WALL (MAX 1200 HIGH)

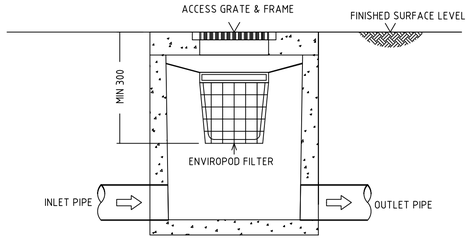
SCALE 1:20

NOTE: DESIGNER TO CHECK THE NEED FOR SHEAR KEY

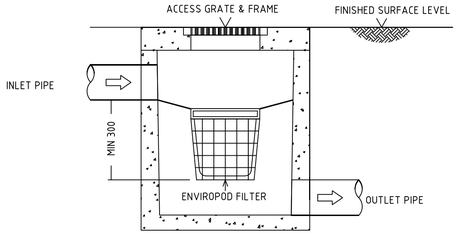


BOLLARD DETAIL

SCALE 1:20

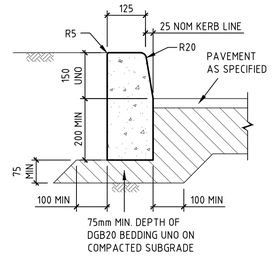


STANDARD ENVIROPOD CONFIGURATION SECTION



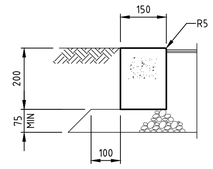
DROP PIPE ENVIROPOD CONFIGURATION SECTION

TYPICAL ENVIROPOD PIT DETAILS



KERB ONLY (KOa)

SCALE 1:10



FLUSH KERB (FK)

SCALE 1:10

BLOCK RETAINING WALL BASE TYPE 1

WALL HEIGHT				REINFORCEMENT		BASE DIMENSIONS	
TOTAL HEIGHT (mm) H	HEIGHT OF BLOCKWORK			X-BARS AND V-BARS	K-BARS	WIDTH, B (mm) WITH FOLLOWING BACKFILL CONDITIONS	
	150 SERIES	200 SERIES	300 SERIES			LEVEL	MAX 1:4 SLOPE
800	800	-	-	N12-400	-	800	1000
1000	1000	-	-	N12-400	-	1000	1200

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DRAWING TITLE
SITEWORKS AND STORMWATER DRAINAGE DETAILS SHEET 1

SSDA SUBMISSION

NORTH

SCALE
NOTED

JOB No.	DRAWN	CHECKED	DATE
1097901C	PA	-	-

DRAWING No.
C00-60

REVISION
08

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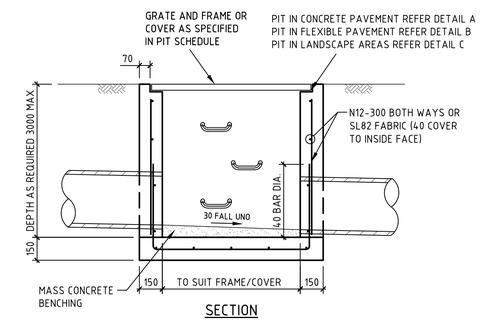

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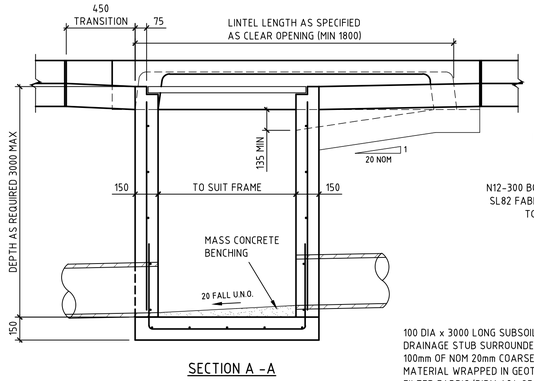
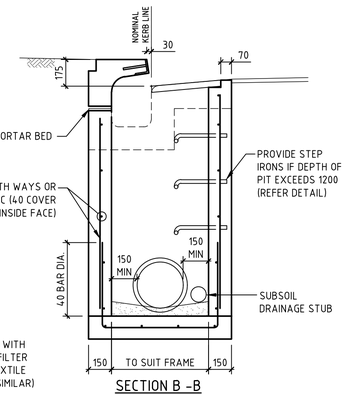


SECTION A -A



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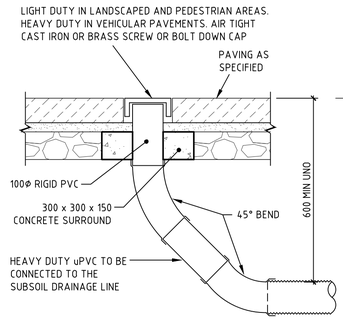
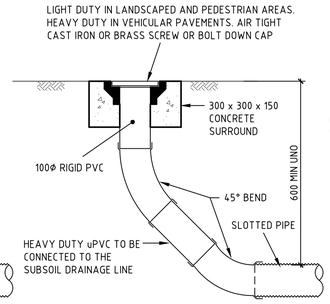


FLUSHOUT RISER (FOR) IN PAVING BRICKS

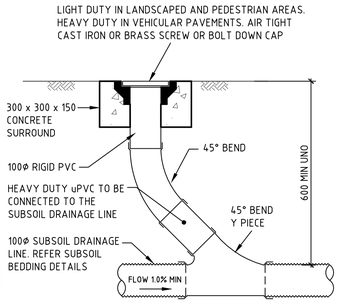
SCALE 1:10



FLUSHOUT RISER (FOR)

SCALE 1:10

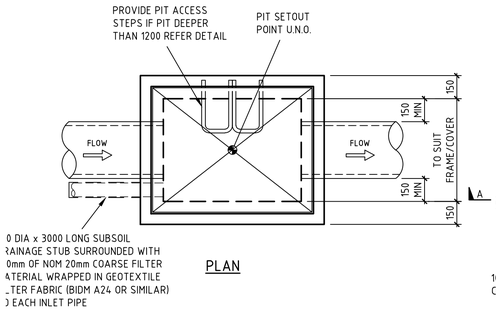
NOTE: SLOTTED RIGID PVC PIPE AND FITTINGS WITHIN DRAINAGE LAYER ONLY



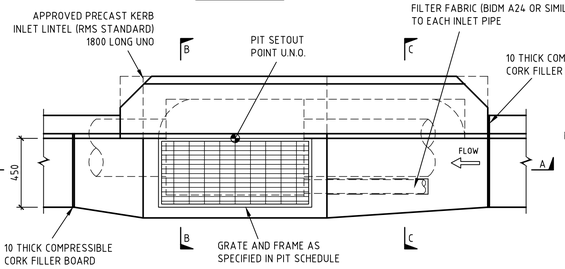
INTERMEDIATE RISER

SCALE 1:10

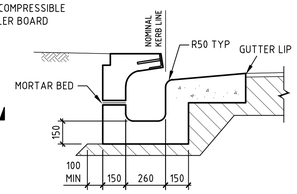
NOTE: SLOTTED RIGID PVC PIPE AND FITTINGS MAY BE USED



PLAN



PLAN



SECTION C -C

SURFACE INLET/JUNCTION PIT DETAIL

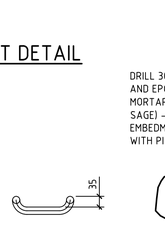
SCALE 1:20

KERB INLET PIT DETAIL

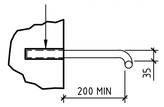
SCALE 1:20

STORMWATER PIT NOTES

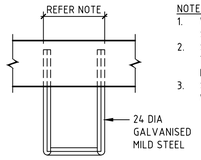
1. CONCRETE TO HAVE A MIN. COMPRESSIVE STRENGTH (F'c) OF 25 MPa AT 28 DAYS.
2. REINFORCEMENT NOT REQUIRED IF DEPTH OF PIT IS LESS THAN 1000mm. PITS GREATER THAN 3000mm DEEP TO HAVE WALL AND BASE 200mm THICK REINFORCED WITH N12-250 EACH WAY EACH FACE WITH CONCRETE STRENGTH F'c = 40 MPa.
3. PROVIDE STEP IRONS AT MAX 350mm CTRS IF DEPTH OF PIT EXCEEDS 1200mm.
4. IF REINFORCING FABRIC IS TO BE USED REFER TO WALL AND CORNER DETAILS
5. PRECAST PITS ARE TO GENERALLY COMPLY WITH THESE DETAILS.
6. PRECAST PIT MAY BE USED SUBJECT TO ENGINEERS APPROVAL.
7. ALL PITS TO BE LOCKABLE.
8. FINAL INTERNAL PIT DIMENSIONS ARE TO COMPLY WITH AS 3500.



FRONT ELEVATION

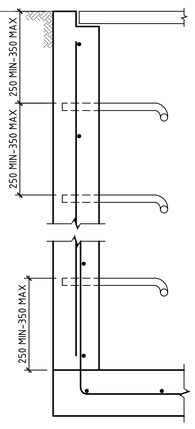


SIDE ELEVATION



PLAN

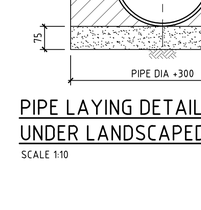
NOTES
1. WHEN POSITIONED IN STRAIGHT ALIGNMENT, STEP TO BE 400 WIDE.
2. STAGGERED STEPS TO BE 200 WIDE, STEPS TO BE STAGGERED 200 CENTRE TO CENTRE FOR ALTERNATIVE STEPS.
3. SPACING OF STEPS TO BE UNIFORM TO WITHIN ±8mm IN EACH PIT.



SECTION

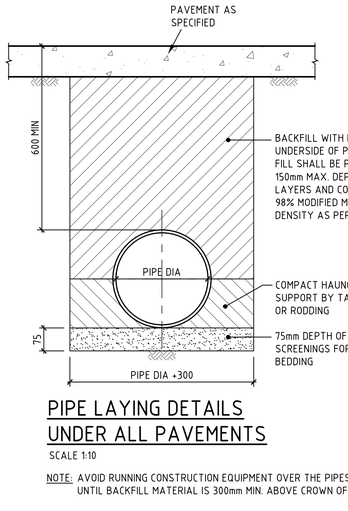
PIT ACCESS STEP DETAIL

SCALE 1:10



PIPE LAYING DETAIL (ALL PIPES) UNDER LANDSCAPED AREAS

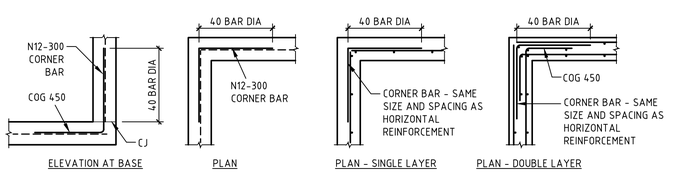
SCALE 1:10



PIPE LAYING DETAILS UNDER ALL PAVEMENTS

SCALE 1:10

NOTE: AVOID RUNNING CONSTRUCTION EQUIPMENT OVER THE PIPES UNTIL BACKFILL MATERIAL IS 300mm MIN. ABOVE CROWN OF PIPE.

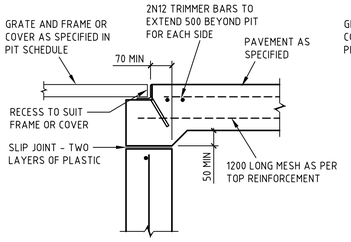


FABRIC REINFORCEMENT

PIT CORNER DETAILS

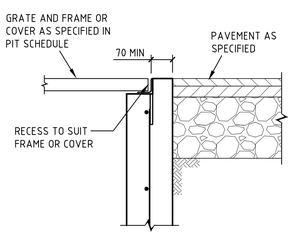
SCALE 1:20

NOTE: DESIGNER TO VERIFY EXTENT OF DETAILING



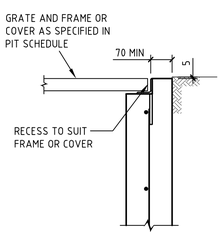
DETAIL A

SCALE 1:10



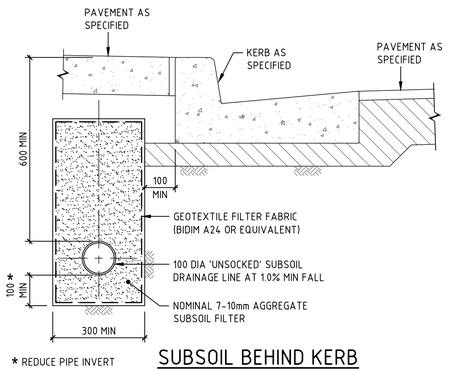
DETAIL B

SCALE 1:10



DETAIL C

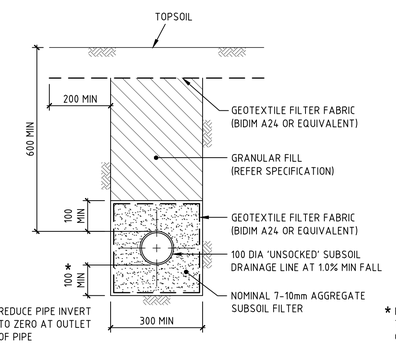
SCALE 1:10



* REDUCE PIPE INVERT TO ZERO AT OUTLET OF PIPE

SUBSOIL BEHIND KERB

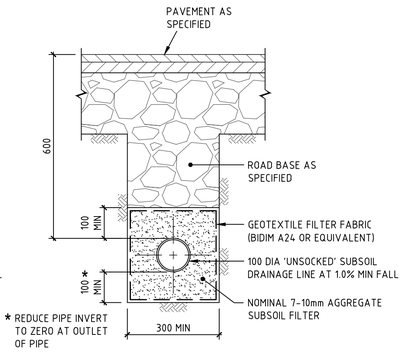
SCALE 1:10



* REDUCE PIPE INVERT TO ZERO AT OUTLET OF PIPE

SUBSOIL IN LANDSCAPED AREAS

SCALE 1:10



* REDUCE PIPE INVERT TO ZERO AT OUTLET OF PIPE

SUBSOIL IN PAVED AREAS

SCALE 1:10

A1 841 x 594
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PROJECT
NEW WESTERN SYDNEY UNIVERSITY BANKSTOWN CITY CAMPUS
74 RICKARD ROAD ALONG WITH A PORTION OF 375 CHAPEL ROAD

DRAWING TITLE
SITEWORKS AND STORMWATER DETAILS SHEET 2

SSDA SUBMISSION

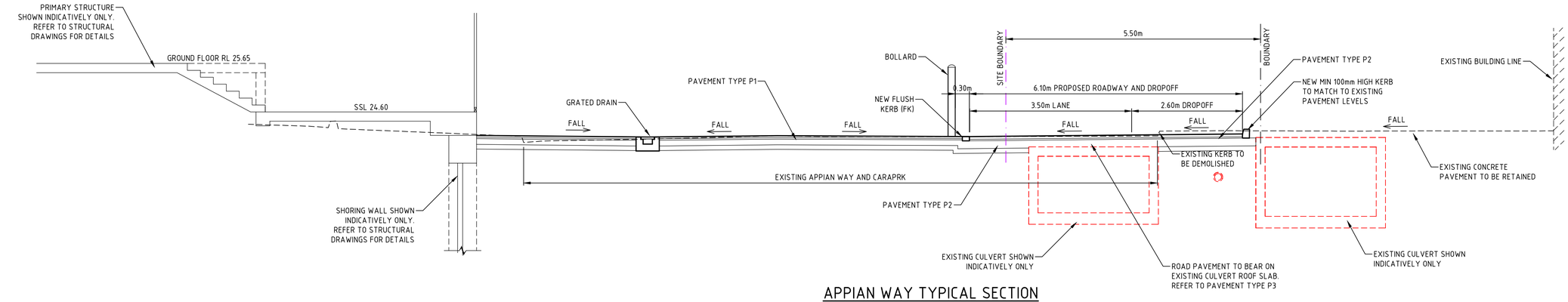
NORTH

SCALE
NOTED

JOB No.	DRAWN	CHECKED	DATE
1097901C	PA	-	-

DRAWING No.
C00-61

REVISION
08



APPIAN WAY TYPICAL SECTION

SECTION 1 — C00-43
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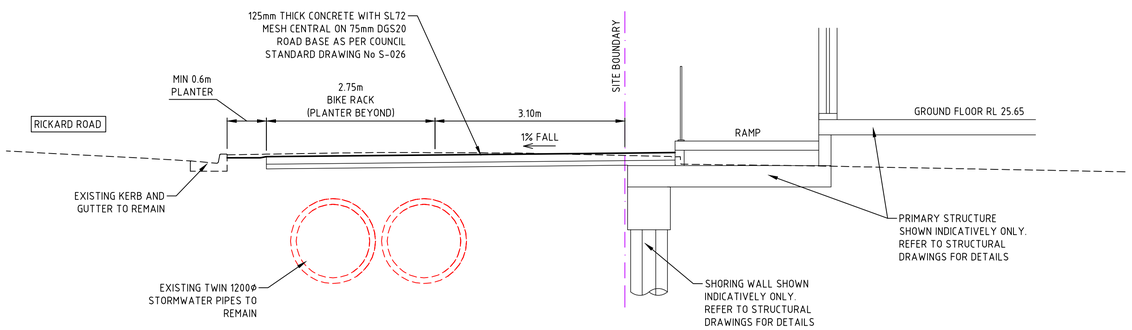

RICKARD ROAD FRONTAGE TYPICAL SECTION

SECTION 2 — C00-43
SCALE 1:50

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Plotted: 13.08.20 at 4:58 PM

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REV.	DETAILS	DATE
01	FOR SEARS	19.07.19
02	FOR SEARS	23.08.19
03	SSDA SUBMISSION	31.07.20
04	SSDA SUBMISSION	14.08.20

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GENERAL NOTES
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PROJECT
NEW WESTERN SYDNEY UNIVERSITY
BANKSTOWN CITY CAMPUS
74 RICKARD ROAD ALONG WITH A PORTION OF 375 CHAPEL ROAD

DRAWING TITLE
TYPICAL SITE SECTIONS

SSDA SUBMISSION

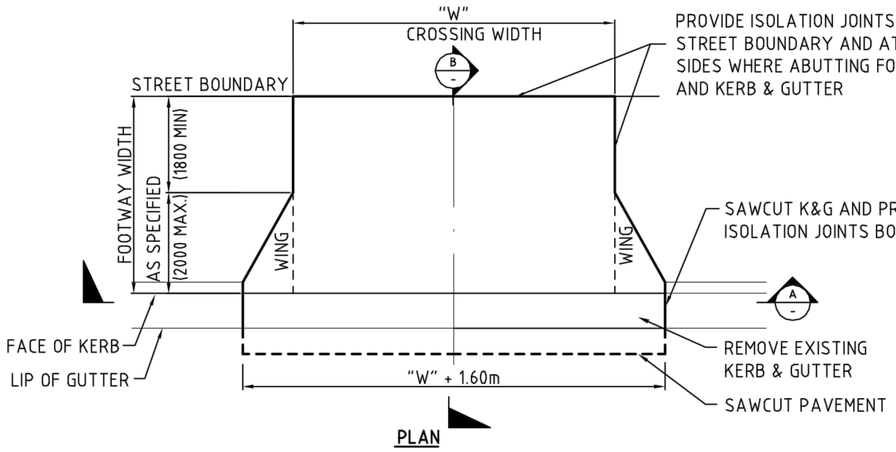
NORTH

SCALE 1:50 @ A1

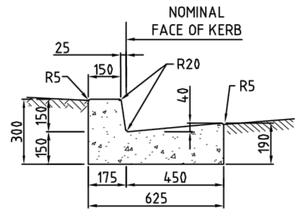
JOB No.	DRAWN	CHECKED	DATE
1097901C	JF	-	-

DRAWING No. **C00-62**

REVISION **04**



ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE



STANDARD KERB & GUTTER

NOTES :

1. VEHICULAR FOOTWAY CROSSING LEVELS AND DIMENSIONS TO BE IN ACCORDANCE WITH DETAILED DRAWING ISSUED BY COUNCIL
2. ROAD BASE MATERIAL IS TO BE CRUSHED ROCK GRADED TO DGB20, CRUSHED CONCRETE GRADED TO DGS20, OR GRADED RECYCLED ASPHALT WITH MAX. PARTICLE SIZE OF 20.
3. CONCRETE: STRENGTH GRADE N32, 20mm MAX SIZE AGGREGATE, IN ACCORDANCE WITH AS3600
4. RMS 40MPa SP40H CONCRETE MIX (WITH <0.8% CaCl2) CAN BE USED TO ALLOW TRAFFIC AFTER 12 HOURS. CaCl2 IS CORROSIVE AND ALL STEEL MESH AND DOWELS MUST BE GALVANISED.
5. ASPHALT HOTMIX TO BE SUPPLIED AND COMPACTED AT A MINIMUM TEMPERATURE OF 140°C IN ACCORDANCE WITH AS2150. **(COLD MIX NOT PERMITTED).**
6. ISOLATION JOINTS SHALL CONSIST OF FULL DEPTH 10MM THICK COMPRESSIBLE FILLER. EITHER BITUMEN IMPREGNATED FIBREBOARD OR CLOSED CELL POLYETHYLENE FOAM SEALED WITH 10x10 POLYURETHANE SEALANT. ISOLATION JOINTS SHALL BE INSTALLED WHERE THE CONCRETE SLAB ABUTS HARD SURFACES.
7. PAVEMENT ADJOINING KERB AND GUTTER IS TO BE RECONSTRUCTED 300mm WIDE AS DETAILED. COUNCILS SUPERVISOR MAY ALLOW THE EXISTING PAVEMENT TO BE RETAINED IF IN GOOD CONDITION. ALTERNATE AC LAYERING MAY BE APPROVED.
8. PROVIDE 65 TOP COVER TO STEEL MESH REINFORCEMENT AND 75 COVER AT ENDS. STEEL MESH IS TO BE PLACED ON PLASTIC BAR CHAIRS IN A REGULAR GRID NOT EXCEEDING 1.0m SPACING.
9. POLYETHYLENE SHEETING IS TO BE PLACED UNDER THE CONCRETE WHERE THE VFC IS CONTAINED ON BOTH SIDES BY FULL WIDTH PAVING.
10. ALL PERIMETER EDGES TO BE ROUNDED TO 20 RADIUS USING AN EDGING TOOL.
11. ADJOINING EXISTING CONCRETE FOOTPAVING IS TO BE RECONSTRUCTED TO MATCH THE VFC AT A GRADE GENERALLY NOT EXCEEDING 1 in 14 AS REQUIRED BY THE COUNCIL SUPERVISOR.
12. ADJOINING NATURAL FOOTWAY IS TO BE SHAPED TO GRADE EVENLY TO THE VFC AS REQUIRED BY THE COUNCIL SUPERVISOR. DISTURBED AREAS TO BE TURFED.
13. THIS PLAN APPLIES FOR HEAVY TRUCK MOVEMENTS OF LESS THAN 25 PER DAY.
14. THIS PLAN DOES NOT APPLY FOR FOOTWAY WIDTHS LESS THAN 2800.

CANTERBURY BANKSTOWN

CITY OF CANTERBURY BANKSTOWN

STD DWG N° S-009

STANDARD HEAVY DUTY VEHICULAR FOOTWAY CROSSING (VFC)

PLAN VIEW, SECTIONS AND GENERAL NOTES

Sheet N°: 1 of 1 | Revision: 1/05/2017

File Name: S-009.dwg

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Plotted: 13.08.20 at 4:59 PM

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REV.	DETAILS	DATE
01	FOR SEARS	19.07.19
02	FOR SEARS	23.08.19
03	SSDA SUBMISSION	31.07.20
04	SSDA SUBMISSION	14.08.20

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PROJECT
NEW WESTERN SYDNEY UNIVERSITY BANKSTOWN CITY CAMPUS
74 RICKARD ROAD ALONG WITH A PORTION OF 375 CHAPEL ROAD

DRAWING TITLE
COUNCIL STANDARD LAYBACK

SSDA SUBMISSION

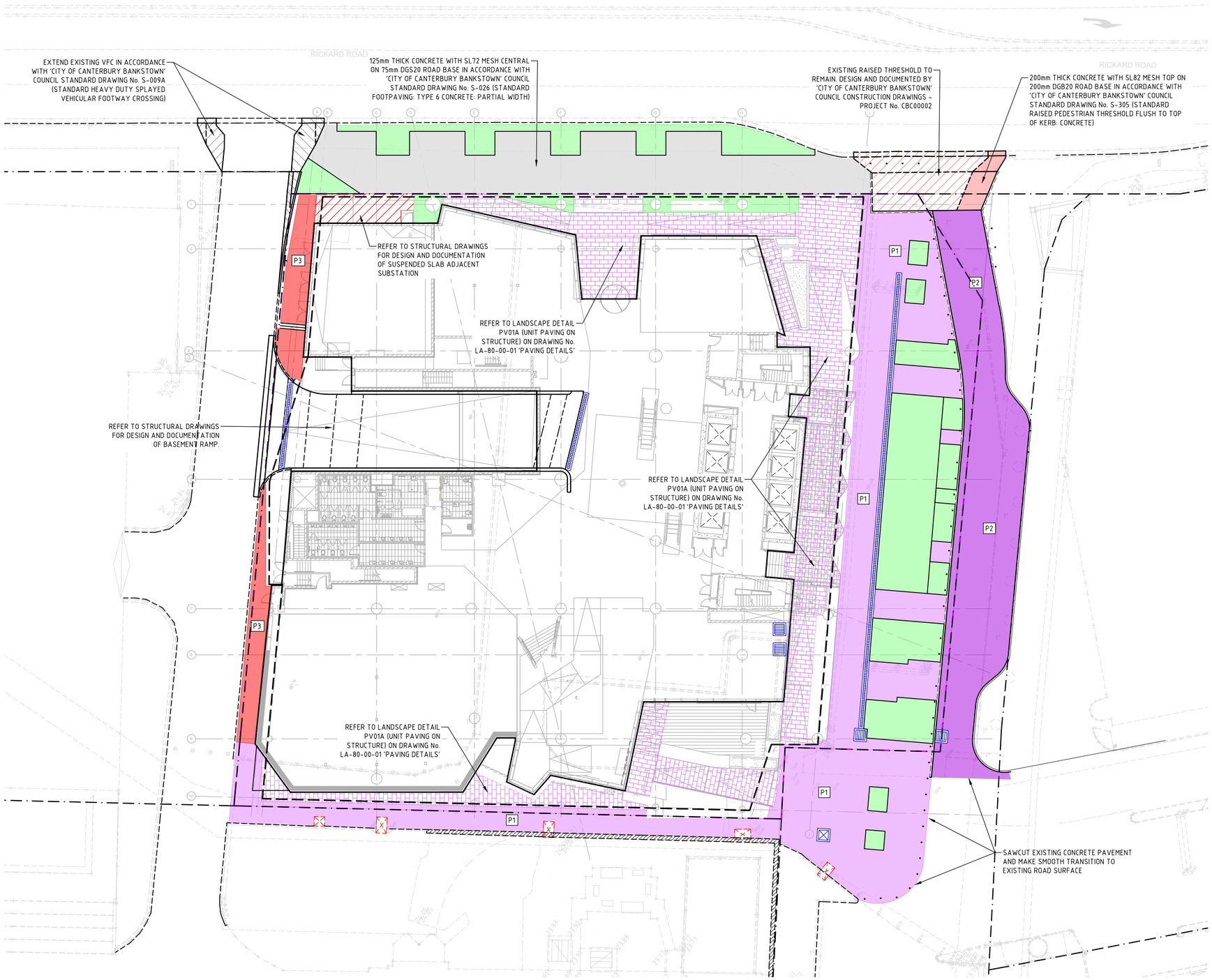
NORTH

SCALE: NOTED

JOB No.	DRAWN	CHECKED	DATE
1097901C	PA	-	-

DRAWING No.: **C00-65**

REVISION: **04**



PAVEMENT LEGEND

- PAVEMENT TYPE P1 LIGHT DUTY UNIT PAVERS
- PAVEMENT TYPE P2 HEAVY DUTY UNIT PAVERS
- PAVEMENT TYPE P3 CONCRETE FOOTPATH PAVEMENT
- REFER TO STRUCTURAL DRAWINGS FOR DESIGN AND DOCUMENTATION OF SUSPENDED SLAB ADJACENT SUBSTATION
- 125mm THICK CONCRETE WITH SL72 MESH CENTRAL ON 75mm DGS20 ROAD BASE IN ACCORDANCE WITH 'CITY OF CANTERBURY BANKSTOWN' COUNCIL STANDARD DRAWING No. S-026 (STANDARD FOOTPAVING: TYPE 6 CONCRETE: PARTIAL WIDTH)
- REFER TO LANDSCAPE DETAIL PV01A (UNIT PAVING ON STRUCTURE) ON DRAWING No. LA-80-00-01 'PAVING DETAILS'
- VEHICULAR FOOTWAY CROSSING (VFC) EXTENSION IN ACCORDANCE WITH 'CITY OF CANTERBURY BANKSTOWN' COUNCIL STANDARD DRAWING No. S-009A (STANDARD HEAVY DUTY SPLAYED VEHICULAR FOOTWAY CROSSING)
- EXISTING RAISED THRESHOLD TO REMAIN. DESIGN AND DOCUMENTED BY 'CITY OF CANTERBURY BANKSTOWN' COUNCIL CONSTRUCTION DRAWINGS - PROJECT No. CBC00002
- 200mm THICK CONCRETE WITH SL82 MESH TOP ON 200mm DGB20 ROAD BASE IN ACCORDANCE WITH 'CITY OF CANTERBURY BANKSTOWN' COUNCIL STANDARD DRAWING No. S-305 (STANDARD RAISED PEDESTRIAN THRESHOLD FLUSH TO TOP OF KERB: CONCRETE)
- LANDSCAPE (REFER TO LANDSCAPE CONSULTANTS DRAWINGS AND SPECIFICATIONS)

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REV.	DETAILS	DATE
01	PRELIMINARY DRAFT ISSUE	25.02.19
02	SCHEMATIC DESIGN	12.03.19
03	FOR SEARS	21.06.19
04	ISSUED FOR DETAILED DESIGN	28.06.19
05	FOR SEARS	19.07.19
06	FOR SEARS	23.08.19
07	SSDA SUBMISSION	31.07.20
08	SSDA SUBMISSION	14.08.20

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PROJECT
NEW WESTERN SYDNEY UNIVERSITY BANKSTOWN CITY CAMPUS
74 RICKARD ROAD ALONG WITH A PORTION OF 375 CHAPEL ROAD

DRAWING TITLE
OVERALL PAVEMENT PLAN

SSDA SUBMISSION

NORTH

SCALE 1:200 @ A1

JOB No.	DRAWN	CHECKED	DATE
1097901C	PA		

DRAWING No. **C00-70**

REVISION **08**

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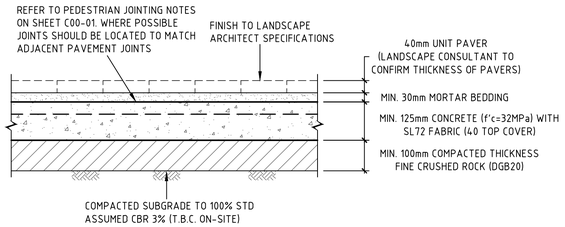
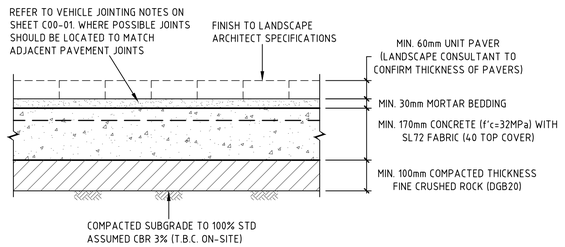


PAVEMENT TYPE P1
PEDESTRIAN UNIT PAVERS ON GRADE

SCALE 1:10

DENOTED ON PLAN



PAVEMENT TYPE P2
TRAFFICABLE UNIT PAVERS

SCALE 1:10

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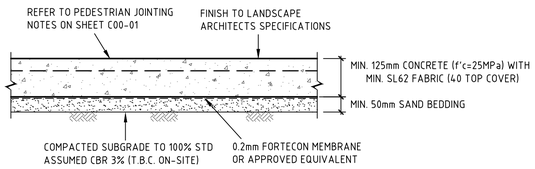
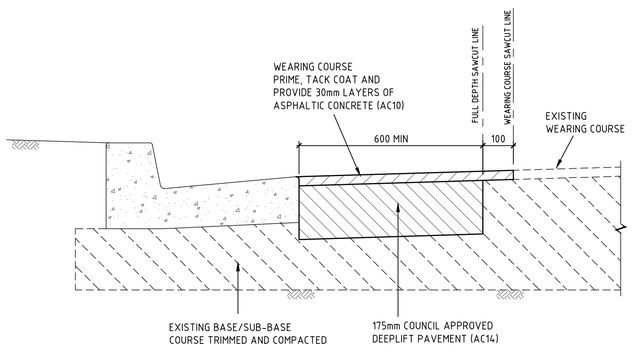


PAVEMENT TYPE P3
CONCRETE FOOTPATH PAVEMENT

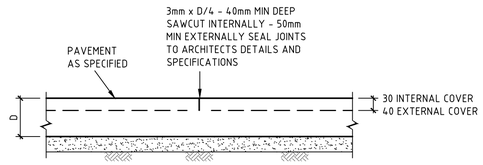
SCALE 1:10

DENOTED ON PLAN



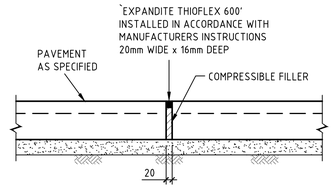
PAVEMENT - DEEPLIFT

SCALE 1:10



SAWCUT JOINT (SJ)

SCALE 1:10

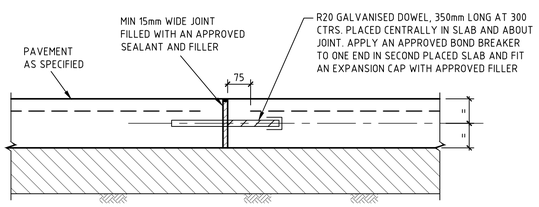


EXPANSION JOINT (EJ)

SCALE 1:10

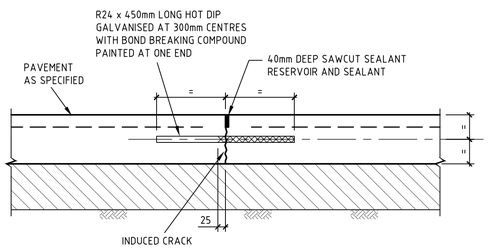
NOTES

1. SLAB MUST BE SAWCUT AS SOON AS PRACTICABLE AFTER FINISHING OF THE SLAB WITHOUT CAUSING DAMAGE TO THE SAWCUT EDGES - USUALLY 12-24 HOURS.
2. SLABS MUST NOT BE POURED IF TEMPERATURE EXCEEDS 32°
3. HOT WEATHER PLACING (25° AND OVER) MAY REQUIRE SLABS TO BE SAWCUT AS SOON AS 5-6 HOURS AFTER POURING.
4. ANY SLAB BAY IN WHICH SHRINKAGE CRACKS OCCUR DUE TO LATE SAWCUTTING MUST BE REMOVED AND REPLACED BY THE BUILDER/CONTRACTOR.



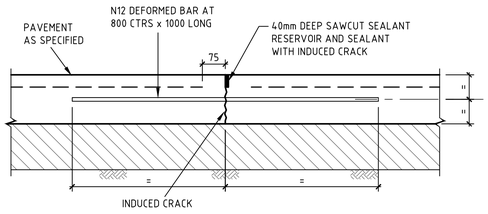
DOWELLED EXPANSION JOINT (DEJ)

SCALE 1:10



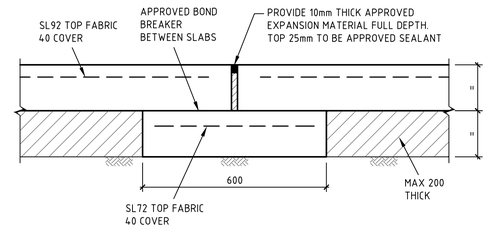
TRANSVERSE CONTRACTION JOINT (TCJ)

SCALE 1:10



LONGITUDINAL WARPING JOINT (LWJ)

SCALE 1:10



ISOLATION JOINT (IJ) WITH SUBGRADE BEAM

SCALE 1:20

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REV.	DETAILS	DATE
01	SSDA SUBMISSION	31.07.20
02	SSDA SUBMISSION	14.08.20

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GENERAL NOTES

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PROJECT
NEW WESTERN SYDNEY UNIVERSITY
BANKSTOWN CITY CAMPUS
74 RICKARD ROAD ALONG WITH A PORTION OF 375 CHAPEL ROAD

DRAWING TITLE
PAVEMENT DETAILS

SSDA SUBMISSION

NORTH

SCALE
1:10 @ A1

JOB No.	DRAWN	CHECKED	DATE
1097901C	JF	-	-

DRAWING No.
C00-75

REVISION
02

A1 841 x 594
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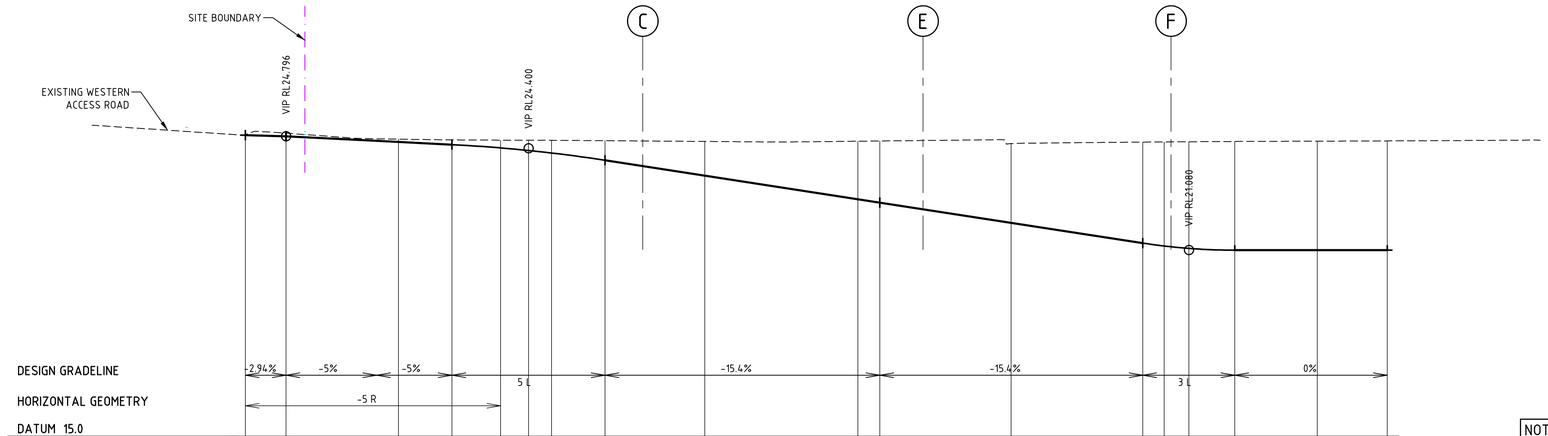

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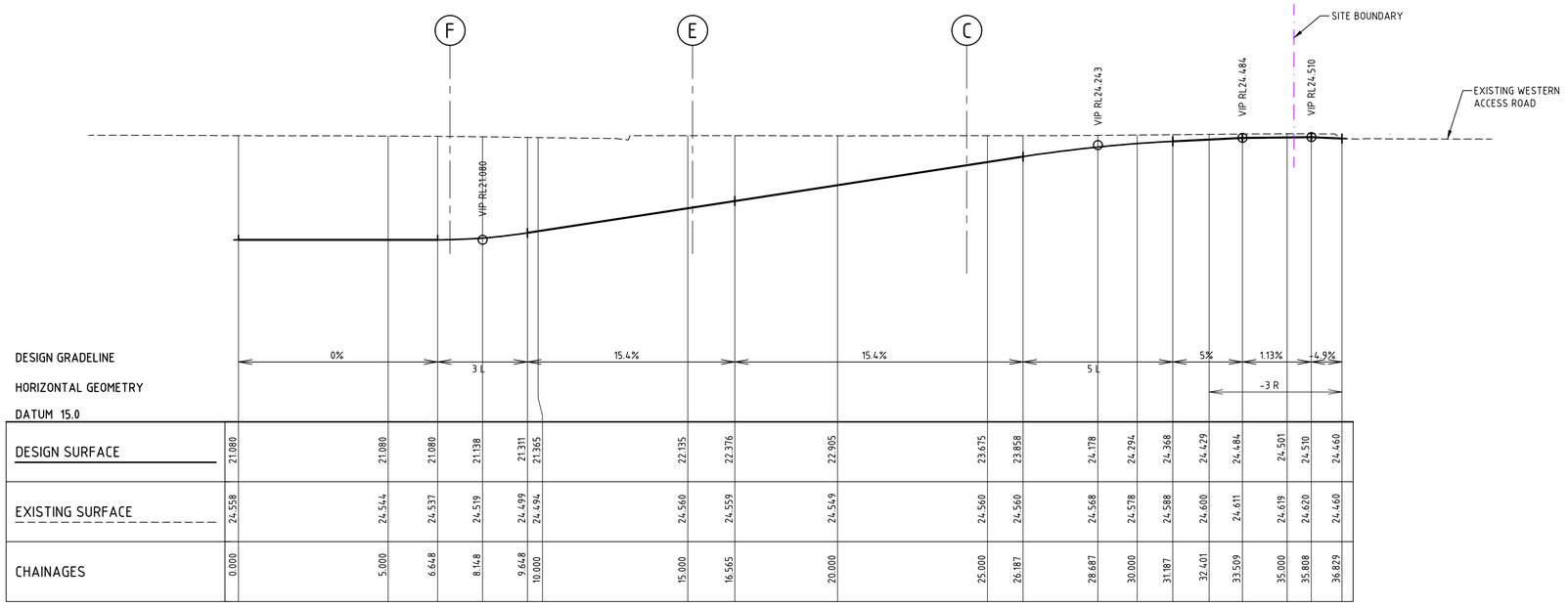
EXISTING SURFACE	24.835	24.900	24.704	24.681	24.672	24.670	24.667	24.654	24.630	24.637	24.644	24.559	24.608	24.614	24.620	24.629	24.638	24.647
CHAINAGES	-0.000	1.327	5.000	6.745	8.336	9.245	10.000	11.745	15.000	20.000	20.718	25.000	29.304	30.000	30.804	32.304	35.000	37.283

1 in 100 HORIZONTAL
1 in 100 VERTICAL

MR02 LONGITUDINAL SECTION



DESIGN SURFACE	21.080	21.080	21.080	21.138	21.311	21.365	22.135	22.376	22.905	23.675	23.858	24.178	24.294	24.368	24.429	24.484	24.501	24.510	24.460
EXISTING SURFACE	24.558	24.544	24.537	24.519	24.499	24.494	24.560	24.559	24.549	24.560	24.560	24.568	24.578	24.588	24.600	24.611	24.619	24.620	24.460
CHAINAGES	0.000	5.000	6.648	8.148	9.648	10.000	15.000	16.565	20.000	25.000	26.187	28.687	30.000	31.187	32.401	33.509	35.000	35.808	36.829

1 in 100 HORIZONTAL
1 in 100 VERTICAL

MR03 LONGITUDINAL SECTION

NOTES
1. REFER TO DRAWING C00-81 FOR KERB SETOUTS
2. EXISTING GROUND SURFACE INTERPOLATED FROM SITE SURVEY SUPPLIED BY 'RPS AUSTRALIA EAST' PTY LTD JOB No. PR140676 ISSUE D DATED 21.07.20 DRAWING No. PR140676-DS-001D
3. RAMP DESIGN HAS BEEN CHECKED WITH GROUND CLEARANCE TEMPLATES FOR A MEDIUM RIGID VEHICLE IN-LIEU OF THE MAXIMUM CHANGE OF GRADE SPECIFIED IN AS2890.2 TABLE 3.2. REFER TO TRAFFIC CONSULTANTS DOCUMENT SUPPLIED BY 'ARUP' JOB No. 263785-00 DRAWING No. SKT001 REV A DATED 29/07/20.

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REV.	DETAILS	DATE
01	ISSUED FOR DETAILED DESIGN	28.06.19
02	FOR SEARS	19.07.19
03	FOR SEARS	23.08.19
04	SSDA SUBMISSION	31.07.20
05	SSDA SUBMISSION	14.08.20

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GENERAL NOTES

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PROJECT
NEW WESTERN SYDNEY UNIVERSITY
BANKSTOWN CITY CAMPUS
74 RICKARD ROAD ALONG WITH A PORTION OF 375 CHAPEL ROAD

DRAWING TITLE
BASEMENT RAMP
LONGITUDINAL SECTIONS

SSDA SUBMISSION

NORTH

SCALE
1:100 @ A1

JOB No.	DRAWN	CHECKED	DATE
1097901C	JF	-	-

DRAWING No.
C00-80

REVISION
05

A1 841 x 594
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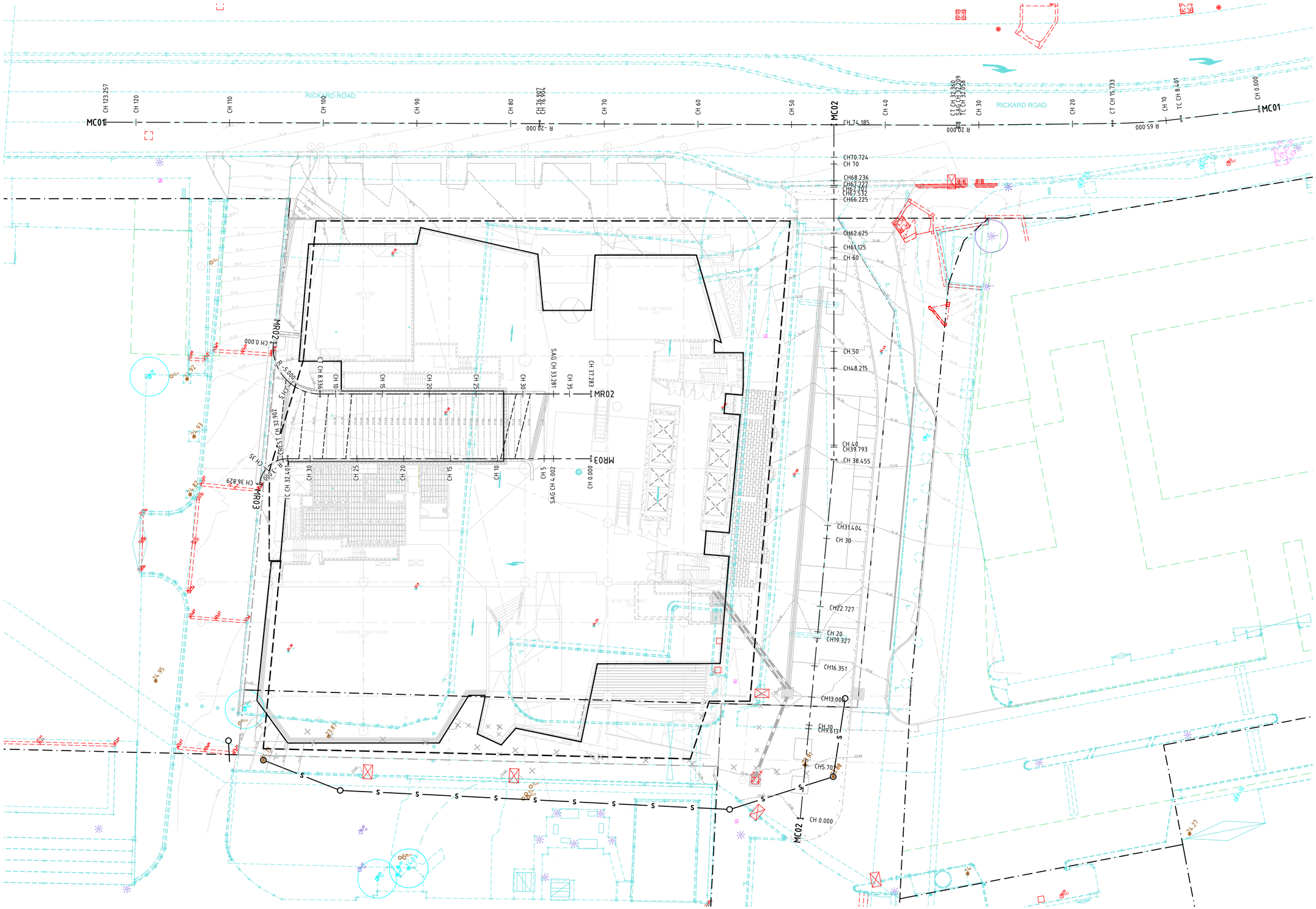

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REV.	DETAILS	DATE
01	DRAFT SSDA	22.07.20
02	SSDA SUBMISSION	31.07.20
03	SSDA SUBMISSION	14.08.20

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GENERAL NOTES
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PROJECT
NEW WESTERN SYDNEY UNIVERSITY
BANKSTOWN CITY CAMPUS
74 RICKARD ROAD ALONG WITH A PORTION OF 375 CHAPEL ROAD

DRAWING TITLE
ROAD SETOUT PLAN

SSDA SUBMISSION

NORTH

SCALE
1:200 @ A1

JOB No.	DRAWN	CHECKED	DATE
1097901C	JF	-	-

DRAWING No.
C00-81

REVISION
03

A1 841 x 594
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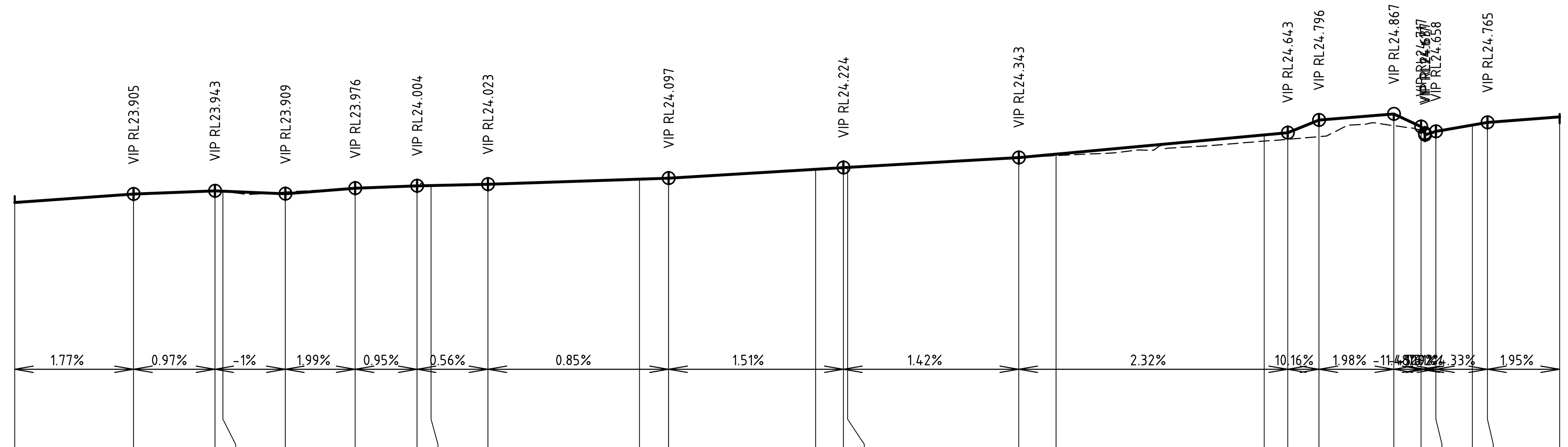

DESIGN SURFACE	23.804	23.905	23.943	23.939	23.909	23.976	24.004	24.008	24.023	24.085
EXISTING SURFACE	23.804	23.899	23.942	23.934	23.930	23.976	24.004	23.999	24.023	24.085
CHAINAGES	0.000	5.707	9.613	10.000	13.000	16.351	19.327	20.000	22.727	30.000

DESIGN SURFACE	24.097	24.204	24.224	24.227	24.343	24.385	24.617	24.643
EXISTING SURFACE	24.097	24.204	24.226	24.229	24.343	24.367	24.541	24.564
CHAINAGES	31.404	38.455	39.793	40.000	48.215	50.000	60.000	61.125

DESIGN SURFACE	24.796	24.867	24.717	24.658	24.734	24.765	24.833
EXISTING SURFACE	24.595	24.728	24.669	24.658	24.736	24.765	24.833
CHAINAGES	62.625	66.225	67.532	68.236	70.000	70.724	74.185

1 in 200 HORIZONTAL
1 in 50 VERTICAL

MC02 LONGITUDINAL SECTION

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REV.	DETAILS	DATE
01	DRAFT SSDA	22.07.20
02	SSDA SUBMISSION	31.01.20
03	SSDA SUBMISSION	14.08.20

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PROJECT
NEW WESTERN SYDNEY UNIVERSITY
BANKSTOWN CITY CAMPUS
74 RICKARD ROAD ALONG WITH A PORTION OF 375 CHAPEL ROAD

SSDA SUBMISSION

NORTH

SCALE
1:100 @ A1

DRAWING TITLE
ROAD LONGITUDINAL SECTIONS

JOB No.	DRAWN	CHECKED	DATE
1097901C	PA	-	-

DRAWING No. C00-82
REVISION 03

A1 841 x 594
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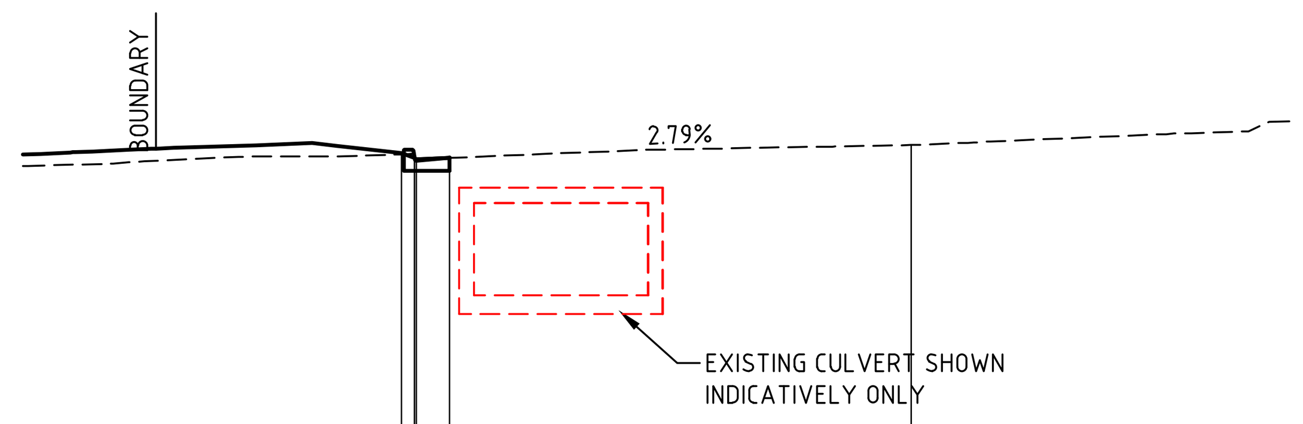
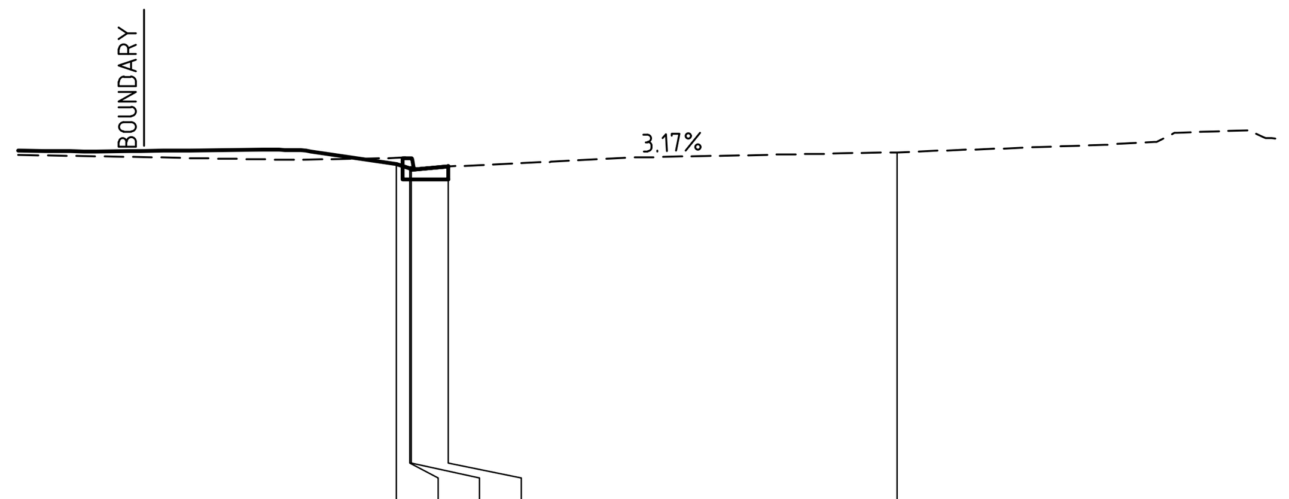
Plotted: 14.08.20 at 10:06 AM



EASTING 318427.413
NORTHING 6245559.877
DATUM RL 20.000

DESIGN LEVEL	24.750	24.690	24.670	24.687	
EXISTING SURFACE LEVEL	24.735	24.707	24.670	24.687	24.858
DESIGN OFFSET	-6.739	-6.564	-6.544	-6.105	0.000

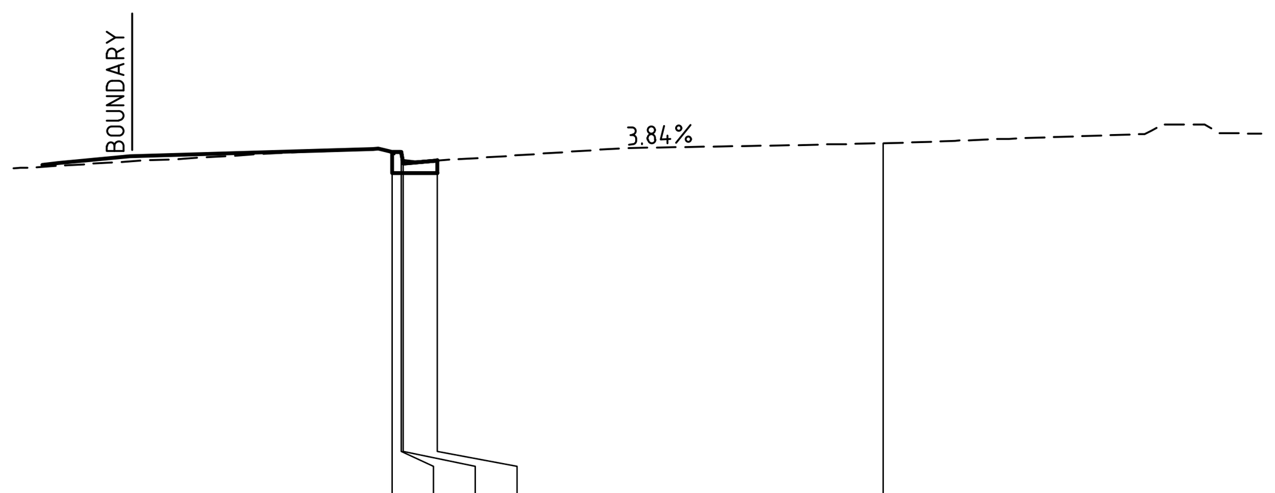
ROAD MC01
CH 50.000



EASTING 318437.326
NORTHING 6245558.563
DATUM RL 20.000

DESIGN LEVEL	24.650	24.590	24.570	24.615	
EXISTING SURFACE LEVEL	24.729	24.661	24.570	24.615	24.803
DESIGN OFFSET	-6.618	-6.443	-6.423	-5.933	0.000

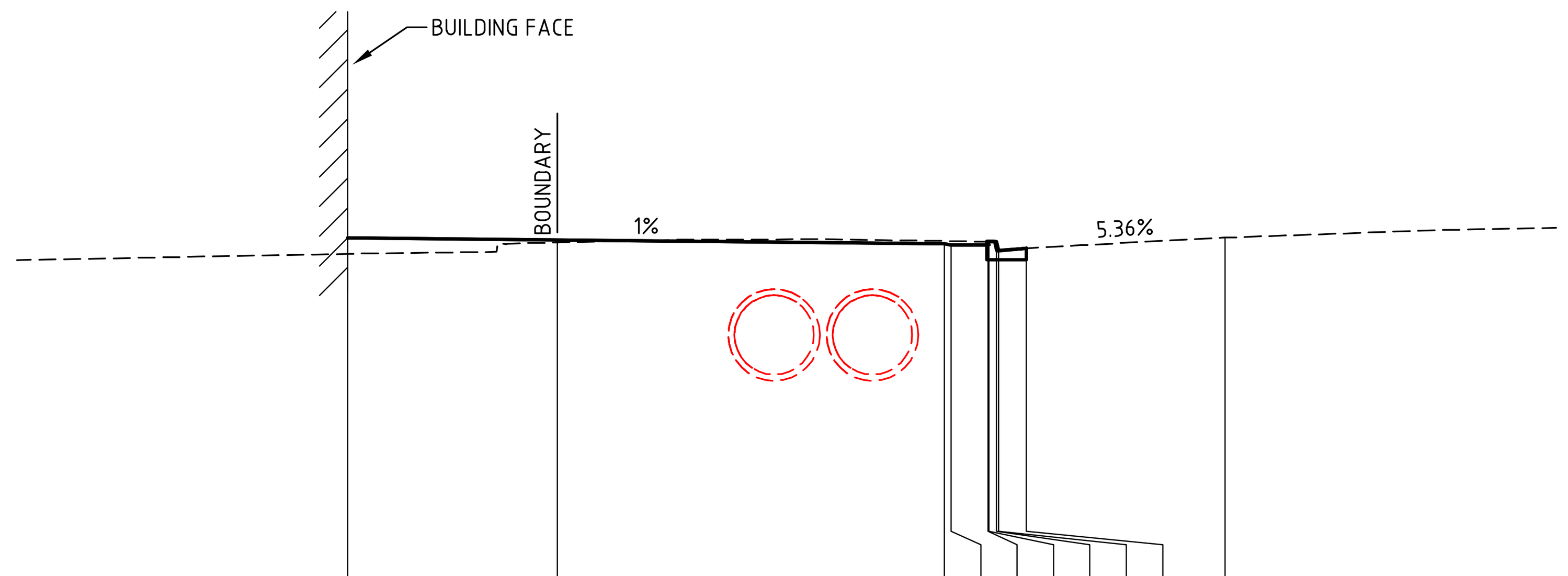
ROAD MC01
CH 40.000



EASTING 318443.77
NORTHING 6245557.71
DATUM RL 20.000

DESIGN LEVEL	24.651	24.651	24.501	24.541	
EXISTING SURFACE LEVEL	24.638	24.577	24.553	24.541	24.767
DESIGN OFFSET	-6.492	-6.372	-6.342	-5.892	0.000

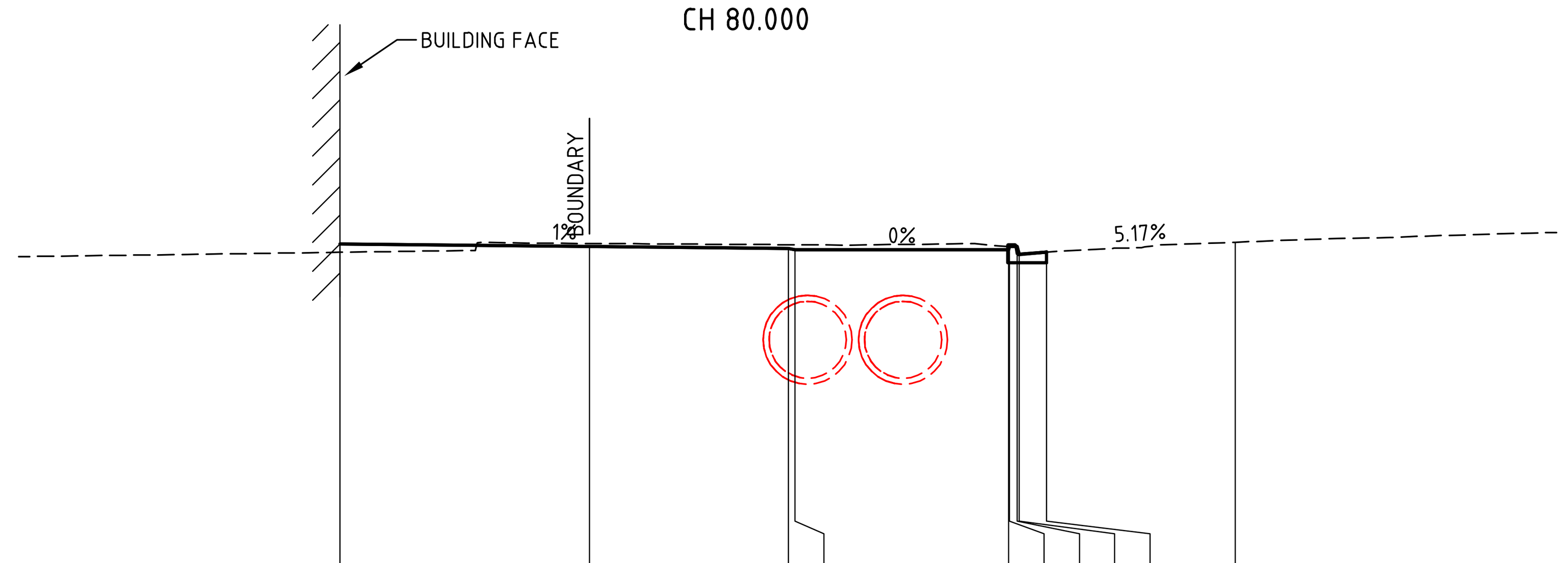
ROAD MC01
CH 33.500



EASTING 318397.673
NORTHING 6245563.816
DATUM RL 20.000

DESIGN LEVEL	25.136	25.104	25.046	25.026	25.026	25.076	25.076	24.943	24.976	
EXISTING SURFACE LEVEL	24.892	25.064	25.086	25.084	25.048	25.040	24.961	24.943	24.976	25.137
DESIGN OFFSET	-13.258	-10.094	-4.244	-4.144	-3.583	-3.573	-3.453	-3.423	-3.003	0.000

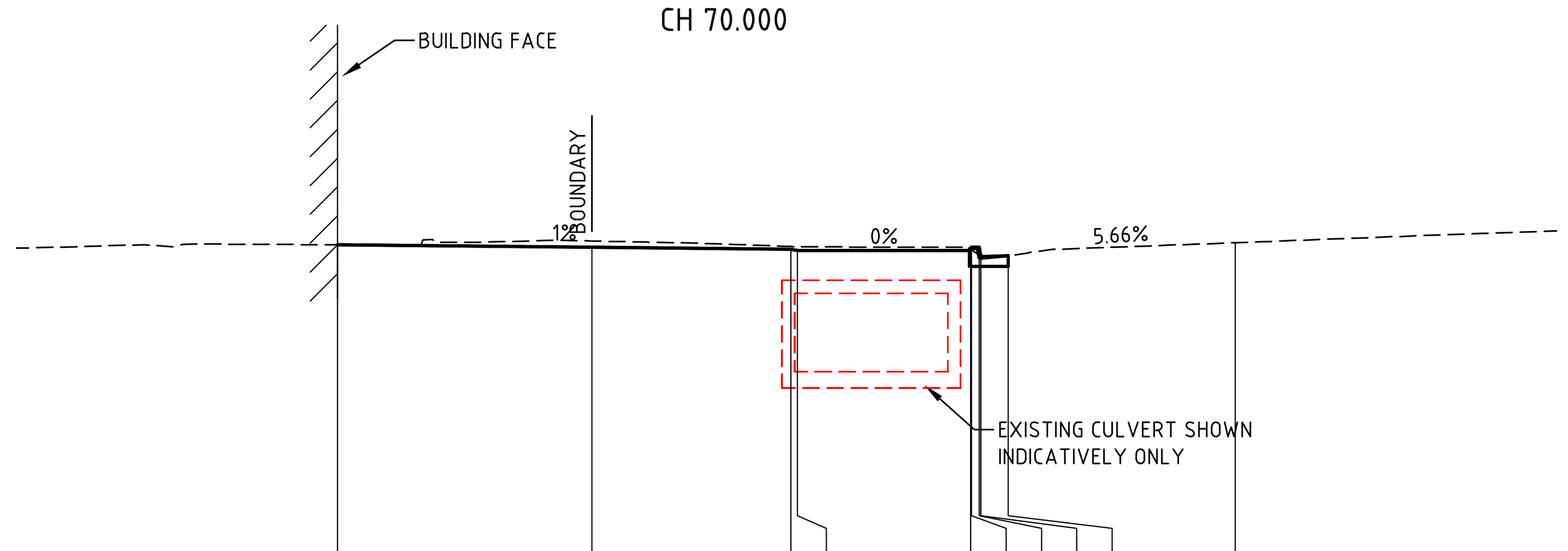
ROAD MC01
CH 80.000



EASTING 318407.586
NORTHING 6245562.503
DATUM RL 20.000

DESIGN LEVEL	25.015	24.976	24.945	24.925	24.925	24.975	24.975	24.859	24.891	
EXISTING SURFACE LEVEL	24.886	25.023	25.004	25.003	24.955	24.949	24.878	24.859	24.891	25.043
DESIGN OFFSET	-13.949	-10.058	-6.958	-6.858	-3.530	-3.520	-3.400	-3.370	-2.942	0.000

ROAD MC01
CH 70.000



EASTING 318417.5
NORTHING 6245561.19
DATUM RL 20.000

DESIGN LEVEL	24.915	24.875	24.844	24.824	24.824	24.874	24.874	24.728	24.745	
EXISTING SURFACE LEVEL	24.913	24.973	24.886	24.882	24.842	24.835	24.750	24.728	24.745	24.945
DESIGN OFFSET	-13.985	-10.022	-6.922	-6.822	-4.121	-4.111	-3.991	-3.961	-3.541	0.000

ROAD MC01
CH 60.000

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REV.	DETAILS	DATE
01	DRAFT SSDA	22.07.20
02	SSDA SUBMISSION	31.01.20
03	SSDA SUBMISSION	14.08.20

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GENERAL NOTES

PROJECT
NEW WESTERN SYDNEY UNIVERSITY
BANKSTOWN CITY CAMPUS
74 RICKARD ROAD ALONG WITH A PORTION OF 375 CHAPEL ROAD

SSDA SUBMISSION

NORTH

SCALE 1:100 @ A1

DRAWING TITLE
ROAD MC01 CROSS SECTIONS SHEET 1

JOB No.	DRAWN	CHECKED	DATE
1097901C	PA	-	-

DRAWING No. C00-83
REVISION 03

A1 841 x 594
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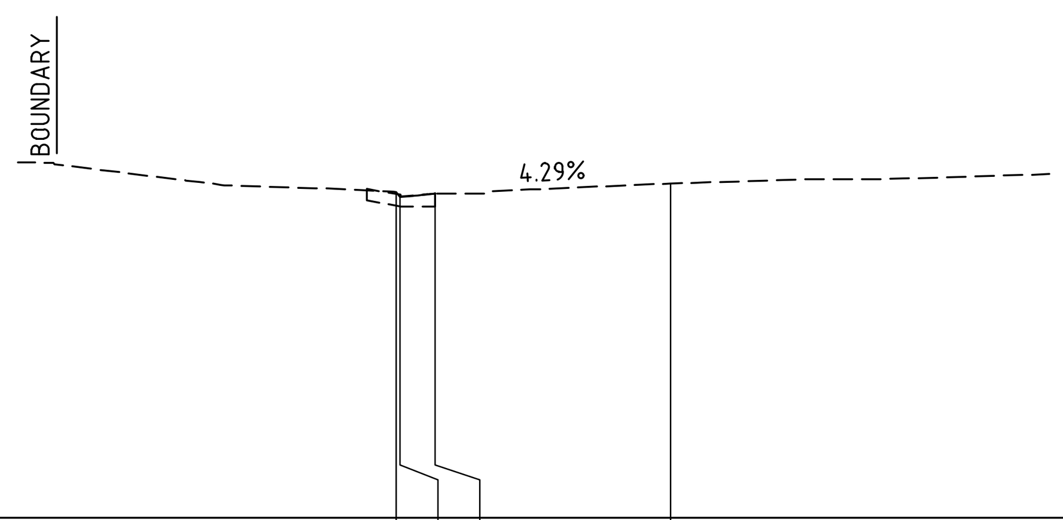
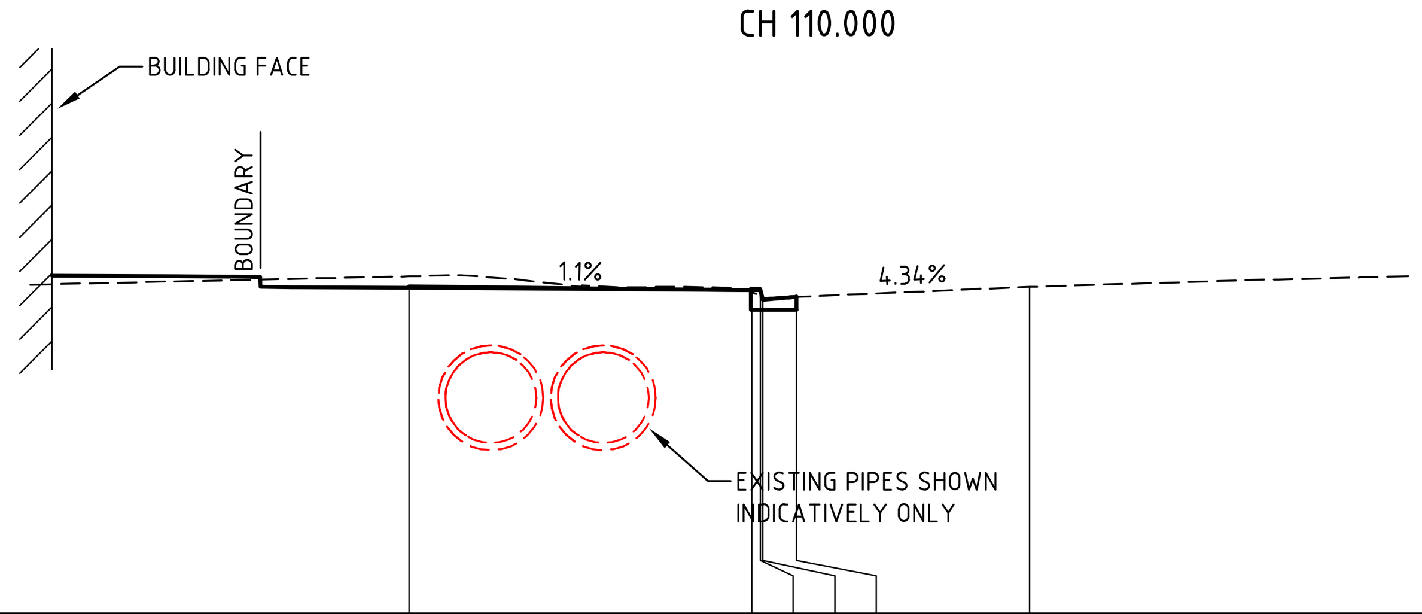
Plotted: 14.08.20 at 10:07 AM



EASTING 318367.932
NORTHING 6245567.751
DATUM RL 21.000

DESIGN LEVEL				
EXISTING SURFACE LEVEL	25.303	25.240	25.286	25.420
DESIGN OFFSET	-3.626	-3.576	-3.117	0.000

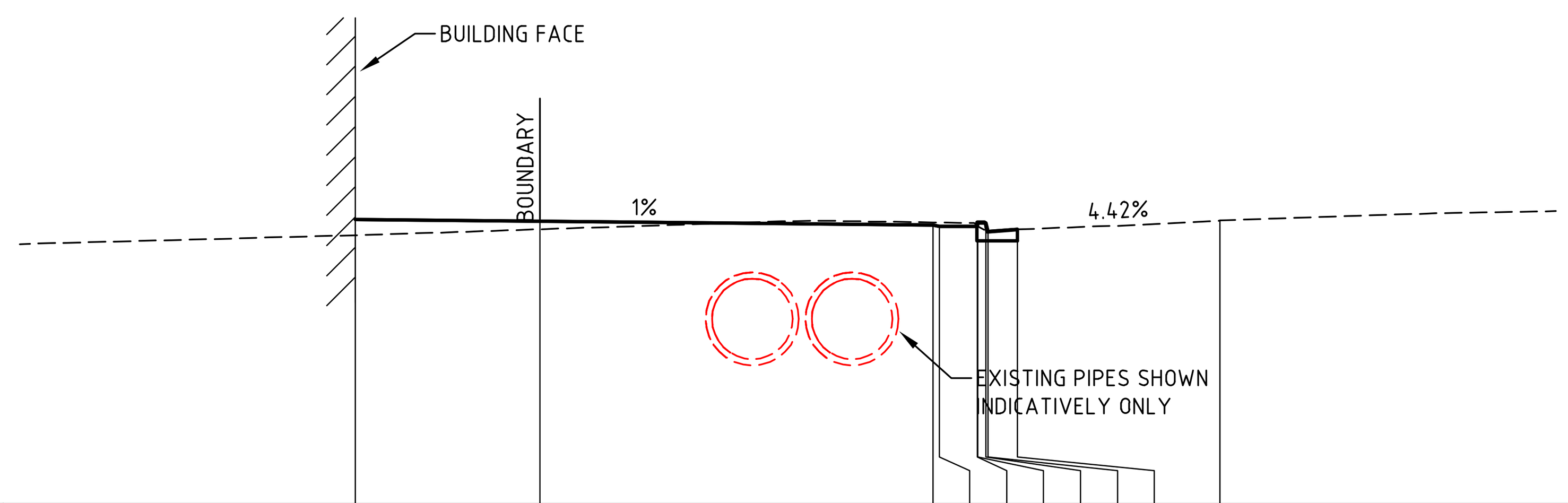
ROAD MC01 — CH 110.000



EASTING 318377.846
NORTHING 6245566.439
DATUM RL 21.000

DESIGN LEVEL	25.320	25.270	25.270	25.151	25.180	
EXISTING SURFACE LEVEL	25.452	25.280	25.181	25.151	25.180	25.314
DESIGN OFFSET	-8.203	-3.676	-3.556	-3.526	-3.084	0.000

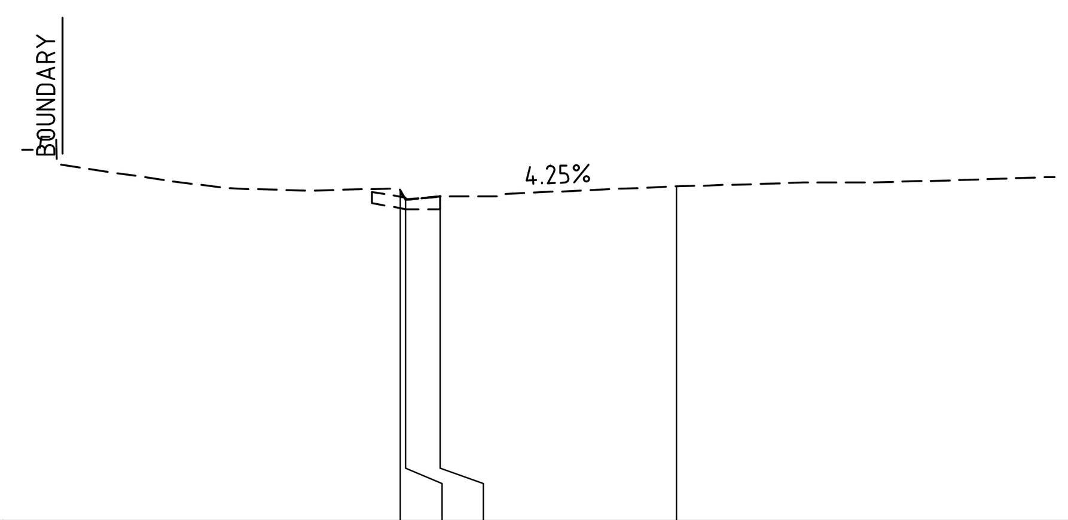
ROAD MC01 — CH 100.000



EASTING 318387.759
NORTHING 6245565.128
DATUM RL 21.000

DESIGN LEVEL	25.241	25.214	25.155	25.135	25.135	25.185	25.185	25.064	25.089	
EXISTING SURFACE LEVEL	25.004	25.093	25.195	25.193	25.146	25.140	25.073	25.064	25.089	25.223
DESIGN OFFSET	-12.878	-10.128	-4.278	-4.178	-3.618	-3.608	-3.488	-3.458	-3.021	0.000

ROAD MC01 — CH 90.000



EASTING 318367.226
NORTHING 6245567.845
DATUM RL 21.000

DESIGN LEVEL				
EXISTING SURFACE LEVEL	25.381	25.249	25.294	25.427
DESIGN OFFSET	-3.649	-3.580	-3.122	0.000

ROAD MC01 — CH 110.712

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REV.	DETAILS	DATE
01	DRAFT SSDA	22.07.20
02	SSDA SUBMISSION	31.01.20
03	SSDA SUBMISSION	14.08.20

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PROJECT
NEW WESTERN SYDNEY UNIVERSITY
BANKSTOWN CITY CAMPUS
74 RICKARD ROAD ALONG WITH A PORTION OF 375 CHAPEL ROAD

SSDA SUBMISSION

NORTH

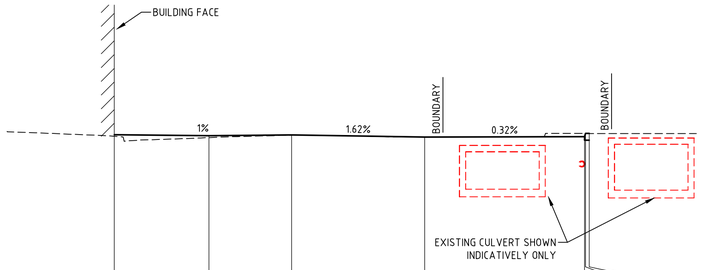
SCALE 1:100 @ A1

DRAWING TITLE
ROAD MC01 CROSS SECTIONS SHEET 2

JOB No.	DRAWN	CHECKED	DATE
1097901C	PA	-	-

DRAWING No. C00-84
REVISION 03

A1 841 x 594
File: G:\Job\1097901\01_Civil\Issued\Dwg\C00-84-CAD[03].dwg
Plotted: 14.08.20 at 10:08 AM

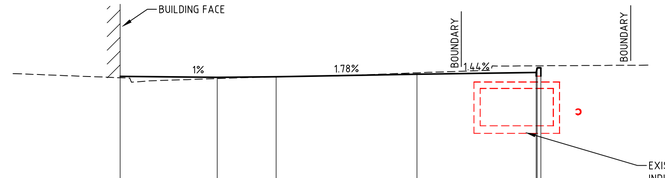


EASTING 318423.276
NORTHING 6245505.837
DATUM RL 19.000

DESIGN LEVEL	24.012	23.981	24.008	23.937	23.954	24.056	24.056
EXISTING SURFACE LEVEL	23.963	23.922	23.999	23.937	24.056	24.056	24.056
DESIGN OFFSET	-5.788	-2.693	0.000	4.345	9.567	9.597	9.717

ROAD MC02

CH 20.000

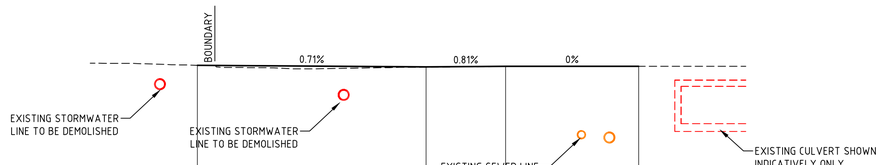


EASTING 318428.805
NORTHING 6245535.291
DATUM RL 20.000

DESIGN LEVEL	24.384	24.352	24.372	24.453	24.510	24.660	24.660
EXISTING SURFACE LEVEL	24.338	24.312	24.367	24.500	24.727	24.728	24.728
DESIGN OFFSET	-5.096	-1.925	0.000	4.593	8.490	8.520	8.640

ROAD MC02

CH 50.000

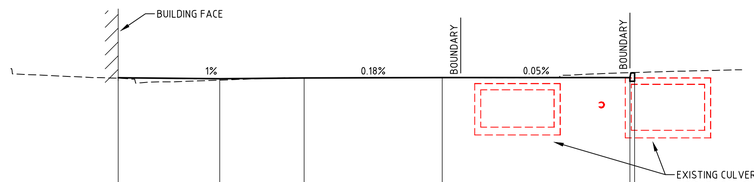


EASTING 318421.079
NORTHING 6245496.081
DATUM RL 19.000

DESIGN LEVEL	23.971	23.918	23.939	23.939	
EXISTING SURFACE LEVEL	23.971	23.911	23.934	23.939	
DESIGN OFFSET	-10.063	-2.592	0.000	4.346	

ROAD MC02

CH 10.000

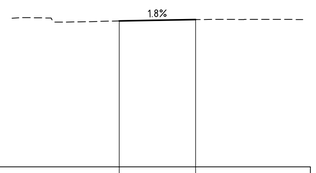


EASTING 318427.528
NORTHING 6245525.373
DATUM RL 20.000

DESIGN LEVEL	24.232	24.199	24.227	24.235	24.239	24.399	24.399
EXISTING SURFACE LEVEL	24.218	24.154	24.229	24.235	24.398	24.399	24.402
DESIGN OFFSET	-6.075	-2.760	0.000	4.509	10.635	10.665	10.785

ROAD MC02

CH 40.000



EASTING 318418.883
NORTHING 6245486.325
DATUM RL 19.000

DESIGN LEVEL	23.759	23.804	
EXISTING SURFACE LEVEL	23.759	23.804	
DESIGN OFFSET	-2.492	0.000	

ROAD MC02

CH 0.000

EASTING 318425.473
NORTHING 6245515.593
DATUM RL 20.000

DESIGN LEVEL	24.093	24.057	24.085	24.067	24.088	24.192	24.192
EXISTING SURFACE LEVEL	24.110	24.015	24.085	24.067	24.192	24.192	24.191
DESIGN OFFSET	-6.421	-2.794	0.000	4.345	10.445	10.475	10.595

ROAD MC02

CH 30.000

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REV.	DETAILS	DATE
01	DRAFT SSDA	22.07.20
02	SSDA SUBMISSION	31.07.20
03	SSDA SUBMISSION	14.08.20

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GENERAL NOTES

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PROJECT
NEW WESTERN SYDNEY UNIVERSITY
BANKSTOWN CITY CAMPUS
74 RICKARD ROAD ALONG WITH A PORTION OF 375 CHAPEL ROAD

DRAWING TITLE
ROAD MC02 CROSS SECTIONS
SHEET 1

SSDA SUBMISSION

NORTH

SCALE
1:100 @ A1

JOB No.	DRAWN	CHECKED	DATE
1097901C	PA	-	-

DRAWING No.
C00-85

REVISION
03

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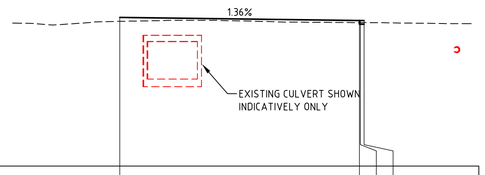
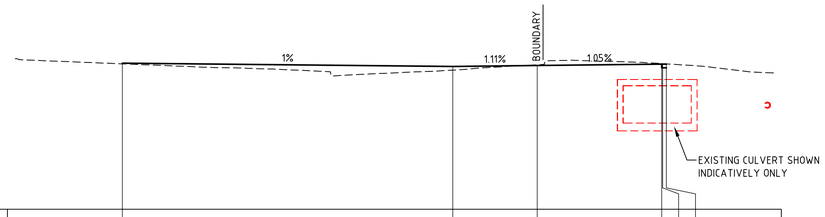


EASTING 318430.889
NORTHING 6245551.473

DATUM RL 20.000

DESIGN LEVEL	24.857							24.750	24.750	24.750		
EXISTING SURFACE LEVEL	24.725							24.683	24.683	24.685		
DESIGN OFFSET	0.000							7.825	7.855	7.975		

ROAD MC02 CH 66.316



EASTING 318430.082
NORTHING 6245545.209

DATUM RL 20.000

DESIGN LEVEL	24.773					24.665	24.695			24.738	24.738	24.738
EXISTING SURFACE LEVEL	24.748					24.541	24.717			24.756	24.754	24.746
DESIGN OFFSET	-10.789					0.000	2.754			6.824	6.854	6.974

ROAD MC02 CH 60.000

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REV.	DETAILS	DATE
01	DRAFT SSDA	22.07.20
02	SSDA SUBMISSION	31.07.20
03	SSDA SUBMISSION	14.08.20

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PROJECT
NEW WESTERN SYDNEY UNIVERSITY
BANKSTOWN CITY CAMPUS
74 RICKARD ROAD ALONG WITH A PORTION OF 375 CHAPEL ROAD

DRAWING TITLE
ROAD MC02 CROSS SECTIONS
SHEET 2

SSDA SUBMISSION

NORTH

SCALE
1:100 @ A1

JOB No.	DRAWN	CHECKED	DATE
1097901C	PA	-	-

DRAWING No. **C00-86**

REVISION **03**

A1 841 x 594
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Plotted: 14.08.20 at 10:18 AM

Appendix B – IFD Data and DRAINS Results

IFD DATA

Copyright Commonwealth of Australia 2016 Bureau of Meteorology (ABN 92 637 533 532)								
IFD Design Rainfall Depth (mm)								
Issued:	16-Oct-18							
Location								
Requested	Latitude	-33.915	Longitude	151.0357				
Nearest gr	Latitude	33.9125(S)	Longitude	151.0375(E)				
		Annual Exceedance Probability (AEP)						
Duration	Duration in	63.20%	50%#	20%*	10%	5%	2%	1%
1 min	1	2.19	2.42	3.12	3.59	4.04	4.63	5.08
2 min	2	3.61	3.91	4.9	5.58	6.27	7.16	7.85
3 min	3	5.01	5.46	6.88	7.86	8.83	10.1	11.1
4 min	4	6.3	6.89	8.75	10	11.3	12.9	14.2
5 min	5	7.45	8.18	10.5	12	13.5	15.5	17
10 min	10	11.8	13.1	17	19.5	22	25.2	27.7
15 min	15	14.7	16.3	21.2	24.4	27.5	31.5	34.6
20 min	20	16.9	18.7	24.2	27.9	31.4	36	39.5
25 min	25	18.6	20.5	26.6	30.6	34.5	39.5	43.2
30 min	30	20	22.1	28.5	32.8	36.9	42.3	46.3
35 min	35	21.2	23.4	30.1	34.6	39	44.6	48.9
40 min	40	22.3	24.6	31.5	36.2	40.8	46.7	51.2
1 hour	60	25.8	28.2	36	41.3	46.5	53.4	58.6
2 hour	120	32.8	35.7	45.2	51.9	58.6	67.7	74.8
3 hour	180	38	41.4	52.5	60.5	68.5	79.5	88.2
4 hour	240	42.4	46.3	59	68.2	77.5	90.3	101
6 hour	360	49.8	54.7	70.7	82.1	93.8	110	123
12 hour	720	66.7	74.4	99.2	117	135	160	181
24 hour	1440	89.1	101	140	168	196	235	265
48 hour	2880	115	132	189	229	270	323	364
72 hour	4320	129	150	216	262	308	367	412
96 hour	5760	138	160	231	280	328	390	437
120 hour	7200	145	168	240	289	338	401	448
144 hour	8640	150	173	245	294	343	405	453
168 hour	10080	154	176	248	296	344	405	453

Very Frequent Design Rainfall Depth (mm)

Issued:	16-Oct-18								
Location									
Requested	Latitude	-33.915	Longitude	151.0357					
Nearest gr	Latitude	33.9125(S)	Longitude	151.0375(E)					
		Exceedance per Year (EY)							
Duration	Duration in	12EY	6EY	4EY	3EY	2EY	1EY	0.5EY#	0.2EY*
1 min	1	0.951	1.08	1.31	1.48	1.73	2.19	2.68	3.18
2 min	2	1.67	1.89	2.27	2.54	2.93	3.61	4.34	4.99
3 min	3	2.28	2.59	3.13	3.51	4.06	5.01	6.06	7.01
4 min	4	2.8	3.19	3.88	4.37	5.07	6.3	7.64	8.93
5 min	5	3.25	3.72	4.54	5.13	5.98	7.45	9.08	10.7
10 min	10	4.9	5.65	6.98	7.94	9.33	11.8	14.5	17.3
15 min	15	6.01	6.94	8.59	9.8	11.6	14.7	18.1	21.6
20 min	20	6.84	7.9	9.8	11.2	13.2	16.9	20.7	24.7
25 min	25	7.51	8.68	10.8	12.3	14.5	18.6	22.8	27.1
30 min	30	8.08	9.34	11.6	13.2	15.6	20	24.5	29.1
35 min	35	8.58	9.91	12.3	14	16.6	21.2	26	30.7
40 min	40	9.02	10.4	12.9	14.7	17.4	22.3	27.3	32.2
1 hour	60	10.4	12.1	14.9	17	20.1	25.8	31.3	36.7
2 hour	120	13.3	15.3	19	21.7	25.6	32.8	39.7	46.2
3 hour	180	15.3	17.6	21.9	25	29.6	38	45.9	53.6
4 hour	240	16.9	19.5	24.3	27.8	33	42.4	51.4	60.2
6 hour	360	19.5	22.6	28.3	32.4	38.6	49.8	60.7	72.1
12 hour	720	24.9	29.2	36.9	42.6	51.1	66.7	82.6	101
24 hour	1440	31.4	37.2	47.6	55.5	67.2	89.1	112	143
48 hour	2880	38.1	45.6	59.4	69.8	85.3	115	147	193
72 hour	4320	41.3	50	65.8	77.7	95.5	129	166	220
96 hour	5760	43	52.5	69.7	82.6	102	138	178	235
120 hour	7200	43.9	53.9	72.3	86	107	145	186	245
144 hour	8640	44.4	54.8	74.1	88.5	110	150	192	250
168 hour	10080	44.5	55.3	75.4	90.4	113	154	196	253

DRAINS RESULTS

5 year:

DRAINS results prepared from Version 2020.034

PIT / NODE DETAILS — Version 8

Name	Max HGL	Max Pond HGL	Max Surfa Flow Arrivi (cu.m/s)	Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)	Constraint
N371	22.7		0				

SUB-CATCHMENT DETAILS

Name	Max Flow Q (cu.m/s)	Paved Max Q (cu.m/s)	Grassed Max Q (cu.m/s)	Paved Tc (min)	Grassed Tc (min)	Supp. Tc (min)	Due to Storm
Existing S	0.086	0.063	0.023	5	8	5	0.2EY AEP, 10 min burst, Storm 8
Roof	0.112	0.111	0.001	5	8	5	0.2EY AEP, 5 min burst, Storm 1
Bypass	0.014	0.014	0	5	8	5	0.2EY AEP, 5 min burst, Storm 1

PIPE DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Max U/S HGL (m)	Max D/S HGL (m)	Due to Storm
Pipe1	0.077	6.33	30.919	22.703	0.2EY AEP, 20 min burst, Storm 1

CHANNEL DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Due to Storm

OVERFLOW ROUTE DETAILS

Name	Max Q U/S	Max Q D/S	Safe Q	Max D	Max DxV	Max Width	Max V	Due to Storm
OF1	0	0	0.565	0	0	0	0	
OF17672	0.077	0.077	0.256	0.032	0.01	10.38	0.45	0.2EY AEP, 20 min burst, Storm 1
OF17673	0.014	0.014	0.256	0.017	0.01	5.54	0.31	0.2EY AEP, 5 min burst, Storm 1
OF17674	0.085	0.085	0.256	0.033	0.02	10.56	0.47	0.2EY AEP, 20 min burst, Storm 10

DETENTION BASIN DETAILS

Name	Max WL	MaxVol	Max Q Total	Max Q Low Level	Max Q High Level
Lvl 1 2m b	31.75	17.1	0.077	0.077	0

Run Log for 181016 WSU v6 run at 14:01:17 on 22/7/2020 using version 2020.034

Flows were safe in all overflow routes.

100 year:

DRAINS results prepared from Version 2020.034

PIT / NODE DETAILS — Version 8

Name	Max HGL	Max Pond HGL	Max Surfa Flow Arrivi (cu.m/s)	Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)	Constraint
N371	24.2		0.079				

SUB-CATCHMENT DETAILS

Name	Max Flow Q (cu.m/s)	Paved Max Q (cu.m/s)	Grassed Max Q (cu.m/s)	Paved Tc (min)	Grassed Tc (min)	Supp. Tc (min)	Due to Storm
Existing S	0.157	0.101	0.056	5	8	5	1% AEP, 10 min burst, Storm 7
Roof	0.186	0.182	0.004	5	8	5	1% AEP, 5 min burst, Storm 1
Bypass	0.024	0.023	0	5	8	5	1% AEP, 5 min burst, Storm 1

PIPE DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Max U/S HGL (m)	Max D/S HGL (m)	Due to Storm
Pipe1	0.112	1.02	32.06	24.2	1% AEP, 15 min burst, Storm 8

CHANNEL DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Due to Storm

OVERFLOW ROUTE DETAILS

Name	Max Q U/S	Max Q D/S	Safe Q	Max D	Max DxV	Max Width	Max V	Due to Storm
OF1	0	0	1.939	0	0	0	0	
OF17672	0.112	0.112	7.665	0.036	0.02	11.27	0.51	1% AEP, 15 min burst, Storm 8
OF17673	0.024	0.024	7.665	0.02	0.01	6.74	0.35	1% AEP, 5 min burst, Storm 1
OF17674	0.126	0.126	7.665	0.038	0.02	11.63	0.53	1% AEP, 15 min burst, Storm 8

DETENTION BASIN DETAILS

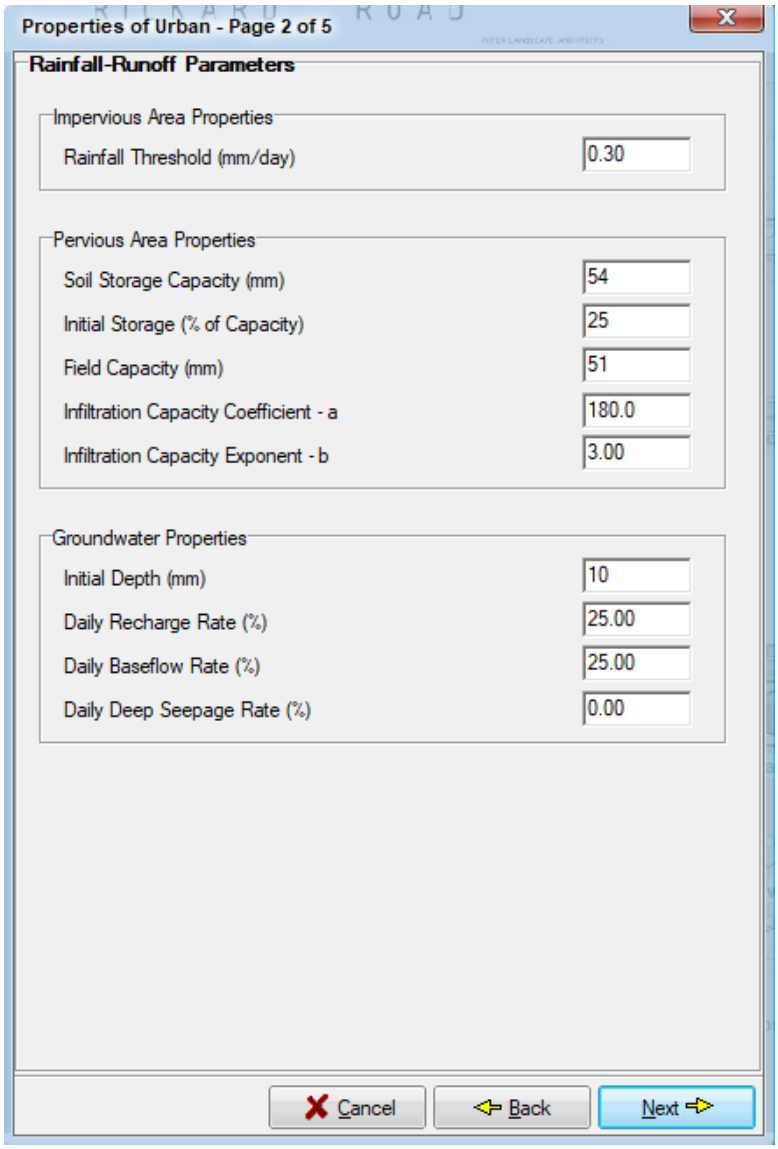
Name	Max WL	MaxVol	Max Q Total	Max Q Low Level	Max Q High Level
Lvl 1 2m b	32.86	34.7	0.112	0.112	0

Run Log for 181016 WSU v6 run at 13:55:15 on 22/7/2020 using version 2020.034

Flows were safe in all overflow routes.

Appendix C – MUSIC Model Source Parameters and MUSIC Link Report

MUSIC Rainfall – Runoff Parameters for Penrith



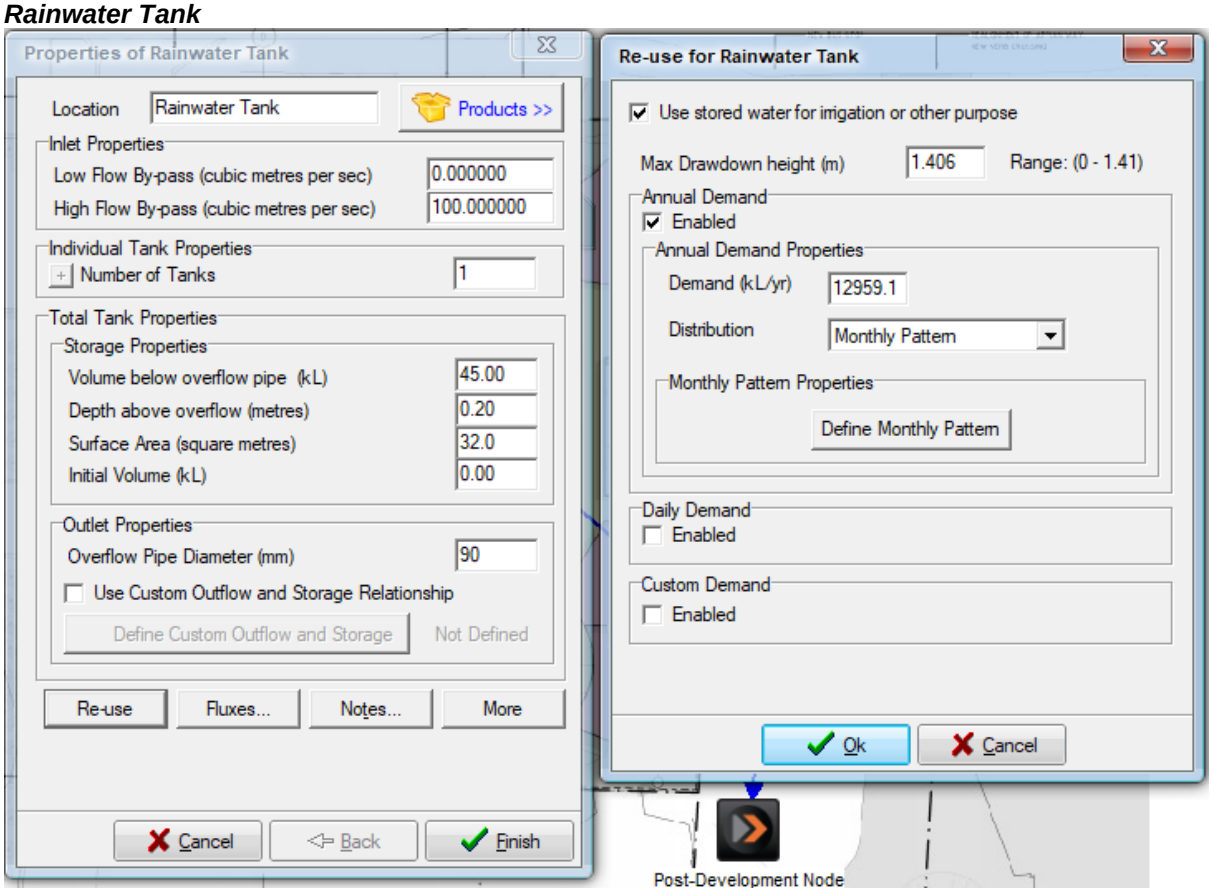
Stormwater Quality Parameters for Source Nodes

Characteristics of WSUD Measures for the Site:

Land-use category		Log10 TSS (mg/L)		Log10 TP (mg/L)		Log10 TN (mg/L)	
		Storm Flow	Base Flow	Storm Flow	Base Flow	Storm Flow	Base Flow
Roof Areas	Mean	1.3	0	-0.89	0	0.3	0
	Std Dev	0.32	0	0.25	0	0.19	0

Land-use category		Log10 TSS (mg/L)		Log10 TP (mg/L)		Log10 TN (mg/L)	
		Storm Flow	Base Flow	Storm Flow	Base Flow	Storm Flow	Base Flow
Commercial (Shared Pedestrian Appian Way)	Mean	2.15	1.2	-0.6	-0.85	0.30	0.11

Rainwater Tank



Enviropod (Stormwater 360)