



**GRAY PUKSAND**



# **SSDA Design Report - Civil**

**Meadowbank TAFE - MULTI-TRADES AND DIGITAL TECHNOLOGY HUB**

Prepared for Gray Puk sand / 03 October 2019

191346 CAAA

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**Structural  
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## 1.0 Executive Summary

The vision for TAFE NSW is to create an integrated academic precinct that meets the educational services needs for Ryde and beyond. The TAFE Meadowbank project will establish TAFE Meadowbank as a leading integrated Trade Educational Hub, creating a foundation for world-class trade expertise, innovation, research and technological advancements to continually improve the delivery of quality education for Northern Suburbs of Sydney. The development includes a Combined Multi-Trades and Digital Hub building. See Figure 1.0 below for a depiction of the development of Meadowbank TAFE.



Figure 1.0: Proposed Meadowbank TAFE site.

### 1.1 Stormwater Quantity

The requirements for stormwater are specified within the City of Ryde Council Development Control Plan (DCP) 2014 Section 8.2 Stormwater and Floodplain Management. An existing major stormwater line traverses the site from the northern Meadowbank School site into the TAFE site and through a Charity Creek culvert crossing of the railway corridor.

A minor council stormwater drainage easement runs along the northern side of the proposed TAFE Combined Multi-Trades and Digital Hub building development site heading west which includes council Stormwater flow from See Street connecting into the Charity Creek trunk drainage main.

The City of Ryde stormwater requirements include maintaining and connecting into the existing minor drainage easement. The stormwater drainage within the site shall be designed for 20 year storm for pipes/pits and the 100 year stormwater for overland flow.

Stormwater On-Site Detention (OSD) being the storage of stormwater to reduce the discharge rate off-site is required for all commercial developments over 3000sq.m.

The existing site is fully developed as a carpark and is approximately 90% impervious. In the proposed scenario of the development there is no increase in impervious area, however a detailed review will be required when external landscaping and surfacing plans are developed.

We note that in discussions with the City of Ryde and in conjunction with City of Ryde Development Control Plan Part 8.2 (Stormwater and Floodplain Management), Section 1.4.1 of the technical manual which outlines conditions where OSD may be exempt. Control (d) specifies

- d) The applicant can demonstrate to Council's satisfaction that if the total catchment containing the site were developed to its full potential, stormwater detention on the subject site would not be of benefit in reducing adverse flooding impacts on downstream roads, properties and open watercourses. This may be the case at the lower end of major catchments.

Based on these requirements TTW have analysed the water levels of the main trunk catchment at the existing exiting railway stormwater culvert crossing to the west of the site and compared an OSD based design and a scenario without OSD. It is determined that the downstream conditions are equal or worse off with an OSD installed. TTW have therefore nominated that the proposed development will proceed without OSD.

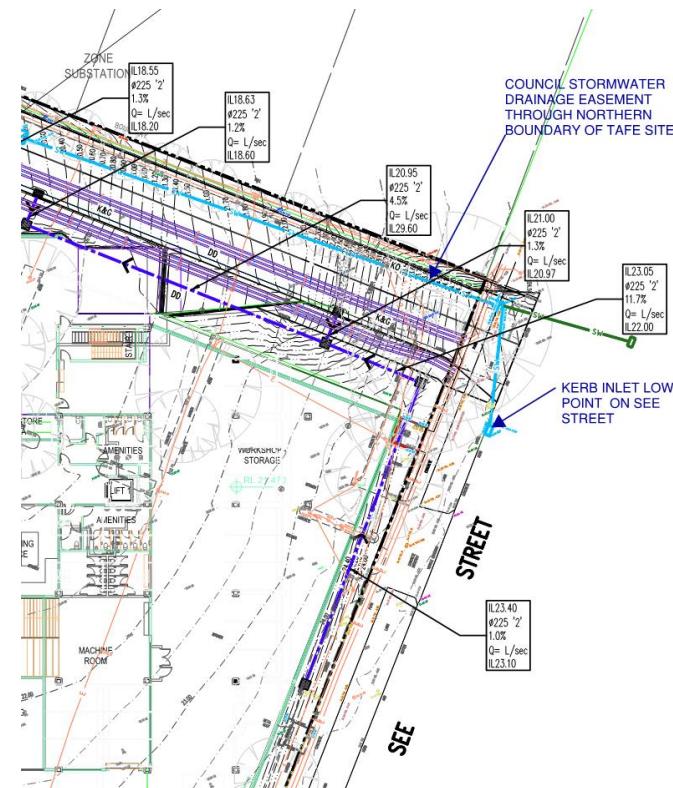


Figure 1.1: Stormwater Drainage Easement.

### 1.2 Stormwater Quality

The site will need to meet the City of Ryde stormwater quality improvement standards within DCP 2014 8.2 Clause 3.0 Water Sensitive Urban Design for discharge into their assets or into Charity Creek. The following pollutant control targets must be met

WSUD Stormwater Quality Performance Targets	
Gross Pollutants	90%
Total Suspended Solids	85%
Total Phosphorus	60%
Total Nitrogen	45%

The 45% nitrogen target is generally the most difficult to achieve and requires implementation of filtration or bio retention basins/channels prior to discharge. The stormwater quality targets only apply to areas of the site that are being developed, and do not apply to undisturbed areas of the site or internal refurbishments.

## 2.0 Introduction

TTW have been engaged by Gray Puksand Architects on behalf of TAFE NSW to provide civil engineering and flooding advice for the proposed development of the Meadowbank TAFE site which includes the construction of a new Combined Multi-Trades and Digital Hub building.

Various elements of the site master planning and potential works have been investigated by TAFE NSW over the development of this project.

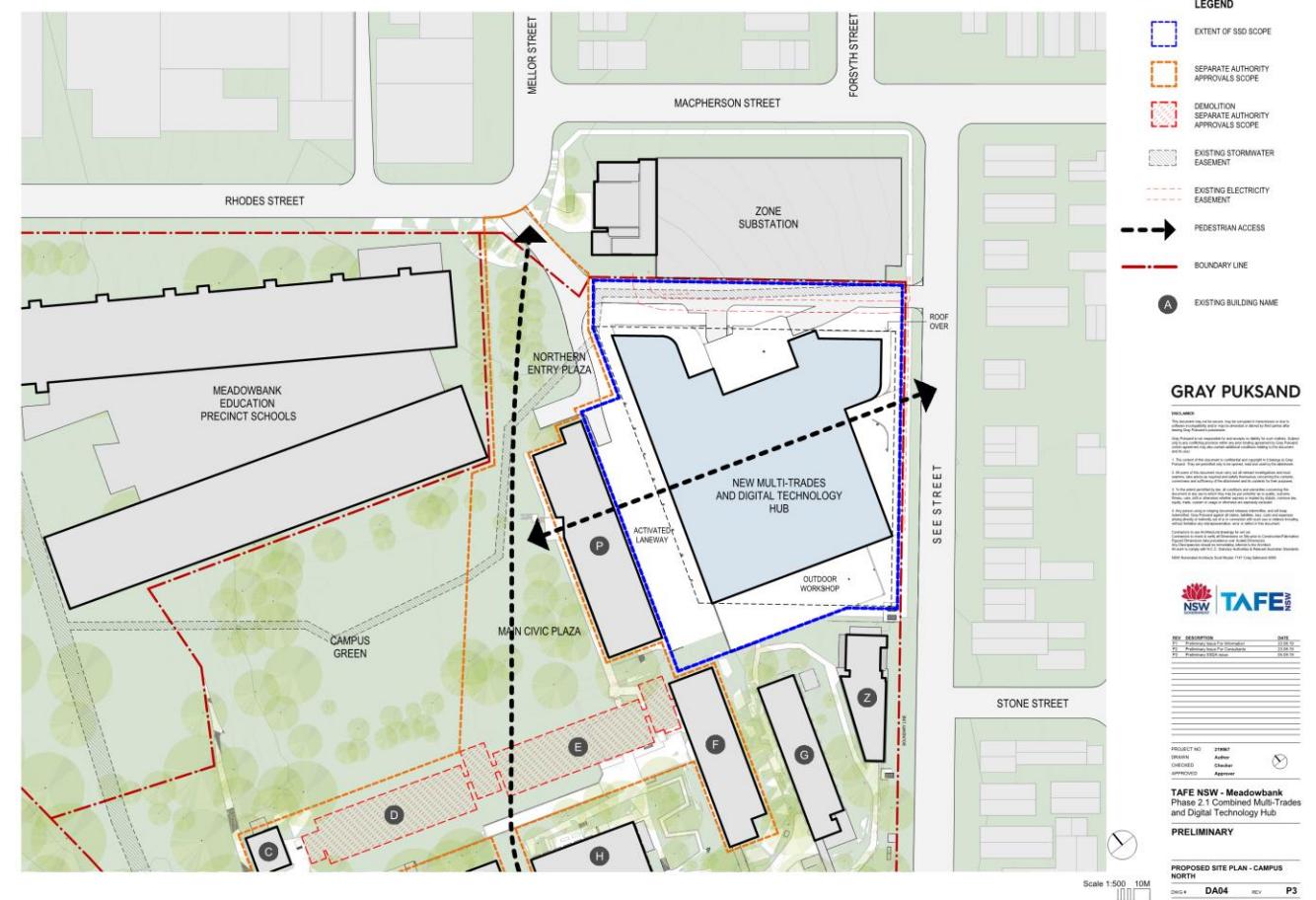
The key project elements can be seen with clarity on the diagram adjacent, placed within the context of proposed adjoining public and high schools, begins to give a feel of the true extent of the Educational Precinct being developed at Meadowbank.

The new Multi Trades hub to the North-East of the sit has a substantial new footprint in the region of 5,350m<sup>2</sup> encompassing car parking spaces to the basement levels, with an approximate building area approaching 22,000m<sup>2</sup>.

The New Trades Hub will present a main civic address to See Street, providing the entre TAFE campus with a sense of arrival befitting a 6.33-hectare Educational facility

This report addresses the following:

- Authority Civil Design Requirements ;
- Proposed Stormwater design and Onsite Stormwater Detention (OSD);
- WSUD and Stormwater Quality Design; and
- Statutory requirements.



### 3.0 Existing Site

#### 3.1 Site Location

The Meadowbank TAFE site is located within the Meadowbank educational district directly north east of Meadowbank Train Station. The TAFE site is bounded by See Street to the east, Rhodes Street and the proposed Meadowbank K-12 School to the north, the railway line to the west and Constitution Rd to the south. The Combined Multi-Trades and Digital Hub building related to this SSDA is shown in figure 3.1.1 below



**Figure 3.1.1: Meadowbank TAFE Combined Multi-Trades and Digital Hub Building Site**

The current site assigned for the proposed Combined Multi-Trades and Digital Hub building is occupied by an existing outdoor carpark with access off See Street.

The TAFE site has an existing internal in-ground network of pits and pipes. The main stormwater trunk drainage system runs through the northern school site connecting pipes from Rhodes St and traverses through to the western section of the TAFE grounds south along the railway boundary and eventually exits the site via a box culvert (4.5m x 1.8m) under the railway line forming Charity Creek which is an open concrete channel.

A second Council stormwater drainage main enters the site from the See Street low point and travels along the northern boundary of the proposed Combined Multi-Trades and Digital Hub building location heading west through a stormwater easement towards the main western site trunk main.

Existing building downpipes and various overland flow paths flow into pits connected to the system mains.

The existing stormwater network has been investigated by means of a detailed survey, site investigation and Dial Before You Dig.



Figure 3.1.2: Meadowbank TAFE Stormwater Network

### 3.2 Existing In Ground Drainage

The TAFE in-ground stormwater system of pits and pipes is found throughout the site, with the majority of pits being surface inlet grates picking up overland flow. Some existing downpipes convey stormwater directly into this underground system, while others discharge above the ground and rely on surface flow to enter the in-ground system.

The building will be positioned to avoid existing services including the stormwater and electrical easements to the north along the boundary.

The existing drainage within the vicinity of the Multi-Trade building is comprised of a 450 dia concrete pipe at a grade of 5.9%. The pipe hydraulic grade line is within 50% of total capacity when providing preliminary calculations and analysis. See figure 3.2 below showing the adequate capacity of the pipe system.

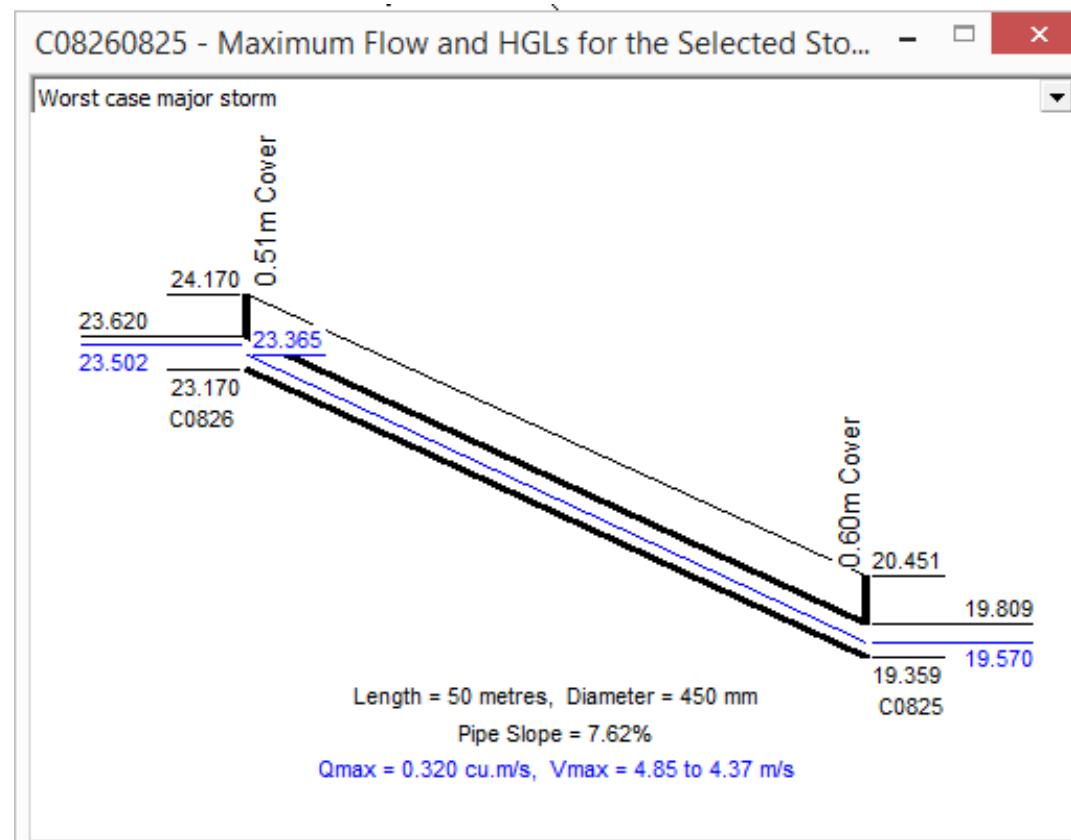


Figure 3.2: 100year Pipe Longsection diagram in DRAINS model

Further checks will be made to ensure that these preliminary calculations are confirmed.

## 4.0 Civil Design Requirements

### 4.1 City of Ryde Stormwater Design

Although the SSDA process empowers the total project approval to the state government, the approval authority for stormwater engineering rests upon the City of Ryde and their policies in accordance with the legislation "Local Government (General) Regulation 2005".

The main design requirements for Stormwater, Water Quality, Flooding and Overland Flow are contained within the City of Ryde Council 2014 Development Control Plan (DCP) Section 8.2 Stormwater and Floodplain Management.

The DCP determines that all pits and pipes must be designed to the 1 in 20 year storm via the ILSAX or DRAINS stormwater model programs.

The surface and building downpipe drainage around the proposed Multi-Trade building will connect into a series of drainage lines which will be treated prior to discharge into the existing drainage mains.

It is not expected that an upgrade of the existing lines downstream of the site will be necessary as no additional flows will be expected over and above the existing. This however shall be analysed further in the concept design.

### 4.2 City of Ryde On-Site Detention

We note that in discussions with the City of Ryde and in conjunction with City of Ryde Development Control Plan Part 8.2 (Stormwater and Floodplain Management), Section 1.4.1 of the technical manual which outlines conditions where OSD may be exempt. Control (d) specifies:

- d) The applicant can demonstrate to Council's satisfaction that if the total catchment containing the site were developed to its full potential, stormwater detention on the subject site would not be of benefit in reducing adverse flooding impacts on downstream roads, properties and open watercourses. This may be the case at the lower end of major catchments.

A catchment wide comparison of OSD based design to a scenario without OSD has been conducted and is detailed in section 5.2.

City of Ryde Council policy under Section 1.4 of DCP 2014 8.2 dictates that Onsite Stormwater Detention (OSD) be designed via either the simplified method or the detailed method.

The detailed method applies to this site which limits total post development flow to the existing site flow.

Stormwater On-Site Detention (OSD) being the storage of stormwater to reduce the discharge rate off-site is required for all commercial developments over 3000sq.m.

The existing site is fully developed as a carpark and is approximately 90% impervious. In the proposed scenario of the development there is no increase in impervious area, however a detailed review will be required when external landscaping and surfacing plans are developed.

### 4.3 City of Ryde Water Quality

The site development shall adhere to Water Quality principles setout by the City of Ryde within Development Control Plan Section 8.2 Stormwater and Floodplain Management - Water Sensitive Urban Design Guidelines"

The approach is to prepare a Water Sensitive Urban Design Strategy Plan (WSUD Strategy Plan) which is to include a Stormwater Management Plan, Treatment of Runoff to achieve water quality targets and reuse.

The following pollutant control targets must be met

WSUD Stormwater Quality Performance Targets	
Gross Pollutants	90%
Total Suspended Solids	85%
Total Phosphorus	60%
Total Nitrogen	45%

This shall be done via the combination of Gross Pollutant Traps (GPT's), bioretention areas, grass lined channels and other proprietary devices.

#### 4.4 City of Ryde Flooding and Overland Flow

The City of Ryde specifies that flooding and overland flow within the site must be accommodated to ensure all proposed flood levels must be equal or lesser than the existing.

Freeboard is to comply to the following table under the Industrial/Commercial column.

Drainage System/ Overland Flow	Residential			Industrial/ Commercial	
	Land Level <sup>(b)</sup>	Habitable Floor Level	Non-Habitable Level <sup>(c)</sup>	Land Level <sup>(b)</sup>	Floor Level
Surface Drainage/ adjoining ground level <sup>(a)</sup>	-	.15m	-	-	.15m
Public drainage infrastructure, creeks and open channels	0.5m	0.5m	0.1m	0.3m	0.3m
Flooding and Overland Flow (Overland Flow Precincts and Low Risk)	N/A	0.3m	0.15m	N/A	0.3m
Flooding and Overland Flow (Medium Risk and greater)	N/A	0.5m	0.3m	N/A	-

Figure 4.4: City of Ryde Freeboard criteria for Stormwater and Overland Flow

#### 4.5 Secretary's Environmental Assessment Requirements (SEARS)

The following requirements have been borne out of the applicants request for the SEARS: -

##### 16. Drainage

- Detail measures to minimise operational water quality impacts on surface waters and groundwater.
- Stormwater plans detailing the proposed methods of drainage without impacting on the downstream properties.
- Relevant Policies and Guidelines: Guidelines for development adjoining land and water managed by DECCW (OEH, 2013).

##### 19. Sediment, Erosion and Dust Controls

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

Relevant Policies and Guidelines:

- Managing Urban Stormwater – Soils & Construction Volume 1 2004 (Landcom)
- Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (EPA)
- Guidelines for development adjoining land and water managed by DECCW (OEH, 2013).

The City of Ryde Council have provided input into the SEARs listed above. They recommend the following amendments: -

4. The DRAFT SEARs do not refer to Council's DCP for Stormwater and Floodplain Management. A development of this scope would warrant OSD be provided and WSUD measures. It is suggested that under the heading 'Key Issues' item 16. Drainage please include the following dot points:

- A stormwater management plan prepared by a qualified Engineer in accordance with the provisions contained in City of Ryde Council's Development Control Plan 2014 Part 8.2 - Stormwater and Floodplain Management. The stormwater plan is to include an OSD system and provide WSUD measures.
- There is a public drainage line adjoining the northern boundary of the development lot. Development works must not impede on access to this service. Further to this, there is an easement over the service and it is aligned (naturally) along a valley. This area accommodates a failure mode should the drainage be blocked in See Street, and this should be accommodated for and detailed in the stormwater management plan.

5. Under the heading 'Key Issues' item 17. Flooding please include a dot point after the first paragraph:

The recommendations listed above in the requirements, SEARs and City of Ryde amendments to the SEARs shall be completed in the documentation for the SSDA.

## 5.0 Proposed Civil Engineering

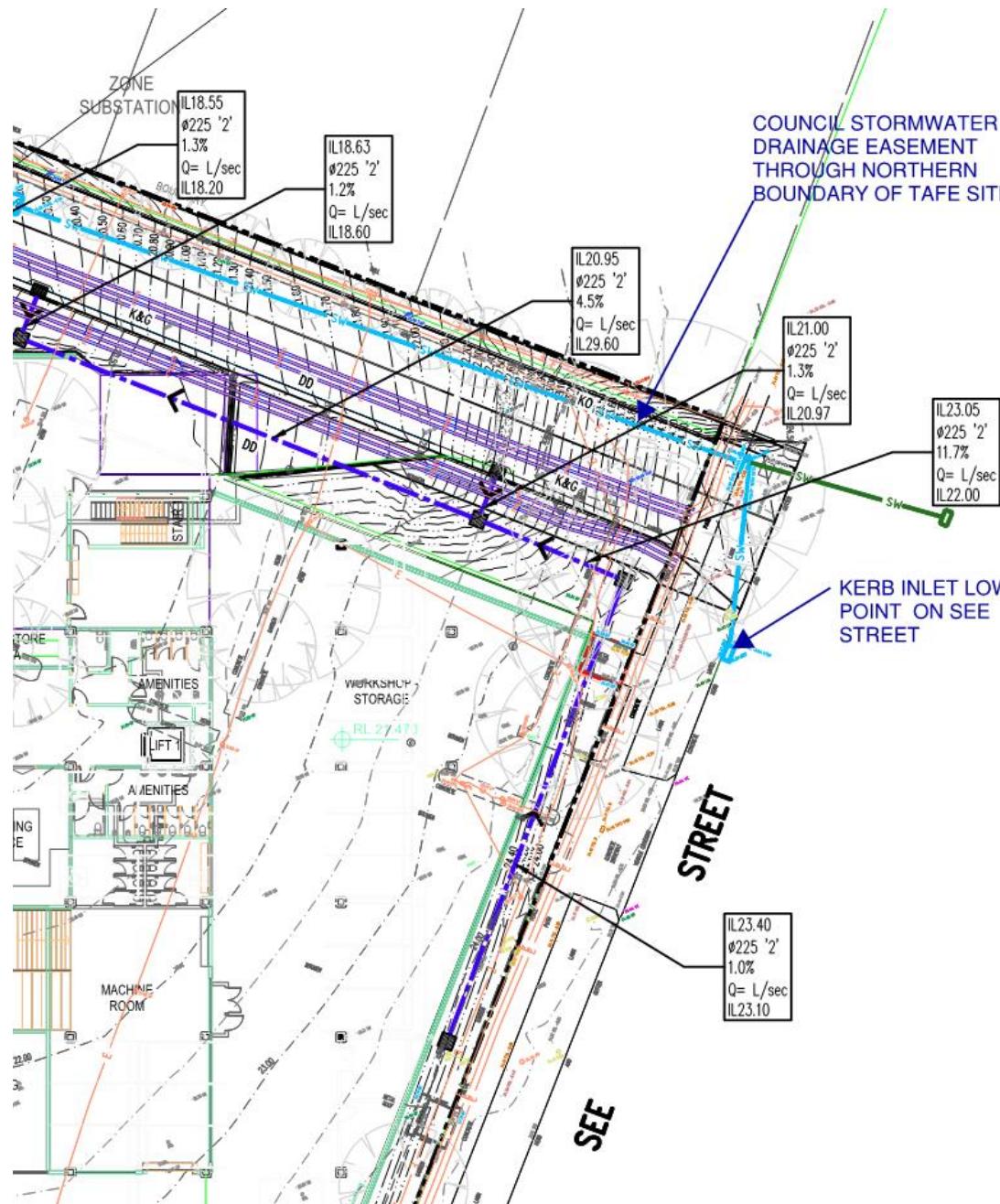
### 5.1 Grading and Site Stormwater

The site falls evenly from See St to the west at a grade or approximately 7%.

The building is to be cut into the proposed slope with three of the five levels of the building beneath the frontage setback of the building.

A proposed driveway traverses the northern boundary of the site and connects to basement entries on the northern side of the proposed building.

See inset of plan below in Figure 5.1 showing proposed grade contour of the driveway which is directed to northern side.



## 5.2 On-Site Detention

TTW have conducted a catchment wide drainage study in order to determine whether installing an OSD to the requirements of City of Ryde via delaying the flow via an OSD system to a point where it increases the

stormwater hydraulic grade line downstream conditions to coincide with the catchment peak storm. This would exacerbate

The building site with a catchment of 7422m<sup>2</sup> and being over 3000m<sup>2</sup> falls into the category of the determination of OSD using the detailed method.

The detailed method used to calculate the volume is based on restricting the 100 year outflow to the 5 year flow. We have determined that the OSD restriction or Permissible Site Discharge (PSD) would be approximately 297L/s. The total volume of on-site detention to detain the 100 year flow to discharge as per the 5 year PSD rate of 297L/s equals 100.7cu.m in the 25 minute storm.

Screen shots of the model analysis conducted in DRAINS showing the proposed case with and without OSD are depicted in Figures 5.2.1 – 5.2.2 below.

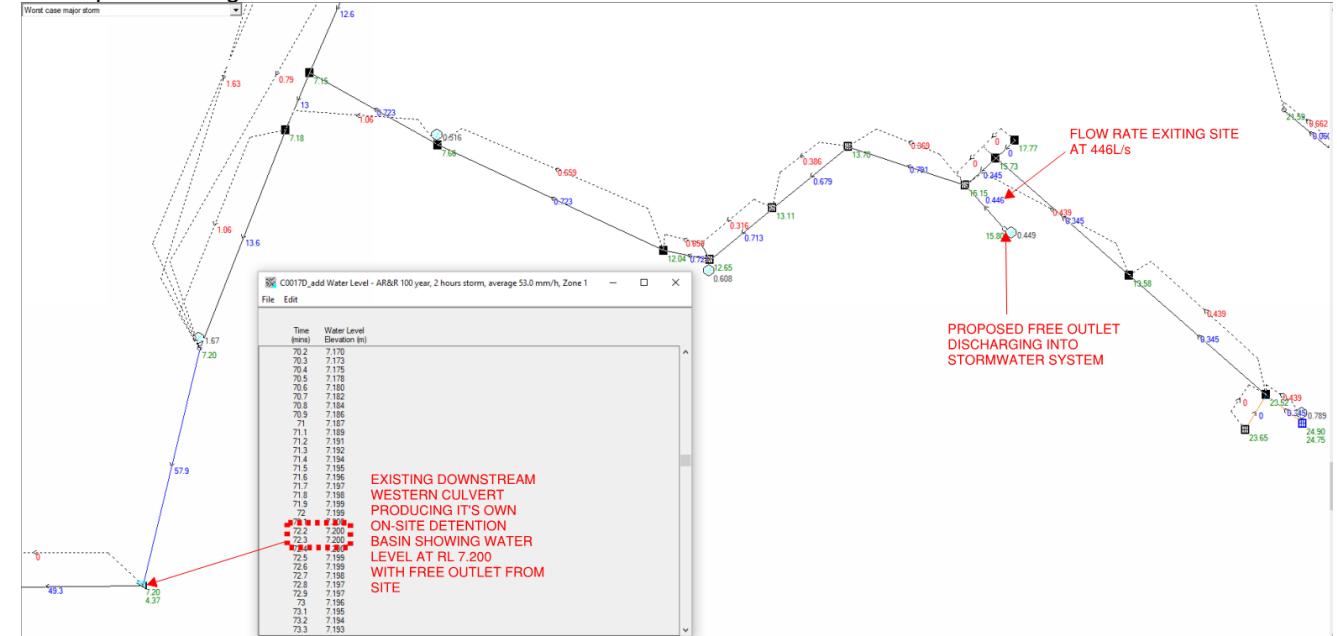


Figure 5.2.1: Catchment Analysis of proposed case with free outlet

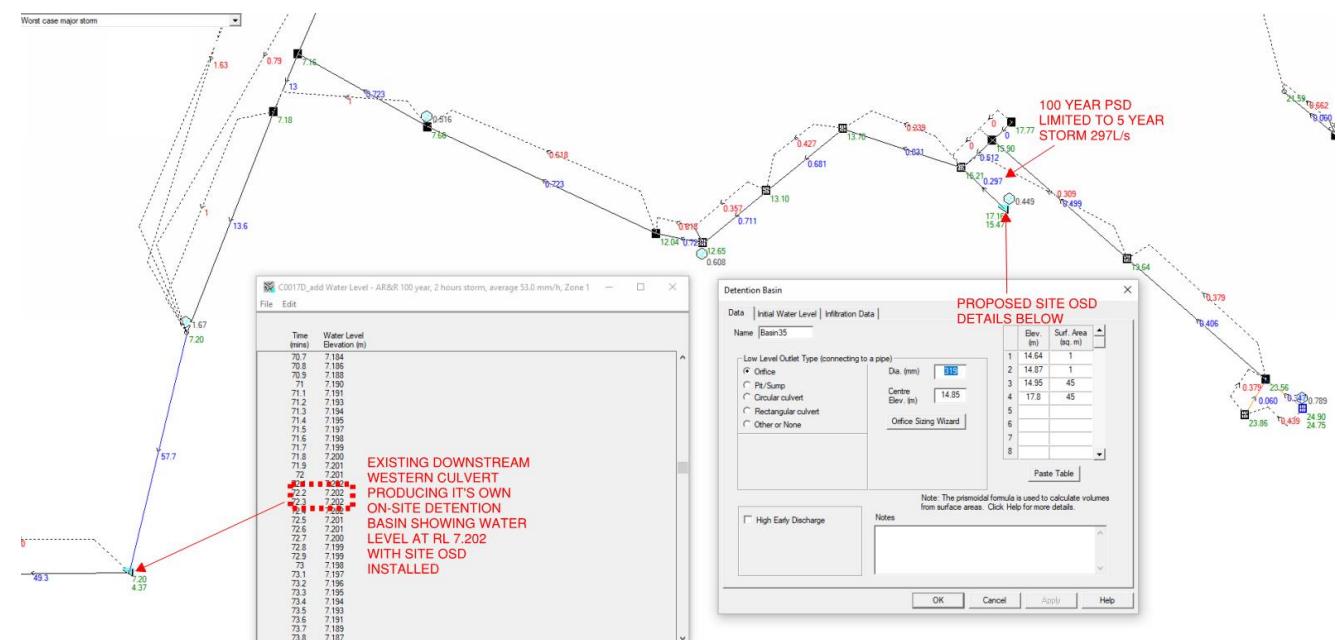


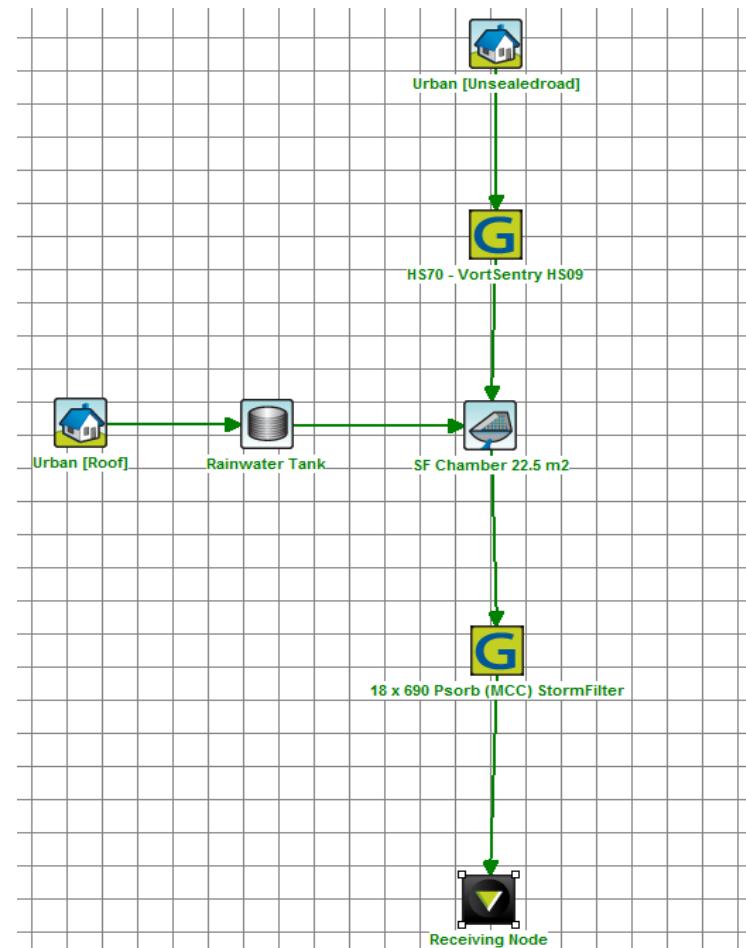
Figure 5.2.2: Catchment Analysis of proposed case with OSD

Due to the location of the site within the catchment it may be prudent to allow the local catchment of the site escape prior to the build-up of the upper catchment as demonstrated above. Delaying the flow via on-site detention does not provide any relief to downstream conditions and will stifle flow and causes a slight increase in hydraulic grade line stormwater level at the western rail culvert crossing. We therefore recommend the removal of the On-site detention requirement from the proposed development in accordance with City of Ryde Development Control Plan Part 8.2 (Stormwater and Floodplain Management), Section 1.4.1 (d) of the technical manual.

### 5.3 Water Quality

The stormwater discharge from the site shall be treated to achieve removal rates specified above. The entire site has been modelled in MUSIC to demonstrate that the proposed stormwater treatment devices achieve the stormwater treatment targets outlined in the policy.

See figure 5.3 below showing configuration of possible water quality arrangement.



5.3: Water Treatment devices

The stormwater treatment train for the proposed development includes:

- 1X VortSentry HS09 OR 2 x ENVIROPODS for road area
- 18x690 Psorb Stormwater filters with chamber for both roof and road area

Table 5.3 Stormwater quality

Pollutant	Load	Residual Load	Load reduction (%)	Target (%)
Total Suspended Solids (kg/yr)	2070	191	90.8	85
Total Phosphorus (kg/yr)	1.98	0.555	72	60
Total Nitrogen (kg/yr)	19.8	10.8	45.4	45
Gross Pollutants (kg/yr)	233	0	100	90

In addition to the above, the rainwater tank will be installed to re-use the stormwater. This should be investigated by the hydraulic engineer as the design progresses.

### 5.4 Flooding

Refer to SSDA Flood Impact Report by TTW for further information regarding flooding

### 5.5 Minor Overland Flow

The existing minor overland flow path from See Street through the existing car park will be redirected to flow along the north side of the proposed access driveway to the north of the Combined Multi-Trades and Digital Hub building and toward the open landscaped area.

In accordance with Ryde DCP (see section 4.4). The proposed basement entrances off the access driveway will require 150mm freeboard above the 100 year storm for the minor overland flow. These entrances will be above the PMF of the major overland flooding from the west of the site.



Figure 5.5: Overland Flow Path at See St

## 5.6 Existing Services

Maps and reports of existing services have been obtained from "dial before you dig" (DBYD). A detailed services survey is due for completion and is required to progress the design of proposed and diverted services and infrastructure.

There are existing service easements around the vicinity of the proposed development as seen below in Figure 5.6. Refer to the Infrastructure Services SSDA Report by JHA Consulting Engineers which details all aspects of services infrastructure.

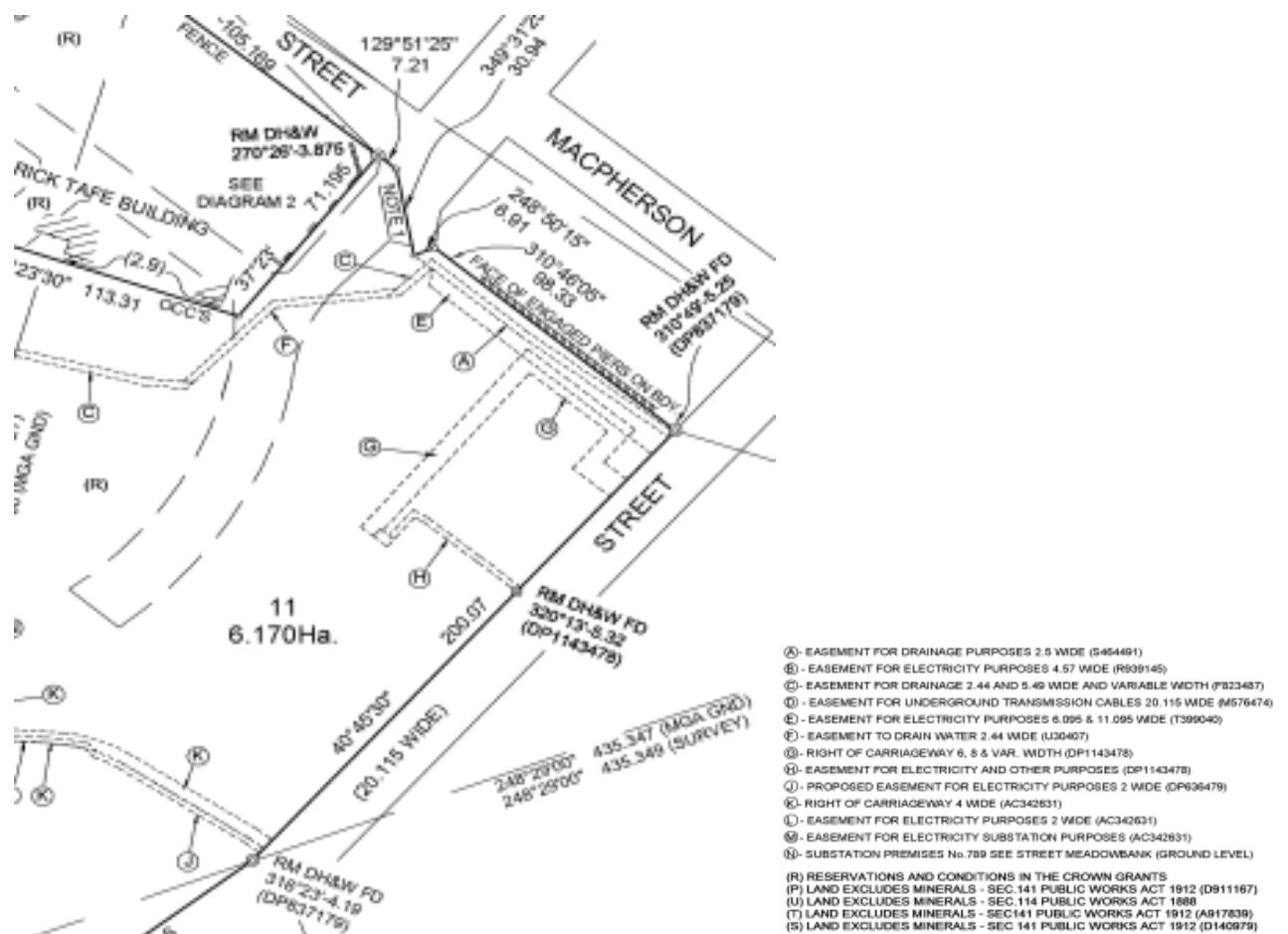


Figure 5.6: Service Easement Survey Plan

## 5.7 Soil and Water Management Plan

To satisfy City of Ryde council requirements, the contractor must prepare a Soil and Water Management Plan (SWMP) as part of the Contractor's Construction Environmental Management Plan (CEMP) for the works. As part of the SWMP an Erosion and Sediment Control Plan (ESCP) is to be prepared in accordance with the 'Blue Book'. This also shall be conducted in accordance with the DEMOLITION/REFURBISHMENT HAZARDOUS MATERIAL RISK ASSESSMENT by continuONE for TAFE NSW.

The ESCP must address the following requirements:

- Any provision of sediment and erosion controls at downstream locations from the construction areas (e.g. sediment fences, sediment basins, other as required).
- Stormwater diversions to divert clean run-off from undisturbed areas around any disturbed areas.

- Stockpile locations
- Sediment control barriers
- Protection of on-site drains and exposed areas using erosion control mats or similar.
- Work staging to limit the area and duration that soils are exposed.
- Disturbed areas to be stabilised progressively to ensure that no areas remain exposed for any extended period of time.

## 5.8 Staging of Works

At this stage in the project the staging of works is unknown. Staging of works may result in temporary stormwater arrangements being required to maintain stormwater flows and discharge points.

Throughout construction, erosion prevention and sediment control measures will be required to prevent sediment laden stormwater from entering the in-ground pit and pipe system. As part of the strategies, overland flow paths will be established and maintained to prevent inundation of other areas of the school and sediment basins provided.

## 6.0 Conclusion

This report provides a summary of the proposed concept civil engineering and stormwater management for the Meadowbank TAFE Campus. Stormwater is proposed to be collected on site using a pit and pipe system, with on-site detention not required as per City of Ryde Development Control Plan Part 8.2 (Stormwater and Floodplain Management), Section 1.4.1 (d). The existing stormwater drainage system will be maintained and connected to via a water quality treatment process. An erosion and sediment control plan will be prepared for the site detailed stormwater management during construction.

Prepared by

**TAYLOR THOMSON WHITTING (NSW) PTY LTD**  
in its capacity as trustee for the  
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Anthony Lahoud  
Senior Civil Engineer

Authorised By

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Stephen Brain  
Technical Director

## 7.0 Appendix A: Proposed Development Plans

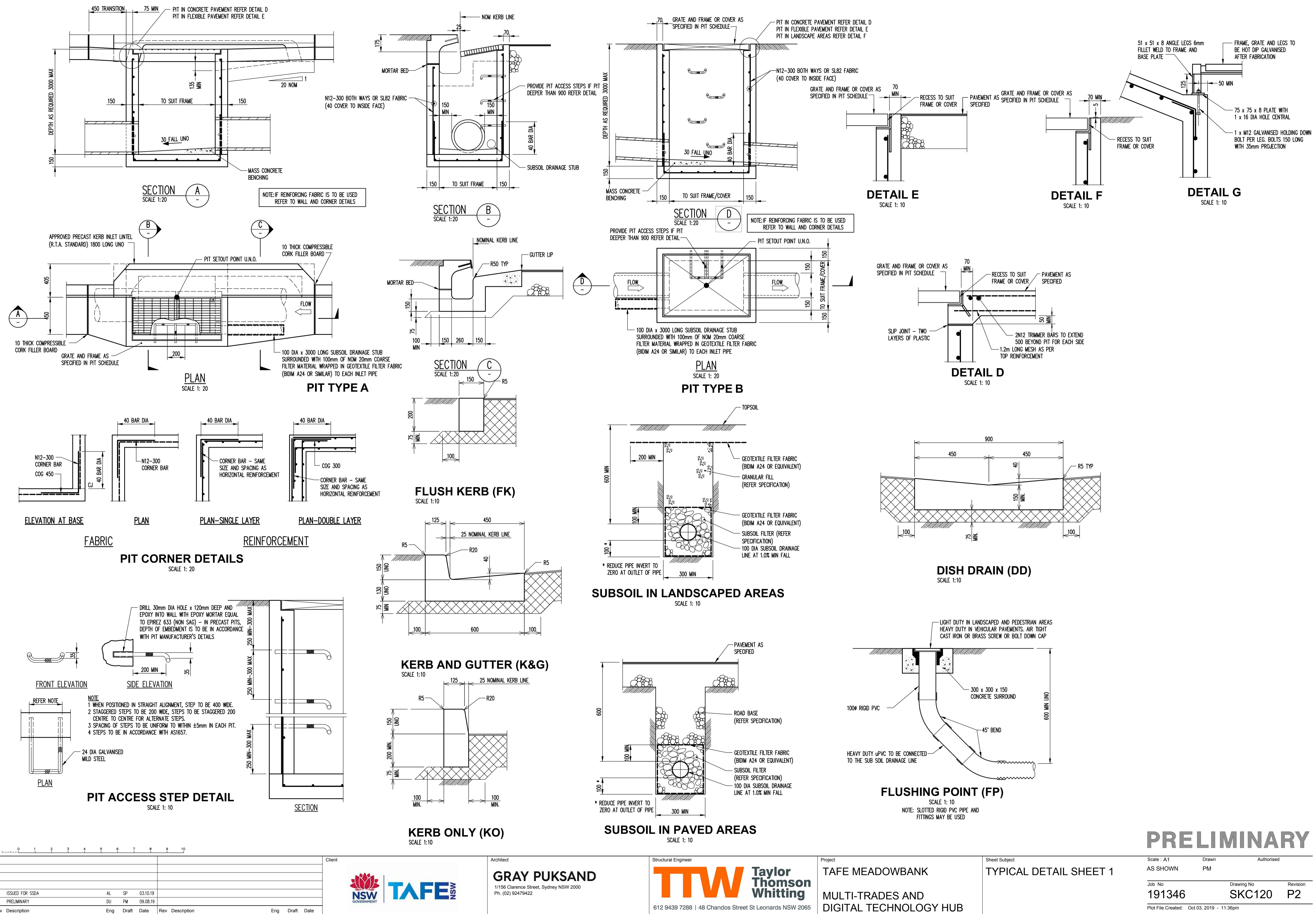
# CIVILWORK - MEADOWBANK TAFE PHASE 2.1

## Combined Multi-Trades and Digital Technology Hub

GENERAL NOTES		SURVEY AND SERVICES INFORMATION		JOINTING NOTES		SAFETY IN DESIGN		SITEWORKS LEGEND	
1. Contractor must verify all dimensions and existing levels on site prior to commencement of works. Any discrepancies to be reported to the Engineer.		SURVEY		VEHICULAR PAVEMENT JOINTING		Contractor to refer to Appendix B of the Civil Specification for the Civil Risk and Solutions Register.		F22.20	Finished surface level
2. Strip all topsoil from the construction area. All stripped topsoil shall be disposed of off-site unless directed otherwise.		Origin of levels : A.H.D. AUSTRALIAN HEIGHT DATUM		1. All vehicular pavements to be jointed as shown on drawings.		Contractor to be aware existing services are located within the site.		F22.00	Finished contour
3. Make smooth connection with all existing works.		Coordinate system : MGA		2. Keyed construction joints should generally be located at a maximum of 6m centres.		Location of all services to be verified by the Contractor prior to commencing works. Contractor to confirm with relevant authority regarding measures to be taken to ensure services are protected or procedures are in place to demolish and/or relocate.		K&G	Kerb and gutter
4. Compact subgrade under buildings and pavements to minimum 98% standard maximum dry density in accordance with AS 1289 5.1.1. Compaction under buildings to extend 2m minimum beyond building footprint.		Survey prepared by :		3. Sawn joints should generally be located at a maximum of 6m centres or 1.5 x the spacing of keyed joints, where key joint spacing is less than 4m, with dowelled expansion joints at maximum of 30m centres.				KO	Kerb only
5. All work on public property, property which is to become public property, or any work which is to come under the control of the Statutory Authority, the Contractor is to ensure that the drawings used for construction have been approved by all relevant authorities prior to commencement site.		Setout Points : CONTACT THE SURVEYOR		4. Provide 10mm wide full depth expansion joints between buildings and all concrete or unit pavers.				FK	Flush kerb
6. All work on public property, property which is to become public property, or any work which is to come under the control of the Statutory Authority to be carried out in accordance with the requirements of the relevant Authority. The Contractor shall obtain these requirements from the Authority. Where the requirements of the Authority are different to the drawings and specifications, the requirements of the Authority shall be applicable.		Taylor Thomson Whitting does not guarantee that the survey information shown on these drawings is accurate and will accept no liability for any inaccuracies in the survey information provided to us from any cause whatsoever.		5. The timing of the saw cut is to be confirmed by the contractor on site. Site conditions will determine how many hours after the concrete pour before the saw cuts are commenced. Refer to the specification for weather conditions and temperatures required.				DD	Dish drain
7. For all temporary batters refer to geotechnical recommendations.		UNDERGROUND SERVICES - WARNING		6. Vehicular pavement jointing as follows:				TE	Thickened Edge
		The locations of underground services shown on Taylor Thomson Whitting's drawings have been plotted from diagrams provided by service authorities. This information has been prepared solely for the authorities own use and may not necessarily be updated or accurate.						IK+TE	Integrated kerb + Thickened Edge
		The position of services as recorded by the authority at the time of installation may not reflect changes in the physical environment subsequent to installation.							
		Taylor Thomson Whitting does not guarantee that the services information shown on these drawings shows more than the presence or absence of services, and will accept no liability for inaccuracies in the services information shown from any cause whatsoever.							
		The Contractor must confirm the exact location and extent of services prior to construction and notify any conflict with the drawings immediately to the Engineer/Superintendent.							
		The contractor is to get approval from the relevant state survey department, to remove/adjust any survey mark. This includes but is not limited to, State Survey Marks (SSM), Permanent Marks (PM), cadastral reference marks or any other survey mark which is to be removed or adjusted in any way.							
		Taylor Thomson Whitting plans do not indicate the presence of any survey mark. The contractor is to undertake their own search.							
REFERENCE DRAWINGS		PEDESTRIAN FOOTPATH JOINTING		EXISTING SERVICES		EXISTING SERVICES		GROUNDWATER	
1. These drawings have been based from, and to be read in conjunction with the following Consultants drawings. Any conflict to the drawings must be notified immediately to the Engineer.		1. Expansion joints are to be located where possible at tangent points of curves and elsewhere at max 6.0m centres.		Contractor to be aware existing services are located within the site.		Contractor to be aware ground water levels are close to existing surface level. Temporary de-watering may be required during construction works.			
Consultant Dwg Title	Dwg No	Rev Date		2. Weekened plane joints are to be located at a max 1.5 x width of the pavement.					
THOMSON ADSETT FLOOR PLANS	REVIT MODEL	01.05.19		3. Where possible joints should be located to match kerbing and / or adjacent pavement joints.					
SURVEY	35179 DETAIL MGA WITH PATH			4. All pedestrian footpath jointings as follows (uno).					
SITeworks NOTES		KERBING NOTES		EXCAVATIONS		HAZARDOUS MATERIALS		DRAWING SCHEDULE	
1. All basecourse material to comply with RMS specification No 3051 and compacted to minimum 98% modified standard dry density in accordance with AS 1289 5.2.1.		FACE OF KERB		Deep excavations due to stormwater drainage works is required.		Existing asbestos products & contaminated material may be present on site. Contractor to ensure all hazardous materials are identified prior to commencing works. Safe working practices as per relevant authority to be adopted and appropriate PPE to be used when handling all hazardous materials. Refer to geotechnical/environmental report by (insert report details) for details.		Drawing No.	
2. All trench backfill material shall be compacted to the same density as the adjacent material.		DEJA		Contractor to ensure safe working procedures are in place for works. All excavations to be fenced off and battens adequately supported to approval of Geotechnical Engineer.			Drawing Title		
3. All service trenches under vehicular pavements shall be backfilled with an approved select material and compacted to a minimum 98% standard maximum dry density in accordance with AS 1289 5.1.1.		6m MAX		Contractor to be aware safe working procedures are in place for works.			SKC100	NOTES AND LEGEND SHEET	
CONCRETE FINISHING NOTES		DEJA		Refer to geotechnical report by (JK GEOTECHNICS) for details.			SKC102	EROSION & SEDIMENT CONTROL PLAN	
1. All exposed concrete pavements are to be broomed finished.		6m MAX					SKC110	SITEWORKS AND STORMWATER PLAN	
2. All edges of the concrete pavement including keyed and dowelled joints are to be finished with an edging tool.		30m MAX					SKC120	TYPICAL DETAILS SHEET 1	
3. Concrete pavements with grades greater than 10 % shall be heavily broomed finished.		DEJA							
4. Corborundum to be added to all stair treads and ramped crossings U.N.O.		EJ							
EXISTING SERVICES LEGEND		MANUAL HANDLING		CONFINED SPACES		WATER POLLUTION		SITE ACCESS/EGRESS	
S - Existing sewer		Contractor to be aware manual handling may be required during construction. Contractor to take appropriate measures to ensure manual handling procedures and assessments are in place prior to commencing works.		Contractor to be aware of potential hazards due to working in confined spaces such as stormwater pits, trenches and/or tanks. Contractor to provide safe working methods and use appropriate PPE when entering confined spaces.		Contractor to ensure appropriate measures are taken to prevent pollutants from construction works contaminating the surrounding environment.		Drawing No.	
W - Existing water							Drawing Title		
EU - Existing underground electrical							SKC100	NOTES AND LEGEND SHEET	
EA - Existing aerial electrical							SKC102	EROSION & SEDIMENT CONTROL PLAN	
T - Existing communications							SKC110	SITEWORKS AND STORMWATER PLAN	
G - Existing gas							SKC120	TYPICAL DETAILS SHEET 1	
SW - Existing stormwater									
DBYD SERVICES NOTE		VEHICLE MOVEMENT		DRAWING SCHEDULE		DRAWING SCHEDULE		DRAWING SCHEDULE	
The location of services shown on this drawing have been plotted as accurately as possible from diagrams provided by service authorities and should be confirmed by site inspection."									







**PRELIMINARY**