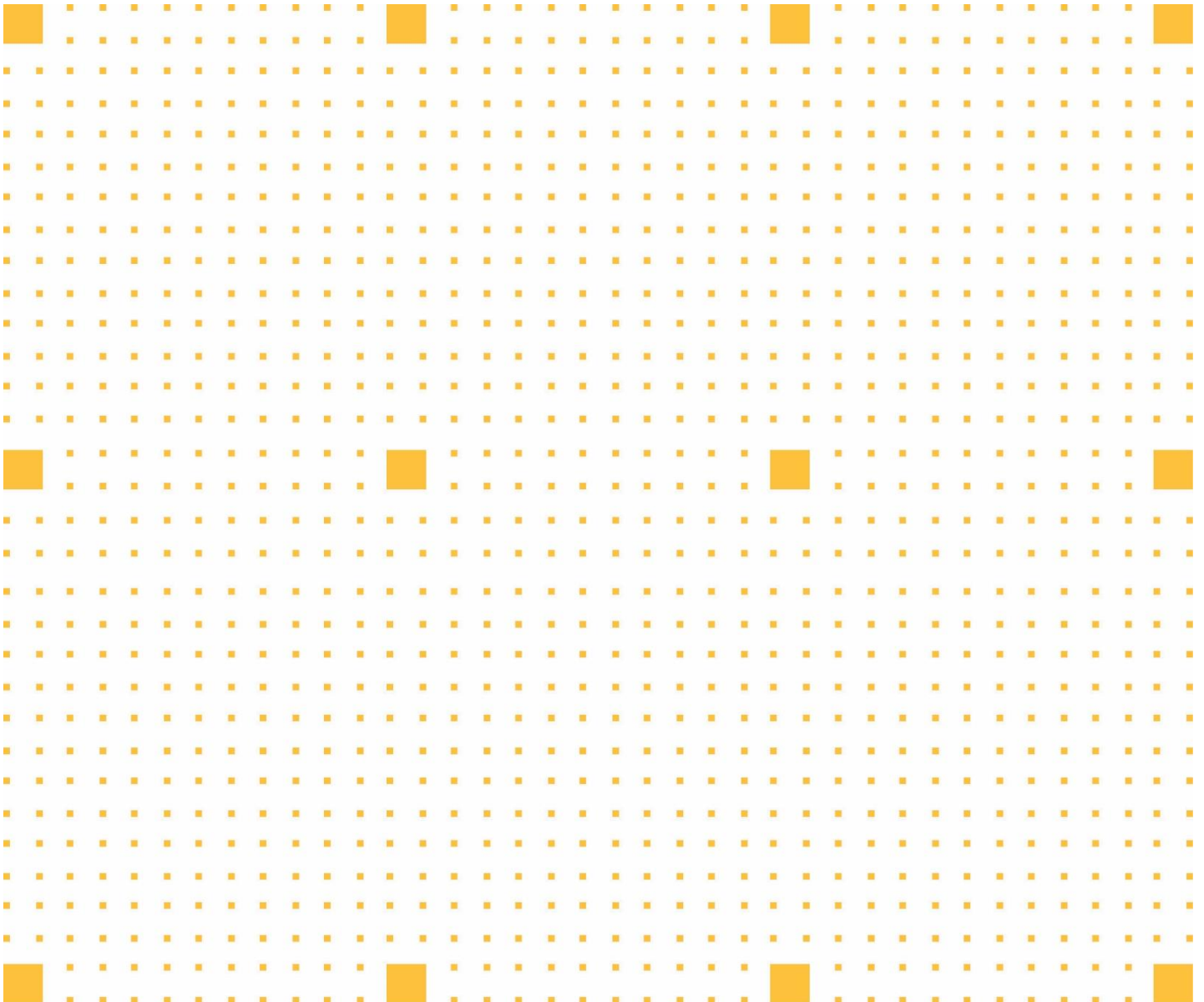


Construction Environmental Management Plan

Project: Meadowbank TAFE – Multi-Trades and Digital Technology Hub

Job No: SC130



Rev: D – February 2021

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1 Document Information

1.1 Review & Approval

Review			
Position	Name	Sign	Date
HY Authorised Person			
Project Manager	Vanja Krumpacnik		
Snr Contracts Administrator	Michael Gibson		
Contracts Administrator			
Snr Site Manager	Eugene Godfrey		
Site Safety Officer	Mustafa Aktas		
Site Engineer	Michael McKinley		
Cadet	Lucas Choi		
Cadet	Adam Rowston		
Services & Commissioning	Richard O'Sullivan		
Design Manager	Hang Nghiem		
Foreman			
Foreman			
Accounts & Admin			
Leading Hand			
Approval			
State HSE Manager	Peter Fay		
Project Director	Matt O'Grady		

1.2 Change Information

Change Information			
Revision	Description	Issued by	Issue date
A	Issued for use	M.A	August 2020
B	Issued for Submission to DPIE and Certifier	A.R	November 2020
C	Amended Compliance Table in appendix A.6	A.R	November 2020
D	Issued for Submission to DPIE and Certifier	D.H	February 2021

2 Definitions

The following definitions and abbreviations have been used in this Environmental Management Plan. Further definitions and abbreviations are provided in referenced procedures and plans.

BIM360 Field	Cloud based QHSE field management software application designed specifically for the construction industry.
CEMP	Construction Environmental Management Plan (this document)
CNVMS	Construction Noise and Vibration Management Sub-Plan
CTPMSP	Construction Traffic and Pedestrian Management Sub-Plan
EPA	State Environment Protection Authority
ESD	Ecologically Sustainable Development
HSE	Health, Safety & Environment
HY	Hansen Yuncken Pty Ltd
HYWAY	An information management platform developed by HY utilising Microsoft SharePoint
NC	Non-Conformance
NGER	National Greenhouse and Energy Reporting
MTDTH	Meadowbank TAFE – Multi-Trades and Digital Technology Hub
MSCP	Meadowbank TAFE – Multi-Storey Carpark
OEH	Office of Environment and Heritage
PLN	HY Plan
PMP	Project Management Plan
POEO	The Protection of the Environment Operations Act
PROJ	Project Management
REO	Regional Environmental Officer
RMS	Roads and Maritime Services
S/C	Subcontract(s) or Subcontractor(s) as the context requires
Site Safety Supervisor	Site Manager
SSC	Site Safety Coordinator
SSO	Site Safety Advisor
Superintendent	GHD
SWMS	Safe Work Method Statement

3 Commitment & Policy

3.1 Scope & Application

The Meadowbank Education and Employment Precinct will see TAFE Meadowbank transformed into a technology-focused campus with state-of-the-art facilities including **A New Multi-Trades and Digital Technology Hub (MTH)**. This new state-of-the-art facility will feature modern and active learning spaces for trade discipline and industry engagement with a strong emphasis on digital technologies and cybersecurity.

The scope of works has been split into two separable portions of work in order to achieve the NSW Government's commitment to complete the works concurrently with the new Meadowbank School in Term 1 2022. The separable portions of work for the TAFE project are:

- Separable Portion 2: Main works for the design and construction of the new Multi-Trades and Digital Technology Hub including the two (2) storey aboveground carpark; and
- Separable Portion 3a: Precinct Works including the demolition and make-good of existing Buildings D & E and minor interface works between the new Meadowbank School at the Rhodes Street entry.

Early Works will be carried out under a separate Part 5 planning approval prior to the Main Works State Significant Development Application approval. The Early Works component involves the demolition of the North-Eastern carpark and Building N ready for construction of the MTH.

The Main Works under Separable Portion 2 involves the design and construction of the 6-storey MTH which includes state-of-the-art learning spaces, workshop areas and digitally enabled spaces. The construction of the MTH will provide a variety of learning and breakout spaces for end users which is outlined below:

- Level 1 – Learning Spaces, Gas Lab, TMV Room, Plumbing Workshops incl. Sandpits;
- Level 2 – Welding Workshops, Learning Spaces and Basement Carpark;
- Level 3 – Indoor & Outdoor Workshops (Carpentry, Electro Technology, Multi-Trades Workshop and Storage Area) and Learning Spaces;
- Level 4 – Learning Spaces, Breakout Areas, Industry Engagement Spaces and Café;
- Level 5 – Applied Research Spaces, Seminar Rooms, Learning Spaces and Industry Engagement Spaces; and
- Level 6 – Digital Technology Spaces including but not limited to Cyber Security Rooms, Workshops, Indoor and Outdoor Learning Spaces and Industry Engagement Spaces.

Other works which form part of Separable Portion 2 and 3a are further outlined below:

- Construction of a new two (2) storey aboveground carpark South of the HUB on an existing carpark located within the TAFE precinct;
- Decanting and demolition of Building D and E including make-good;
- Landscaping works across the See Street frontage and building perimeter of the HUB and multi-storey carpark; and
- Installation of new supporting infrastructure, including power and communications infrastructure.

This CEMP has been generated to satisfy the requirements of "ISO 14001:2015, *Environmental management systems – Requirements with guidance for use*" and the "NSW Government *Environmental Management System Guidelines – 3rd edition*". It establishes guidelines and controls for all HY activities that may impact the surrounding environment for the duration of the works, including but not limited to; air, water, land, natural resource use & waste, flora & fauna, and their respective interrelationship. Furthermore, it has been designed to embrace the environmental management requirements, both in terms of the Contract and generally, to demonstrate HY as an environmentally responsible organisation to the broader community.

3.1.1 Hours of Work

In line with Conditions C3 of SSD 10349, the proposed hours of work for the project are as follows:

- Monday - Friday: 7am – 6pm
- Saturday: 8am – 1pm
- Sundays and Public Holidays: Nil

In line with Conditions C4 of SSD 10349, provided noise levels do not exceed the existing background noise level plus 5dB, works may also be undertaken during the following hours:

- Monday - Friday: 6pm – 7pm
- Saturday: 1pm – 4pm

3.1.2 24 Hour Contact Details

The 24-hour contact details for the project are as follows:

NAME: Eugene Godfrey

M: 0436 857 222

EMAIL: EGodfrey@hansenyuncken.com.au

3.2 CEMP Interrelationship with PMP

This CEMP forms part of Hansen Yuncken's Environmental Management and interfaces with the company's Quality & WHS Management Systems. Furthermore, this CEMP is an integral part of Meadowbank TAFE – Multi-Trades and Digital Technology Hub PMP. The following plans referenced within this CEMP form part of the overall PMP for the project and contribute to the environmental management procedures:

- **Project Site Induction** – Ensures all workers onsite are aware of the Environmental Management Plan & also trains all workers onsite on the requirements for controlling: dust & windblown debris, dirt & debris on public roads, protection of stormwater drains, tool & equipment washout, chemical spills, noise disturbance, waste collection & disposal, rubbish & food scraps & excess concrete.
- **Project HSE Risk Assessment** – Identifies what subcontractor onsite are impacted by or the risk of; air quality/dust, archaeology & cultural heritage, chemical spill, flora & fauna, littering, noise disturbance, stormwater contamination & watercourse pollution each month. This will be monitored through task observations scheduled for each month.
- **Construction Noise & Vibration Management Sub-Plan** – Identifies mitigation methods to minimise the risk of noise & vibration to the workers onsite and the surrounding properties.
- **Construction Traffic and Pedestrian Management Plan** – Summarises how construction and pedestrian traffic will be managed on the project to minimise the impact on the existing facility and the neighbours surrounding to the project.
- **Site Layout Plan** – Identifies the location of sediment controls, access routes, truck washout, location of site bins, spill kits, concrete washout.
- **Emergency Response Plan** – Outlines the process to manage the following environmental emergencies; asbestos exposure, water pollution, fire, major fuel spill & chemical spill
- **Audit Management Plan** – Describes the frequency of internal and external environmental audits and the process for closing out any non-conformances raised.

3.3 Policy & Objectives

The HY Environmental Policy Statement provides the framework for the development of this CEMP (refer appendix A.1), and details the company's commitment to *"providing a high quality environment, which meets the requirements and expectations of; Clients, Statutory Authorities, Employees and Community Groups"*, through the application of *"sustainable development principles, to continually improve environmental performance in minimising impact on, and pollution of, the environment during the construction process"*.

The objective of the Environmental Management Plan is to:

- Satisfy Client requirements related to environmental performance, set out in the Specification for the Works;
- Incorporate and provide mitigation strategies for environmental issues arising from site activities and as detailed in the Meadowbank TAFE – Multi-Trades and Digital Technology Hub Environmental impact assessment document;
- Encourage best practice environmental management through planning, commitment and continuous improvement;
- Prevent and minimize adverse impacts on the environment;
- Identify the potential for, and respond to, environmental incidents and emergency situations and take corrective actions;
- Identify and control possible environmental hazards with the works and HY activities;
- Identify and protect any special environmental characteristics of the site including cultural heritage significance;
- Define roles and responsibilities and allocate the necessary resources
- Ensure environmental training and awareness programmes are provided to employees and subcontractors;
- Establish mechanisms to monitor, evaluate and report progress.

The HY Environment Policy commits the company to achieve the following goals:

- Develop and promote a culture of environmental leadership, responsibility and continual improvement across the HY business;
- Audit, monitor and ensure compliance with environmental legislative and regulatory obligations and other environmental commitments;
- Utilise the resources of HY to lead the way in defining and achieving best environmental practice; and
- Advance and disseminate environmental knowledge and applied environmental management through training, research and engagement with the wider community

A copy of the Environment Policy is contained within the PMP and displayed at the project / site office and induction sheds. HY recognises this implementation will involve effective training of personnel to ensure they fully understand their responsibilities to comply with and monitor the management system. In addition, all site workers are consulted on HY environmental policies & procedures through the following mechanisms: site induction, notice board, site inspections, prestart meetings, subcontractor meetings, team meetings, toolbox talks.

3.4 Targets

3.4.1 Objective: Reduce waste

KPI: Waste minimisation and recycling

Target: Construction & Demolition Waste going to landfill <5kg per m² of GFA

Responsibility: HY Site Manager

3.4.2 Objective: Comply with all environmental legislation

KPI: Number of identified breaches of State or Commonwealth Environmental legislation

Target: Nil for duration of project.

Responsibility: HY & Subcontractors

3.4.3 Objective: Minimise impacts on the environment

KPI: Number of significant environmental incidents causing serious harm to the environment

Target: Nil for duration of project.

Responsibility: HY & Subcontractors

3.4.4 Objective: Conduct environmental site inspections to validate environmental conformance

KPI: Schedule and undertake regular site inspections

Target: > 90% of scheduled HSE inspections

Responsibility: HY Site Manager

3.4.5 Objective: Minimise and manage environmental complaints

KPI: Consult with impacted neighbours and promptly address all complaints

Target: ≤ 1 complaint per significant construction milestone

Responsibility: HY Site Manager

3.5 ESD Vision & Principles

The project provides an opportunity for HY to expand its practical and theoretical knowledge of ESD to a level that is considered 'best practice' status. In line with condition B11, the project requires a 4-star Green Star rating and must include water sensitive urban design measures in the design.

As such, the ESD vision and principles for HY involves:

- Identification and prioritisation of environmental risk based on AS/NZS ISO 31000:2009 and Guidelines HB158:2010, using qualitative likelihood vs. consequence methods.

- Development of management systems which build knowledge and capacity on environmental issues, principles and sustainable behaviours including training and communication.
- Reduced energy and water consumption as well as waste minimisation during the construction process.
- Environmental training and management of trade contractor's activities to ensure that the project ESD objectives are obtained.
- Efficient and effective use of natural resources in a way that maintains the ecological processes on which life depends
- Sustainable use of renewable energy resources.

3.6 Environmental Planning

In accordance with the contractual requirements, applicable legislation, and in keeping with proper environmental practices, Hansen Yuncken has instituted a methodology which is reflective of observes the requirement, as set out in ISO 14001:2015.

3.6.1 Environmental Aspects & Impact

All activities related to the Meadowbank TAFE – Multi-Trades and Digital Technology Hub, which are enacted by or on behalf of Hansen Yuncken, are identified in the "Project HSE Risk Assessment" (refer Appendix A.4). For each activity the environmental aspects and associated actual and potential impacts are identified as they relate to the following environmental elements:

- Location and Land Use;
- Noise & Vibration;
- Traffic and Access;
- Air Quality;
- Soils, Erosion and Water Quality;
- Terrestrial Flora and Fauna;
- Cultural Heritage;
- Site Contamination; and
- Waste Management.

Environmental impacts are detailed in the "**Project HSE Risk Assessment**" and assessed for significance by using the Risk Matrix. Each identified potential impact is rated (Risk rating) in relation to its predicted likelihood and consequence. Environmental Impacts as applicable to the Meadowbank TAFE – Multi-Trades and Digital Technology Hub are summarised in this CEMP "Environmental Risk Register" (Section 4.3).

3.6.2 WORK METHOD STATEMENTS

For each activity rated as a significant risk (i.e. Risk class >M/Medium) to the environment, a further Risk assessment is undertaken and any additional controls identified in a Work Method Statement, detailing the; steps involved, hazards, control measures and persons responsible. Furthermore, a Toolbox Talk will be completed, involving all workers responsible for completing the “Significant Risk” activity.

3.6.3 Legal Compliance and Other Requirements

Hansen Yuncken has developed a procedure (“[Legislation Standards and Codes of Practice](#)”), available on HYWAY to identify legal and other requirements that are applicable to the Meadowbank TAFE – Multi-Trades and Digital Technology Hub and to ensure the accessibility of the information. The procedure shall be referenced and is applicable to those activities and functions that have the potential to interact with the environment.

Furthermore (URL) links are supplied on HYWAY to regulatory body websites and relevant NSW legislation relevant to environmental Aspects and management of the same.

4 Implementation

4.1 Environmental Awareness

All HY and S/C employees shall receive an induction into the project in accordance with the Site Induction procedure including completing the Site Induction Record Form (FM-CORP-HSE-001).

The induction shall include the requirements for the conduct of activities which have the potential for significant environmental impacts on the project which shall be outlined in the project specific Site Induction Handbook.

This document applies to all HY and S/C employees, environmental awareness is the responsibility of every person working on and associated with the project.

4.2 Environmental Impacts of Subcontractor Activities

The environmental impacts of subcontractor activities shall be assessed during the S/C pre-award meeting in accordance with pre-award meeting procedure and the project HSE risk assessment.

4.3 Environmental Risk Register

The below table assesses the level of risk associated with each environmental issue prior to the implementation of mitigation measures.

Environmental Issue	Risk to Project	Responsible Personnel
<p><u>Location & Land use</u></p> <p>Residential properties and teaching spaces may be impacted with construction works due to construction noise and dust</p>	Medium	PM, SM, FM, S/C
<p><u>Noise & Vibration</u></p> <p>Construction of the development may result in short term impacts during the project due to the use of heavy machinery and plant as well as construction personnel and vehicle movements.</p>	Medium	PM, SM, FM, S/C
<p><u>Traffic & Access</u></p> <p>During the 80 weeks of construction there will be impacts on the existing facility and the public roads surrounding the project from construction vehicles and deliveries for site.</p>	Medium	PM, SM, FM, S/C

<p><u>Air Quality</u></p> <p>During the earthworks, stage of the project there is a risk of poor air quality generated by the constructions works.</p>	Medium	PM, SM, FM, S/C
<p><u>Soils, Erosion, & Water Quality</u></p> <p>There is a risk of water pollution from the construction works caused by wind or water movement causing sediment and other materials leaving site.</p>	Medium	PM, SM & FM
<p><u>Terrestrial Flora & Fauna</u></p> <p>The removal of trees during construction works poses minimal risk to landscaped species throughout the area.</p>	Low	PM & SM
<p><u>Cultural Heritage</u></p> <p>It is unlikely that construction works will impact any undisturbed aboriginal artefacts due to the construction zone being in an existing site.</p>	Low	PM & SM
<p><u>Site Contamination</u></p> <p>There is a risk of contamination based on testing conducted prior to construction works commencing (There is a risk of unexpected finds being an existing site).</p>	Low	PM & SM
<p><u>Waste Management</u></p> <p>The risk of the constructions works waste management is low/medium pending the results of existing materials onsite.</p>	Low	PM, SM, FM, S/C

PM - Project Manager, SM - Site Manager, FM - Foreman, S/C – Subcontractor, PCA - Private Certifier

4.4 Location and Land Use

4.4.1 Site Location

The Meadowbank TAFE construction sites (MTH and Multi-storey Carpark) are located within the current site boundaries of the Meadowbank TAFE campus. Both sites are located adjacent and parallel to See Street and will be accessed via See Street.

The MTH site is located on an existing carpark and a vacated childcare centre. The site will be primarily accessed via See Street with an alternative access point located at the North-Western entrance from Rhodes Street. This alternative entry point will be primarily used for trade personnel access and TAFE truck deliveries. North of the MTH building is the Ausgrid high voltage substation and East across See

Street is low density residential housing. West of the MTH is Building P which is an existing 5 storey structure containing mixed use teaching and hospitality spaces. South of the MTH are 3 existing buildings F, G and Z. Building F & G is a multi-storey structure consisting of mixed-use teaching spaces and Building Z is a single storey art exhibition centre.

The multi-storey carpark is located on an existing carpark adjacent a right of carriageway and electrical easement. The primary entry point to the site is via the existing right of carriageway coming off See Street which will be accessible by TAFE during the construction works. The site is located directly adjacent Building J on the South-Western boundary of the multistorey carpark. This existing Building J is comprised of mixed-use teaching spaces and a childcare centre. Located across See Street to the East are low density residential housing alike to the conditions of the MTH site.

Refer to Appendix A.3 for further information regarding site location.

4.4.2 Likely Impacts

The construction works will be restricted to within the boundary of the site with designated entry/exit points thus not interfering with the current use of the remainder of the TAFE site. All construction activities would be carried out with due diligence, duty of care and best management practices.

The proximity of residential properties and teaching facilities to the site including any works along See Street poses a risk. There will be some impacts associated with construction traffic, noise and dust which may affect residents and/or staff, however any effects will be minimal and will be addressed as per below.

4.4.3 Mitigation Strategies

- The neighbouring landowners are to be consulted regarding the construction works, predicted program and any access requirements.
- Land disturbance during construction is to be limited to that required to undertake the construction works.
- Construction works to be undertaken in consideration of adjacent vegetation.
- Areas disturbed during construction to be returned to the pre-construction condition.

4.5 Noise and Vibration

4.5.1 Likely Impacts

Construction of the proposed development will result in short term noise impacts during the 80-week construction period with noisy works to be restricted to set hours as per council requirements.

Heavy vehicle traffic noise will be minimised through set entry and exit routes to and from site with no vehicle lay down within the residential areas.

4.5.2 Mitigation Strategies

- Site construction noise will be managed in accordance Construction Noise and Vibration Management Sub-Plan (CNVMSP) developed for this project. The CNVMSP is based on the proposed construction methodology, activities, durations and equipment type and numbers.
- Keep the community informed in relation to noise intensive activities in the immediate area.
- Provide consultation where prolonged or consecutive periods of construction works are planned.
- Construction activities shall be restricted to the hours dictated in the consent SSD 10349.

- The consent approval stipulates working times to minimise the impact on the community being generally Monday to Friday 7am-6pm, Saturday 8am-1pm, no work on Sundays or public holidays.
- Any noise complaint received will be investigated as soon as practicable. Any practicable and feasible measures to minimise noise will be identified and implemented if required.
- All possible steps to be taken to silence construction equipment where possible.
- Optimum siting of work areas, vehicle and plant parking areas, materials stockpiles and equipment storage areas in locations where potential acoustical impacts will be minimised.
- All plant and machinery used for the project shall be well maintained.
- Ensure workers and contractors are regularly trained (such as toolbox talks) to use equipment in ways to minimise noise.
- “Quacker” reversing alarms to be used for all plant on site where applicable.

For more detailed mitigation strategies related to specific work phases and the relevant mitigation strategies to be adopted, refer to the CNVMSP (Appendix A.7)

4.6 Traffic & Access

4.6.1 Likely Impacts

Construction would occur over an 80-week period with some increase in traffic in the local area expected. There is limited opportunity for construction worker parking to be provided during the Main Works stage as the building footprint(s) largely extend to the site boundary. In consultation with Council, temporary parking arrangements at Meadowbank Park have been made available to staff and students of the TAFE during construction of the project, due to the temporary loss of on-site parking to construct the new buildings. It is understood the Meadowbank carpark contains around 400 car spaces and can accommodate the temporary loss of around 300 space on the Meadowbank site, while any additional available parking can be utilised by construction workers.

Additionally, construction workers will be instructed not to park either within precinct grounds or on-street within the typical daily precinct parking catchment. This includes See Street along the eastern boundary. Construction workers will be encouraged where possible to use the public transport network with regular bus and train services running directly to the Meadowbank precinct. This information will be conveyed to all workers during the site induction process. The construction workforce would vary according to the work being carried out, the construction method and contractor's program.

The increased traffic is not predicted to have an impact on local traffic flow and only a minor inconvenience to local road users is expected. Whilst construction works may cause some inconvenience to residents, any impacts would be minor, localised and short-term.

Construction vehicle routes have been developed with the aim to provide the shortest distances to/from the local and main road network, whilst minimising the impact of construction traffic on the local streets in the immediate vicinity. Alternative routes would not be used without specific prior approval from the relevant authorities. No trucks will be permitted to layover on approach to the construction sites without formal prior approval. Access to the MTDTH is consistent with those used for the early works stages, with one utilising the existing crossover on Rhodes Site, while the other will be in the same location as the proposed new laneway crossover See Street. Two accesses for the MSCP are required to adequately service the site, given constraints related to the limited available site area for loading. One

of the access points is similar to that used in the early works stage on the northern boundary, via the existing driveway near See Street/Angas Street, while the other crossover will be a temporary access from See Street in the south-eastern corner of the site.

There are no significant construction-related issues or impacts that would not be mitigated by the Construction Traffic and Pedestrian Management Sub-Plan, in Appendix A.7.

4.6.2 Mitigation Strategies

- Follow the Construction Traffic and Pedestrian Management Sub-Plan (CTPMSP) based on the detailed construction methodology and use of specific heavy vehicles and construction plant. The CTPMSP includes measures to minimise traffic impacts ensure public safety and has been prepared in accordance with:
 - Traffic Control at Work Sites Manual (RTA, 2010)
 - Australian Standard 1742.3 - 2002 Traffic Control Devices for Works on Roads.
- The CTPMSP has been developed in consultation with TfNSW and Ryde City Council.
- The CTPMSP details hours of operation, heavy vehicle volumes (numbers) and routes, construction staff parking, loading / unloading areas and site access arrangements, all temporary warning, guidance and information signage, and appropriate traffic control devices
- Notify surrounding landowners at least one week in advance of the works
- All vehicles accessing the sites will use the designated access roads
- All roads will be kept clean and free of dust and mud. Where material is tracked onto sealed road, it will be removed so that road pavements are kept safe and trafficable
- All vehicles transporting spoil onsite will be covered and filled to maximum capacity to minimise vehicle movements as required
- All roads, kerbs, gutters and footpaths damaged as a result of construction are to be restored to their pre-construction condition. A dilapidation report will be carried prior to construction
- A dedicated vehicle wash-down area will be established on site
- All traffic shall comply with all applicable traffic laws and regulations including speed limits. All construction vehicles shall comply with the speed limits set for the roads accessing the site
- Construction activities shall be restricted to the hours dictated in the consent SSD 10349.
 - The consent approval stipulates working times to minimise the impact on the community being generally Monday to Friday 7am-6pm, Saturday 8am-1pm, no work on Sundays or public holidays.

4.7 Air Quality & Dust Control

In accordance with condition B15a (iii) of SSD 10349, repeated in part as follows; the Construction Environmental Management Plan (CEMP) must include details of; management of dust and odour to protect the amenity of the neighbourhood. This section of the CEMP addresses this condition, outlining the likely impact of air quality and dust control for the various aspects of the construction works, along with the mitigation strategies that will be implemented to minimise these impacts on the neighbourhood.

4.7.1 Likely Impacts

The main impact to air quality during construction is expected to arise from the generation of airborne localised dust associated with demolition and earthworks. Given the close proximity of neighbouring

properties and existing buildings, there is the potential for impact by dust, particularly during windy conditions.

4.7.2 Mitigation Strategies

- Construction vehicles and equipment to be suitably serviced prior to commencement of construction activities and all necessary maintenance to be undertaken during the construction period to meet EPA air quality requirements.
- Excessive use of vehicles and powered construction equipment will be minimised where possible.
- All construction machinery will be turned off when not in use to minimise emissions where possible.
- Construction contractors to monitor dust generation progressively.
- Dust suppression methods including the use of water carts will be adopted where required (i.e. on windy days when earthworks and vehicle movements are generating dust).
- Any stockpiled spoil/fill will be protected to minimise dust generation to avoid sediment moving offsite.
- Vehicles transporting spoil from the site to be covered where required.
- Public roads to be kept clean
- All trucks entering and leaving the site will have their loads covered
- The burning of waste materials will not be permitted on site.

4.8 Soil, Erosion & Water Quality

In accordance with condition B15a, (iv) & (v), of SSD 10349, repeated in part as follows; the Construction Environmental Management Plan (CEMP) must include, but is not limited to, details of; (iv) stormwater control and discharge; and (v), measures to ensure that sediment and other materials are not tracked onto the roadway by vehicles leaving the site. This section of the CEMP addresses these conditions, outlining the likely impacts associated with stormwater runoff and the mitigation strategies that will be implemented to ensure that these impacts are minimised. Further to this, in accordance with condition B15e, refer to Appendix A.9 for the Soil and Water Management Sub-Plan.

4.8.1 Likely Impacts

Earthworks and general ground disturbances associated with the site works may result in sediment and other materials leaving the site via wind or water movement. This may have the potential to result in the water pollution such as turbidity and nutrient inputs, should sediment wash into stormwater or natural drainage lines.

Aspects of the site identified as potentially impacting on water quality includes:

- Excavation for foundations and site levelling;
- Stockpiling and transportation of excess spoil; and
- General construction waste entering drainage lines

4.8.2 Mitigation Strategies

- Construction is to be undertaken in accordance with the Sediment and Soil Erosion Control Plans.
- All erosion and sediment control devices shall be properly maintained for the duration of the work. All structures are to be inspected after rain events and sediment to be removed.
- Any temporary stockpiles should be stabilised using sediment fencing or similar.

- All fuels and other hazardous liquids shall be stored at designated construction compounds.
- All chemicals used for construction shall be stored and used in accordance with the relevant Safety Data Sheets.
- An emergency spill kit shall be kept at the construction compound.
- Workers are to be made aware of the provisions of Section 120 of the POEO Act with regards to water pollution
- Notification to the EPA in accordance with Part 5.7 of the POEO Act is to be undertaken where a pollution incident occurs
- All construction vehicles and equipment are to be maintained in designated areas away from watercourses.
- Construction vehicles shall be appropriately cleaned of any soil or mud prior to leaving each works site at dedicated wash down bays.
- “Clean” stormwater shall be diverted around the site where possible.
- All existing stormwater pits and drains subject to HY construction works will be silt protected with geo-fabric and/or granular socks. Drains will be monitored and maintained by HY.
- Stockpiles to be established at HY approved locations.
- Sediment fences shall be installed at required locations at the perimeter of the site.
- Stormwater shall be diverted to retention basins.
- The location and details of permanent controls shall be included on the Site Layout Plan.
- Erosion and sediment controls shall be inspected as part of the Site HSE Inspection.

4.9 Terrestrial Flora and Fauna

4.9.1 Likely Impacts

The new Multi Trade Hub and Multi-storey Carpark is located on an existing carpark in a highly modified section of the campus, including various buildings, structures and hardstand areas. The works do not involve the removal of any protected tree species and all trees nominated for removal are approved under the SSD application. In August 2019, EMM undertook an investigation into the presence of microbats within the existing Building N and substation kiosk nominated for demolition. There was no evidence of microbat presence nor was any presence previously recorded. Therefore, the construction activities required for the new MTH and carpark is unlikely to adversely affect any flora or fauna species.

4.9.2 Mitigation Strategies

- No vegetation removal or modification is to occur beyond the proposed works areas shown on the plans.
- Fireweed (if applicable) should be removed from site prior to commencement of earth works.
- Carry out landscaping in accordance with the landscape design.
- Any areas of significant flora and fauna value which have been identified on the construction site will remain bunted/ flagged during construction.
- If any additional species are encountered the Site Manager shall arrange for works to be ceased in the area and contact the Superintendent for further directions.

4.10 Archaeology & Cultural Heritage

4.10.1 Likely Impacts

It is unlikely that the proposed works would disturb any undisturbed Aboriginal objects or sites of historical relics as defined under the Heritage Act 1977. However, if anything is uncovered throughout the demolition/excavation process works shall cease and superintendent notified immediately. Work shall only resume once approval has been granted and appropriate steps to address the find have been undertaken.

4.10.2 Mitigation Strategies

- All workers (including contractors) should be made aware that it is illegal to harm an archaeological or culturally significant objects, or historic relics, and if a potential object is encountered during activities, then all work at the site will cease and the OEH will be contacted to advise on the appropriate course of action to allow the appropriate actions to take place prior to resuming work.

4.11 Site Contamination

4.11.1 Contaminated Soil Risk Assessment

A risk assessment of contaminated soil shall be conducted at the start of the project in accordance with the following procedure for [Contaminated Soil Assessment](#).

As soon as possible after possession of the site by HY, an assessment of actual or potential soil contamination and its impacts shall be undertaken using the Soil Contamination Assessment on BIM 360 Field.

The purpose of the assessment is to provoke whether HY should have an independent third party to provide recommendations or seek wider advice within the company so that the additional knowledge can reduce the risk profile of contaminated soil.

Projects which have the following criteria should fill in this form:

- Projects with a geotechnical report that nominates fill on bore logs
- Projects which do not have a geotechnical report but have a requirement for material to be exported off the site.

4.11.2 Identification of Contaminated Soil

During construction, it shall be necessary to monitor soil contamination levels (if any), dust levels and water runoff quality, to ensure that health and environmental standards are not compromised. This is especially important as contaminated soil may be excavated and transported around the site.

Upon discovery of contaminated soil, the HY Site Manager shall arrange for works to be ceased immediately in the area and contact the Superintendent for further directions.

Contaminated waste shall be collected, contained, stored, handled and disposed of in accordance with relevant legislation and codes of practice.

4.11.3 Risk of Exposure

It is important to minimise the risk of exposure of construction personnel to soil contaminants by adopting appropriate site controls and industrial hygiene practices. Site controls may include:

- Defining certain areas as contaminated and restricting access to them;
- Appropriate signage;
- Training construction employees in industrial hygiene procedures;
- Keeping non-essential motor vehicles such as personal cars out of contaminated areas;
- Regular medical checks of construction personnel who are exposed to contaminated soils;
- Keeping stockpiles of contaminated material watered down to minimise dust generation in accordance with any water restriction requirements and ensure that runoff is not generated from excessive watering;
- Covering truck loads with tarpaulins and watering material when loading and unloading;
- Wheel washes for trucks and vehicle leaving the contaminated areas;
- Regular road sweeping and cleaning;
- Dust monitoring and adjustment of construction programs to accommodate high risk periods when conditions are windy or very dry; and
- Monitoring of concentrations of volatiles.

Industrial hygiene practices may include:

- Wearing long sleeved shirts and trousers or overalls to minimise dermal exposure;
- Wearing gloves when handling soils;
- Washing hands and faces before eating, drinking or smoking;
- Leaving overalls at site for laundering;
- Showering and washing facilities; and
- Wearing respiratory equipment during times of high dust or volatile emissions.

4.11.4 Groundwater Management

In accordance with condition B15a (vi) of SSD 10349, repeated in part as follows; the Construction Environmental Management Plan (CEMP) must include, but is not limited to, details of, (iv) groundwater management plan including measures to prevent groundwater contamination. The Data Gap Investigation, conducted by Trace Environmental, concluded that groundwater is not considered to pose a risk to the Multi-Trade Hub site. This was based on Douglas Partners Limited DSI assessment which considered the detections to be representative of regional groundwater quality common for urban environments. The Douglas Partners Detailed Site (Contamination) Investigation, for the Carpark site, concluded that groundwater is not considered to pose a risk to the site. This was based on the three ground water monitoring wells that were included to depths of approximately 8.0 m bgl and were found dry.

Despite this, the measures outlined in Section 4.11.5 will be adopted to mitigate the potential contamination of groundwater. Furthermore, the unexpected finds protocols outlined in Section 4.11.7 & Section 4.11.8 will be adopted in the event that groundwater is encountered on site.

4.11.5 Release of Contaminants to Soil and Groundwater

Water spraying of stockpiles and of soils being loaded and unloaded from trucks, covering of truck loads with tarpaulins and other measures described in the previous section would minimise the potential for dust to be generated.

If heavily contaminated soil is placed in contact with clean soils, contaminants could be mobilized by rainwater or chemical / physical reactions and affect the clean soils to a limited extent.

Similarly, there is a risk that contaminated soil is not clearly differentiated from clean soil and that mistakes could occur which cause the materials to be mixed or wrongly handled or disposed of.

This shall be overcome by implementing a material tracking system for all contaminated soils and ensuring that construction staff are trained how to use the system.

This shall involve documenting areas containing contaminated soil and putting signage near stockpiles that indicated the type of material present and its contamination status.

It shall also require supervision and documentation of all movements of contaminated materials around the site.

Avoiding contact between stormwater and contaminated soils is difficult to achieve if larger areas of a site are being exposed within a short period, because it does not allow for minimizing the amount of soil that is uncovered or placed in temporary stockpiles.

Therefore, it is necessary to manage stormwater in such a way that it does not mobilize contaminants and transfer them to clean areas.

This may be achieved by:

- Covering stockpiles of contaminated soil;
- Placing stockpiles of contaminated soil on bitumen or other sealed areas;
- Installation of adequate bunding or other approved method to contain runoff;
- Collecting stormwater run-off from stockpile areas; and
- Analytical testing of collected stormwater prior to its release.

Erosion and sediment control procedures in accordance with the relevant Code of Practice may also be applied, but with the additional objective of keeping water that is exposed to contaminated soils separate from water that has only come into contact with clean soils.

Groundwater could potentially be impacted by contaminants mobilized from stockpiled contaminated soil or by buried material.

Minimising runoff from stockpiles, as outlined above would reduce the risk to groundwater.

Land filling of contaminated material which is below the relevant criteria for soil contamination above the water table and capping the landfill area with low permeability material would minimise the risk of groundwater contamination from infiltration of stormwater into buried soils.

4.11.6 Heavy Metal Contamination

Any suspicious industrial wastes encountered will be immediately isolated to enable these assumptions to be confirmed by analytical testing.

4.11.7 Mitigation Strategies

- In the event that unexpected conditions are encountered during development work or between sampling locations which may pose a contamination risk, all works should stop, and an environmental consultant shall be engaged to inspect the site and address the issue.
- A Salinity Management Plan is to be prepared for the project as per REF requirements.

4.11.8 Unexpected Finds

In accordance with Condition B15g & h, of SSD 10349, unexpected finds protocols must be included within the CEMP to outline the process to be followed in the event that unexpected contamination and /or Aboriginal/non-Aboriginal heritage is found through the duration of the project. Unexpected Finds shall be addressed in compliance with the Hansen Yuncken's Unexpected Finds protocol listed below:

Unexpected Finds Protocols – General

1. Immediately cease work and contact site foreman
2. Site Foreman to construct temporary barricading to prevent worker access to the unexpected substance(s) and install appropriate stormwater/sediment controls
3. Site foreman to contact Client and arrange inspection by environmental consultant
4. Environmental consultant to undertake detailed inspection and sampling & analysis as per the documented sampling procedures outlined in the RAP. Environmental consultant to assess field screening and/or analytical results against documented site assessment criteria in the RAP
5. If substance assessed as not presenting an unacceptable risk to human health Site foreman to remove safety barricades and environmental controls and continue work
 - a. Site Foreman to remove barricades and environmental controls and continue work.
6. If substance assessed as presenting an unacceptable risk to human health
 - a. Environmental consultant to supervise remediation and undertake validation/clearance as per the remediation/validation/clearance plan
 - b. Environmental consultant to submit assessment/validation/clearance to site foreman for distribution to Client and appropriate regulatory authorities.
 - c. Site Foreman to remove barricades and environmental controls and continue work.

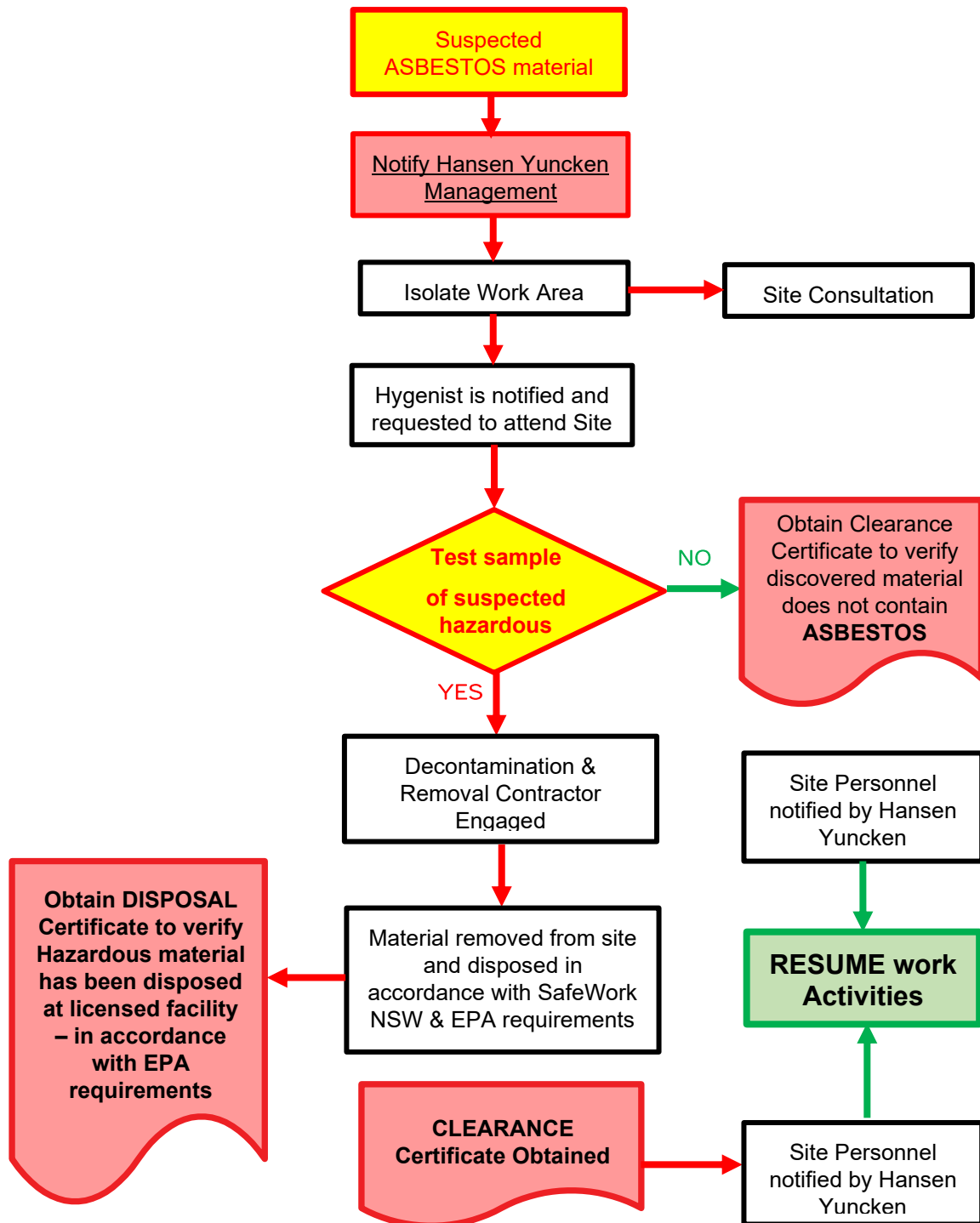
Unexpected Finds Protocol – Asbestos and Contamination

If asbestos is detected in unexpected areas prior to, or during, site development works the following 'Unexpected Finds Protocol' will apply:

- a. Upon discovery of suspected asbestos containing material, the site manager is to be notified and the affected area closed off by the use of barrier tape and warning signs. Warning signs shall be specific to Asbestos Hazards and shall comply with the AS1319-1994 – Safety Signs for the Occupational Environment.
- b. An Occupational Hygienist is to be notified to inspect the area and confirm the presence of asbestos and to determine the extent of remediation works to be undertaken. A report detailing this information would be compiled by the Occupational Hygienist and provided to the Principal (or their representative) and the site manager.
- c. The location of the identified asbestos material would be surveyed using sub-meter Differential Global Positioning System (DGPS).
- d. If the impacted soil is to be disposed off site, it should be classified in accordance with the DECCW's Waste Classification Guidelines (2008) and disposed of, as a minimum, as asbestos contaminated waste to a suitably licensed landfill. In dry and windy conditions the stockpile would be lightly wetted and covered with plastic sheet whilst awaiting disposal.
- e. All work associated with asbestos in soil would be undertaken by a contractor holding a class ASA Licence. WorkCover must be notified 7 days in advance of any asbestos works.
- f. Monitoring for airborne asbestos fibres is to be carried out during the soil excavation in asbestos contaminated materials.

- g. Documentary evidence (weighbridge dockets) of correct disposal is to be provided to the Principal (or their representative).
- h. At the completion of the excavation, a clearance inspection is to be carried out and written certification is to be provided by an Occupational Hygienist that the area is safe to be accessed and worked. If required, the filling material remaining in the inspected area can be covered/sealed by an appropriate physical barrier layer of non-asbestos containing material prior to sign-off.
- i. Validation samples would be collected from the remedial excavation to confirm the complete removal of the asbestos containing materials. If the asbestos pipes/conduits are uncovered, then sampling density would typically comprise one sample per 10-20 linear meter (depending on the length of the pipe). If asbestos debris are found, then the sampling density would typically comprise 1 sample per 5 metre x 5 metre grid.
- j. The sampling locations should be surveyed using a sub-meter DGPS.
- k. Details are to be recorded in the site record system.
- l. Following clearance by an Occupational Hygienist, the area may be reopened for further excavation or construction work.

Unexpected Finds Protocol - ASBESTOS



Unexpected Finds Protocol - Buried Structures

In the unlikely event that buried structures such as Underground Storage Tanks (USTs) are encountered during site works, the structure(s) and any associated pipe-work should be managed /removed as follows:

- a. Upon discovery of structure, the site foreman is to be notified and the area barricaded;
- b. Visual identification of the tank and associated pipe-work;
- c. Remove and dispose of the structure and associated pipe-work by a qualified contractor. In the case of an UST, the tank must be removed in accordance with Australian Institute of Petroleum (AIP) Code of Practice and Australian standards;
- d. Excavate and stockpile impacted materials (based on field observations) for classification;
- e. Validation of the remedial pit by a qualified environmental consultant for the contaminants of concern at the following sampling density:
 - i) Base of tank pit excavation - 1 sample per 25 m² (i.e. 5m x 5 m grid);
 - ii) Side of tank pit excavation - 1 sample per 10 linear metre (minimum of 1 sample per side) and 1 sample per 2m – 3m depth interval;
 - iii) Fuel feed lines/pipe-work - 1 sample per 10 linear metre and 2 - 3 depth interval; and
 - iv) QA/QC sampling and analysis in accordance with the Project Quality Management Plan.
- f. If required, “chase out” all of materials in the remediation pit identified to be impacted by petroleum/hydrocarbons and further validation sampling and analysis as required to assess appropriate removal of impacted materials;
- g. Waste classification and off-site disposal of impacted materials in accordance with the project Environmental Management Plan or the Waste Management Plan; and
- h. Inclusion of validation, waste classification and disposal documents (including landfill dockets and, in the case of USTs, tank and pipe work destruction certificates) in the validation report.

Unexpected Finds Protocol - Volatile Contaminants

Based on the findings of the previous assessments, and noting the nature of the filling and soil encountered at the site the potential for the site being impacted by volatile contaminants would be extremely low.

In the highly unlikely event that significant quantities of volatile compounds are detected, then appropriate gas mitigation strategies may be required as per ANZECC (1999) Guidelines for the Assessment of On-site Containment of Contaminated Soil.

If impacts due to volatile contaminants are detected in the area to be capped, the nature and extent of the impacts of the volatile contaminants should be established as a first step before an appropriate remedial strategy.

Unexpected Finds Protocol – Aboriginal & non-Aboriginal Heritage

Upon discovery of aboriginal or historical artefacts or anything considered to be of archaeological interest the Site Manager shall arrange for works to be ceased in the area and contact the Client for further directions.

The Project Team will take all necessary measures to protect the artefacts from being damaged or destroyed.

Works will not re-commence in the area until a written instruction from the Superintendent is received.

4.12 Waste Management

In accordance with condition B15d, the Construction Waste Management Plan (CWMSPP) has been completed for the project and is contained with Appendix A.8. In accordance with B15i, the CWMSPP details waste classification and validation measures including the treatment and allocation of waste for the project. The following volumes of materials are estimated to result from Main Works construction activities:

Stage 2				
Materials on Site		Destination/Treatment		
Type of Material	Estimated Volume (m³)	Onsite (Reuse/Recycle)	Offsite (Reuse/Recycle)	Disposal (Landfill)
Excess Concrete	5	Separated on site and crushed for use in temporary access road construction	Collected by contractor and taken to concrete recycling facility	No disposal to landfill
Scrap Wiring	2	No on-site reuse	Collected by contractor for separation into different grades for recycling	No disposal to landfill
General Waste (All Other Materials)	1	No on-site reuse or recycling	Separated onsite into dedicated receptacles and collected by waste contractor for disposal	Disposal to landfill

Stage 3				
Materials on Site		Destination/Treatment		
Type of Material	Estimated Volume (m³)	Onsite (Reuse/Recycle)	Offsite (Reuse/Recycle)	Disposal (Landfill)
Excess Concrete	20	Separated on site and crushed for use in temporary access road construction	Collected by contractor and taken to concrete recycling facility	No disposal to landfill
Floor Coverings	10	No on-site reuse	Disposed of into a designated bin and collected for recycling if of the required quality, or disposal to landfill if not	Material that cannot be recycled will be disposed of at landfill facility
Metal Offcuts, Roof Sheeting, Wiring, etc.	10	No on-site reuse	Collected by contractor for separation into different grades for recycling	No disposal to landfill
Used Pallets	30	Reused on site for storage where possible	Collected by contractor and disposed of at recycling facility	No disposal to landfill
Plastic Pallet Wrap	50	Some potential for reuse on site for covering equipment, fittings etc.	Collected by contractor and disposed of at recycling facility	No disposal to landfill
Timber Offcuts	25	Reuse for formwork where possible	Untreated recyclable timber will be collected and recycled at appropriate timber yard. Unrecyclable (treated) timber will be disposed of at landfill	Material that cannot be recycled will be disposed of at landfill facility

Stage 3				
Materials on Site		Destination/Treatment		
Type of Material	Estimated Volume (m³)	Onsite (Reuse/Recycle)	Offsite (Reuse/Recycle)	Disposal (Landfill)
Plasterboard Offcuts	25	No on-site reuse	Separated and stockpiled onsite and collected by waste contractor for recycling for use as soil improver with gypsum etc. removed	Material that cannot be recycled will be disposed of at landfill facility
Paper/Cardboard Recycling	30	Reuse cardboard boxes for storage where possible	Separated onsite into dedicated receptacles and collected by waste contractor for recycling	No disposal to landfill
Glass (Excess)	5	No on-site reuse	Recyclers consulted as to potential for recycling	No disposal to landfill
Mixed Recyclables	10	No on-site reuse or recycling	Separated onsite into dedicated receptacles and collected by the waste contractor for recycling	No disposal to landfill
Soil, Rock	10	May be reused onsite as fill in services trenches or shoring walls	Uncontaminated materials removed from the site should be reused as clean fill by waste contractor	Material that cannot be reused will be disposed of at licenced landfill facility
General Waste (All Other Materials)	20	No on-site reuse or recycling	Separated onsite into dedicated receptacles and collected by waste contractor for disposal	Disposal to landfill

Stage 4				
Materials on Site		Destination/Treatment		
Type of Material	Estimated Volume (m³)	Onsite (Reuse/Recycle)	Offsite (Reuse/Recycle)	Disposal (Landfill)
Excess Concrete	2	Separated on site and crushed for use in paving and/or temporary internal road construction	Any materials not reused on site should be sent to a licenced recycling facility	No disposal to landfill
Soil, Rock	4	May be reused onsite as fill in services trenches or shoring walls	Uncontaminated materials removed from the site should be reused as clean fill by waste contractor	Material that cannot be reused will be disposed of at licenced landfill facility
General Waste (All Other Materials)	1	No on-site reuse or recycling	Separated onsite into dedicated receptacles and collected by waste contractor for disposal	Disposal to landfill

4.12.1 Waste Reduction

The main source of waste associated with the construction works would be demolished material (bricks, concrete, steel etc.) resulting from the demolition and refurbishment of existing buildings. It is likely that some excess building materials will be produced due to the construction work such as miscellaneous waste associated with packaging and transport of plant and equipment and various other manufactured items forming part of the augmentation works. Waste generated as a result of construction will be minimised, recycled, reused or recovered, where practical.

HY has accepted the challenge to reduce waste on construction projects, particularly in materials transferred to landfill.

The strategy for reducing the waste on the project will be made up of three strategies as detailed below in order of priority. The prime objective is to keep the amount of materials transferred to landfill from this project to the minimum possible amount.

1. Reduce the amount of waste material produced on the project by ensuring that only enough materials required to perform the works are ordered.
2. Any excess materials from particular work areas are to be retained and incorporated into other work areas where practical.
3. Encourage “just in time” delivery of construction materials (minimum storage on site) to reduce the potential of loss / waste due to damage prior to usage.

4.12.2 Non-Recyclable Waste

Non-recyclable waste will be disposed of at an EPA approved landfill or transfer station. Provide details

4.12.3 Waste Collection & Disposal

Appropriate waste bins are to be provided by HY and made available to all S/C.

All S/C shall be directed to place waste in the bins provided. This shall be included in the Site Induction.

Waste collection points are nominated on the Site Layout Plan.

4.12.4 Waste Reporting

Waste generation is monitored by HY on monthly basis to ensure that the company’s waste reduction objectives are achieved. Waste disposal quantities are monitored monthly by HY to ensure compliance.

The Project Administrator shall record waste disposal data on BIM360 Field using the waste record checklist.

Waste quantities from the PMR shall be entered into the State HSE Database for analysis and reporting against HY Waste reduction targets.

4.12.5 Concrete Waste & Washout

Concrete trucks and pumps shall be washed out at designated locations as shown on the site layout plan. Washout of concrete pumps and AGI’s in other areas will not be permitted.

Washout shall be captured using membranes or other suitable means and allowed to set.

Waste shall be separated on site and crushed where possible for use in temporary access road construction or placed in bins for disposal with site waste.

Excess concrete shall be returned to the concrete plant for disposal or re-use.

4.12.6 Mitigation Strategies

- Accurate written records are to be kept such as:
 - Who transported the waste (company name, ABN, vehicle registration and driver details, date and time of transport, description of waste)
 - Copies of waste dockets/receipts for the waste facility (date and time of delivery, name and address of the facility, it's ABN, contact person).
- The construction contractor to ensure that waste generated by the works is transported to a place that can lawfully accept it as per Section 143 of the *Protection of the Environment Operations Act* 1997.
- The removal of any asbestos containing material if found is only to undertaken by an appropriately licenced contractor as per WorkCover NSW requirements and current guidelines.
- All waste, including excess spoil be recycled where practicable
- Trucks transporting spoil off site to be covered.
- The EPA is to be notified immediately of any pollution incidents or harm to the environment (as defined under Part 5.7 of the POEO Act).

4.13 Visual

4.13.1 Likely Impacts

The Meadowbank TAFE project has minimal visual impact to neighbouring properties and is well screened by existing trees and other building structures. In addition, all temporary fencing shall be installed neatly with shade cloth and maintained throughout the duration of the works.

4.13.2 Mitigation Strategies

- Construct landscaping in accordance with the design documentation to reduce visual impacts of the new development.

4.14 Environmental Complaints

Complaints received regarding HY's Environmental Impacts or performance shall be recorded as Complaint in accordance with the [HSE Incident Procedure](#). Actions to be taken to address the complaint.

4.15 Fuel & Chemical Spills

Response to major fuel spills shall be implemented in accordance with the fuel spill procedure in the Emergency Response Plan. The requirements for storage of large fuel and chemical quantities are not expected for this project.

A spill kit shall be located adjacent to fuel and chemical storage and dispensing areas.

4.16 Hazardous Materials

Hazardous materials shall be controlled in accordance with Hazardous Materials procedure.

4.17 External Lighting

In accordance with condition B15a (vii) of SSD 10349, the external lighting to the proposed Multi-Trades and Digital Technology Hub and carpark complies with AS4282-2019 – Control of the Obstructive Effects

of Outdoor Lighting. Please refer to Appendix A.5 for the certificate verifying the compliance with these Australian Standards.

4.18 Community Consultation and Complaints Handling

In accordance with condition B15a (vii) of SSD 10349, community consultation and complaints handling are primarily the responsibility of the Client. Hansen Yuncken will provide assistance where possible to ensure that the Client is complying with the requirements of the Community Communication Strategy developed for the project.

4.18.1 Community Consultation

Community consultation is primarily the responsibility of the client. Hansen Yuncken will ensure that the relevant strategies/outcomes are incorporated within the relevant management plans and construction process where possible. The main channels that the client is planning on conducting consultation is through the following:

- Community information phone line
- Advertising (print)
- Call centre scripts
- Community contact cards
- CRM database
- Display boards
- Phone call or teleconferencing
- FAQs
- Information Booths
- Information Sessions (drop in)
- Information Pack
- Newsletters
- Notifications
- Technical Reference Group
- Website
- Works notifications
- Letterbox drops

The above have been extracted from Table 3 and Appendix A of the Community Communication Strategy.

4.18.2 Complaints Handling

The primary form of assistance that Hansen Yuncken will provide is through the complaints handling process. During the project delivery phase, a complaint defined as in regards to construction impacts – *such as* – safety, dust, noise, traffic, congestion, loss of parking, contamination, loss of amenity, hours of work, property damage, property access, service disruption, conduct or behaviour of construction workers or other environmental impacts. If a complaint is made directly to Hansen Yuncken, it will be redirected to the following SINSW communication channels:

- Phone: 1300 482 651
- Email: schoolinfrastructure@det.nsw.gov.au

Upon receipt of the complaint from the Project Director, Hansen Yuncken will endeavour to close out the complaint in a timely manner. The complaint will be logged to ensure that the impact of future construction works that may impact the community in a similar manner are minimised.

5 Measurement & Evaluation

5.1 Environmental Incidents & Emergencies

5.1.1 Environmental Incidents

Incidents resulting in potential or actual environmental damage shall be reported and investigated in accordance with the [HSE Incident Procedure](#) and recorded on BIM360 using the HSE incident report

5.1.2 Environmental Emergencies

Preparation for and response to the environmental impacts of emergency events shall be conducted in accordance with the project [Emergency Response Plan](#). The environmental impacts controlled in ERP are;

Asbestos Exposure

In the event that during works, personnel become accidentally exposed to asbestos, the following procedures shall be followed:

1. Personnel in the immediate affected area shall cease work and immediately go to the emergency showers on site.
2. All contaminated clothing is to be removed and placed into a thick plastic bag. The plastic bag must then be tightly sealed and labelled as "Asbestos Contaminated Clothing".
3. Personnel are to immediately decontaminate themselves in a shower and a clean set of clothes to be re-issued.
4. Asbestos contaminated clothing is to be industrially cleaned or disposed of appropriately

Water Pollution

An incident involving actual or potential harm to human or environmental health must be reported immediately to the EPA.

Firstly, call 000 if the incident presents an immediate threat to human health or property. Fire and Rescue NSW, the NSW Police and the NSW Ambulance Service are the first responders, as they are responsible for controlling and containing incidents.

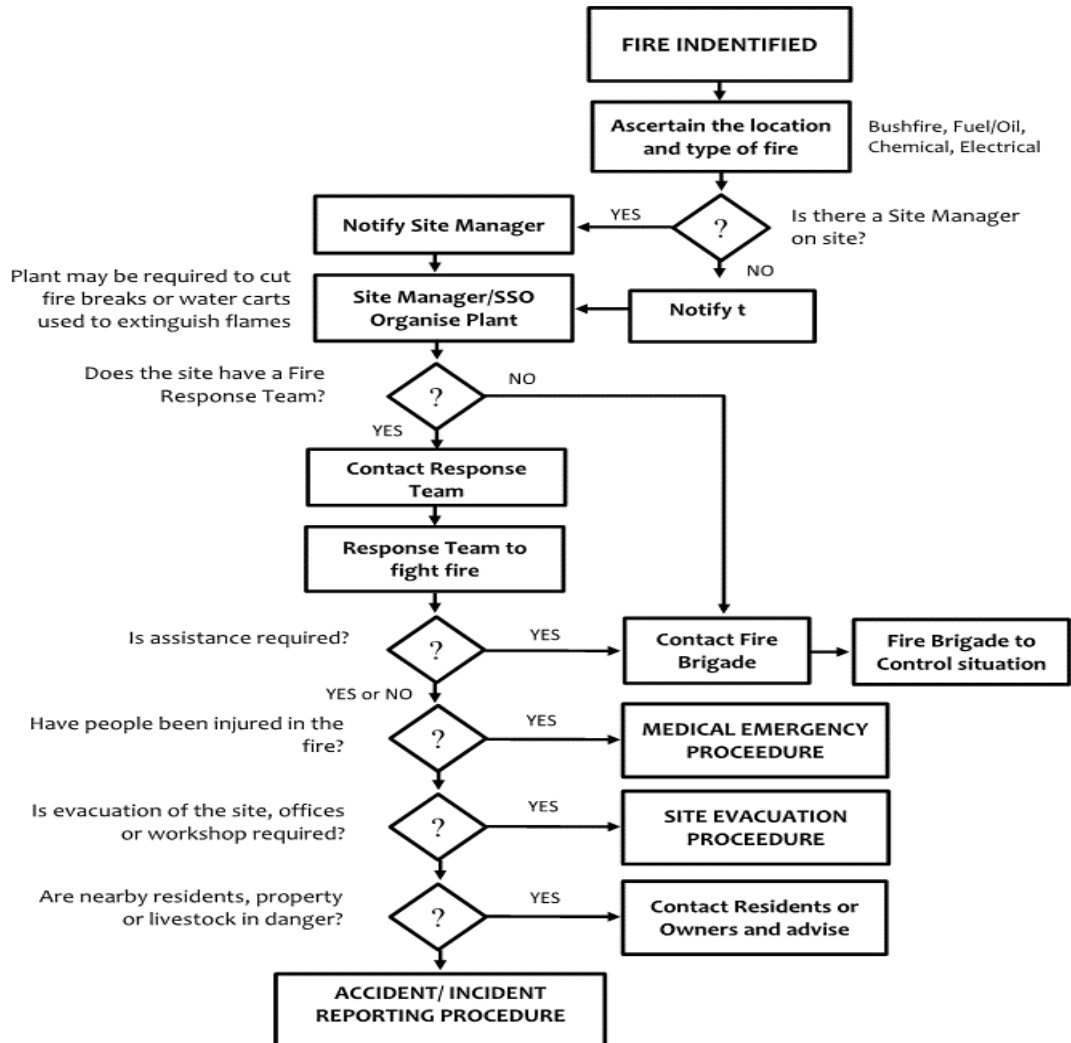
If the incident does not require an initial combat agency, or once the 000 call has been made, notify the HY Site Manager who will notify the relevant authorities in the following order. The 24-hour hotline for each authority is given when available:

EPA Environment Line on 131 555

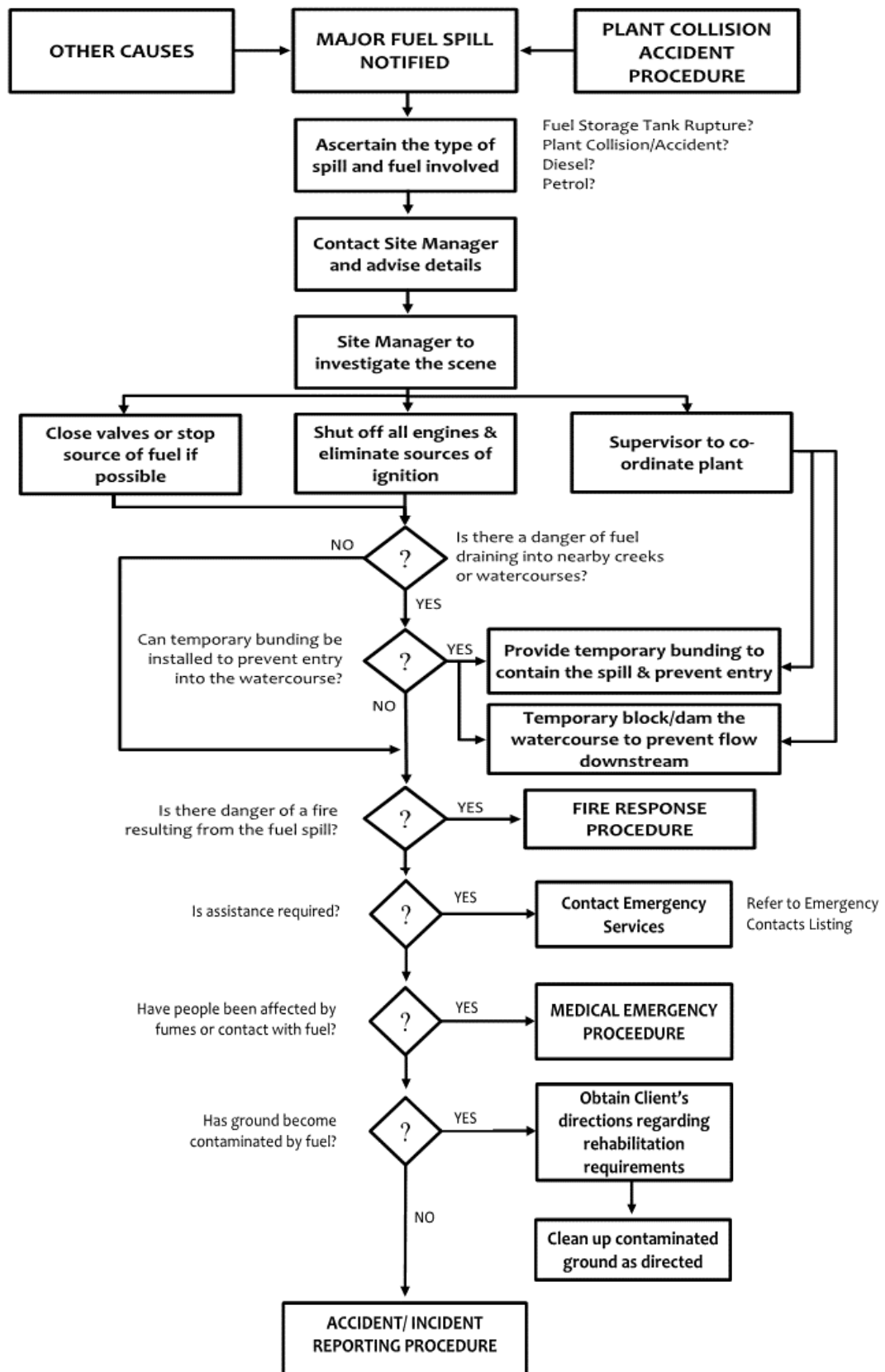
Safework NSW Authority – phone 13 10 50 (Where appropriate)

City of Ryde Council – phone 9952 8222

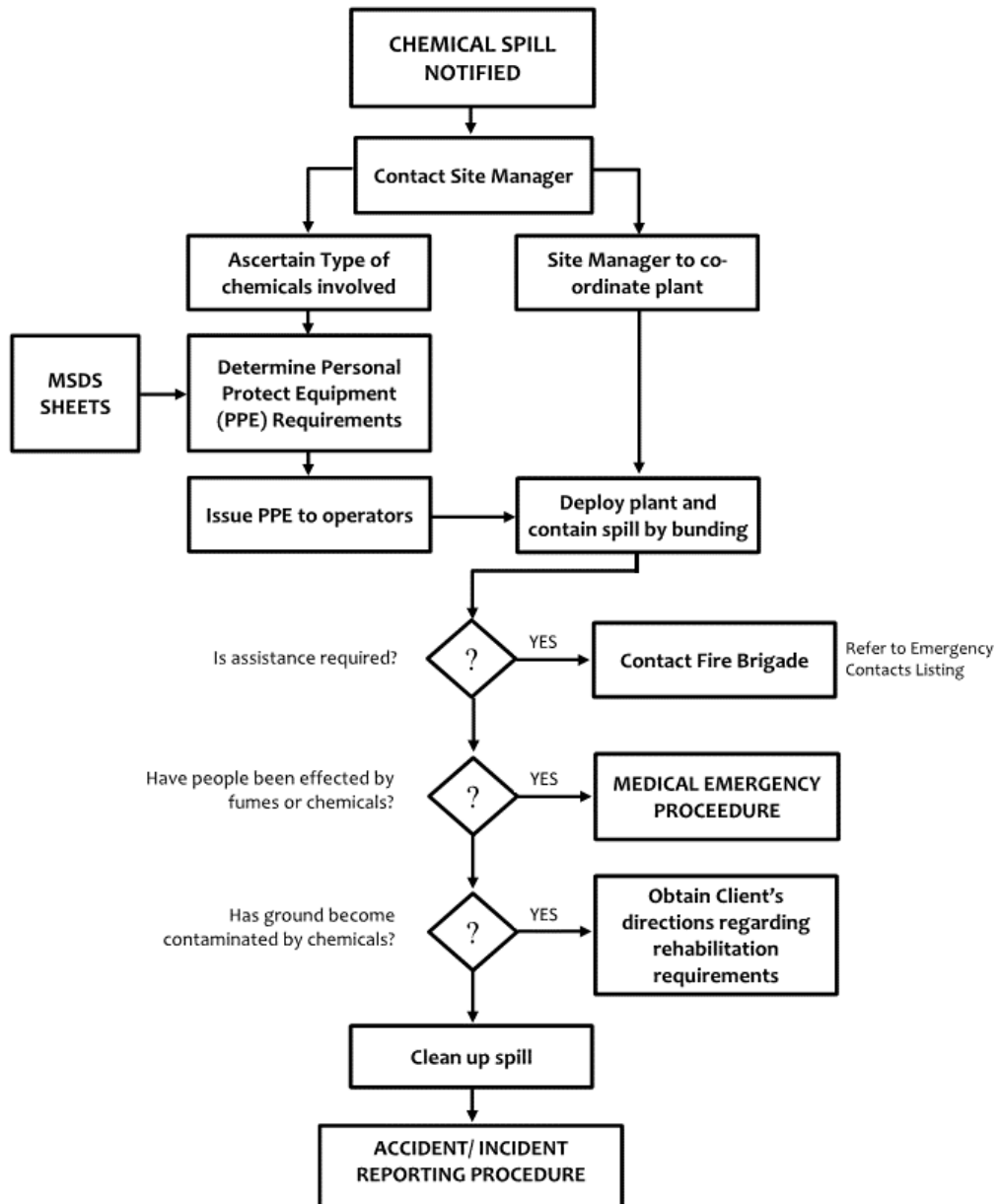
Fire



Major Fuel Spill



Chemical Spill



5.2 Environmental Inspections & Audits

5.2.1 Non-Conformances

Inspections & audits of the site including environmental controls shall be conducted in accordance with the procedure for Site HSE Inspections & the project Audit Management Plan. The following inspections will be conducted onsite throughout the time on the project:

- Fortnightly site inspections,
- Monthly task observations,
- 3 monthly internal audits,

Where an item has been assessed as Non-Conformance (NC) during any internal inspection an issue shall be raised in BIM360 Field to bring the activity or process into compliance with requirements. The issue(s) shall be recorded in BIM360 Field and allocated to the relevant contractor/subcontractor.

The independent consultant in writing shall raise all items assessed as non-conformance during external audits and HY will address all issues and close out within the time frame advised.

5.2.2 Reporting & Corrective Actions

All nonconformances will result in corrective action being undertaken. The significance of nonconformities shall be evaluated in terms of their impact on:

- operating costs,
- cost of nonconformity and its correction,
- product performance,
- regulatory requirements
- client satisfaction, and
- any other risks

HY project management shall undertake the following actions to investigate the causes of nonconformities specific to the project in order to prevent recurrence.

- Identify nonconformities that relate to; products, QMS processes, resources, client complaints and subcontractors and outsourced work.
- Review and determine the causes of nonconformities using problem solving tools such as the root cause analysis process – Process Workflow flowchart – to determine the underlying root cause(s) of the nonconformity;
- Evaluate the need for corrective action to minimise the occurrence of identified nonconformities;
- Determine and implement the corrective action needed;
- Monitor the corrective actions taken and record the results to determine if further improvement is necessary to get it right;
- Actions taken to eliminate the cause of nonconformity must flow from the root cause analysis and may involve changes to product, process, resources, methods, equipment, etc. or any combination of these;
- Records of the actions taken, and follow-up activities shall be monitored and maintained by the project;
- Ensure timely completion of any open corrective action; and
- Monitor corrective Action records on an ongoing basis, for any recurrence of the nonconformity where corrective action was taken.

5.3 National Greenhouse & Energy Reporting (NGER)

5.3.1 National Reporting Guidelines

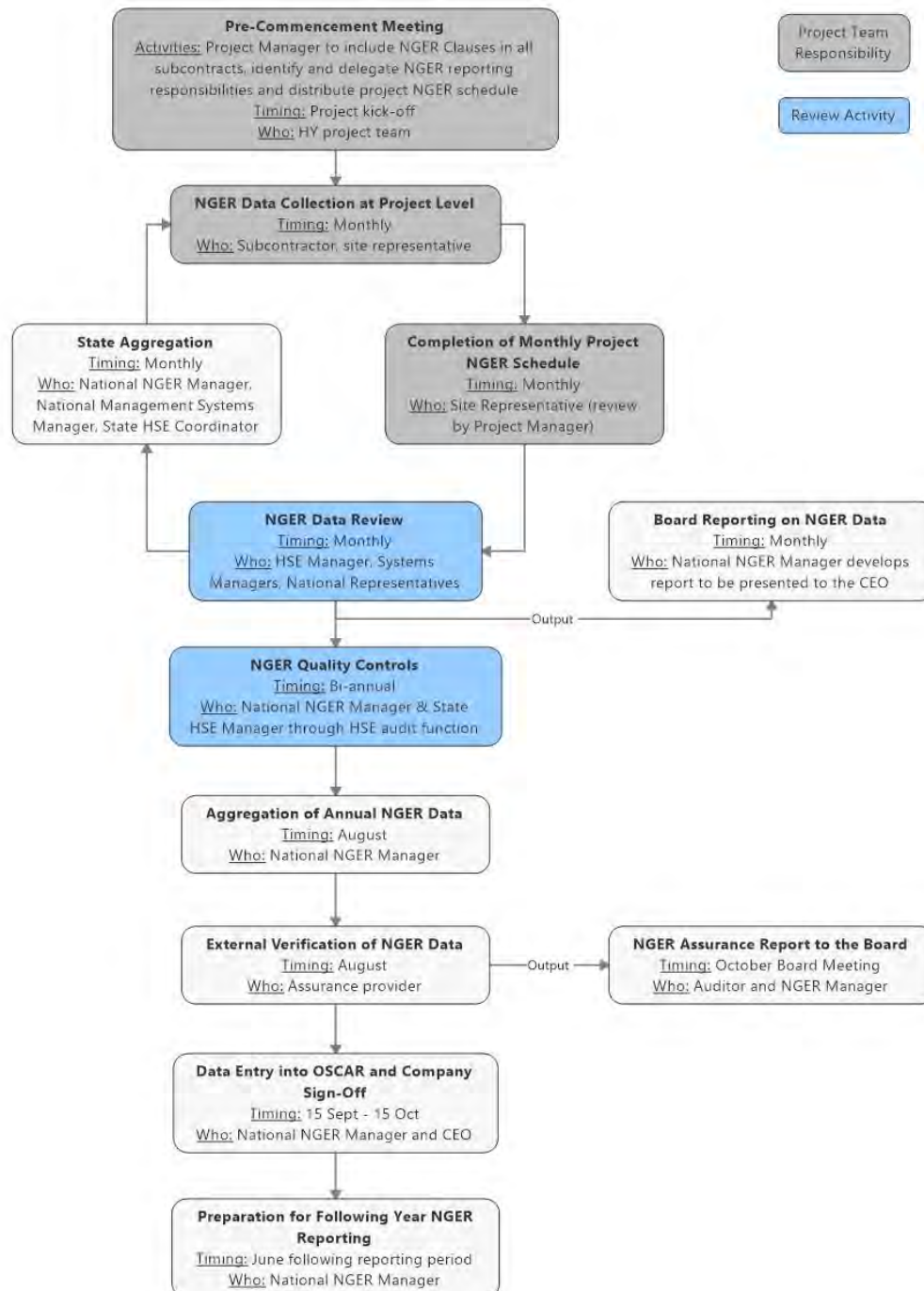
The purpose of the National Greenhouse and Energy Reporting Guidelines is to help corporations understand their obligations under the National Greenhouse and Energy Reporting Act 2007 (the Act).

5.3.2 Reporting Thresholds

HY's has been assessed and determined to be below the corporate group reporting thresholds – detailed in the below table. Notwithstanding this, all natural gas and electricity consumption is recorded monthly

on BIM360 Field and collated for national reporting. Furthermore, all site mobile plant and equipment fuel consumption is registered on BIM360 Field and incorporated in the HY greenhouse gases (CO2-e) annual report (NGER).

5.3.3 NGER Reporting process



5.3.4 NGER Data Collection

NGER data shall be collected and recorded on BIM360 Field using the Site Electricity and Natural Gas Usage Checklist

6 References

Environmental Planning and Assessment Act 1979 No 203

Environmental Planning and Assessment Regulation 2000

Protection of the Environment Operations Act 1997 (NSW)

Protection of the Environment Operations (General) Regulation 2009

ISO 14001; 2015 Environmental management systems - Requirements with guidance for use

AS/NZS ISO 31000:2009 Risk management – Principles and guidelines

HB158:2010 Delivering assurance based on ISO 31000:2009 – Risk management – Principles and guidelines

NSW Government Environmental Management Guidelines – Construction Procurement (Edition 4 - December 2019)

7 Appendices

A.1 Hansen Yuncken Environmental Policy Statement



A.2 Environmental Management Accreditation - ISO14001

CERTIFICATE OF REGISTRATION

Hansen Yuncken Pty Ltd

SCP, Building 1, Level 3, 75-85 O’Riordan Street, Alexandria NSW 2015 Australia
Suite 12, 125 Bull Street, Newcastle West NSW 2302 Australia
and transient sites
ABN 38 063 384 056

complies with the requirements of

ISO 9001:2015

Quality Management Systems – Requirements
and

ISO 14001:2015

Environmental Management Systems – Requirements with guidance for use

for the following capability:

This registration covers the Quality and Environmental Management Systems for the provision of project management and the design and construction of commercial, industrial and institutional buildings and civil engineering works.

Registered by:

Quality Control Services (Environmental) Pty Ltd
ABN 85 102 935 195
10 Rosina Street Woodcroft South Australia 5162 Australia

This certificate is subject to the Terms and Conditions for Certification, and relevant program rules. Currency of certification can be validated at www.qcse.com.au/certified-register, and www.jas-anz.org/our-directory/certified-organisations; it remains the property of QCSE Pty Ltd and must be returned upon request.

Certificate Number: 160052022
Issue Date: 26 February 2019

Original Certification: 23 February 2010
Expiry Date: 22 February 2022

CASTONE

Cheryl Stone
Certification Manager



QMS/EMS Certified Company
Licence Number: Q0160





www.jas-anz.org/register


A.3 Site Location Plan




A.4 HSE Project Risk Assessment

		PROJECT HSE RISK ASSESSMENT <small>This Project HSE Risk Assessment is to be used as a guide when completing the monthly Project High Risk Identification assessment on HYWAY Site Management Dashboard in accordance with the Project HSE Risk Assessment procedure and should be conducted at the time of Construction programme status to assess hazards and risks for next month. Hazards with residual risk from the Design WHS Risk Assessment (if applicable) are also to be considered.</small>									
RELEVANT PROCEDURE:		Project HSE Risk Assessment		RISK ASSESSMENT TABLE		Consequence					
PROJECT:		Meadowbank TAFE - Multi-Trades and Digital Design Hub		Likelihood		1	2	3	4	5	
JOB NO:		SC130		A	Very Likely	High	High	High	Medium	Medium	
ASSESSED BY:		Mustafa Aktas		B	Likely	High	High	Medium	Medium	Medium	
ASSESSMENT DATE:		19 - 06 - 2020 (FOR INFORMATION ONLY) - PLEASE REFER ALSO TO HY RISK IDENTIFIER ON HY-WAY		C	Possible	High	Medium	Medium	Medium	Low	
				D	Remotely Possible	Medium	Medium	Medium	Low	Low	
				E	Very Unlikely	Medium	Medium	Low	Low	Low	
				NA	Not applicable	NA	NA	NA	NA	NA	
		RISK ASSESSMENT		CONTROLS (to be established in the following order of priority 1st=High Level Risks; 2nd = Medium Level Risks; 3rd = Low Level Risks)							
HAZARD (Include additional project specific hazards as required)		L	C	Class	Legislation, Standards & Codes of Practice		Enter Details of Specific Controls Required				
Amenities											
Access		B	4	Medium	NSW Code Of Practice: Managing the work Environment and Facilities		Road base pedestrian footpaths will be provided and maintained along with awning roof cover over the site amenities. The compound area is fenced off to protect workers from moving plant, trucks and vehicles				
Location and nature of workplace		B	4	Medium	NSW Code Of Practice: Managing the work Environment and Facilities		All amenities are set up in a compound area at the main entry to site making it easy for access and egress in emergency situations				
Housekeeping		B	4	Medium	NSW Code Of Practice: Managing the work Environment and Facilities		A full time cleaner is engaged to manage and maintain all amenities.				
Seating		B	4	Medium	NSW Code Of Practice: Managing the work Environment and Facilities		Sufficient seating is in place for all workers to rest, take breaks and eat lunch				
Lighting (Poor)		C	4	Medium	NSW Code Of Practice: Managing the work Environment and Facilities		Lighting is setup in all amenities for safe access				
Air Quality		B	4	Medium	NSW Code Of Practice: Managing the work Environment and Facilities		Windows, fans and airconditioning are installed to all site sheds				
Hot and Cold Environment		C	4	Medium	NSW Code Of Practice: Managing the work Environment and Facilities		Air conditioning installed to all lunch sheds				
Drinking water		C	4	Medium	NSW Code Of Practice: Managing the work Environment and Facilities		Bubbler set up at lunch sheds and various locations throughout site				
Dining Facilities		C	4	Medium	NSW Code Of Practice: Managing the work Environment and Facilities		Clean and tidy tables are available in all lunch sheds. There is sufficient space for all workers to sit down and have lunch				
Hand washing		C	4	Medium	NSW Code Of Practice: Managing the work Environment and Facilities		Warm water, soap and hand dryers are available in the toilets				
Shower Facilities		B	4	Medium	NSW Code Of Practice: Managing the work Environment and Facilities		Hot showers are provided on site				
Change Room		C	4	Medium	NSW Code Of Practice: Managing the work Environment and Facilities		Change rooms with benching and coat hooks are provided on site for workers to change clothes				
Air Quality											
Dust from plant & truck movements		B	4	Medium	Meadowbank TAFE WHS Plan		Water cart to conduct regular laps of the site spraying water on the ground to keep dust settled particularly where there is high plant and truck movements. Temporary water has been installed at several locations around site.				
Refuelling of plant and equipment		C	4	Medium	AS/NZS 1715 Selection, use and maintenance of respiratory protective devices AS/NZS 1716 Respiratory protection devices		All refuelling is to be conducted in well ventilated areas only. Refuelling to be conducted clear of any hot works on site such as grinding, welding etc				
Concrete cutting / coring		E	5	Low	NSW Cutting & Drilling Concrete & Other Masonry Products 1996		Water must be used to minimise dust. Demolition saws take preference over dry cutting with a masonry blade on an angle grinder. Rubble to cleaned up immediately. Slurry to be cleaned up immediately				
Access/ Egress and movements around site											
Workers entering site without Hansen Yuncken permission would be unaware of any specific site hazards eg, asbestos, gas lines, high risk construction work etc		C	3	Medium	NSW Code Of Practice: Consultation, coordination and cooperation		All workers must be site inducted by Hansen Yuncken prior to entering site. This is clearly marked on the contact details sign at the main entry to site. Subcontractors must give Hansen Yuncken site staff sufficient notice prior to workers attending site to be site inducted. All workers on site to display a HY Meadowbank TAFE photo ID at all times and sign into the site attendance register on a Daily Basis after they have been inducted.				
Visitors entering site without Hansen Yuncken permission would be unaware of site hazards eg, asbestos, gas lines etc		C	3	Medium	NSW Code Of Practice: Consultation, coordination and cooperation		All visitors must sign in at the site office prior to entering site. Signs have been erected clearly stating this. Visitors must display a ID card and be escorted by an inducted guide at all times. Visitors entering site must have approval from the Site Manager.				
Pedestrians/ workers walking around site being struck by vehicles/trucks/ plant moving around site		D	1	Medium	NSW Code of Practice: Moving Plant On Construction Sites		Bunted/fenced off pedestrian pathways have been erected on site to keep pedestrians clear of areas where there are high movements of vehicles/trucks and plant. All subcontractors using moving plant must have a HRCW SWMS which details how to protect other workers in the area from being struck by the plant. All plant must have a flashing light, horn and reversing beeper. Vehicles/ trucks must turn their flashing lights on. There is a 10km/h speed limit on site. All workers have been told at the site induction to be aware of moving plant on site and keep clear whenever possible. Only workers who are involved with the task are to be in the vicinity of the plant. HY have instructed all subcontractors to train their workers through pre-start meetings on how to approach moving plant and equipment. Haul roads for plant and vehicles are to be maintained. Pedestrians are to avoid walking on haul road whenever possible. Plant operators are to keep reversing to a minimum. Pedestrians that need to approach moving plant are to do so from the front of the machine and are to gain the operators attention by waving arms and yelling out to the operator. No person is to approach the machine until the operator has stopped moving the machine and signalled that it is safe to approach. Spotters working with machines must always stand in an area where they are visible to the operator. A site spotter/ delineation plan has been proposed to and approved by the site safety committee. This plan states areas where a spotter is mandatory for all plant and vehicle movements. This plan is posted on the site notice board.				
Public being struck by trucks entering and exiting site		D	3	Medium	NSW Code Of Practice: How to manage work health and safety risks		Traffic control is in place managing vehicle and pedestrian movements at main entry to site				
Subcontractors bringing vehicles onto site without Hansen Yuncken permission		D	4	Low	Meadowbank TAFE Traffic Management Plan		All subcontractors must seek approval from the Hansen Yuncken Site Manager prior to bringing vehicles/ trucks onto site.				
Workers slipping/ tripping over on muddy/ uneven ground		C	3	Medium	Meadowbank TAFE WHS Management Plan		Pedestrian pathways have been constructed to minimise slip and trip hazards. Wheel ruts, eroded ground, muddy haul roads and pathways are to be bladed back to solid ground as required. On rain days the foreman & safety committee (when established) is to walk the site prior to work commencing and determine which areas are safe for work and which areas are no go zones.				
Vehicles becoming bogged or losing traction whilst entering/ exiting and driving around site		E	4	Low			Vehicles to be driven on solid ground only. No vehicles will be allowed to drive on muddy terrain				
Collisions between plant on site		E	3	Low			Sufficient distance to be kept between all plant on site. Flashing light, horn and reversing beeper must be working. Plant and vehicles to stay on haul roads whenever possible. Site speed limit is 10km/h				
Too many vehicles parked on site creating restricted access around site		NA	4	NA			No Parking onsite unless a designated area has been provided by Hansen Yuncken for Subcontractor or Visitor Parkin.				

		<h2 style="text-align: center;">PROJECT HSE RISK ASSESSMENT</h2> <p style="font-size: small;">This Project HSE Risk Assessment is to be used as a guide when completing the monthly Project High Risk Identification assessment on HYWAY Site Management Dashboard in accordance with the Project HSE Risk Assessment procedure and should be conducted at the time of Construction programme status to assess hazards and risks for next month. Hazards with residual risk from the Design WHS Risk Assessment (if applicable) are also to be considered.</p>									
RELEVANT PROCEDURE:		Project HSE Risk Assessment			RISK ASSESSMENT TABLE		Consequence				
PROJECT:		Meadowbank TAFE - Multi-Trades and Digital Design Hub			Likelihood		1	2	3	4	5
JOB NO:		SC130			A Very Likely		High	High	High	Medium	Medium
ASSESSED BY:		Mustafa Aktas			B Likely		High	High	Medium	Medium	Medium
ASSESSMENT DATE:		19 - 06 - 2020 (FOR INFORMATION ONLY) - PLEASE REFER ALSO TO HY RISK IDENTIFIER ON HY-WAY			C Possible		High	Medium	Medium	Medium	Low
					D Remotely Possible		Medium	Medium	Medium	Low	Low
					E Very Unlikely		Medium	Medium	Low	Low	Low
					NA Not applicable		NA	NA	NA	NA	NA
		RISK ASSESSMENT		CONTROLS (to be established in the following order of priority 1st=High Level Risks; 2nd = Medium Level Risks; 3rd = Low Level Risks)							
HAZARD (Include additional project specific hazards as required)		L	C	Class	Legislation, Standards & Codes of Practice		Enter Details of Specific Controls Required				
Asbestos											
Workers being exposed to the asbestos contaminated soil (ACM) at various locations around site		NA	3	NA	Working with asbestos guide 2008		An independent Environmental consultant (JBS&G) has been engaged by HY and whilst the contamination scope is outside of HY's contractual obligations, under the direction and approval of DOJ, HY can engage JBS&G identify any areas that may potentially be deemed to contain asbestos contaminated soil or material on site. An unexpected finds protocol can be established that will also address the 'remedial action plan / strategy' to be adopted in such instance.				
Unidentified finds of asbestos		D	3	Medium	Meadowbank TAFE Asbestos Management Plan		If asbestos is found stop work immediately and notify HY site staff immediately whom will arrange for the asbestos to be removed safely. Area to be closed off with bunting/ red white tape and warning signage				
Unidentified finds of asbestos		D	3	Medium	Code of Practice: How to manage and control asbestos in the workplace		Warning signage and red/white tape to be used to prevent unauthorised persons entering the area. Air monitors to be installed and all workers in the area must wear appropriate PPE as defined in SWMS.				
Unidentified finds of asbestos		D	3	Medium	Code of Practice: How to safely remove asbestos		Warning signage and red/white tape to be used to prevent unauthorised persons entering the area. Air monitors to be installed and all workers in the area must wear appropriate PPE as defined in SWMS.				
Unidentified finds of asbestos		D	3	Medium	NWHSC 2002 - 2005 Safe Removal of Asbestos		Warning signage and red/white tape to be used to prevent unauthorised persons entering the area. Air monitors to be installed and all workers in the area must wear appropriate PPE as defined in SWMS.				
Unidentified finds of asbestos		D	3	Medium	NWHSC 2018 - 2005 Management & Control of Asbestos		Warning signage and red/white tape to be used to prevent unauthorised persons entering the area. Air monitors to be installed and all workers in the area must wear appropriate PPE as defined in SWMS.				
Atmosphere - Contaminated/ Flammable											
Flammable fumes from fuel containers		A	4	Medium	NSW Code of Practice: Storage and Handling of Dangerous Goods		Fuel to be stored in fuel storage areas only. Fuel drums are to be placed back in the fuel storage area after refuelling has been completed. No refuelling near any hot works being undertaken. All subcontractors must have a valid fuel SWMS.				
Unsafe storage of fuel		C	4	Medium	AS/NZS 2430 Classification of hazardous areas		Fuel must be stored in ventilated cages. No fuel to be stored in shipping containers				
Fumes from spray sealer application to carpark slab		D	4	Low	AS1318 Use of colour for the marking of physical hazards and the identification of certain equipment in industry		Applicators must wear mask whilst spray painting. Warning signage to be erected and all other personnel not involved with the task are to be clear of the area				
Biological Hazards											
Disease from unhygienic facilities and amenities		E	4	Low	NSW Code Of Practice: HIV and other blood-borne pathogens in the workplace Meadowbank TAFE WHS Management Plan NSW: Code Of Practice: Work Place Amenities		A cleaner has been engaged by Hansen Yuncken to clean amenities on a weekly basis. Amenities to be kept clean and tidy at all times				
Bomb Threat											
Persons unaware of what to do in the event of an emergency		E	5	Low	HY Emergency Response Plan AS 2293 Emergency escape lighting and exit signs for buildings AS 3745: 2002 Emergency Control Organisation and Procedures For Buildings, Structures and Workplaces		Emergency response procedure is explained to all workers at the site induction. HY to practice fire drills every 6 months to ensure the system is working.				
Changes in design											
Changes in design could result in new hazards not being identified		D	4	Low	Meadowbank TAFE WHS Management Plan		All design changes must be risk assessed by HY. Subcontractor SWMS will be reviewed by HY as required				
Craning & Hoisting Operations											
Persons/ other trades on site walking into the crane slew area may be struck by crane or load		C	1	High	AS 2550: Cranes, hoists & winches - Safe Use Meadowbank TAFE WHS Plan		The work area around all cranes must be fully barricaded eg bunting and signposted to keep other workers clear.				
Slings or chains failing resulting in loss of load		C	1	High	AS 1418.1: Cranes, hoists and winches – General Requirements AS 4991 Lifting Devices Meadowbank TAFE WHS Plan		Subcontractors must keep an up to date register of all chains and slings. All equipment must be visually checked daily prior to use.				
Crane out riggers sinking in ground resulting in crane rolling over		D	1	Medium	NWHSC 1010: National Standard for Plant Meadowbank TAFE WHS Plan		Subcontractor SWMS to detail craning and hoisting operations. Subcontractor to communicate with HY staff and obtain a plant setup permit prior to setting up cranes to ensure outriggers are not set up over underground services or in unstable ground conditions.				
Crane striking structures whilst slewing		B	2	High	AS 1418.10(Int): Cranes, hoists and winches - Elevating work platforms Meadowbank TAFE WHS Plan		Dogman and crane operator to constantly communicate with each other. Crane operator to take directions from dogman only.				


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								E	Very Unlikely	Medium	Medium	Low	Low	Low
								NA	Not applicable	NA	NA	NA	NA	NA
				RISK ASSESSMENT		CONTROLS (to be established in the following order of priority 1st=High Level Risks; 2nd = Medium Level Risks; 3rd = Low Level Risks)								
HAZARD (Include additional project specific hazards as required)				L	C	Class	Legislation, Standards & Codes of Practice			Enter Details of Specific Controls Required				
Concrete														
Concrete Pumping - overload formwork structure				C	2	Medium	NSW Code Of Practice: Pumping Concrete 1993			Spotter to be used when positioning boom over formwork, registered engineer signoff of formwork structures prior to concrete pours.				
Trip hazard after excess concrete has cured				B	4	Medium	Environmental Protection Act 1994			Back to plant policy for large amounts of excess concrete				
Slip hazard from excess water and slurry on the ground/ concrete washout				B	4	Medium	Meadowbank TAFE WHS Plan			Concrete washout to be set up in area where water will not run over pedestrian pathways. Generally plastic is rolled out on the ground. The hopper is washed out onto the plastic, the concrete cures then is placed in a skip bin the following day				
Slurry and wet concrete entering stormwater drains				D	3	Medium	Meadowbank TAFE WHS Plan			The concrete washout area will constantly move on site to suite site conditions. The HY site foreman will determine where the wash out area will be on the day of any concrete pours.				
No designated washout area could result in truck drivers washing out wherever they please leaving the site messy and untidy				D	4	Low	Meadowbank TAFE WHS Plan			Excess concrete from washing out the pump is to be placed onto plastic, allowed to set then placed into the skip bin with a telehandler				
Concrete cutting / coring - dust				B	4	Medium	Meadowbank TAFE WHS Plan			Water must be used to minimise dust. Demolition saws take preference over dry cutting with a masonry blade on an angle grinder. Rubble to cleaned up immediately. Slurry to be cleaned up immediately				
Strike PT cables whilst cutting concrete				C	3	Medium	Meadowbank TAFE WHS Plan			Review As Constructed Drawings, consult Structural engineer and obtain permission to proceed. Enact Cutting and Coring Permit prior to any works commencing				
Confined Space														
Poor ventilation inside in-ground pits				C	4	Medium	NWHSC 1009: Safe Working in a Confined Space AS 2865: Confined Spaces NSW Code of Practice: Confined spaces			No chemicals are to be used inside in-ground pits. Close supervision of all men working inside pits at all times. Lid to be kept open at all times. Sparging up of pits is to be conducted as pit risers are installed to minimise the need to enter the pit afterwards				
Workers unable to easily enter and exit trenches				D	3	Medium	Meadowbank TAFE WHS Plan			All trenches over 1.5m must be benched at 1:1 at a maximum of 1.5m or battered at 45 degrees. A ramp or steps must be cut into the trench for easy pedestrian access.				
Workers being overcome by fumes building up in open trenches				D	3	Medium	NSW WHS Regulation 2011: Part 4.3 Confined spaces			All open trenching has good ventilation. Refuelling does not occur inside open trenches. Oxy acetylene equipment is kept clear of open trenching.				
Contaminated Soil														
Exposure to contaminated soil which has not been identified				C	3	Medium	AS 4482: Guide to the investigation & sampling of sites with potentially contaminated soil NSW Environment Operations Act 1997			All subcontractors that will excavate onsite to have a SWMS for 'unexpected finds'. All workers have been instructed at the site induction to stop work immediately and notify Hansen Yunken site staff whom will take action to make the area safe.				
Exposure to contaminated soil which has not been identified				D	3	Medium	Meadowbank TAFE WHS Plan			A soil validation investigation has been carried out on site by suitably qualified consultant at 10 x 10m grids to determine existence of any contaminants prior to any excavation being undertaken.				
Deliveries To Site														
Delivery vehicle drivers unaware of site hazards				A	4	Medium	NSW Code of Practice: Moving Plant On Construction Sites: 2004			All delivery drivers must complete a 'delivery driver induction' prior to entering site. A delivery driver induction is an abridged induction similar to a visitors induction.				
Delivery vehicle unloading in an unsafe area eg. in an area where there is mobile plant or pedestrians frequently moving past				C	2	Medium	Meadowbank TAFE Site WHS Plan			The subcontractor supervisor must have good communication with the delivery driver and escort him to the work area where the delivery is to be unloaded. The s/c supervisor must take charge and assist the driver to unload materials from the truck.				
Pedestrians/ other workers in the area being struck by materials as they are being unloaded from the truck				A	4	Medium	Meadowbank TAFE Traffic Management Plan			All delivery drivers are told at the 'delivery driver induction' to be aware of any pedestrians/ other workers in the area. Delivery drivers must ensure they have enough space to unload/ load materials from trucks safely. If they have any problems they must notify HY staff immediately whom will assist the driver to undertake their task safely. Subcontractors must manage and supervise their deliveries on site. Subcontractors must spot the driver whilst materials are being unloaded and warn other workers in the area to keep well clear.				
Untrained delivery drivers using plant to unload goods				E	3	Low	Meadowbank TAFE Site WHS Plan			SWMS must be in place for subcontractors using plant to unload their delivery				
Drugs & Alcohol														
Persons under the influence of drugs or alcohol are at high risk of injuring themselves or others				E	4	Low	Alcohol and other drugs in the workplace guide - 2006			Persons assumed to be under the influence of drugs or alcohol will be stopped from working immediately. Their employer will be notified who will investigate and take appropriate action as per their drug and alcohol policy.				





PROJECT HSE RISK ASSESSMENT

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			D	Remotely Possible	Medium	Medium	Medium	Low	Low
			E	Very Unlikely	Medium	Medium	Low	Low	Low
			NA	Not applicable	NA	NA	NA	NA	NA
	RISK ASSESSMENT		CONTROLS (to be established in the following order of priority 1st=High Level Risks; 2nd = Medium Level Risks; 3rd = Low Level Risks)						
HAZARD (Include additional project specific hazards as required)	L	C	Class	Legislation, Standards & Codes of Practice		Enter Details of Specific Controls Required			
Dust									
Disruption/ nuisance to neighbours and client	D	5	Low	NSW Code of Practice: Control Of Workplace Hazardous Substances		Shade cloth installation to site perimeter fence to contain all dust within the construction site.			
Eye injuries and respirable damage to workers	D	4	Low	AS/NZS 1336 Recommended practices for occupational eye protection		Water carts and hoses used to keep dust to a minimum. Plant and trucks to move at low speeds to keep dust settled. Eye protection to be worn for any task that creates large amounts of dust			
Dust from wall chasing	NA	4	NA	AS/NZS 1715 Selection, use and maintenance of respiratory protective devices		Dust must be minimised whilst wall chasing by way of vTAFEum system. Workers must wear dust mask whilst wall chasing. Rooms are to be swept frequently to minimise dust			
Concrete cutting / coring	E	4	Low	AS/NZS 1716 Respiratory protection devices NSW Cutting & Drilling Concrete & Other Masonry Products 1996 Meadowbank TAFE WHS Plan		Water must be used to minimise dust. Demolition saws take preference over dry cutting with a masonry blade on an angle grinder. Rubble to be cleaned up immediately. Slurry to be cleaned up immediately. HY Cutting and Coring permit in place.			
Electricity									
Electrocution from faulty/ damaged electrical equipment	D	1	Medium	AS/NZS 3017: Electrical installations - Testing & inspection guidelines		All power tools/ leads must be visually checked daily and tested and tagged monthly. Damaged leads and power tools are not to be used on site. Lead are to be elevated off the ground to minimise risk of electrical leads being damaged.			
Electrocution from faulty/ damaged Distribution boards	NA	1	NA	Meadowbank TAFE WHS Plan		HY DB Board checklist to be completed for all DB boards. All temporary distribution boards will be inspected, tested and tagged monthly. All RCD's to be padlocked and only reset by a qualified electrician.			
Workers tripping on leads	C	4	Medium	AS/NZS 3199 Approval & test specification for cord extension sets		All power leads must be elevated off the ground. A maximum of 5m may be on the ground for general movements in the area whilst using the power tool.			
Electrocution from temporary construction wiring being damaged	B	1	High	NSW Low Voltage Electrical Work 2002		All temporary construction must be labelled with 'yellow temporary construction wiring tape'. All temporary construction wiring will be inspected and recorded on the site HSE inspection report weekly. All temporary electrical installations to be certified as installed in line with current regulations and standards.			
Working around energised live Substation	B	2	High	AS/NZS 3000: Electrical Installations		All subcontractors conducting excavation works must obtain a permit to dig from HY site staff. A plan with existing underground services must be attached to the permit to dig.			
Workers piggy backing leads	C	3	Medium	AS 3012: Electrical Installations - Construction & Demolition Sites		Portable generators must be used if electrical leads cant reach from the DB board to the work area so a power source is close to the work area.			
Disruption to the TAFE facility from shutting down power without notification could have major implications	D	1	Medium	AS/NZS: 3000 Electrical Installations		Notice of disruption process will be in place prior to any services shutdowns outside site perimeter			
				AS 3190: Approval & test specification - Residual current devices					
				AS/NZS 3001 Electrical installations - Relocatable premises and their site installations					
				NSW: Code Of Practice: Electrical Practices for Construction Work					
				AS3760: 2010 In-service safety inspection and testing of electrical equipment					
				NSW Code Of Practice: Electrical Practices for Construction Work 2007					
Emergency Services Unavailability									
Injured person may not receive first aid treatment in a sufficient amount of time	E	3	Low	WHS Act 2011 Code of Practice: First Aid HY emergency response plan		Emergency contact details are displayed on the site safety notice board in the lunch shed and in the first aid room. All HY site staff have senior first aid training. 2 type A first aid kits required in the site office. One portable and one fixed to the wall. Defibrillator required in the first aid room. The first aid facilities have been setup in accordance with Code Of Practice: First Aid taking into account the number of workers on site, response times and types of injuries which may occur on site.			
Site Emergencies	C	3	Medium	WHS Regulation 2011		HY emergency response plan details actions to be taken for different types of emergencies			
Erosion/ Loss of Topsoil									
Sediment entering stormwater systems	E	4	Low	Environmental Protection Act 1994		All stormwater pits to be covered with sediment control fabric. Sediment barrier to be erected around the low perimeter of site perimeter fencing in accordance with the site sediment control plan. Sediment control to be inspected weekly and recorded on the site HSE inspection report. All de-watering of site must be pumped into dams or tanks. The water must be flocced, tested and approved by HY prior to being pumped into the existing stormwater system. Permit to discharge required to any release into the SW system.			
Erosion causing perimeter scaffolding to become unstable	E	3	Low	Meadowbank TAFE Environmental Management Plan		All perimeter scaffolding to be checked following significant rainfall and rectified by scaffolder as required.			

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RELEVANT PROCEDURE:		Project HSE Risk Assessment		RISK ASSESSMENT TABLE		Consequence					
PROJECT:		Meadowbank TAFE - Multi-Trades and Digital Design Hub		Likelihood		1	2	3	4	5	
JOB NO:		SC130		A	Very Likely	High	High	High	Medium	Medium	
ASSESSED BY:		Mustafa Aktas		B	Likely	High	High	Medium	Medium	Medium	
ASSESSMENT DATE:		19 - 06 - 2020 (FOR INFORMATION ONLY) - PLEASE REFER ALSO TO HY RISK IDENTIFIER ON HY-WAY		C	Possible	High	Medium	Medium	Medium	Low	
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		RISK ASSESSMENT		CONTROLS (to be established in the following order of priority 1st=High Level Risks; 2nd = Medium Level Risks; 3rd = Low Level Risks)							
HAZARD (Include additional project specific hazards as required)		L	C	Class	Legislation, Standards & Codes of Practice		Enter Details of Specific Controls Required				
Existing services											
Damage to existing services could cause major disruption to the client eg. live power, security cables etc.		D	3	Medium	NSW Code Of Practice: Excavation 2004 Meadowbank TAFE WHS Plan		Subcontractors are available to repair services in the event they are damaged				
PLANT OPERATORS STRIKING UNDERGROUND SERVICES WHILST UNDERTAKING TRENCHING/ EXCAVATION WORKS		C	1	High	Ausgrid National Standard NS 156 - Working near or around underground cables Meadowbank TAFE WHS Plan		A permit to dig system is in place on this site. All known existing services have been marked up on the site plans. Pot holing and hand digging must occur when working around existing services. Striking existing underground services has been listed as a hazard on all subcontractor SWMS involving excavation works				
Excavators digging trenches accidentally striking recently installed and charged up hydrant lines throughout the site		E	2	Medium	Jemena Guidelines Construction Activities Near & Over Jemena Gas Networks Assets Meadowbank TAFE WHS Plan		A plan has been issued to all subcontractors notifying them of existing services				
Explosive Powered Tools											
Eye and hearing damage		E	4	Low	Meadowbank TAFE WHS Plan		Eye and hearing protection must be worn. Workers must be closely supervised by their supervisor				
Excavations											
Excavation over 1.5m		C	3	Medium	NSW Code Of Practice: Excavation 2000		All trenches over 1.5m must be benched at 1:1 at a maximum of 1.5m or battered at 45 degrees unless stated otherwise by a geotechnical engineers report. A ramp or steps must be cut into the trench for easy pedestrian access. Shoring boxes to be used for trenches greater than 1.5 m deep if benching is not possible				
Large stockpiles of spoil creating blind spots for plant operators and truck drivers		E	3	Low	NSW Code Of Practice: Moving Plant On Construction Sites 2004		Plant operators must neatly stockpile all spoil and limit the height of the stockpile to maintain good vision. Plant operators are to avoid stockpiling spoil next to bends on haul roads.				
Trench collapse trapping workers		D	2	Medium	AS 2763 Vibration and shock - hand transmitted vibration - guidelines for measurement and assessment of human exposure		Any trenching in unstable ground is to be benched/ battered. If the excavation reaches rock or shale and benching/ battering is not practical geotechnical engineers signoff is required. A ramp must also be cut into the end of trench for emergency access/ egress.				
Plant eg. mobile crane set up too close to a trench could result in trench collapse and plant roll over		C	2	Medium	Meadowbank TAFE WHS Management Plan		All plant must be set up clear of the zone of influence				
Plant outriggers sinking into ground resulting in plant roll over.		C	1	High	AS 3798 Guidelines on earthworks for commercial & residential developments		Plant must only be set up on solid ground and sufficient pig sty packing/ sole plates placed underneath outriggers. Sole plates are to be used underneath EWP stabilizers if the ground is soft. Ground conditions to be constantly checked during and after rain fall.				
Open trenches restricting access for vehicles and pedestrians around site		C	4	Medium	NSW Dial Before U Dig Legislation		Pedestrian / vehicle/ plant access must be kept clear at all times around site. Alternative access routes are to be set up prior to trenching across pathways and roadways.				
Building materials/ stockpiles stored near trench could result in trench collapse		C	3	Medium			Materials and equipment must not be stored within the 'zone of influence'				
Different trades working in the same area at the same time could strike each other with mobile plant		B	2	High			Daily pre-starts and SWMS detail how to work around moving plant on site including plant used by other trades eg. spotters, barricade the work area, signage etc				
Damage to existing buildings from vibrations caused by machinery		NA	4	NA			Vibration from earthworks to be monitored by HY and subcontractors				
Formwork											
Formwork collapse		C	1	High	Code of Practice: Formwork		Formwork must be certified by a qualified engineer that it is structurally sound and able to safely support loads that may be applied by the concrete pour, workers, reinforcement & crane lifted loads. Once engineer's inspection complete ensure any additional back propping is installed if required. Place plant and materials on formwork and falsework only where allowed for by the design and when the structure or deck is sufficiently constructed so it is able to bear the load				
Fall from heights		C	1	High			Spread first section of joist on beam from intermediate work platform and only access the deck to start laying ply once the joist are down and handrail is in place. Use scaffold to gain access to deck to start laying plywood When you sheet up to 1.8m from end of joist lay next section of joist NEVER sheet to the end of the joist even if there is a catch deck in place Lay joist across bearers fixed at a spacing of 450 maximum to prevent any possibility of falls while construction of the deck. Establish working areas for steelfixers & other trades. A 'formwork only' zone should be maintained behind the leading edge. This zone should be clearly demarcated by signage and a barrier. Protect open penetrations with edge protection (e.g. handrails) or cover securely. Cast5in metal mesh with a small aperture (e.g. 50 x 50 mm mesh size or smaller) for small penetrations. Paint ply covers with appropriate warnings (e.g. "PEN0" or similar) and fasten securely.				
Cuts/ impalement on starter bars		B	3	Medium			Safety caps to be fitted to all starter bars wherever there is a risk that a person may fall on one.				
Fall prevention/ arrest equipment											
Failure of fall arrest equipment		C	1	High	HY emergency response plan AS/NZS 1891: Industrial fall arrest systems and devices		All safety harnesses and lanyards must be visually checked daily. Safety harness is the last form of control and other forms of fall protection should be used such as perimeter scaffolding, EWP, handrails etc Maintenance and inspection records in subcontractor safety management plans to be kept up to date Roof anchor points must be certified prior to use Rescue procedure for rescuing persons in fall arrest must be developed prior to persons using safety harnesses				


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				RISK ASSESSMENT		CONTROLS (to be established in the following order of priority 1st=High Level Risks; 2nd = Medium Level Risks; 3rd = Low Level Risks)								
HAZARD (Include additional project specific hazards as required)				L	C	Class	Legislation, Standards & Codes of Practice				Enter Details of Specific Controls Required			
Fall from heights														
Workers falling into open trenches				C	3	Medium	AS 1418.1: Cranes, hoists and winches – General Requirements				All open trenches must be bunted off at least 1m from the edge of the trench. Where there are high movements of pedestrians an plant then a solid barrier such as a temporary mesh			
Workers falling into open penetrations (eg in-ground pits)				C	3	Medium	WHS Regulation 2011 Part 4.4 Falls				All penetrations to be covered with and secured and the wording "peno" or "do not remove" sprayed onto the plywood			
Workers falling from ladders				C	3	Medium	NSW Code Of Practice: Managing the risk of falls at workplaces				Ladders are to be used in accordance with the HY ladder policy. Ladders are the last resort for height access and other means of height access should be used eg EWP's, mobile scaffolding, platform ladders etc. Standard A frame ladders can be used but only for short duration works or tight restricted spaces such as small rooms where a scissor lift will not fit. Ladders with 4 steps or less are not permitted on site			
Bricklayers falling from trestle scaffold				C	1	High	AS 4576: Guidelines for scaffolding				Bricklayers must install a handrail to the scaffold and a ladder for safe access/egress. Trestle scaffold must be set up correctly on solid ground			
Fall from scaffold				E	3	Low	AS 1576: Scaffold general requirements				Modular stairs to be installed at the same time as decks are installed for safe access to each deck. Handrails must be installed from deck below prior to accessing the deck above. Ends must be closed off with trannys. Scaffolder will erect 'danger scaffold incomplete' signage until the scaffold is ready for use and a handover certificate has been issued to HY. All trades have been made aware not to alter the scaffold under any circumstance.			
Personnel falling into open trenches or off the edges of batters and excavations				D	3	Medium	Meadowbank TAFE Emergency Response Plan				All open trenches and along the top edge of batters must be bunted off at least 1m from the edge of the trench. Deep trenching must be benched every 1.5m so that a person can only fall a maximum of 1.5m.			
Fall from mobile scaffold				B	3	Medium	Scaffold erection guide (comes with scaffold)				All mobile scaffolding must be built as per the manufacturers instructions. Handrails and midrails must be in place. Any scaffold where a person can fall more than 4m must be erected by a licenced scaffolder .			
Workers falling from heights				C	2	Medium	Meadowbank TAFE WHS Plan				Roof access permit must be obtained by the roofer prior to accessing the roof. Perimeter scaffold or handrail must be in place for fall protection. Safety mesh must be installed correctly as per Code Of Practice: Safe Work On Roofs: Part 1			
Falls into bored piers				B	2	High	AS/NZS 1892 Portable Ladders				Bored piers must be fully covered with plywood or mesh to eliminate risk of workers falling into the hole. Deep excavation signs are to be erected and the are fully bunted off. Best practice is to fill the hole with concrete as soon as possible.			
Falling objects														
Pallets of blocks stacked too high could tip over and injure a person				A	4	Medium	Workcover Bricklayers guide				Pallets of blocks must be stacked on level ground no more than 2 pallets high			
Scaffold parts could fall/ be knocked off the deck and injure workers below				NA	2	NA	AS 1576: Scaffold general requirements				All excess scaffold material must remain on the ground. No excess scaffold material is to be left lying on scaffold decks			
Formwork and reo materials falling from deck onto persons below				C	2	Medium					All FRP materials must be stacked neatly clear from edge of deck. If this is not possible then kick boards must be put in place			
Building material and tools falling from scaffold decks				C	2	Medium	Meadowbank TAFE WHS Plan				Edge boards to be fitted to all scaffold decks. Materials stored on scaffolding is to be kept to a minimum and removed from decks daily. If possible do not store materials on scaffold at all.			
Falling materials from EWP's				C	2	Medium	AS/NZS 2210 Occupational protective footwear				No worker is to walk underneath an elevated EWP. All EWP operation must have a spotter or the area must be fully barricaded off with red/white tape, bunting or flagging or signage in place			
Loose materials and rocks from walls of trenches falling onto workers within the trench				D	3	Medium	AS/NZS 1800 Occupational protective helmets - Selection, care & use				N/A this month. No access to any open trenches for workers unless the walls of the trench are stable. Geotech sign off required for trenching over 1.5m			
Materials left behind after works finish eg. loose bolts, off cuts etc				C	2	Medium	AS/NZS 1801 Occupational protective helmets				Work areas at heights must be checked daily and loose items brought down to ground level.			
Fauna (protected or endangered species)														
Snakes and insects in long grass				D	3	Medium	Environmental Protection Act Meadowbank TAFE Environmental Management Plan				Weeds and long grass alongside pedestrian pathways around the site are to be cut back with a whipper snipper			
Fire														
Chemical and fuel spills may cause a fire				E	1	Medium	Meadowbank TAFE Emergency Response Plan				A,BE Powder type fire extinguishers are installed at several locations strategically placed around the site			
Sparks from hot works eg welding, grinding may cause a fire				D	3	Medium	AS 2444: Portable fire extinguishers & fire blankets - selection and location AS/NZS 1850 Portable fire extinguishers - Classification, rating and performance testing				All subcontractors must obtain a hot works permit from HY staff. The permit will detail any controls required for undertaking the task			
Flammable materials stored on site may ignite from hot works in the area				D	2	Medium	NSW Code of Practice: Control Of Workplace Hazardous Substances				Hazardous materials must be stored in cool, dry areas away from ignition sources and flammable material signage installed.			
Fuel drums could catch on fire from sources of ignition				B	4	Medium	AS 3745 Emergency control organisation and procedures for buildings, structures and workplaces				Fuel drums are to be put away when not in use in a storage cage in a well ventilated area			
Workers could be seriously injured whilst attempting to extinguish fire				E	1	Medium	AS 2444 Portable fire extinguishers and blankets - Selection & location				All workers are told at site induction not to place themselves at risk and not to try and fight the fire			
Time taken to obtain fire extinguisher in the event of an emergency				D	1	Medium	AS/NZS 1841 Portable fire extinguishers				Fire extinguishers are places strategically around site for easy/ fast access. Locations of fire extinguishers are on the site layout plan			
Poor maintenance of fire extinguishers				E	1	Medium	AS 2375 Guide to the selection, care & use of clothing for protection against heat & fire				Fire extinguishers are to be tagged every 6 months by a competent person			
Breach of Total Fire Ban				NA	5	N/A	AS 1851 Maintenance of fire protection systems & equipment				Hansen Yuncken have applied to the local Fire Brigade in writing for an exemption. This has been approved as per Schedule 14 (D) of the NSW Government Gazette No. 11			



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RELEVANT PROCEDURE:	Project HSE Risk Assessment			RISK ASSESSMENT TABLE		Consequence				
PROJECT:	Meadowbank TAFE - Multi-Trades and Digital Design Hub			Likelihood		1	2	3	4	5
JOB NO:	SC130			A	Very Likely	High	High	High	Medium	Medium
ASSESSED BY:	Mustafa Aktas			B	Likely	High	High	Medium	Medium	Medium
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	RISK ASSESSMENT		CONTROLS (to be established in the following order of priority 1st=High Level Risks; 2nd = Medium Level Risks; 3rd = Low Level Risks)							
HAZARD (Include additional project specific hazards as required)	L	C	Class	Legislation, Standards & Codes of Practice		Enter Details of Specific Controls Required				
First aid										
Persons unaware of what to do if an individual requires first aid	E	5	Low	WHS Regulation 2011		Emergency response plan posted on site notice board. All workers explained of the location of the first aid room and contact details for site first aiders.				
Injured person not receiving first aid treatment quickly enough due to the site being so large	D	3	Medium	Work injury management and workers compensation act 1988		Site staff to communicate by way of mobile phones and 2 way radios. A first aid room is set up in the HY compound area. Within the first aid room is a fixed type A kit and portable type A kit for rapid response.				
It may not be possible to take the injured person to the first aid room because of the seriousness of their injuries	E	4	Low	First aid in the workplace: Code of Practice: July 2012		Access routes to be kept clear around site for emergency vehicles				
Inadequate first aid supply's	E	3	Low	Meadowbank TAFE WHS Plan		First aid room to be set up with portable and fixed first type A first aid kits, stretcher, defibrillator, ice packs, sun cream, eye wash and examination couch as per Code of Practice: First Aid .				
Inadequately trained first aiders/ insufficient number of first aiders	E	3	Low	Meadowbank TAFE Emergency Response Plan		HY Site Foreman must have Apply First Aid type certification. HY Safety Officer must have Occupational First aid certificate				
Persons working alone unable to raise the alarm	E	3	Low	Meadowbank TAFE Emergency Response Plan		No person is to work alone. There must be another person in the area at all times. This is told to all workers at site induction				
Heart attack/ stroke	E	1	Medium	Meadowbank TAFE Emergency Response Plan		Defibrillator to be kept in first aid room				
Number of buildings	E	5	Low	Meadowbank TAFE Emergency Response Plan		5 - all easily accessible for pedestrians or vehicles				
Maximum Number of levels on each building	E	5	Low	Meadowbank TAFE Emergency Response Plan		1 - All have internal stair access				
Time taken to walk to furthest point on site	D	4	Low	Meadowbank TAFE Emergency Response Plan		6 minutes - from first aid room to furthest point on site				
Nearest Hospital	D	4	Low	Meadowbank TAFE Emergency Response Plan		Blacktown Hospital				
Nearest Medical centre	D	4	Low	Meadowbank TAFE Emergency Response Plan		Stanhope Gardens Medical centre				
Maximum time to medical service	D	4	Low	Meadowbank TAFE Emergency Response Plan		1min				
Maximum number of workers	D	4	Low	Meadowbank TAFE Emergency Response Plan		>100				
Number of other persons	E	4	Low	Meadowbank TAFE Emergency Response Plan		Expected to have a maximum of 3-4 at any one time				
Site hours	E	5	Low	Meadowbank TAFE Emergency Response Plan		7:00am - 5:00pm Monday - Friday 8:00am - 4:00pm Saturday. No Works on Sundays or Public Holidays. A first aid qualified person from Hansen Yuncken is on site at all times				
Average hours worked by a worker	E	5	Low	Meadowbank TAFE Emergency Response Plan		Workers generally work 8-9 hours per day				
Remote or isolated works	E	4	Low	Meadowbank TAFE Emergency Response Plan		Workers are not permitted to work alone. There must be atleast 2 workers in the same area at all times. Due to the nature of the site it is unlikely any worker will be isolated or work alone				
Types of injuries over the last 12 months	E	4	Low	Meadowbank TAFE Emergency Response Plan		Majority of types of injuries include: cuts and abrasions, minor eye injuries, insect bites, sprains and strains, back injuries and dislocations				
Incidents not resulting in injury	E	5	Low	Meadowbank TAFE Emergency Response Plan		Incidents have occurred where excavator operators have struck existing live underground electrical cables - defibrillator will be required in the event persons are electrocuted				
Other	E	3	Low	Meadowbank TAFE Emergency Response Plan		Occasionally workers have fallen ill (not work related) however these people are sent to a Doctor for further treatment				
Cuts and abrasions	C	4	Medium	Meadowbank TAFE Emergency Response Plan		Type A first aid kit has contents for treating these types of injuries				
Sprains and strains	D	4	Low	Meadowbank TAFE Emergency Response Plan		Ice packs and instant cold packs to be available				
Eye injuries	D	3	Medium	Meadowbank TAFE Emergency Response Plan		Eye wash station to be set up in first aid room				
Burns	E	4	Low	Meadowbank TAFE Emergency Response Plan		Burn cream and non adherent wound dressings				
Fractures	D	4	Low	Meadowbank TAFE Emergency Response Plan		Type A first kit and a stretcher for moving injured workers				
Dislocations	D	4	Low	Meadowbank TAFE Emergency Response Plan		Type A first aid kit has triangle slings				
Poisoning and toxic effect of substances	E	5	Low	Meadowbank TAFE Emergency Response Plan		Safety data sheets available for all substances used. Oxy viva system to be kept in first aid room				
Heat stroke	D	4	Low	Meadowbank TAFE Emergency Response Plan		Ice packs and cold water on standby. Subcontractors have been addressed at site induction to take breaks, work in shade wherever possible., job rotation etc				





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HAZARD (Include additional project specific hazards as required)	L	C	Class	Legislation, Standards & Codes of Practice		Enter Details of Specific Controls Required			
Ground Collapse/poor ground									
Plant roll over from sinking in unstable ground conditions	C	3	Medium	Meadowbank TAFE WHS Plan		Subcontractors to complete a plant risk assessment prior to operating plant. Plant will not be operated in unstable ground conditions. If the ground is too soft or uneven then the ground will be bladed back to solid ground prior to plant operating on it. All subcontractors must obtain a HY plant setup permit prior to operating plant with outriggers. Concrete boom pumps and mobile cranes must obtain a geotechnical engineers report stating the ground is stable and able to take the weight of the crane and load being lifted. Site to be inspected by the Site Manager and HSR following heavy rain prior to work commencing the next day			
Vehicles/ plant could become bogged in soft muddy ground	D	4	Low	National Standard For Plant: 10:10 (1994)		Temporary roadways have been rolled and compacted to keep ground stable. No plant to work on unstable ground accessed in wet weather prestart to be conducted after each inclement weather event			
Pedestrian slip and trip hazards from muddy/ uneven ground	E	3	Low	Meadowbank TAFE WHS Plan		Crusher dust has been spread over pedestrian pathways to minimise slip and trip hazards. Plant is to be used to blade back ruts and muddy ground to minimise slip and trip hazards for workers in the area particularly on rain days			
Trucks and vehicles tracking mud and dirt onto road from muddy tyres	E	3	Low	Meadowbank TAFE WHS Plan Meadowbank TAFE Environmental Management Plan		Shaker grid installed at site entrance. High pressure water blaster to be used to wash tyres if required			
Pedestrians/ workers tripping over in deep wheel ruts left by plant movements	E	3	Low	Meadowbank TAFE WHS Plan		Wheel ruts are to be bladed/ levelled out to minimise trip hazards around site			
Hazardous Chemicals									
Spillage of fuels and chemicals	C	3	Medium	AS 1940: The storage and handling of flammable and combustible liquids Meadowbank TAFE Environmental Management Plan		A spill kit is kept in the site office. Any drums of fuel larger than 20 litres must be banded. All trades are to set up a hazardous substance storage area next to their site containers with signage erected 'no smoking', 'Danger Fuel Storage area' etc			
Unsafe storage of oxy acetylene equipment	C	3	Medium	AS 4332 The storage and handling of gases in cylinders Meadowbank TAFE Environmental Management Plan		Oxygen and acetylene bottles are to be stored in separate ventilated cages 3m apart at the end of each day and appropriate warning signage erected.			
Mix matched storage of hazardous substances could cause a chemical reaction	C	3	Medium	NWHSC 2017 - 2001 Storage & Handling of Dangerous Goods		Only substances of the same class can be stored together as per the Safety Data sheet for the products			
				AS 3780: The storage & handling of corrosive substances					
				NWHSC 2011: Preparation of Material Safety Data Sheets					
				Meadowbank TAFE WHS Plan					
				NSW Code of Practice: Control Of Workplace Hazardous Substances					
				NWHSC 1015 - 2001 Storage & Handling of Dangerous Goods					
				NWHSC 2011 - 2003 Preparation of Material Safety Data Sheets					
				NWHSC 2007 - 1994 Control of Workplace Hazardous Substances					
				NWHSC 2012 - 1994 Labelling of Workplace Hazardous Substances					
				NWHSC 2014 - 1995 Carcinogenic Substances					
Heat stress									
Sun burn	D	4	Low	NSW Code Of Practice Work in hot or cold environments 2001		Sun cream is available in the site office. Singlets are banned. Workers are encouraged at the site induction to wear long sleeve pants and shirts.			
Hot temperatures may cause persons to become dehydrated resulting in illness, headaches, fainting etc	E	4	Low	NSW Hot & Cold Environments 2001		Air conditioned lunch sheds. Subcontractors to work in shaded area wherever possible.			
				NSW Code Of Practice: Managing the work Environment and Facilities					
				Meadowbank TAFE WHS Plan					
Heavy lifting (over normal crane operation)									

		<h2 style="text-align: center;">PROJECT HSE RISK ASSESSMENT</h2> <p style="font-size: small;">This Project HSE Risk Assessment is to be used as a guide when completing the monthly Project High Risk Identification assessment on HYWAY Site Management Dashboard in accordance with the Project HSE Risk Assessment procedure and should be conducted at the time of Construction programme status to assess hazards and risks for next month. Hazards with residual risk from the Design WHS Risk Assessment (if applicable) are also to be considered.</p>									
RELEVANT PROCEDURE:		Project HSE Risk Assessment			RISK ASSESSMENT TABLE		Consequence				
PROJECT:		Meadowbank TAFE - Multi-Trades and Digital Design Hub			Likelihood		1	2	3	4	5
JOB NO:		SC130			A Very Likely		High	High	High	Medium	Medium
ASSESSED BY:		Mustafa Aktas			B Likely		High	High	Medium	Medium	Medium
ASSESSMENT DATE:		19 - 06 - 2020 (FOR INFORMATION ONLY) - PLEASE REFER ALSO TO HY RISK IDENTIFIER ON HY-WAY			C Possible		High	Medium	Medium	Medium	Low
					D Remotely Possible		Medium	Medium	Medium	Low	Low
					E Very Unlikely		Medium	Medium	Low	Low	Low
					NA Not applicable		NA	NA	NA	NA	NA
		RISK ASSESSMENT		CONTROLS (to be established in the following order of priority 1st=High Level Risks; 2nd = Medium Level Risks; 3rd = Low Level Risks)							
HAZARD (Include additional project specific hazards as required)		L	C	Class	Legislation, Standards & Codes of Practice			Enter Details of Specific Controls Required			
Manual handling injuries		E	4	Low	WHS Regulation 2011 Part 4.2 Hazardous Manual Tasks			Team lifts for heavy items. Subcontractors SWMS must list manual handling as a hazard and controls put in place. Mechanical lifts wherever possible			
Back injuries		E	3	Low	Meadowbank TAFE WHS Plan			Bend knees, keep a straight back, don't twist			
Block and tackle use		NA	4	NA	NCOP for Manual Tasks 2007 National Standard for Manual Tasks - 2007 NCOP for the Prevention of Musculoskeletal Disorders Caused From Performing Manual Tasks			Use of block, tackle and slings is to be used in accordance with SWMS. Slings are to be wrapped around a solid structure only. Slings to be wrapped by dogman and riggers only			
					NSW Manual Handling Resource 2004						
					Code of Practice: Hazardous Manual Tasks						
Hot Works											
Sparks from welding, grinding or using oxy acetylene may cause a fire if flammable materials are in the area		C	4	Medium	AS 1674: Safety in welding and allied processes			A hot works permit must be obtained by the subcontractor... All sources of ignition to be removed from the area prior to hot works occurring			
Fire and injury to others from persons using angle grinders		A	4	Medium	Meadowbank TAFE hot works permit			Conduct all grinding away from flammable materials and other workers in the area. Be aware of direction of flying sparks			
Welders flash to other trades		B	4	Medium	Meadowbank TAFE WHS Plan			Welding screens and warning signage must be erected to protect other trades from welders flash if others are within a 10m radius of the work area			
					Code Of Practice: Welding Processes						
Hygiene (poor)											
Unhygienic facilities could result in workers becoming ill and contracting diseases		D	4	Low	NSW Code Of Practice: Managing the work environment and facilities			A cleaner has been engaged by Hansen Yuncken to clean amenities on a daily basis. All amenities to be kept clean and rubbish bins emptied daily			
Trades not putting rubbish and off cuts in bins provided creating trip hazards		D	4	Low	NSW Code Of Practice: Amenities for construction work 1997			Improvement notices to be issued to subcontractors who do not keep the site neat and tidy			
Inadequate facilities for general site rubbish		D	4	Low	Meadowbank TAFE WHS Plan			Skip bins to be placed on site at various locations and changed over regularly			
Lifting Over Public/outside site											
Injury to pedestrians/ public		NA	4	NA	AS 1742.3-2009: Manual of uniform traffic control devices - Traffic control for works on roads Meadowbank TAFE WHS Plan Meadowbank TAFE Traffic Management Plan Road Management Act 2004			No lifting of building materials outside of the construction fence unless traffic control and diversions are in place and the subcontractor has sought approval from the HY Site Manager			
Manual Handling											
Back injuries/sprains and strains		C	3	Medium	HY Glove and clip policy			Team lifts for heavy items. Mechanical aids eg. telehandler to be used wherever possible. Building material to be dropped off as close to the work area as possible to minimise carrying distance.			
Cuts to hands		C	4	Medium	WHS Regulation 2011 Part 4.2 Hazardous Manual Tasks			Gloves to be worn for manual handling tasks as per Hansen Yuncken glove & clip policy			
					NSW Code Of Practice: Hazardous Manual Tasks						
					AS/NZS 2161 Occupational protective gloves						
					Meadowbank TAFE WHS Plan						


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HAZARD (Include additional project specific hazards as required)				L	C	Class	Legislation, Standards & Codes of Practice		Enter Details of Specific Controls Required			
Mobile Plant												
Mobile plant could strike a pedestrian worker on site	C	1	High	NWHSC 1010: National Standard for Plant		All trades are warned of moving plant at the site induction. High vis vests are to be worn at all times. All workers on site must keep well clear of plant on site and gain the operators attention prior to approaching any plant. Only workers involved with the task are to be with in the work areas of plant. People working within the work area of plant must be visible to the operator at all times.						
Mobile plant could crash into a structure or open trench	D	3	Medium	Meadowbank TAFE WHS Plan		Trained, experienced, qualified workers to operate plant only. Plant operator competency statement to be issued to HY for any plant which does not require a legislated ticket.						
Pedestrians/ workers being struck by mobile plant	C	1	High	AS 2294 Earth moving machinery - Protective Structures AS 4602 High Visibility Safety Garments		A combination of controls must be put into place and detailed in sub contractors SWMS eg. barricade the area, erect signage, use a spotter etc. Bunted off pedestrian pathways have been erected on site to keep pedestrians clear of areas where there are high movements of vehicles/ trucks and plant. All subcontractors using moving plant must have a SWMS which details how to protect other workers in the area from being struck by the plant. All plant must have a flashing light, horn and reversing beeper. Vehicles/ trucks must turn their flashing lights on. There is a 10km/h speed limit on site. All workers have been told at the site induction to be aware of moving plant on site and keep clear whenever possible. Only workers who are involved with the task are to be in the vicinity of the plant. HY have instructed all subcontractors to train their workers through pre-start meetings on how to approach moving plant and equipment. Access routes for plant and vehicles are to be maintained. Pedestrians are to walk along the side of access routes whenever possible. Plant operators are to keep reversing to a minimum. Pedestrians that need to approach moving plant are to do so from the front of the machine and are to gain the operators attention by making verbal contact and eye contact with the operator. No person is to approach the machine until the operator has stopped moving the machine and signalled that it is safe to approach. Spotters working with machines must always stand in an area where they are visible to the operator.						
Plant roll over on unstable ground	E	3	Low	Model Code of Practice - Managing the Risks of Plant in the Workplace		Plant operator and HY site staff must assess conditions and determine if the ground is stable for plant. If the plant has out riggers then they must be fully extended. Subcontractors must obtain a 'plant setup permit' from Hansen Yuncken prior to setting up any plant with outriggers eg. concrete boom pumps, cranes, frames etc						
Possibility of scissor lift being driven off edge of concrete slab resulting in scissor lift tipping over	NA	2	NA	Model Code of Practice - Managing the Risks of Plant in the Workplace		A timber bump stop must be installed to the edge of the slab whenever EWP's are used close to the edge of a slab						
Crushing Injury from scissor or boom lift	C	1	High	Model Code of Practice - Managing the Risks of Plant in the Workplace		Provide onsite training, instruction and supervision Pre starts and Toolbox talks to be done as consultation with person's affected by the controls outlined. Only person's with EWP ticket to operate Scissor Lift No Person to work isolated or alone on an EWP 2 person team as a minimum, whilst using a EWP, 1 person to spot and also assist with task All Personnel to be trained by a qualified person from the hire company on the specific EWP, as not all EWP's are the same. Prior to use, completion of a logbook check is to be done All faults are to be immediately reported to supervisor and machine is to be tagged out Personnel using EWP must be aware of the emergency response protocol of that specific EWP Person operating scissor lift must be able to communicate clearly to spotter/work partner(team)						
Needle stick Injury												
Injured person could contract a disease	E	2	Medium	NSW Code Of Practice: HIV and other blood-borne pathogens in the workplace		Workers injured by needle stick to be sent to the nearest medical centre						
Workers unaware of what to if a needle is found	E	4	Low	Meadowbank TAFE WHS Plan		Workers to be told at site induction that if they find a needle on site they are not to touch it and report it to HY staff immediately						
Inadequate disposal facilities for needles found on site	E	4	Low	NSW: Code Of Practice: Work Place Amenities		Sharps clean up kit to be kept in site office at all times						
Noise												
Hearing damage from general construction noise eg. power tool usage, jack hammering etc.	B	3	Medium	AS/ANZ 1269: Occupational Noise Management		Hearing protection to be worn when using power tools or loud equipment. Signage to be erected to warn other trades of excessive noise. A noise monitor is available in the site office. The noise monitor is available for use on site safety walks						
Disruption to client and neighbours	D	5	Low	NWHSC 1007 - 2000 National Standard for Occupational Noise NWHSC 2009 - 2004 Noise Mgt & Protection of Hearing at Work		Notice of disruption to be issued to client if required. Work to be conducted within approved hours of DA contract only						
				AS/NZS 1269 Occupational noise management AS/NZS 1270 Acoustics - hearing protectors AS 2436 Guide to noise control on construction, maintenance & demolition sites								
				NSW Noise Management & Protection of Hearing at Work 1996								
				AS 2436: Guide to noise control on construction, maintenance & demolition sites								
				AS 2012: Acoustics – Measurement of Airborne Noise Emitted by Earthmoving Machinery & Agricultural Tractors								
				Meadowbank TAFE WHS Plan								
				AS/NZS 1270: Acoustics - hearing protectors								
Overhead Power lines												
Power lines over main entry to site	C	4	Medium	Meadowbank TAFE WHS Plan		All plant and workers must keep clear of overhead power lines as per Code Of Practice: Work near overhead power lines						
				NSW Code of Practice: Work near overhead power lines 2006								





PROJECT HSE RISK ASSESSMENT

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				NA	Not applicable	NA	NA	NA	NA	NA
	RISK ASSESSMENT		CONTROLS (to be established in the following order of priority 1st=High Level Risks; 2nd = Medium Level Risks; 3rd = Low Level Risks)							
HAZARD (Include additional project specific hazards as required)	L	C	Class	Legislation, Standards & Codes of Practice		Enter Details of Specific Controls Required				
Plant & Equipment										
Plant failure may cause serious injury to workers	D	3	Medium	NWHSC 1010: National Standard for Plant		HY plant verification reports to be completed for all plant. Maintenance records to be submitted to HY as evidence machine is safe for operation. Plant risk assessments to be conducted for all high risk work. Plant operators must conduct pre-start safety inspections of their machine daily and report faults to their supervisors				
Poorly maintained ladders and scaffolding failing/ collapsing	D	3	Medium	AS/NZS 1892: Portable Ladders		No timber ladder on HY sites. Ladders must be in good condition. Electricians must use fibre glass ladders. All workers are aware of the HY ladder policy posted on the wall in the lunch shed. Extension ladders must be tied off at the top landing. Scaffolding to be visually checked daily and full inspection monthly or after adverse weather				
Use of damaged ladders	D	3	Medium	AS 4576: Guidelines for scaffolding		Ladders to be checked for damage weekly on the site safety walk				
Lifting gear failure	D	1	Medium	AS/NZS 4994: Temporary edge protection		All lifting gear: soft slings, lifting chains must be visually checked daily prior to use for damage. Damaged lifting gear is to be withdrawn from service.				
Scaffold collapse/ fall from scaffold	NA	1	NA	AS/NZS 1891.1 2007 Industrial fall arrest systems - harnesses and ancillary equipment		Scaffold handover certificate to be issued to HY prior to anyone accessing the scaffold. Scaffold to be inspected minimum monthly and after heavy rain. Scaffold will also be inspected on weekly safety walks. Mobile scaffolds to be built as per manufacturers instructions. Scaffold where a person can fall more than 4m must be erected by a licenced scaffolder. No person is to alter the scaffold what so ever. Any issues with scaffold is to be reported to the Site Manager immediately.				
Multiple mobile plant interaction/ contact	D	1	Medium	Meadowbank TAFE WHS Plan		Plant operators must communicate by way of 2 way radios, eye contact and spotters				
Vehicle and plant exhaust fumes	D	4	Low	HY ladder policy		Use of electric scissor lifts inside buildings only. All other diesel powered machines are used in open well ventilated areas				
Post Tensioning										
Accidental drilling or cutting into PT cable	NA	2	NA			N/A this month. All subcontractors to obtain permit to cut concrete/ core. This permit will detail location of PT cables if applicable				
Plant & Equipment Washout										
Water from cleaning plant and equipment creating a muddy/ slippery surface	D	4	Low	Environmental Protection Act 1994		Washout area to be determined on a daily basis as the site changes. The wash out area must not allow water to flow over pedestrian foot paths				
Muddy and contaminated water entering stormwater system	D	4	Low	HY environmental management plan		Sediment control to be placed around the washout area				
Pressurised Gas Mains										
Excavator buckets striking UNDERGROUND GAS LINES	D	1	Medium	NSW Code Of Practice: Excavation Work 2000		A permit to dig system is in place on this site. All known existing services have been marked up on the site plans. Pot holing must occur when working around existing services. Only toothless buckets are to be used when digging in the vicinity of gas lines. Striking existing underground services has been listed as a hazard on all subcontractor SWMS involving excavation works				
				Meadowbank TAFE WHS Plan						
				Jemena guidelines construction activities near and over Jemena has network assets						
Scaffold										
Fall from heights over 2m	NA	1	NA	WHS Regulation 2011: Part 3.1 Managing risks to health and safety						
Fall from heights whilst forming up and pouring concrete	NA	3	NA	AS4576: Guidelines for scaffolding						
Insufficient safe means of access onto Ground Floor Slab from Basement Slab level	NA	5	NA	AS1576: Scaffold general requirements						
Insufficient egress from building in the event of an emergency	NA	5	NA	Meadowbank TAFE WHS Plan						
Inadequate development of scaffold plan	NA	5	NA							
Possible scaffold overload resulting in scaffold collapse - materials and workers	NA	4	NA							
Scaffold sinking into soft ground compromising structural integrity	NA	3	NA							
Sediment and erosion control										
Mud, dirt and sediment polluting stormwater systems	C	4	Medium	Environmental Protection Act 1994		HY Sediment Erosion Control plan Rev. 3				
Mud, dirt and sediment polluting stormwater systems	C	4	Medium	Meadowbank TAFE Environmental Management Plan		Silt barriers to be installed around low areas of site to catch all rain fall. All stormwater pits to be covered in silt control. All vehicles tyres must be washed clean of mud prior to leaving site. Silt socks to be placed in front of stormwater drains in gutters. Inspections to be carried out weekly by HY using the Site HSE inspection report				

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		RISK ASSESSMENT		CONTROLS (to be established in the following order of priority 1st=High Level Risks; 2nd = Medium Level Risks; 3rd = Low Level Risks)								
HAZARD (Include additional project specific hazards as required)		L	C	Class	Legislation, Standards & Codes of Practice			Enter Details of Specific Controls Required				
Site Lighting												
Sun glare restricting plant operators visibility		C	4	Medium	WHS Regulation 2011			Sunglasses to be worn by plant operators as required. Certain tasks may also be conducted at different times of the day to stop the sun becoming an issue.				
Lighting (Poor)		D	4	Low	NSW Code Of Practice: Managing the work Environment and Facilities			Ensure that task area has adequate natural light and if natural light is not adequate provide artificial lighting				
Slips/Trips												
Workers slipping or tripping on rough/ uneven/ muddy/ slippery ground		C	3	Medium	AS/NZS 2210 Occupational protective footwear Meadowbank TAFE WHS Plan			Pedestrian pathways to be kept clear of rubbish and material. Safe access around site to be maintained at all times. Gravel/ crusher dust to be placed on slippery/ muddy surfaces. Blading back of ruts and muddy ground conditions to be conducted as required. Bunted off pedestrian pathways are installed around main access routes throughout site for safe pedestrian access, this way people can use the pathway then branch out to their specific work area with minimal risk of slipping over in muddy conditions				
Structural Support												
Masonry walls collapsing in high winds		D	1	Medium	National Code of Practice for Precast, Tilt Up and Concrete Elements in Building Construction 2008			Masonry walls must be adequately braced with timbers every 2m until core filled				
Formwork collapse		D	1	Medium	AS 3850:Tilt Up Concrete Construction			Engineers sign off required to pouring of any concrete				
Precast concrete panel collapse if structural steel is inadequately braced		NA	1	NA	NSW Code of Practice: Formwork 1998			Structural steel must be signed off by engineer prior to installation of precast concrete panels				
Structural steel collapse		D	1	Medium	AS 4991: Lifting devices			Structural steel must be erected by qualified dogmen and riggers. Subcontractor must submit ITP's to Hansen Yuncken. Hansen Yuncken to complete QC Compliance audit report: Structural Steel checklist				
Synthetic fibres												
Unsafe handling of roof insulation		D	4	Low	NSW Code of Practice: Safe use of synthetic mineral fibres			Install roof insulation as per Safety Data Sheet and SWMS				
Temperature Extremes												
Dehydration		E	3	Low				Workers are encouraged to drink plenty of water. Water bubbler available at site lunch sheds				
Sunburn		C	3	Medium				Workers must wear a shirt on site. Singlets are not allowed. Sun cream is available to everyone and is kept in the site office				
Heat stress		E	3	Low				Workers are encouraged to work in the shade wherever possible and take regular breaks whenever required.				
Tilt –up or Precast Concrete Work												
Structural steel support collapse		NA	1	NA	AS 3850:Tilt Up Concrete Construction			HY precast panel installation checklist must be completed and all relevant documentation submitted, reviewed and approved by HY prior to installation of precast panels				
Injury to other workers/ trades		NA	1	NA	AS 4991: Lifting devices			Precast panel installation must be closely monitored by HY Management and conducted in accordance with SWMS . The work area around the crane must be clearly closed off to other trades with bunting, flagging or red/white tape. Spotters must be used to				
Plant failure		NA	1	NA	National Code of Practice for Precast, Tilt Up and Concrete Elements in Building Construction 2008			All maintenance records and plant safety verification reports must be maintained and kept up to date				
Failure of lifting points on precast panels		NA	1	NA	AS 2550: Cranes, hoists & winches - Safe Use			Subcontractor ITP's must be submitted and reviewed by HY prior to erection of precast panels , engineered lifting points used to install precast. Lifting gear register in place				
Concrete may not have cured to specified strength		NA	2	NA				HY precast panel installation checklist must be completed and all relevant documentation submitted, reviewed and approved by HY prior to installation of precast panels				
Crane roll over on unstable ground		NA	1	NA	AS 1418.1: Cranes, hoists and winches – General Requirements			Plant setup permit must be obtained by subcontractor prior to standing crane				
Exceed SWL of crane		NA	2	NA	AS 2321: Short link chain for lifting purposes			Work to SWL chart for crane at all times				
Lifting gear failure		NA	3	NA	National Code of Practice for Precast, Tilt Up and Concrete Elements in Building Construction 2008			Riggers must inspect all lifting gear prior to use. Damaged lifting equipment must not be used. Lifting gear registers and certificates must be issued to HY prior to use.				
Poor communication between crane operator and dogmen		NA	3	NA				Dogman and crane operator to constantly communicate with each other. Crane operator to take directions from dogman only.				

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Traffic Management													
Vehicles/ trucks speeding on site				B	3	Medium	AS 1742.3-2009: Manual of uniform traffic control devices - Traffic control for works on roads			10km/h speed limits signs are erected around site. Drivers must give way to pedestrians. Delivery driver inductions for all drivers entering site. Hazard or flashing lights must be turned on			
Vehicles parking and blocking access roads				B	4	Medium				Vehicles to be used for loading/unloading purposes only and are to be parked off site if not required for work purposes			
Blind spots creating collisions between vehicles				E	3	Low				Warning signs to be erected at blind spots			
Vehicle congestion on Birmingham Ave				A	4	Medium				Traffic control is in place at Birmingham Ave. A traffic controller is in place full time at the entry to site to coordinate all delivery drivers, trucks and vehicles coming onto site.			
Pedestrians entering site being struck by trucks and vehicles				C	2	Medium				A fenced off pathway with signage has been installed along the driveway from the street to the site office to keep all pedestrians off the road used by plant and trucks. Pedestrians and vehicles have been separated through entry/ exit by way of concrete jersey kerbs			
Tree lopping													
Tree lopping				B	4	Medium				Area to be delineated and HRCW for falling from heights and Plant and Equipment			
Vehicle & plant exhaust fumes													
Workers overcome by exhaust fumes from plant				E	1	Medium	NSW Code of Practice: Control Of Workplace Hazardous Substances			Plant to be operated in open areas with good ventilation only. Electric scissor lifts to be used inside buildings only. No petrol/ diesel powered equipment used inside buildings			
Ventilation (poor)													
Workers overcome by fumes when using chemicals				E	1	Medium	NSW Code of Practice: Control Of Workplace Hazardous Substances AS/NZS 1715 Selection, use and maintenance of respiratory protective devices AS/NZS 1716 Respiratory protective devices			MSDS to be read and understood by all workers prior to work commencing			
Violence													
Workers arguing and fighting				D	4	Low	Violence in the workplace guide 2002			Zero tolerance for fighting on site - instant dismissal			
Prisoners/Detainees inciting workers or vice versa				D	3	Medium	NSW Workplace Bullying 2008			All workers are instructed not to talk to the Prisoners at the site induction			
Waste Management/ Littering													
Inadequate bins on site to dispose of rubbish				E	3	Low	WHS Act/ Regulation 2011			Skip bins to be placed at various locations around site which are easy to access. Bins for food scraps are to be placed at the front of all lunch sheds			
Bins attracting rodents				D	4	Low				Food scrap bins to be bagged and changed regularly			
Having to walk long distances to dispose of rubbish				D	4	Low				Numerous skip bins to be on site close to all work areas			
Workers littering the site with rubbish and off cuts instead of disposing of rubbish in bins provided				D	4	Low				Suspension/ improvement notices to be issued to subcontractors who leave the site untidy			
Water Contaminants													
Clean water around site becoming contaminated with mud				E	4	Low				Clean rain water is diverted around site by way of swales and sediment control			
Working at Height above 2m													
Workers dropping tools and material onto persons below				C	1	High	NSW Code of practice: Safe work on roofs part 1			"Danger workers above" signage to be erected. If there are other trades in the immediate area then red/white tape will be erected to create an exclusion zone.			
Scaffolders falling from heights during erection process				C	1	High	WHS Regulation 2011 Part 4.4 Falls			Install handrail, mid-rails and toe-boards where scaffolders are working from deck below while building using the approved control methods such as the 1m rule or Advanced guardrail systems			
Perimeter scaffold collapse				C	1	High	AS 4576: 1995 Guidelines for scaffolding			Check and confirm the suitability of the subgrade prior to basing out the scaffolding Confirm areas where trenches have been laid Visually check ground for stability, use sole boards where required or get others to compact areas Do not allow scaffold to exceed 4.0 m in height without being tied to the structure and braced or stabilised to an approved design Do not allow standards to be erected and left unsupported Each standard will be braced in a minimum of two directions. A brace is defined as a ledger or transom Scaffolds from which a person can fall more than 4 metres must be constructed and certified by a licensed scaffolder. Secure materials at height & isolate area below where there is risk of falling objects causing injury to persons below. No scaffold alterations are to be undertaken except by licensed scaffolder. Close off access to incomplete scaffolds, for example, install tube barricades and warning signs "Scaffold Incomplete" Ensure all scaffold is checked and secure before issuing handover docket and attaching Scaffoldtag.			
Workers falling from roof				A	1	High	HY HSE procedure 9.46 Working at height			Roof access permit must be obtained by the workers prior to accessing the roof. Perimeter scaffold or handrail must be in place for fall protection. Safety mesh must be installed correctly as per Code Of Practice: Safe Work On Roofs: Part 1			
Mobile scaffold collapse				B	1	High	NSW Code of Practice: Managing the risk of falls at workplaces						
Workers falling from perimeter scaffold				C	1	High	AS 1577 Scaffold Planks			Perimeter scaffolds to be inspected weekly using the site HSE inspection report. All workers are advised at site induction strictly not to alter any scaffolding			
Fall from ladder				C	3	Medium	AS/NZS 4488 Industrial rope access systems - Selection, use & maintenance			Ladders must be used in accordance with HY ladder policy. An Aconex has been issued on ladder use to all subcontractors. EWP's, mobile scaffold and platform ladders take first preference over standard A frame ladders.			
Fall from EWP/ boom lift				B	1	High	AS/NZS 1891 Industrial fall arrest systems & devices AS/NZS 4994 Temporary edge protection			WP ticket required to operate boom lift >11m . EWPAA yellow car required for EWP <11m. Ground conditions to be checked prior to operation. Harnesses and lanyards must be maintained and kept in good condition			
Fall from scissor lift				B	1	High	NWHSC - Prevention of Falls in General Construction 2008			Timber or angle to be installed to the edge of concrete slabs to stop scissor lifts accidentally being driven off edge of slab. Scissor lift operators must have a EWPAA yellow card or WP type ticket. Stabilizers and sole plates must be used for rough terrain scissors used on soft ground			



PROJECT HSE RISK ASSESSMENT

This Project HSE Risk Assessment is to be used as a guide when completing the monthly Project High Risk Identification assessment on HYWAY Site Management Dashboard in accordance with the Project HSE Risk Assessment procedure and should be conducted at the time of Construction programme status to assess hazards and risks for next month. Hazards with residual risk from the Design WHS Risk Assessment (if applicable) are also to be considered.

RELEVANT PROCEDURE:	Project HSE Risk Assessment		RISK ASSESSMENT TABLE		Consequence				
PROJECT:	Meadowbank TAFE - Multi-Trades and Digital Design Hub				1	2	3	4	5
JOB NO:	SC130								
ASSESSED BY:	Mustafa Aktas								
ASSESSMENT DATE:	19 - 06 - 2020 (FOR INFORMATION ONLY) - PLEASE REFER ALSO TO HY RISK IDENTIFIER ON HY-WAY								
	RISK ASSESSMENT		CONTROLS (to be established in the following order of priority 1st=High Level Risks; 2nd = Medium Level Risks; 3rd = Low Level Risks)						
HAZARD (Include additional project specific hazards as required)	L	C	Class	Legislation, Standards & Codes of Practice	Enter Details of Specific Controls Required				
Inadequately installed roof perimeter handrail	B	1	High	NSW Identification Tool for Aluminium Mobile Scaffolds 2008	Installation certificate must be issued to HY prior to any worker accessing roof. Installation manual to be available on site so it can be confirmed the handrail has been installed as per the manufacturers specifications.				

PROJECT HSE RISK ASSESSMENT

This Project HSE Risk Assessment is to be used as a guide when completing the monthly Project High Risk Identification assessment on HYWAY Site Management Dashboard in accordance with the Project HSE Risk Assessment procedure and should be conducted at the time of Construction programme status to assess hazards and risks for next month. Hazards with residual risk from the Design WHS Risk Assessment (if applicable) are also to be considered.

RELEVANT PROCEDURE:		Project HSE Risk Assessment				RISK ASSESSMENT TABLE		Consequence				
PROJECT:		Meadowbank TAFE - Multi-Trades and Digital Design Hub				Likelihood		1	2	3	4	5
JOB NO:		SC130				A	Very Likely	High	High	High	Medium	Medium
						B	Likely	High	High	Medium	Medium	Medium
ASSESSED BY:		Mustafa Aktas				C	Possible	High	Medium	Medium	Medium	Low
						D	Remotely Possible	Medium	Medium	Medium	Low	Low
ASSESSMENT DATE:		19 - 06 - 2020 (FOR INFORMATION ONLY) - PLEASE REFER ALSO TO HY RISK IDENTIFIER ON HY-WAY				E	Very Unlikely	Medium	Medium	Low	Low	Low
						NA	Not applicable	NA	NA	NA	NA	NA
		RISK ASSESSMENT		CONTROLS (to be established in the following order of priority 1st=High Level Risks; 2nd = Medium Level Risks; 3rd = Low Level Risks)								
HAZARD (Include additional project specific hazards as required)		L	C	Class	Legislation, Standards & Codes of Practice		Enter Details of Specific Controls Required					
Potential Emergencies - preparation for and response to potential emergency events assessed high or medium risk to be defined in the Emergency Response Plan												
Arrested fall in a harness	C	2	Medium	HY Procedure for Emergency Response		All subcontractors using harnesses in boom lifts must have a rescue procedure as part of their SWMS. Generally rescue will be by using the ground controls at the base of the machine or by using a second boom lift to retrieve the suspended casualty.						
Bomb threat	E	4	Low	HY Procedure for Emergency Response		Procedure for bomb threats is part of the HY Emergency Response Plan						
Confined Space Rescue	E	3	Low	HY Procedure for Emergency Response		Procedure for confined space rescue is part of the HY Emergency Response Plan						
Cyclone	NA			HY Procedure for Emergency Response		N/A on the Meadowbank TAFE Project						
Drowning	E	5	Low	HY Procedure for Emergency Response		Trenches are to be de-watered prior to any person working in around the area.						
Electric shock	D	1	Medium	HY Procedure for Defibrillators		Electric shock procedure detailed in the HY Emergency response plan						
Emergency services unavailability	NA	1	NA	HY Procedure for Emergency Response		N/A on the Meadowbank TAFE Project.						
Fire	D	2	Medium	AS 3745 Emergency control organisation and procedures for buildings, structures and workplaces AS/NZS 1221 Fire hose reels AS/NZS 1841 Portable fire extinguishers AS/NZS 1850 Portable fire extinguishers - Classification, rating and performance testing AS 1851 Maintenance of fire protection systems & equipment AS 2375 Guide to the selection, care & use of clothing for protection against heat & fire AS 2444 Portable fire extinguishers and blankets - Selection & location		Fire procedure detailed in the HY emergency response plan						
First Aid (inadequate resources)	E	3	Low	HY Procedure for Emergency Response		First aid room to be set up with portable and fixed first type A first aid kits, stretcher, defibrillator, ice packs, sun cream, eye wash and examination couch as per Code of Practice: First Aid . (Refer to first aid assessment)						
Gas line contact or damage	D	2	Medium	HY Procedure for Emergency Response		Jemena contact details are part of the HY Emergency response plan						
Major rock fall/landslip	E	4	Low	HY Procedure for Emergency Response		Rockall procedure detailed in the HY Emergency response plan						
Major Fuel/Chemical Spill	E	3	Low	HY Procedure for Emergency Response		Fuel/ Chemical spill is part of the HY emergency response plan						
Medical Emergency	D	3	Medium	HY Procedure for Emergency Response		Medical emergency is part of the HY emergency response plan						
Overhead power line contact or arcing	C	2	Medium	HY Procedure for Emergency Response		Contact with overhead power lines is part of the HY emergency response plan						
Precast Panel Collapse	NA	1	NA	HY Procedure for Emergency Response		Precast panel collapse is part of the HY emergency response plan						
Structural failure/collapse	NA	1	NA	HY Procedure for Emergency Response		Structural collapse is part of the HY emergency response plan						
Trench collapse	D	1	Medium	HY Procedure for Emergency Response		Trench collapse is part of the HY emergency response plan						

A.5 External Lighting Compliance



ABN 48 612 666 172

Sydney | Brisbane

Level 23, 101 Miller St
North Sydney NSW 2060

PO Box 3
North Sydney NSW 2059
Ph (02) 94371000

6 October 2020

Richard O'Sullivan

Hansen Yunken

75-85 O'Riordan St
Alexandria NSW 2015

DESIGN CERTIFICATE – SSD CONDITION ITEM B15 VII

SUBJECT PREMISES : TAFE MEADOWBANK – CWC1

Addressing Item B15 Construction Environmental Management Plan **item viii**, of the CWC1 matrix and design document check list, the proposed lighting associated with the Shoring Walls, Excavation, Remediation Activities will be in accordance with normal engineering practice, and will meet the requirements of the Building Code of Australia and relevant Australian Standards. In particular, the design will be in accordance with the following:

- **AS 4282-2019** Control of the obtrusive effects of outdoor lighting

I am an appropriately qualified and competent person in this area and as such can certify that the design will comply with the above and which are detailed on the drawings attached.

Full Name of Designer:	Marc Estimada
Qualifications:	B. Eng (Electrical) Hons. MIEAust CPEng NER 2903203
Address of Designer:	Level 23, 101 Miller Street, North Sydney NSW 2060
Business Telephone No:	(02) 9437 1000
Name of Employer:	JHA Consulting Engineers Pty Ltd

Yours sincerely,

Marc Estimada
Director

A.6 Construction Traffic and Pedestrian Management Sub-Plan (CTPMSP)

Multi-Trades and Digital Technology Hub and carpark (SSD 10349): Submission of Construction Traffic and Pedestrian Management Sub-Plan in accordance with Condition B16, B21, B23 & B30

Condition	Condition requirements	Document reference
B16	The Construction Traffic and Pedestrian Management Sub-Plan (CTPMSP) must be prepared to achieve the objective of ensuring safety and efficiency of the road network and address, but not limited to, the following;	Multi-Trades and Digital Technology Hub, TAFE NSW Meadowbank, Main Works Construction Traffic and Pedestrian Management Plan Rev A Dated 28/01/2020 Reference: N183633
	(a) be prepared by a suitably qualified and experienced person(s);	Section 1.1 Background SSD 10349 – B16 – CTPMSP CV – Brett Maynard_2020 bw
	(b) be prepared in consultation with Council and TfNSW;	Section 1.2 Consultation Appendix E Stakeholder Correspondence
	(c) detail the measures that are to be implemented to ensure road safety and network efficiency during construction in consideration of potential impacts on general traffic, cyclists and pedestrians and bus services;	Section 4.1 Traffic Control Plan Section 4.2 Pedestrian and Cyclist Management Section 4.3 Public Transport Section 4.4 Traffic Impacts
	(d) detail heavy vehicle routes, access and parking arrangements;	Section 3.6 Construction Site Access Section 3.8 Construction Traffic Routes
	(e) a swept path assessment is to be carried out, showing that the largest vehicles can manoeuvre safely at all intersections along the proposed approach and departure routes. The swept path assessment must also demonstrate that the largest heavy vehicle is capable of accessing and vacating the construction site and/or work zone in a safe and efficient manner;	Appendix A Swept Path Assessment
	(f) include location of all proposed work zones;	Section 3.5 On-street work zones
B16	(g) details of the haulage routes and the construction hours;	Section 3.3 Hours of Operation

		Section 3.8 Construction Traffic Routes
	(h) details of estimated number and type of construction vehicle movements including morning and afternoon peak and off-peak movements for each stage of construction;	Section 3.7 Construction Traffic Volumes Section 4.8 Existing and Future Developments
	(i) details of the construction program highlighting details of peak construction activities and proposed construction staging;	Section 3.1 Description and Duration of Works Section 4.8 Existing and Future Developments
	(j) any potential impacts to general traffic, cyclists, pedestrians and bus services within the vicinity of the site from construction vehicles during the construction of the proposed works;	Section 4.2 Pedestrian and Cyclist Management Section 4.3 Public Transport Section 4.4 Traffic Impacts
	(k) cumulative impacts of the proposed construction and ongoing projects within a 250m radius of the site including the Meadowbank Schools Project (SSD 9343);	Section 4.8 Existing and Future Developments
	(l) detail appropriate measures that are to be implemented to ensure road safety and network efficiency is maintained during construction to minimise potential impacts on general traffic, cyclists, pedestrians and bus services as well as surrounding residents;	Section 4.1 Traffic Control Plan Section 4.2 Pedestrian and Cyclist Management Section 4.3 Public Transport Section 4.4 Traffic Impacts
	(m) comply with relevant sections of the following documents: (i) Australian Standard AS1742.3 – Manual of Uniform Traffic Control Devices Part 3: Traffic control for works on roads (AS1742.3); (ii) TfNSW's Traffic Control at Work Sites (Technical Manual); and (iii) Part 8.1 (Construction Activities) of City of Ryde Development Control Plan.	Section 1.3 References
B21	A Driver Code of Conduct must be prepared and communicated by the Applicant to heavy vehicle drivers and must address the following:	Appendix C Driver Code of Conduct
B21	(a) minimise the impacts of earthworks and construction on the local and regional road network;	Appendix C – Section C.3 Haulage Routes and Timing of Transport

	(b) minimise conflicts with other road users;	Appendix C – Section C.3 Haulage Routes and Timing of Transport & C.4 Safe Driving Practices
	(c) minimise road traffic noise; and	Appendix C – Section C.4 Safe Driving Practices & C.5 Maintenance Requirements
	(d) ensure truck drivers use specified routes.	Appendix C – Section C.3 Haulage Routes and Timing of Transport
B23	Prior to the commencement of construction, the Applicant must submit a Construction Worker Transportation Strategy to the Certifier. The Strategy must detail the provision of sufficient parking facilities or other travel arrangements for construction workers in order to minimise demand for parking in nearby public and residential streets or public parking facilities. A copy of the strategy must be submitted to the Planning Secretary and Council for information.	Appendix D Construction Worker Transportation Strategy
B30	Prior to the commencement of construction, evidence of compliance with the following requirements must be submitted to the Certifier and a copy provided to Council for information: (a) all vehicles must enter and leave the site in a forward direction;	Section 3.6 Construction Site Access
	(b) the swept path of the longest construction vehicle entering and exiting the site in association with the new work, as well as manoeuvrability through the site, is in accordance with the latest version of AS2890.2; and	Appendix A Swept Path Assessment
	(c) the safety of vehicles and pedestrians accessing adjoining properties, where shared vehicle and pedestrian access occurs, has been addressed.	Section 4.1 Traffic Control Plan Section 4.2 Pedestrian and Cyclist Management Appendix B Traffic Control Plans
B14	(a) detailed baseline data;	Section 2 Existing Conditions
B14	(b) details of: (i) the relevant statutory requirements (including any relevant approval, licence or lease conditions);	Section 1.3 References

(ii) any relevant limits or performance measures and criteria; and	Section 3.3 Hours of Operation
(iii) the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;	Not Applicable
(c) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;	Section 4 Construction Pedestrian and Traffic Management
(d) a program to monitor and report on the: (i) impacts and environmental performance of the development;	Section 4.10 Site Inspections and Record Keeping
(ii) effectiveness of the management measures set out pursuant to paragraph (c) above;	Section 4.10 Site Inspections and Record Keeping
(e) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;	Not Applicable
(f) a program to investigate and implement ways to improve the environmental performance of the development over time;	Not Applicable
(g) a protocol for managing and reporting any: (i) incident and any non-compliance (specifically including any exceedance of the impact assessment criteria and performance criteria);	Section 4.10 Site Inspections and Record Keeping
(ii) complaint;	Section 4.10 Site Inspections and Record Keeping
(iii) failure to comply with statutory requirements; and	Section 4.10 Site Inspections and Record Keeping
(h) a protocol for periodic review / update of the plan and any updates in response to incidents or matters of non-compliance.	Not Applicable

Multi-Trades and Digital Technology Hub

TAFE NSW Meadowbank

Main Works Construction Traffic and Pedestrian Management Plan



Prepared by: GTA Consultants (NSW) Pty Ltd for Hansen Yuncken

on 28/01/2021

Reference: N183633

Issue #: A

Multi-Trades and Digital Technology Hub

TAFE NSW Meadowbank

Main Works Construction Traffic and Pedestrian Management Plan

Client: Hansen Yuncken

on 28/01/2021

Reference: N183633

Issue #: A

Quality Record

Issue	Date	Description	Prepared By	Checked By	Approved By	Signed
A	28/01/2021	Final	Mackenzie Brinums	Brett Maynard	Brett Maynard	<i>B. Maynard</i>

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1. INTRODUCTION

01

1.1. Background

Hansen Yuncken commissioned GTA Consultants (GTA) in December 2020 to prepare a Main Works Construction Traffic and Pedestrian Management Plan (CTPMP) for the Meadowbank TAFE Multi-Trades and Digital Technology Hub (MTDTH) and multi-storey car park (MSCP) project. The Main Works stage of the project includes:

- construction of the building structure
- fit-out
- public domain and landscaping works.

CTPMPs for Phase 1 and Phase 2 of the Early Works were previously prepared (dated 31 August 2020 and 5 November 2020 respectively), which included site establishment, demolition and excavation works.

Specifically, this CTPMP seeks to address Condition B16, B21, B23 and B30 of the project approval (SSD 10349). The condition requirements and the location where the requirements have been addressed are outlined in Table 1.1.

Table 1.1: Consent condition requirements

Condition	Condition requirements	Document reference
B16	A Construction Traffic and Pedestrian Management Sub-Plan (CTPMSP) must be prepared to achieve the objective of ensuring safety and efficiency of the road network and address, but not be limited to, the following: (a) be prepared by a suitably qualified and experienced person(s)	Section 1.1
	(b) be prepared in consultation with Council and TfNSW	Section 1.2 and Appendix E
	(c) detail the measures that are to be implemented to ensure road safety and network efficiency during construction in consideration of potential impacts on general traffic, cyclists and pedestrians and bus services	Section 4.1, 4.2, 4.3, 4.4
	(d) detail heavy vehicle routes, access and parking arrangements	Section 3.6, 3.8
	(e) a swept path assessment is to be carried out, showing that the largest vehicles can manoeuvre safely at all intersections along the proposed approach and departure routes. The swept path assessment must also demonstrate that the largest heavy vehicle is capable of accessing and vacating the construction site and/or work zone in a safe and efficient manner	Appendix A
	(f) include location of all proposed work zones	Section 3.5
	(g) details of the haulage routes and the construction hours	Section 3.3 and 3.8
	(h) details of estimated number and type of construction vehicle movements including morning and afternoon peak and off-peak movements for each stage of construction	Section 3.7 and 4.8
	(i) details of the construction program highlighting details of peak construction activities and proposed construction staging	Section 3.1 and 4.8
	(j) any potential impacts to general traffic, cyclists, pedestrians and bus services within the vicinity of the site from construction vehicles during the construction of the proposed works	Section 4.2, 4.3, 4.4

Condition	Condition requirements	Document reference
	(k) cumulative impacts of the proposed construction and ongoing projects within a 250m radius of the site including the Meadowbank Schools Project (SSD 9343)	Section 4.8
	(l) detail appropriate measures that are to be implemented to ensure road safety and network efficiency is maintained during construction to minimise potential impacts on general traffic, cyclists, pedestrians and bus services as well as surrounding residents.	Section 4.1, 4.2, 4.3, 4.4
	(m) comply with relevant sections of the following documents: (i) Australian Standard AS1742.3 - Manual of Uniform Traffic Control Devices Part 3: Traffic control for works on roads (AS1742.3); (ii) TfNSW's Traffic Control at Work Sites (Technical Manual); and (iii) Part 8.1 (Construction Activities) of City of Ryde Development Control Plan.	Section 1.3
B21	A Driver Code of Conduct must be prepared and communicated by the Applicant to heavy vehicle drivers and must address the following: (a) minimise the impacts of earthworks and construction on the local and regional road network	Appendix C – Section C.3
	(b) minimise conflicts with other road users	Appendix C – Section C.3, C.4
	(c) minimise road traffic noise	Appendix C – Section C.4, C.5
	(d) ensure truck drivers use specified routes.	Appendix C – Section C.3
B23	Prior to the commencement of construction, the Applicant must submit a Construction Worker Transportation Strategy to the Certifier. The Strategy must detail the provision of sufficient parking facilities or other travel arrangements for construction workers in order to minimise demand for parking in nearby public and residential streets or public parking facilities. A copy of the strategy must be submitted to the Planning Secretary and Council for information.	Appendix D
B30	Prior to the commencement of construction, evidence of compliance with the following requirements must be submitted to the Certifier and a copy provided to Council for information: (a) all construction vehicles must be able to enter and leave the site in a forward direction	Section 3.6
	(b) the swept path of the longest construction vehicle entering and exiting the site in association with the new work, as well as manoeuvrability through the site, is in accordance with the latest version of AS 2890.2	Appendix A
	(c) the safety of vehicles and pedestrians accessing adjoining properties, where shared vehicle and pedestrian access occurs, has been addressed.	Section 4.1, 4.2 and Appendix B

INTRODUCTION

The following report sets out an assessment with consideration of the following:

- site accesses
- requirement for work zones
- anticipated heavy vehicle movements
- heavy vehicle routes to and from the site
- requirements for pedestrians and cyclists.

This CTPMP has been prepared by engineers who hold the Transport for NSW (TfNSW) Prepare a Work Zone Traffic Management Plan certification. Details of the accredited engineers are provided below:

- Mackenzie Brinums - Certification No. 0051848769, exp. 7 November 2021
- Brett Maynard - Certification No. 0052374425, exp. 21 May 2023.

It is a prerequisite in obtaining the above accreditation that individuals have suitable professional experience.

1.2. Consultation

In accordance with the requirements of the Consent Conditions, Condition B16(b) this CTPMP must be developed in consultation with Council and TfNSW.

A Phase 1 Early Works CTPMP has previously been developed in consultation with Council. A draft Phase 1 Early Works CTPMP was submitted to Council on 27 August 2020. Following a round of comments, the Phase 1 Early Works CTPMP was finalised and submitted to Council on 11 September 2020.

A draft Phase 2 Early Works CTPMP was provided to Council and TfNSW on 8 October 2020, with comments and outcomes of subsequent discussions incorporated into the final report dated 5 November 2020.

The Main Works CTPMP builds on the Phase 1 and Phase 2 Early Works CTPMPs. Most of the proposed construction traffic and pedestrian management measures are consistent with the early works stage, with updates to construction vehicle accesses and anticipated size and frequency of construction vehicles deliveries. A draft Main Works CTPMP was provided to Council and TfNSW on 18 January 2020 for review and comment. All comments received have been since been addressed in this CTPMP.

A meeting was also held with Council on 31 August 2020 regarding the cumulative construction traffic impact of the Schools @ Meadowbank Education and Employment Precinct (SMEEP) project and the Meadowbank TAFE project. Following this meeting, a cumulative traffic impact technical note was prepared, with key details incorporated into this CTPMP and summarised in Section 4.8.

Hansen Yuncken will continue to liaise with Council and TfNSW throughout the construction of the project to satisfy any concerns with the proposed construction methodology and/or materials handling.

1.3. References

In preparing this report, reference has been made to the following:

- Traffic Control at Work Sites manual, TfNSW, October 2020
- Australian Standard AS1742.3:2019 Manual of Uniform Traffic Control Devices – Traffic control for works on roads
- Part 8.1 (Construction Activities) of City of Ryde Development Control Plan
- other documents and data as referenced in this report.

2. EXISTING CONDITIONS

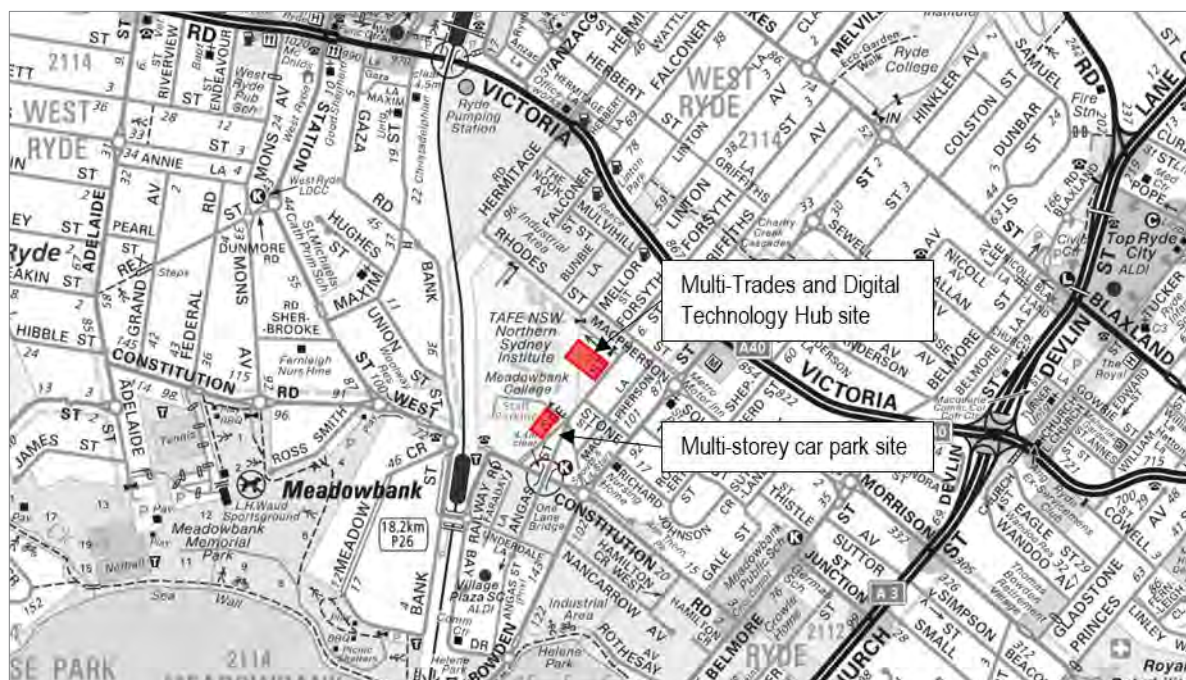
02

2.1. Site Location and Local Context

The TAFE NSW Meadowbank campus (herein referred to as Meadowbank TAFE) is located approximately 15 kilometres north west of Sydney CBD. The proposed new MTDTH building will occupy the north eastern corner of the existing Meadowbank TAFE campus, which presently contains an at-grade car parking area. The MSCP will be located in place of the existing at-grade staff car park adjacent to Block J. The Meadowbank TAFE campus is bounded by Macpherson Street and an Ausgrid substation to the north, See Street to the east and the rail corridor to the west. Meadowbank Railway Station is located at the southern boundary of the site.

The site location is illustrated in Figure 2.1 and has a primary frontage to See Street. Surrounding properties largely consist of light industrial, low density residential and educational uses.

Figure 2.1: Subject site and environs



Base image source: Sydney

2.2. Existing Road Network

See Street

See Street functions as a local road and near the campus is aligned in a north-south direction. It is a two-way road configured with one travel lane and one parking lane in each direction within an 11-metre wide carriageway. Kerbside parking is permitted on both sides of the road. Parking is generally unrestricted on the eastern side, with a short section of 15-minute time restriction from 8:00am to 5:30pm, Monday to Friday. On the western side of See Street, the following parking restrictions apply:

- Two-hour time restriction between Macpherson Street and Stone Street, from 8:00am to 9:00pm, Monday to Friday (permit holders excepted)
- 15-minute time restriction between Stone Street and Angas Street, from 7:00am to 5:00pm, Monday to Friday.
- Two-hour time restriction between Angas Street and Constitution Road, from 8:00am to 9:00pm, Monday to Friday (permit holders excepted).

Rhodes Street

Rhodes Street functions as a collector road and is aligned in an east-west direction. It is a two-way road configured with one traffic lane and one parking lane in each direction within a 11-metre wide carriageway.

Kerbside parking is permitted on both sides of the road. Rhodes Street carries around 1,100 vehicles per day in the eastbound direction and 1,400 vehicles per day in the westbound direction.

Rhodes Street is shown in Figure 2.2 and Figure 2.3.

Figure 2.2: Rhodes Street (looking east)



Figure 2.3: Rhodes Street (looking east)



Hermitage Road

Hermitage Road functions as a collector road and is aligned in a north south direction. It is a two-way road configured with one travel lane and one parking lane in each direction within a 10-metre wide carriageway. Kerbside parallel parking is permitted on both sides of the road. Hermitage Road intersects Victoria Road at a signalised intersection, permitting all turning movements.

Hermitage Road carries around 1,700 vehicles per day in the southbound direction and 1,900 vehicles per day in the northbound direction.

Hermitage Road is shown in Figure 2.4.

Victoria Road

Victoria Road is a classified State Road (TfNSW controlled) and is aligned in an east-west direction. Near the campus, it is a two-way road configured with three travel lanes in each direction. Kerbside parking is not permitted on both sides of the road. The road carriageway is around 20 metres wide.

Victoria Road is shown in Figure 2.5.

Figure 2.4: Hermitage Road (looking south)



Figure 2.5: Victoria Road (looking east)



Bowden Street

Bowden Street functions as a collector road and is aligned in a north south direction. It is a two-way road configured with one travel lane in each direction within a 12-metre wide carriageway. Bowden Street intersects Victoria Road at a signalised intersection, permitting all turning movements.

Kerbside parking is permitted on both sides of the road, subject to a one to two-hour time restrictions during weekdays between 7:00am and 5:00pm. On the southern approach to Victoria Road, Bowden Street is subject to clearway restrictions along the western side of the road, extending back to the intersection with Macpherson Street.

Bowden Street carries around 4,200 vehicles per day in the northbound direction and 4,700 vehicles per day in the southbound direction.

Bowden Street is shown in Figure 2.6.

Macpherson Street

Macpherson Street functions as a local road and near the campus is aligned in an east-west direction. It is a two-way road configured with one travel lane and one parking lane in each direction within a 10-metre wide carriageway. Kerbside parking is permitted on both sides of the road, subject to a two-hour time restriction during weekdays between 8:00am and 9:00pm.

Macpherson Street is shown in Figure 2.7.

Figure 2.6: Bowden Street (looking north)



Figure 2.7: Macpherson Street (looking east)



Mellor Street

Mellor Street functions as a local road and near the campus is aligned in a north-south direction. It is a two-way road configured with one travel lane and one parking lane in each direction within an 11-metre wide carriageway. Mellor Street provides left-in/ left-out access to Victoria Road.

Kerbside parking is permitted on both sides of the road, and is generally unrestricted, with a short section of two-hour time restriction between Mulvihill Street and Victoria Road from 8:30am to 6:00pm, Monday to Friday and from 8:30am to 12:30pm on Saturdays.

Forsyth Street

Forsyth Street functions as a local road and near the campus is aligned in a north-south direction. It is a two-way road configured with one travel lane and one parking lane in each direction within an 11-metre wide carriageway. Forsyth Street provides left-in/ left-out access to Victoria Road.

Kerbside parking is permitted on both sides of the road, subject to a two-hour time restriction on the western side from 8:00am to 9:00pm, Monday to Friday (permit holders excepted). Kerbside parking on the eastern side is unrestricted.

Constitution Road

Constitution Road functions as a local road and near the campus is aligned in an east-west direction. It is a two-way road configured with one travel lane in each direction within a 10-metre wide carriageway. No stopping is permitted on Constitution Road, between Railway Road and Bowden Street.

2.3. Existing Public Transport

2.3.1. Train Services

Meadowbank Railway Station and West Ryde Station are located around 350 metres southwest and 830 metres northwest from the Meadowbank TAFE campus, respectively. Both Meadowbank and West Ryde stations are on the T9 Northern Line, with services running from Epping to Central every 30 minutes.

2.3.2. Bus Services

Bus route 507 operates near the campus with the nearest stop located at Meadowbank Railway Station. Bus routes 520, 524, 534 and M52 operate along Victoria Road. The surrounding bus network services are detailed in Table 2.1 and shown indicatively in Figure 2.8.

Table 2.1: Bus service frequency¹

Bus route number	Description	AM/ PM peak frequency	Off-peak frequency
507	Macquarie University to City Circular Quay via Putney	30 minutes/ 20 minutes	60 minutes
513	Carlingford to Meadowbank Wharf via West Ryde	30 minutes/ 60 minutes	60 minutes
520	Parramatta to City Circular Quay via West Ryde	30 minutes/ 60 minutes	Infrequent
524	Ryde to Parramatta via West Ryde	30 minutes/ 30 minutes	60 minutes
M52	Parramatta to City Circular Quay (limited stops)	12 minutes/ 10 minutes	15 minutes

Note: Valid from 12 October 2020, sourced from <https://transportnsw.info/routes/bus>, accessed December 2020

Figure 2.8: Surrounding bus network



Base image source: https://transportnsw.info/document/4247/state_transit_north_shore_and_west_network_map.pdf, accessed December 2020

2.4. Existing Pedestrian Infrastructure

Pedestrian footpaths are generally provided along all the roads surrounding the campus. Footpaths are generally concrete paths with a width of 1.2 metres. The primary pedestrian link to Meadowbank Station is along See Street and Constitution Road or through the Meadowbank campus. There is no requirement for pedestrians to cross roads along this route to access the station.

There is an existing north-south pedestrian connection through the TAFE NSW campus, which runs between Rhodes Street and Meadowbank Station.

Formal crossing points in vicinity of the Meadowbank campus include the following pedestrian crossings:

- north eastern, north western and south western legs of the Victoria Road/ Hermitage Road intersection (signalised)
- north eastern, south eastern and south western legs of the Victoria Road/ Bowden Street intersection (signalised).

There are also various pedestrian refuges provided on surrounding roads near the site as follows:

- Squire Street, east of Bowden Street
- Bowden Street south of Squire Street
- Macpherson Street, west of Bowden Street
- See Street, north of Constitution Road.

2.5. Existing Cyclist Infrastructure

There are limited formal cyclist facilities within the transport network surrounding the campus.

3. OVERVIEW OF CONSTRUCTION ACTIVITIES

03

3.1. Description and Duration of Works

The Main Works stage of the project includes:

- construction of the building structure
- fit-out
- public domain and landscaping works.

The expected duration of the works is around 17 months, with the works expected to commence March 2021 and be completed by July 2022.

The Main Works includes Stage 2, 3 and 4 of the construction program, as detailed below:

- Stage 1 - EWP2 (Earthworks, Remediation & Shoring Wall)
- Stage 2 - Structure
- Stage 3 - Building Envelope & Fit-out
- Stage 4 - Public Domain Works.

3.2. Head Contractor Contact Details

The nominated Hansen Yuncken representative for any required Council or stakeholder contact is:

- Vanja Krumpacnik, Project Manager – 0439 542 674.

Relevant site contact details for the appointed contractor(s) will also be affixed to the fencing around the work site.

3.3. Hours of Operation

Construction, including the delivery of materials to and from the site, will be carried out during the following periods:

- Weekdays: 7:00am to 6:00pm
- Saturdays: 8:00am to 1:00pm
- Sundays and public holidays: No works permitted.

Other works that do not exceed the existing background noise level plus 5dB may also be undertaken during the following hours:

- Weekdays: 6:00pm to 7:00pm
- Saturdays: 1:00pm to 4:00pm.

Rock breaking, rock hammering, sheet piling, pile driving and similar activities may only be carried out between the following hours:

- Weekdays: 9:00am to 12:00pm and 2:00pm to 5:00pm
- Saturdays: 9:00am to 12:00pm.

Hansen Yuncken will be responsible for instructing and controlling all subcontractors regarding the hours of work or hours enforceable by any government order which may apply (e.g. COVID-19 extended hours).

3.4. Construction Worker Parking

The anticipated workforce for the Main Works stage is anticipated to average around 300 workers on-site at any given time, with up to a maximum of 380 workers on-site during peak activities. There is limited opportunity for construction worker parking to be provided during the Main Works stage as the building footprint(s) largely extend to the site boundary.

In consultation with Council, temporary parking arrangements at Meadowbank Park have been made available to staff and students of the TAFE during construction of the project, due to the temporary loss of on-site parking to construct the new buildings. It is understood that the Meadowbank Park car parking contains around 400 parking spaces and can accommodate the temporary loss of around 300 spaces on the Meadowbank TAFE site, while any additional available parking can be utilised by construction workers. Meadowbank Park is located around a 10-15 minute walk away from Meadowbank TAFE, with pedestrian footpaths provided on both sides of Constitution Road, connecting the TAFE with the car parks.

Notwithstanding the above, given the site's proximity to high frequency public transport services, including Meadowbank Railway Station, all workers will be encouraged to use public transport to access the site, with appropriate tool/ equipment drop-off arrangements made. This will be incorporated into the site induction program.

3.5. On-Street Work Zones

It is proposed to provide two on-street work zones along See Street adjacent to the two sites, as shown in Figure 3.1.

Figure 3.1: On-street work zone locations



Base image source: Nearmap

OVERVIEW OF CONSTRUCTION ACTIVITIES

The MTDTH work zone is proposed to cover a length of approximately 90 metres to accommodate vehicles up to 19-metre semi-trailers and will allow for loading and unloading activities. This work zone would also be able to accommodate several vehicles at once to limit potential congestion on the surrounding road network. It is anticipated that this could involve a semi-trailer and around four heavy rigid vehicles. The MSCP work zone is proposed to cover a length of approximately 74 metres to accommodate vehicles up to 12.5-metre heavy rigid vehicles when required. The proposed work zones would be utilised to remove potential congestion to surrounding streets and prevent the back-up of vehicles entering the site.

The length of work zone is required due to topography constraints with the site. The site itself is relatively steep, falling away from See Street, which not only limits manoeuvrability on-site but also where loading and unloading can take place.

The MTDTH and MSCP work zones will each require the temporary removal of approximately 11 on-street car parking spaces (22 spaces total) in addition to those removed as part of the Phase 2 Early Works. The work zones are proposed to be in operation during the approved work zone hours as detailed in Section 3.3. Outside work zone periods, existing kerbside restrictions will be maintained. The temporary loss of parking in this location is considered acceptable, noting the loss of parking is along the site frontage only and does not impact any parking along the frontage of neighbouring residential properties. A portion of these spaces are also short-term parking between 8am and 5:30pm on weekdays (duration of stay of 15 minutes or less) and as such would generally have low demand for most of the day.

Trucks accessing the MSCP work zone on See Street would be required to approach the site from the southern end of See Street. This results in a slight variation to the previously used approach routes for the MSCP site, which is outlined further in Section 3.8.

The specific details of the work zones will be subject to separate approvals by Council.

3.6. Construction Site Access

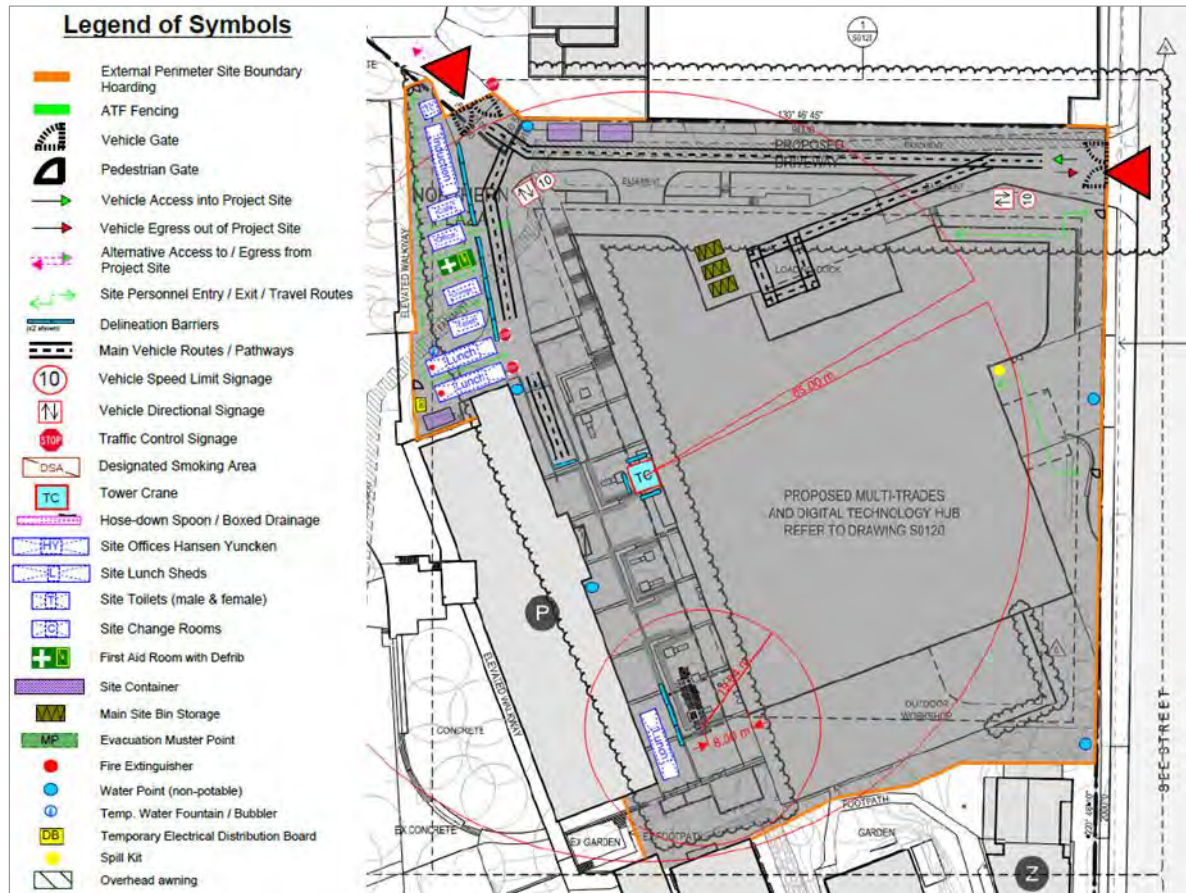
Two accesses are proposed for the MTDTH site (consistent with those used for the Early Works stages) with one utilising the existing crossover on Rhodes Street, while the other will be in the same location as the proposed new laneway crossover on See Street. The two accesses for the MTDTH site allow for better distribution of construction traffic on the surrounding road network so as to reduce the cumulative impact with the adjacent SMEEP project, which is being constructed concurrently.

Two accesses are also proposed for the MSCP site. The two accesses for the MSCP are needed to adequately service the site, given constraints relating to the limited available site area for loading. One of the accesses is in a similar location to that used in the Early Works stage on the northern boundary of the site, via the existing driveway near the See Street/ Angas Street intersection while the other will be a new temporary access from See Street in the south-east corner of the site. Loading is also proposed to take place along the southern side of existing driveway, along the northern boundary of the site within Meadowbank TAFE, with traffic controllers to be positioned on the driveway to manage two-way traffic movements along the driveway using a single travel lane arrangement. It is envisaged that once the circa 100 space car park at the western end of the existing driveway is fully occupied in the morning, temporary signage will be placed near the driveway access at the See Street/ Angas Street intersection advising of no available car parking spaces in this location, thereby limiting general traffic movements along the existing driveway to outbound only once the car park is full.

The proposed site access locations are shown in Figure 3.2 and Figure 3.3.

OVERVIEW OF CONSTRUCTION ACTIVITIES

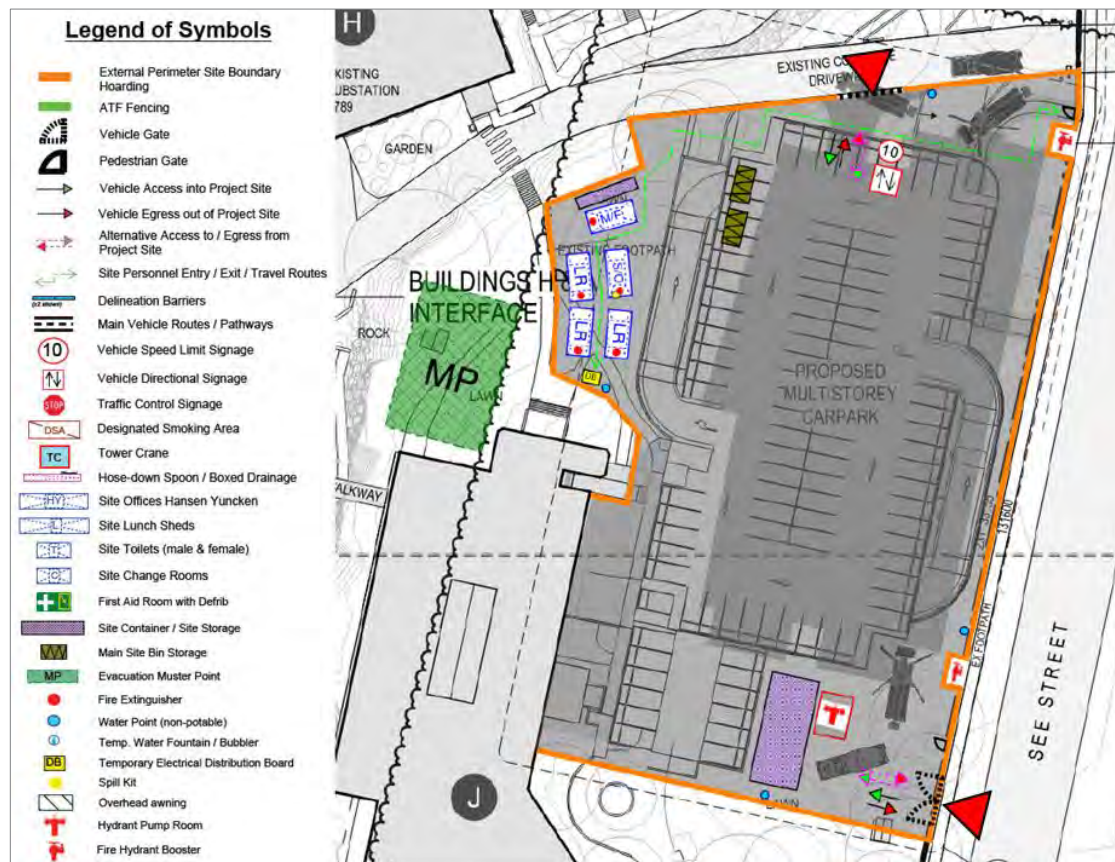
Figure 3.2: MTDTH proposed site access arrangement



Base image source: Hansen Yuncken, drawing reference SC130-SP-PM-DWG-REVC dated 23 December 2020

OVERVIEW OF CONSTRUCTION ACTIVITIES

Figure 3.3: MSCP proposed site access arrangement



Base image source: Hansen Yuncken, drawing reference SC130-SP-PM-DWG-REVC dated 23 December 2020

Construction vehicle access to the northern MSCP access will primarily involve 8.8-metre medium rigid vehicles and 12.5-metre heavy rigid vehicles. Vehicles will enter in a forward direction via the existing internal Meadowbank TAFE roadway along the northern boundary of the MSCP site, and either reverse into the northern MSCP access or unload along the southern side of the driveway. Medium rigid vehicles will be able to do a three-point turn to exit the Meadowbank TAFE driveway in a forward direction, while 12.5-metre heavy rigid vehicles will be required to continue west to turn around at the western end of the existing roadway before exiting onto See Street in a forward direction.

Construction vehicle access to the southern MSCP access will involve 8.8-metre medium rigid vehicles and 12.5-metre heavy rigid vehicles. Swept paths have been completed to confirm vehicles can enter and exit the site from See Street in a forward direction.

Construction vehicle access for the MTDTH will involve 8.8-metre concrete trucks, 12.5-metre heavy rigid vehicles and 19-metre semi-trailers. Vehicles up to and including heavy rigid vehicles are proposed to enter and exit via both accesses, consistent with arrangements for the Early Works stage, however semi-trailers will be restricted to entering via See Street and exiting via Rhodes Street. It is acknowledged that Council has previously recommended that semi-trailer movements be restricted to enter and exit via Rhodes Street only, however this arrangement has been investigated and confirmed to not be possible due to the limited available manoeuvring area on-site to allow for semi-trailers to turn around.

A swept path assessment has been completed for the proposed approach and departure routes between Victoria Road and the sites and is shown in Appendix A.

The swept path assessment indicates that there are constraints for long vehicles including heavy rigid vehicles and semi-trailers on the existing local road network, particularly around the corners on Rhodes Street. It is noted that the design vehicles used for swept path analysis are conservative, as they need to represent a broad national vehicle fleet. An on-site demonstration was completed by Roberts Pizzarotti at Rhodes Street/ Mellor Street and Rhodes Street/ Hermitage Road with Council for the SMEEP project, confirming that both 12.5-metre heavy rigid vehicles and the truck and dog combinations are able to navigate these corners without crossing the centreline, while traffic controllers would likely be required for 19 metre semi-trailers.

All loading and unloading of materials during the Main Works stage will be completed within the Meadowbank TAFE site or within the proposed work zones, with materials transported from the work zones to the site using a manitou or forklift under traffic control. It is noted that no lifting via cranes will be carried out from the work zones due to the existing overhead powerlines that run along See Street. Accredited traffic controllers will be positioned at all site accesses (when in use) to manage pedestrian and general traffic movements as construction vehicles are entering/ exiting the sites. Traffic controllers will also be positioned on the existing driveway to the north of the MSCP site to manage traffic in both directions accessing the approximately 100 space car park on the western side of the campus, noting that the driveway will at times be reduced to a one lane two-way arrangement over around a 20 metre section to facilitate loading. As mentioned, it is envisaged that once the car park is full in the morning, temporary signage will be placed near the driveway access at the See Street/ Angas Street intersection advising of no available car parking spaces in this location, thereby largely limiting general traffic movements along the existing driveway to outbound only once the car park is full. Gates will be located at all site accesses to restrict entry to the work sites.

Queuing or marshalling of construction vehicles will not be permitted elsewhere on the road network, with call-up procedures to be put in place to manage arrivals.

3.7. Construction Traffic Volumes

The MTDTH and MSCP sites will be serviced by 8.8 metre medium rigid vehicles, 12.5-metre heavy rigid vehicles and 19-metre semi-trailers. It is anticipated that there will be on average up to 46 vehicle movements per hour throughout the day. Noting the school zone on See Street, construction vehicle movements on See Street will be limited as much as possible between 8:00am and 9:30am, and between 2:30pm and 4:00pm on school days. It is anticipated that construction traffic volumes using See Street during these times will be around 8-10 movements per hour.

3.8. Construction Traffic Routes

Construction traffic will generally have origins and destinations to/ from the north and west of the site. The proposed construction vehicle routes have been selected to minimise the use of local roads and use arterial roads where possible (illustrated in Figure 3.4 and Figure 3.5).

The proposed routes are as follows:

Approach

- From north:
 - Pennant Hills Road, Silverwater Road, Victoria Road, Bowden Street, Stone Street (or Constitution Road), See Street
 - Lane Cove Road, Victoria Road, Bowden Street, Stone Street (or Constitution Road), See Street
 - Lane Cove Road, Victoria Road, Mellor Street, Rhodes Street.

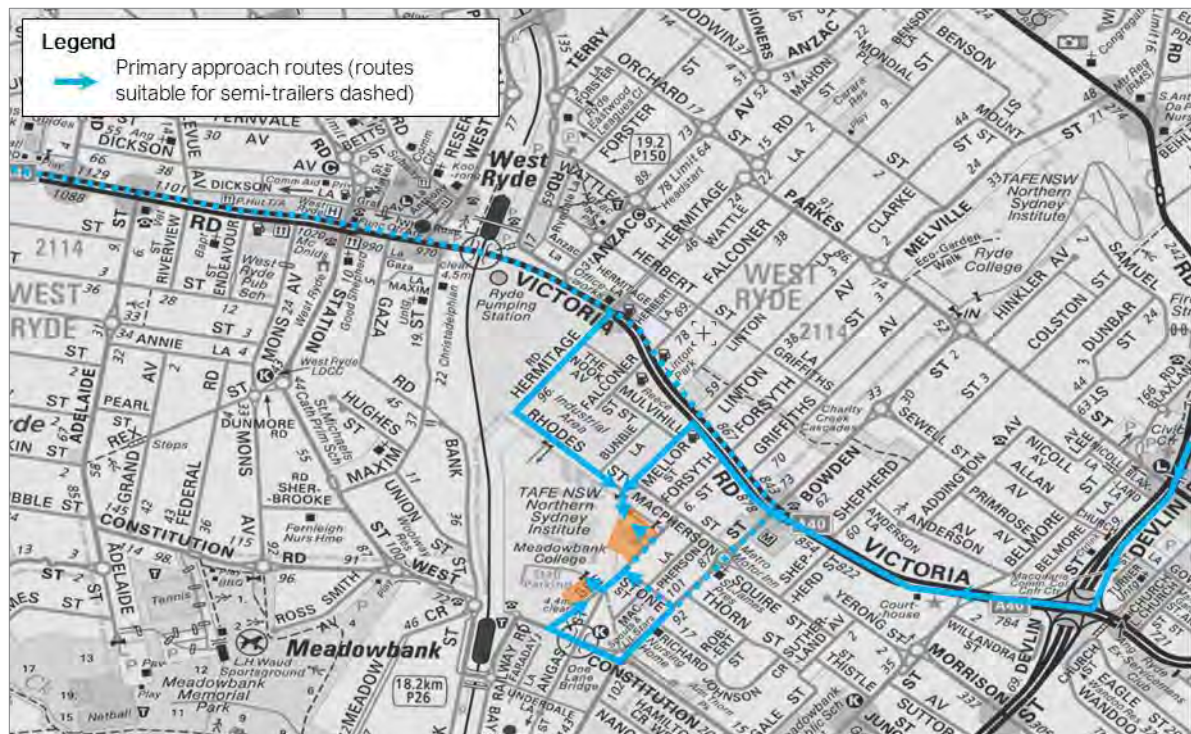
OVERVIEW OF CONSTRUCTION ACTIVITIES

- From west:
 - M4 Western Motorway, James Ruse Drive, Victoria Road, Bowden Street, Stone Street (or Constitution Road), See Street
 - M4 Western Motorway, James Ruse Drive, Victoria Road, Hermitage Road, Rhodes Street
 - Old Windsor Road, Cumberland Highway, James Ruse Drive, Victoria Road, Bowden Street, Stone Street (or Constitution Road), See Street
 - Old Windsor Road, Cumberland Highway, James Ruse Drive, Victoria Road, Hermitage Road, Rhodes Street.

Departure

- Towards north:
 - See Street, Stone Street, Bowden Street, Victoria Road, Silverwater Road, Pennant Hills Road
 - Mellor Street, Victoria Road, Silverwater Road, Pennant Hills Road
 - See Street, Stone Street, Bowden Street, Victoria Road, Lane Cove Road.
- Towards west:
 - See Street, Stone Street, Bowden Street, Victoria Road, James Ruse Drive, M4 Western Motorway
 - Mellor Street, Victoria Road, James Ruse Drive, M4 Western Motorway
 - See Street, Stone Street, Bowden Street, Victoria Road, James Ruse Drive, Cumberland Highway, Old Windsor Road
 - Mellor Street, Victoria Road, James Ruse Drive, Cumberland Highway, Old Windsor Road.

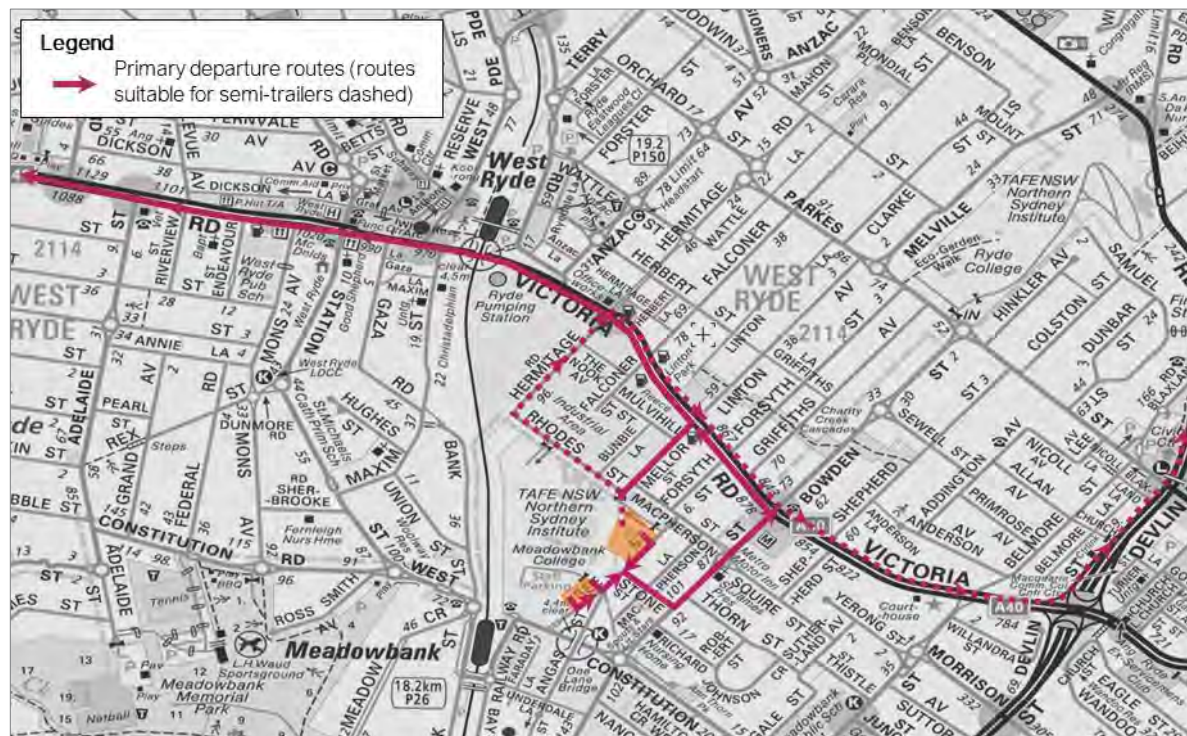
Figure 3.4: Construction vehicle approach routes



Base image source: Sydney

OVERVIEW OF CONSTRUCTION ACTIVITIES

Figure 3.5: Construction vehicle departure routes



Base image source: Sydney

4. CONSTRUCTION PEDESTRIAN AND TRAFFIC MANAGEMENT

04

4.1. Traffic Control Plan

Preliminary Traffic Control Plans (TCPs) for the Main Works stage are included in Appendix B. The TCPs present the principles of traffic management and is subject to WorkCover requirements. The TCPs have been developed with consideration for the requirements of the following documents:

- Traffic Control at Work Sites manual, TfNSW, July 2018
- Australian Standard AS1742.3:2019 Manual of Uniform Traffic Control Devices – Traffic control for works on roads
- Part 8.1 (Construction Activities) of City of Ryde Development Control Plan.

Detailed information for work site operation is contained in the *Traffic Control at Work Sites* manual (TfNSW, 2018). The control of traffic at work sites must be undertaken in accordance with WorkCover requirements and Hansen Yuncken's own workplace health and safety manuals.

The proposed TCPs for the work sites include the following considerations and assumptions:

- Construction vehicle activity, including the loading/ unloading of trucks and all materials handling to be provided within the construction site boundaries at all times.
- Placement of accredited site personnel or traffic controllers to manage construction vehicle access to the site and minimise disruption to through traffic.
- Construction site accesses to provide appropriate sight distances and safe environment for all users.
- Clear definition of the work site boundaries to be provided by erection of construction A-Class hoarding and fencing around the site boundaries adjacent to public roads.
- Pedestrians to be guided around the site via existing footpaths.
- Pedestrian safety to be maintained at all times.
- All signage will be clean, clearly visible and unobstructed.

4.2. Pedestrian and Cyclist Management

Pedestrian and cyclist movements will be maintained around the two sites. Traffic controllers will be positioned at site accesses (when in use) throughout the works to temporarily hold pedestrians when vehicles are entering and exiting the site. A-Class hoarding and fencing will be installed around the perimeter of the sites to prevent pedestrian access.

4.3. Public Transport

The construction work is not expected to impact existing bus services near the site.

4.4. Traffic Impacts

Some minor increase in average delay to vehicles at surrounding key intersections such as on Victoria Road can be expected at times during the construction period. That said, truck movements will be minimised as much as possible during road network peak hours. As mentioned previously, traffic controllers will be required at the western end of Rhodes Street to stop opposing traffic temporarily if required when 19-metre semi-trailers (pending the outcomes of an on-site trial demonstration with Council as proposed in the early works CTPMP) are approaching and/ or departing the site. Considering the low traffic volumes along Rhodes Street, this arrangement is considered appropriate.

Traffic controllers will also assist with managing traffic as required along the existing driveway on the northern boundary of the MSCP.

As part of any site induction, drivers will be specifically alerted to the pedestrian activity associated with the TAFE NSW site, with appropriate care and safety at this location by drivers.

4.5. Parking Impacts

The proposed See Street work zones will result in the temporary removal of around 22 on-street parking spaces on the western side of the road during the approved work hours, while the new temporary crossover for the southern MSCP access will result in the loss of an additional two spaces for the duration of the works beyond that removed for the SMEEP project and the Meadowbank TAFE Early Works Phase 2 works. Existing kerbside restrictions (unrestricted parking) will be maintained outside these hours. A signage plan incorporating parking changes is provided in Appendix F.

The temporary reduction in on-street parking is considered appropriate and acceptable to maximise safety on the surrounding local roads during the construction of such a significant development. It is also noted that the majority of parking removed as a result of the construction works is along the frontage of the site, which limits the impact along the frontage of neighbouring residential properties.

The use of on-street parking on the surrounding local road network by construction personnel will not be permitted. This restriction will be communicated during site inductions and is further addressed in Appendix D.

It is noted that 289 car parking spaces have been removed as part of the Early Works on the MSCP and MTDTH sites. An additional 100 car parking spaces have been provided with Meadowbank TAFE, resulting in a net temporary loss of 189 car parking spaces on campus. Students and staff will be encouraged to make use of the surrounding public transport network while there is a temporary shortfall of parking on-site, considering the site's location adjacent to Meadowbank Station and within walking distance from frequent bus services on Victoria Road.

As previously mentioned City of Ryde has agreed for the car parking adjacent to Meadowbank Park (located to the west of the site) to also be used by staff and students when the main TAFE car park is closed. These car parks are shown in Figure 4.1 and are understood to contain a total of around 400 parking spaces, offsetting the net loss of parking on-site.

Figure 4.1: Potential additional off-site car parking



Base image source: Nearmap

4.6. Impacts to Neighbouring Properties

Surrounding property access is not expected to be affected during construction work for the proposed development.

4.7. Emergency Vehicle Access

Access to the subject site and adjacent buildings by emergency vehicles would not be affected by the works as road and footpath frontages would remain unaffected during these stages of the works.

Emergency protocols on the site would include a requirement for suitably accredited site personnel to assist with emergency access from the street. In an emergency situation, traffic controllers' safe work method statements (SWMS) should be referenced to ensure emergency services vehicles have clear and unobstructed access and egress to site.

Consequently, any potential impacts on emergency access would be effectively managed throughout the works.

Liaison would be maintained with the police and emergency services agencies throughout the construction period and a 24-hour contact would be made available for 'out-of-hours' emergencies and access.

4.8. Existing and Future Developments

Construction for the SMEEP project will also be occurring concurrently. Hansen Yuncken will liaise with the appointed contractor (Roberts Pizzarotti) for the new Schools site and monitor the cumulative impact of the two sites to ensure any traffic impact is appropriately managed, in consultation with Council. The Rhodes Street access will be used by heavy vehicles where possible, in order to reduce traffic impacts on residential streets.

A summary of the staging of both projects by month is provided in Table 4.1.

Table 4.1: SMEEP and Meadowbank TAFE project construction staging

Year	Month	SMEEP project	Meadowbank TAFE project	
2020	September	Excavation & Piling	Early Works	
	October	Excavation & Piling	Early Works	
	November	Structure	Excavation & Piling (Stage 1)	
	December	Structure	Excavation & Piling (Stage 1)	
2021	January	Structure	Excavation & Piling (Stage 1)	
	February	Structure	Excavation & Piling (Stage 1)	
	March	Structure	Excavation & Piling (Stage 1)	Structure (Stage 2)
	April	Structure	Excavation & Piling (Stage 1)	Structure (Stage 2)
	May	Structure	Structure (Stage 2)	
	June	Fitout, Landscaping & External Works	Structure (Stage 2)	
	July	Fitout, Landscaping & External Works	Structure (Stage 2)	
	August	Fitout, Landscaping & External Works	Structure (Stage 2)	Building Envelope & Fitout (Stage 3)
	September	Fitout, Landscaping & External Works	Structure (Stage 2)	Building Envelope & Fitout (Stage 3)
	October	Fitout, Landscaping & External Works	Structure (Stage 2)	Building Envelope & Fitout (Stage 3)
	November	Fitout, Landscaping & External Works	Building Envelope & Fitout (Stage 2 & 3)	
	December	Fitout, Landscaping & External Works	Building Envelope & Fitout (Stage 2 & 3)	
2022	January	Fitout, Landscaping & External Works	Building Envelope & Fitout (Stage 3)	Demolition & Precinct Works
	February	Complete	Building Envelope & Fitout (Stage 3)	Demolition & Precinct Works
	March	Complete	Building Envelope & Fitout (Stage 3)	Demolition & Precinct Works
	April	Complete	Building Envelope & Fitout (Stage 3)	Demolition & Precinct Works
	May	Complete	Building Envelope & Fitout (Stage 3)	Demolition & Precinct Works
	June	Complete	Building Envelope & Fitout (Stage 3)	Public Domain Works (Stage 4)
	July	Complete	Building Envelope & Fitout (Stage 3)	Public Domain Works (Stage 4)

Both construction sites will be serviced by vehicles of a size up to and including 12.5-metre heavy rigid vehicles, 18.1-metre truck and dog combinations and 19-metre semi-trailers. A summary of the anticipated peak number of construction vehicle movements for each project shown by month in Figure 4.2.

Figure 4.2: SMEEP and Meadowbank TAFE anticipated average peak truck movements

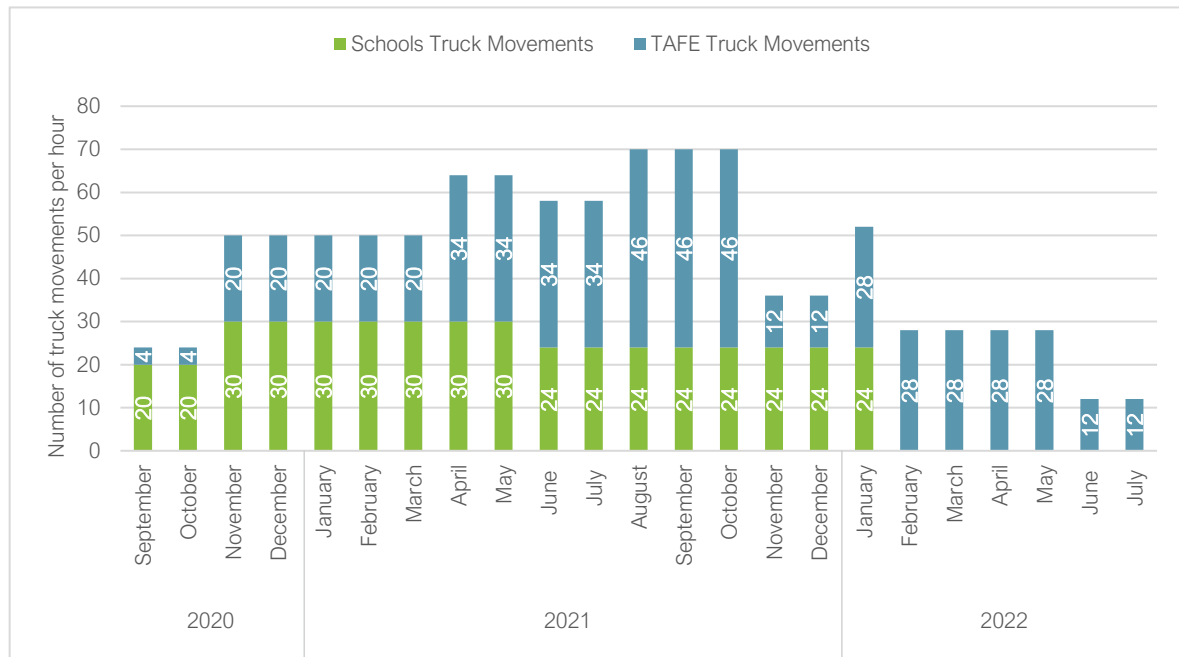


Figure 4.2 indicates the peak cumulative traffic activity with consideration for both construction sites is expected to occur between August and October 2021 with around 35 construction vehicles per hour (70 construction vehicle movements per hour) accessing the precinct. It is anticipated that larger vehicles (semi-trailers and truck and dog combinations) will account for up to half of the construction vehicle movements during peak activity (both typical non-concrete pour days and concrete pour days), noting that there is a significant quantity of prefabricated elements for the SMEEP.

The Transport and Accessibility Impact Assessment submitted to support the SSDA for the SMEEP indicates the schools are expected to generate 220 vehicle movements in the AM peak hour in 2022. The traffic generation for the proposed construction works is considered minor in comparison. Conservatively assuming one heavy vehicle is equivalent to three passenger car units on average, 70 heavy vehicle movements per hour during peak activity could be considered equivalent to 210 car movements per hour, which is less than the anticipated operational impact of the schools alone.

Further to this, it is noted that the above construction traffic volume estimates are for peak activity, with typical activity expected to generate less activity. On the basis of the above, it is anticipated that the anticipated construction traffic volumes of both projects throughout the project can be adequately accommodated on the surrounding road network.

In addition, there is ongoing construction work occurring in the Shepherds Bay precinct. Overlap in the use of Bowden Street in this regard is not expected to present any issues, noting the low heavy vehicle volumes anticipated for the early works stage.

Overall, considering the anticipated construction traffic generation of the TAFE development site of around four vehicles per hour, early works activities could not be expected to compromise the safety and/ or function of the surrounding road network.

No other existing or future developments of significance are known to be occurring concurrently in the immediate area surrounding the site.

4.9. Traffic Movements in Adjoining Council Areas

No adverse impact is expected from the movement of heavy vehicles through adjacent council areas.

4.10. Site Inspections and Record Keeping

The construction work would be monitored to ensure that it proceeds as set out in the Construction Management Plan prepared by Hansen Yuncken and this CTPMP. A daily inspection before the start of the construction activity should take place to ensure that conditions accord with those stipulated in the plans and there are no potential hazards. Any potential risks or non-conformances to the CTPMP would be identified, recorded and dealt with if they arise.

4.11. Site Induction

All staff employed on the site by Hansen Yuncken (including sub-contractors) would be required to undergo a site induction. The induction would include permitted access routes to and from the construction site for site staff and delivery vehicles, limited parking arrangements, as well as standard environmental, WHS, driver protocols and emergency procedures. The agreed work hours must be included as part of this induction.

A.SWEPT PATH ASSESSMENT



\\GTA.COM.AU\PROJECTFILES\PROJECTFILES\N183633-MEADOWBANK EDUCATION PRECINCT - CONSTRUCTION\HY\CAD\N183633-07-P4.DWG PLOTTED BY RAYMOND ZHANG ON 27/07/2021 AT 08:58

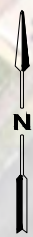
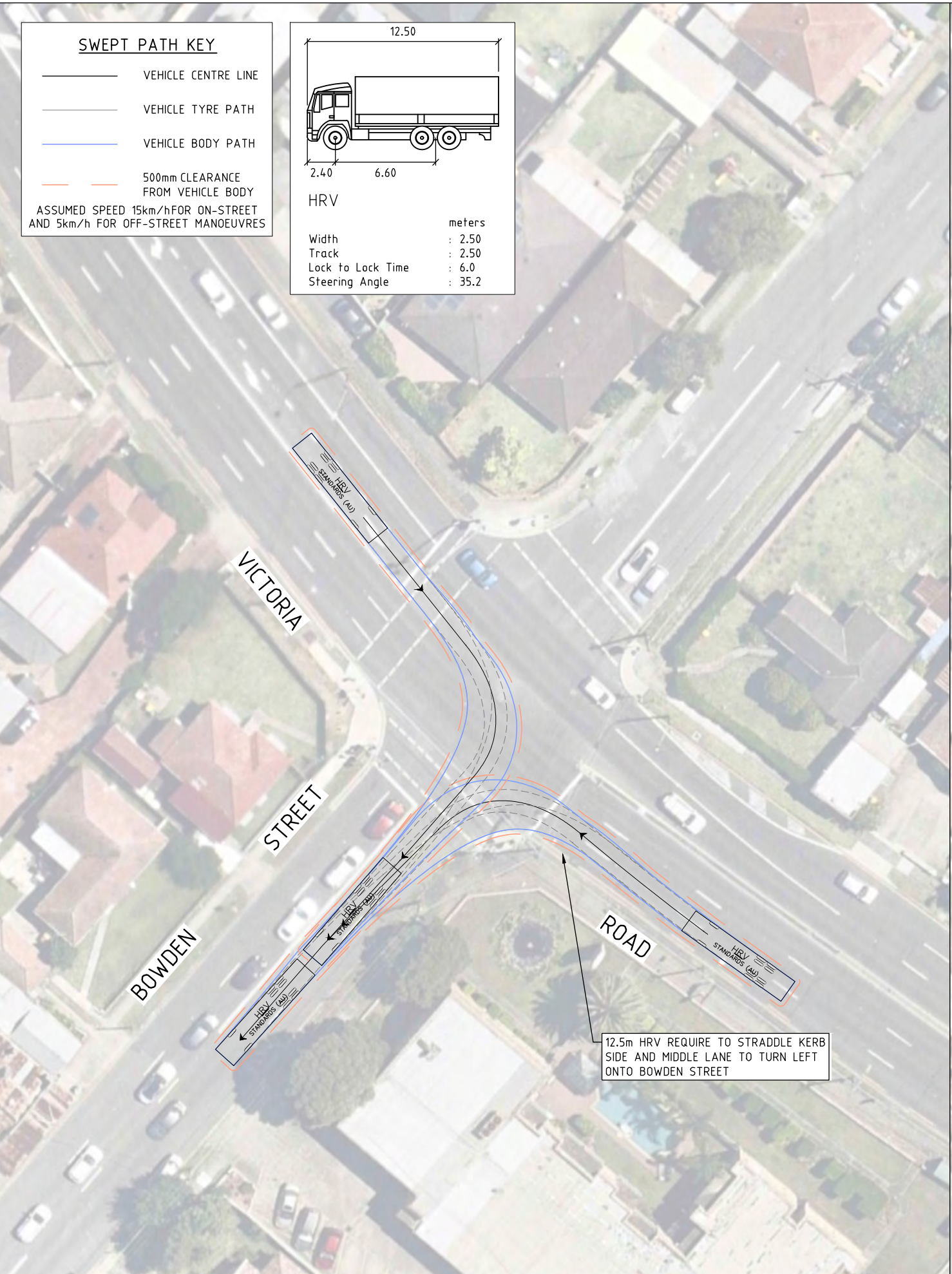
SWEPT PATH KEY

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 500mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 15km/h FOR ON-STREET AND 5km/h FOR OFF-STREET MANOEUVRES

HRV

	metres
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 35.2



NEARMAP AERIAL IMAGE
DATED 06.12.2020



Melbourne 03 9851 9600
Sydney 02 8448 1800
Brisbane 07 3113 5000
Adelaide 08 8334 3600
Perth 08 6169 1000



PRELIMINARY PLAN
FOR DISCUSSION PURPOSES ONLY
SUBJECT TO CHANGE WITHOUT
NOTIFICATION

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

DESIGNED
R.ZHANG

DESIGN CHECK
M.BRINUMS

APPROVED BY
B.MAYNARD

DATE ISSUED
27 JANUARY 2021

SCALE
A3 0 2.5 5 10 1:500

CAD FILE NO.
N183633-07-P4.DWG

MEADOWBANK TAFE

MAIN WORKS
VEHICLE SWEEP PATH ASSESSMENT

DRAWING NO. N183633-07-01

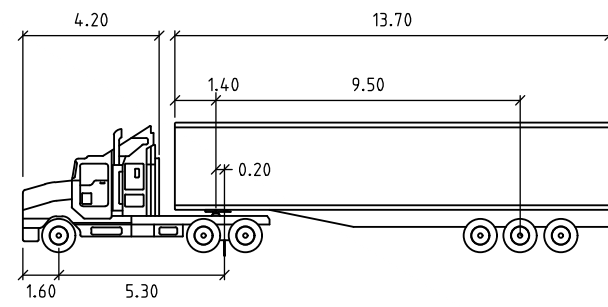
SHEET 01 OF 19

ISSUE P4

\\GTA.COM.AU\PROJECTFILES\PROJECTFILES\183300-18399\N183633 MEADOWBANK EDUCATION PRECINCT - CONSTRUCTION\HY\CAD\N183633-07-P4.DWG PLOTTED BY RAYMOND ZHANG ON 27/07/2021 AT 08:59

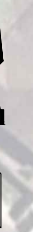
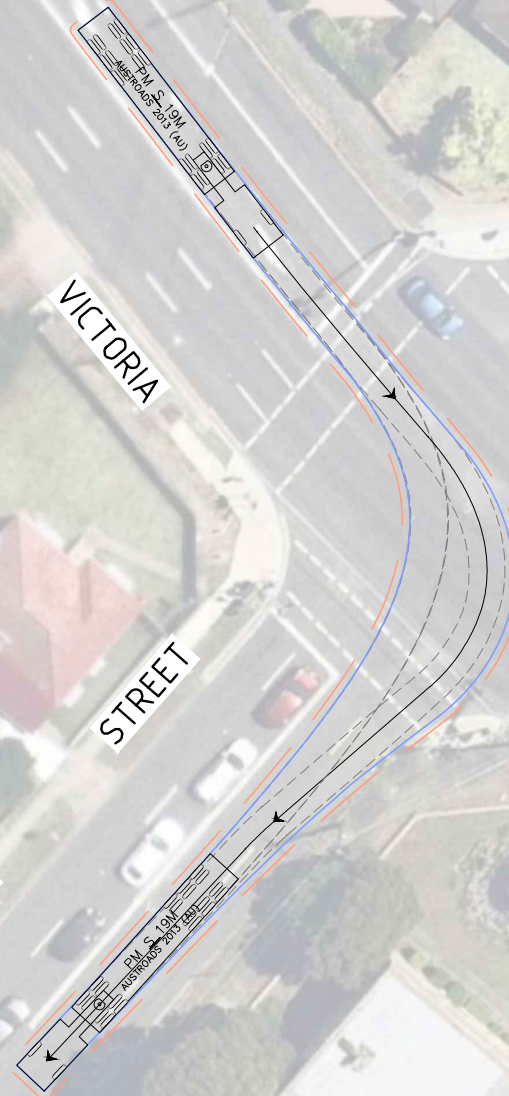
SWEPT PATH KEY

- VEHICLE CENTRE LINE
 - VEHICLE TYRE PATH
 - VEHICLE BODY PATH
 - 500mm CLEARANCE FROM VEHICLE BODY
- ASSUMED SPEED 15km/h FOR ON-STREET AND 5km/h FOR OFF-STREET MANOEUVRES



PM S 19M

	Tractor Width	Tractor Track	Trailer Width	Trailer Track	Lock to Lock Time	Steering Angle	Articulating Angle
PM S 19M	2.50	2.50	2.50	2.50	6.0	27.8	70.0



NEARMAP AERIAL IMAGE
DATED 06.12.2020



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CAD FILE NO.
N183633-07-P4.DWG

MEADOWBANK TAFE

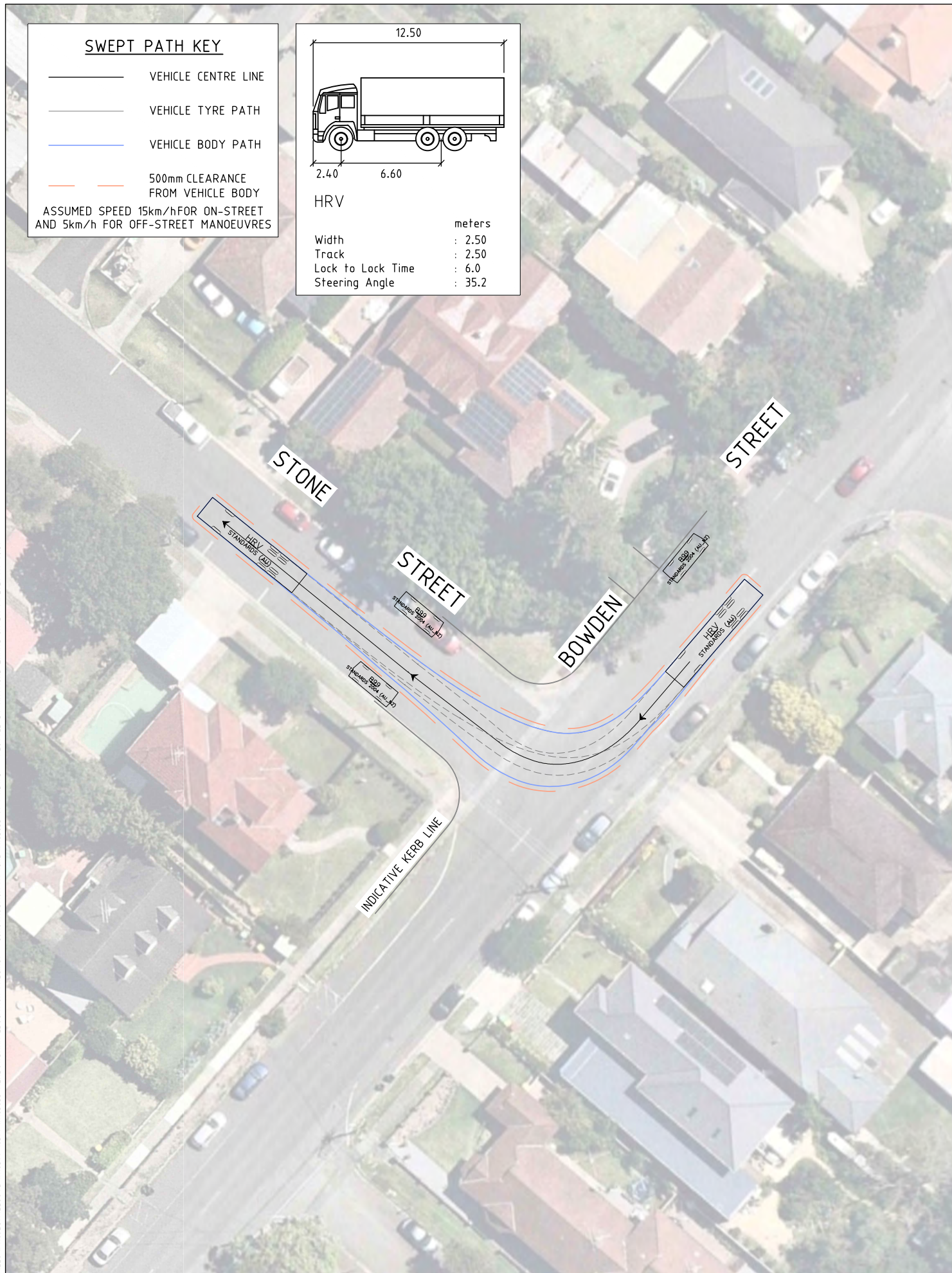
MAIN WORKS
VEHICLE SWEEP PATH ASSESSMENT

DRAWING NO. N183633-07-02

SHEET 02 OF 19

ISSUE P4

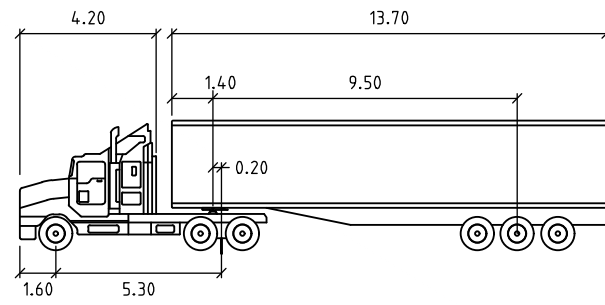
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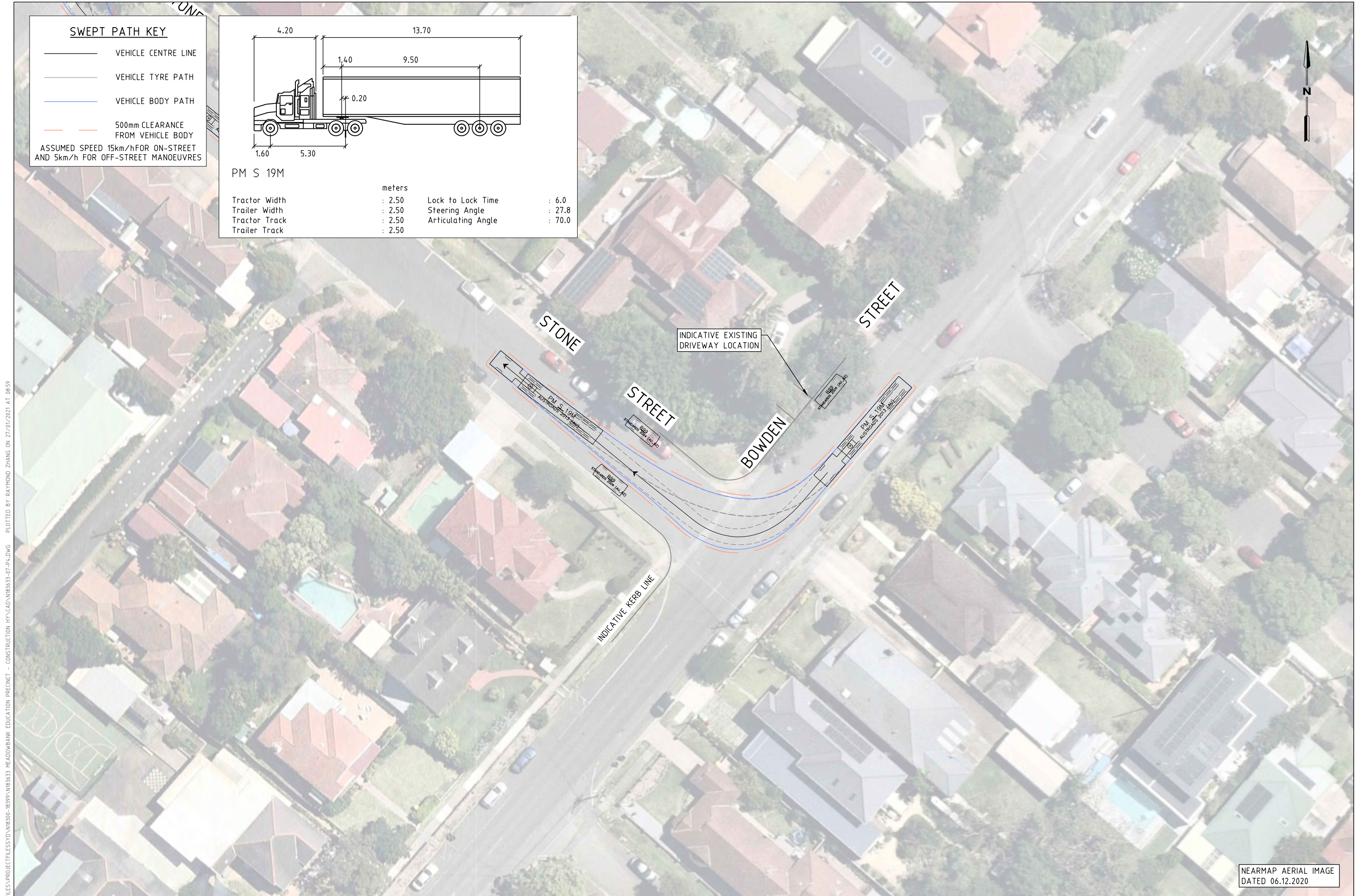
SWEPT PATH KEY

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PM S 19M

	Tractor Width	Trailer Width	Tractor Track	Trailer Track	Lock to Lock Time	Steering Angle	Articulating Angle
PM S 19M	2.50	2.50	2.50	2.50	6.0	27.8	70.0



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DATED 06.12.2020



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DESIGN CHECK
M.BRINUMS

DATE ISSUED
27 JANUARY 2021

SCALE
A3 0 2.5 5 10 1:500

CAD FILE NO.
N183633-07-P4.DWG

MEADOWBANK TAFE

MAIN WORKS
VEHICLE SWEEP PATH ASSESSMENT

DRAWING NO. N183633-07-04

SHEET 04 OF 19

ISSUE P4

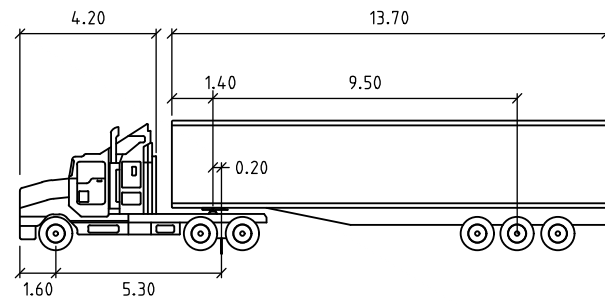
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SWEPT PATH KEY

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 500mm CLEARANCE FROM VEHICLE BODY
- ASSUMED SPEED 15km/h FOR ON-STREET AND 5km/h FOR OFF-STREET MANOEUVRES



PM S 19M

	Tractor Width	Trailer Width	Tractor Track	Trailer Track	Lock to Lock Time	Steering Angle	Articulating Angle
	2.50	2.50	2.50	2.50	6.0	27.8	70.0

TEMPORARY CONVERT 11 EXISTING KERBSIDE PARKING SPACES TO WORKS ZONE

- LEGEND
- WORK SITE
 - WORK ZONE
 - CONSTRUCTION GATE

NEARMAP AERIAL IMAGE
DATED 06.12.2020



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CAD FILE NO.
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MEADOWBANK TAFE

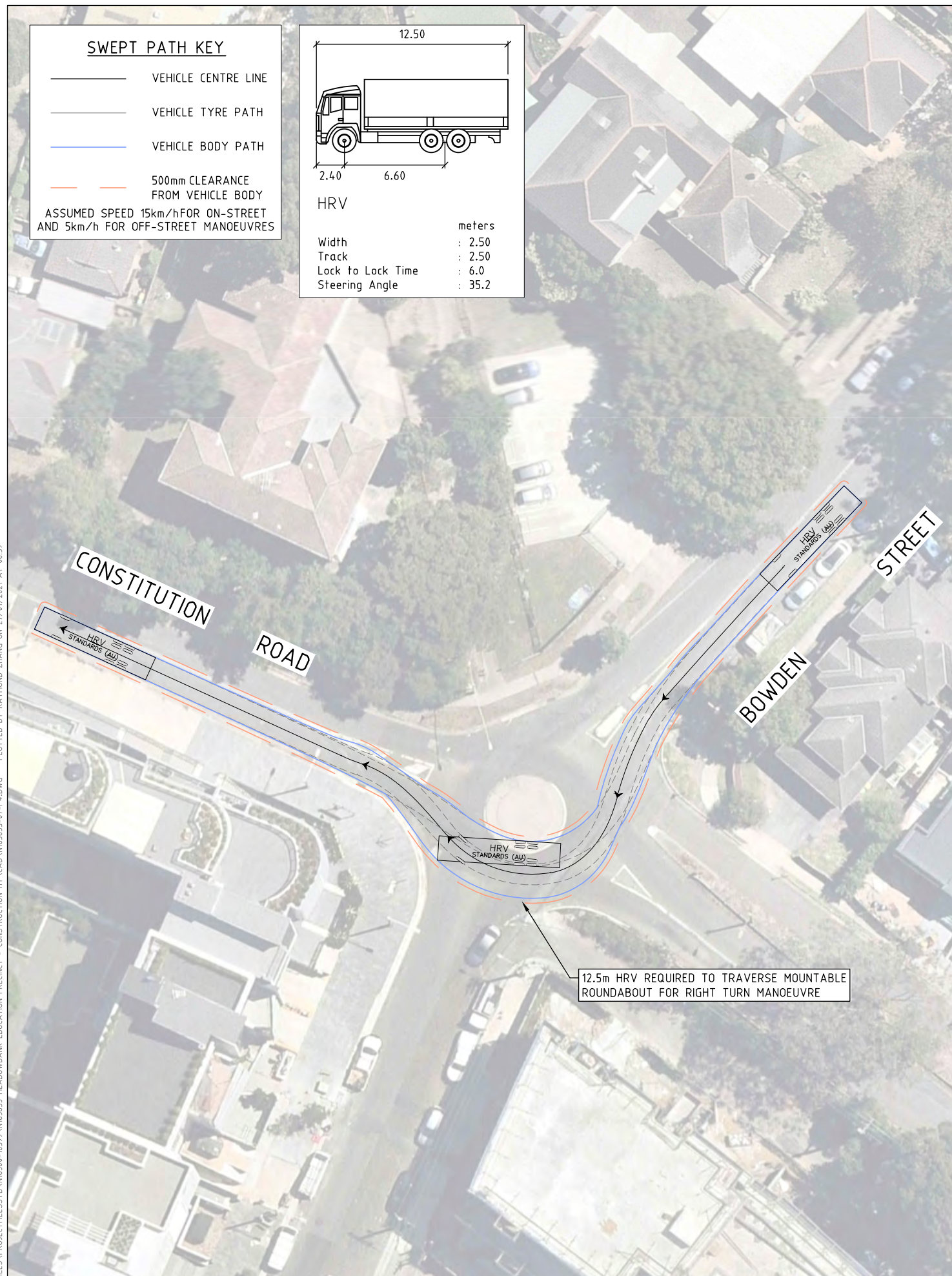
MAIN WORKS
VEHICLE SWEEP PATH ASSESSMENT

DRAWING NO. N183633-07-06

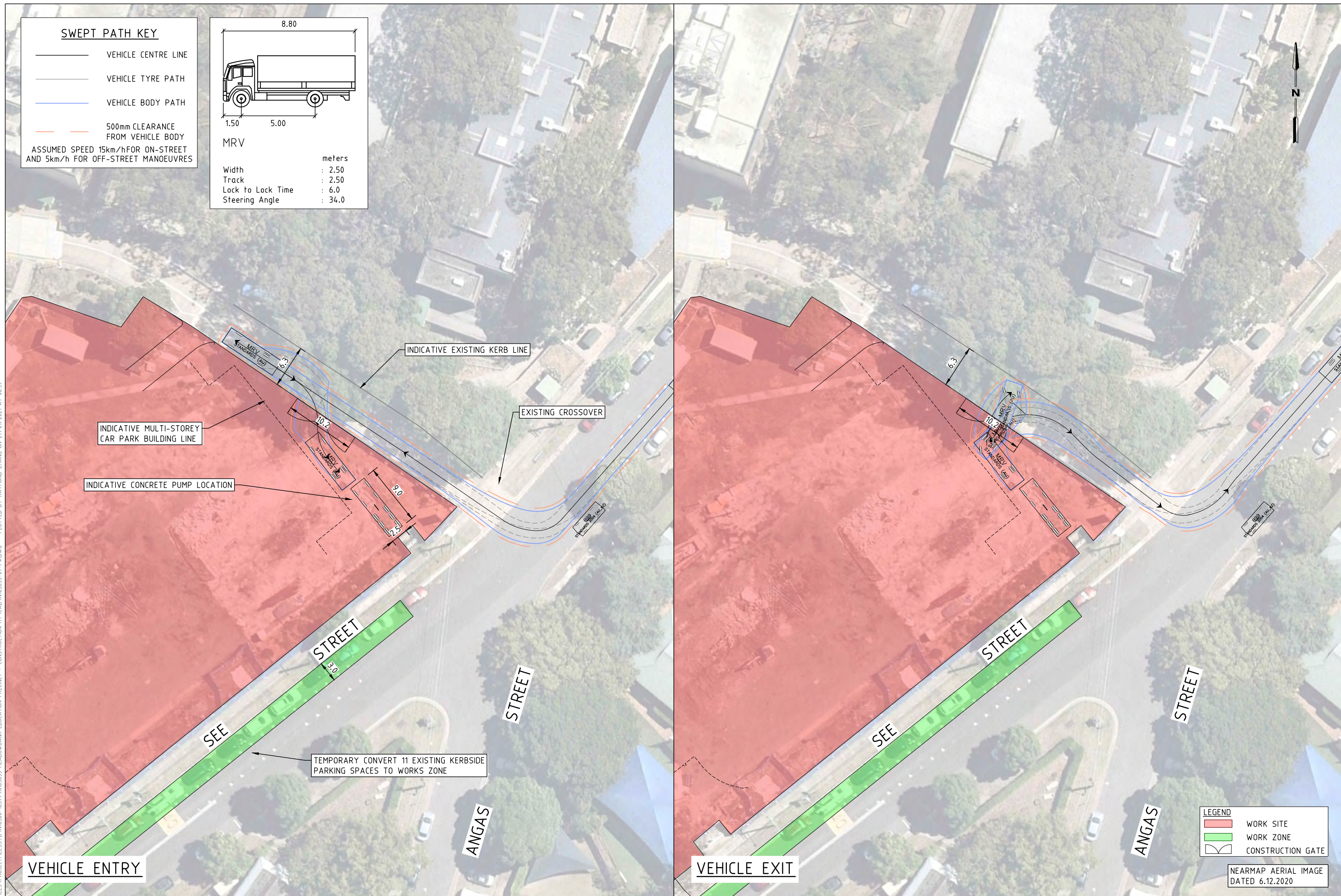
SHEET 06 OF 19

ISSUE P4

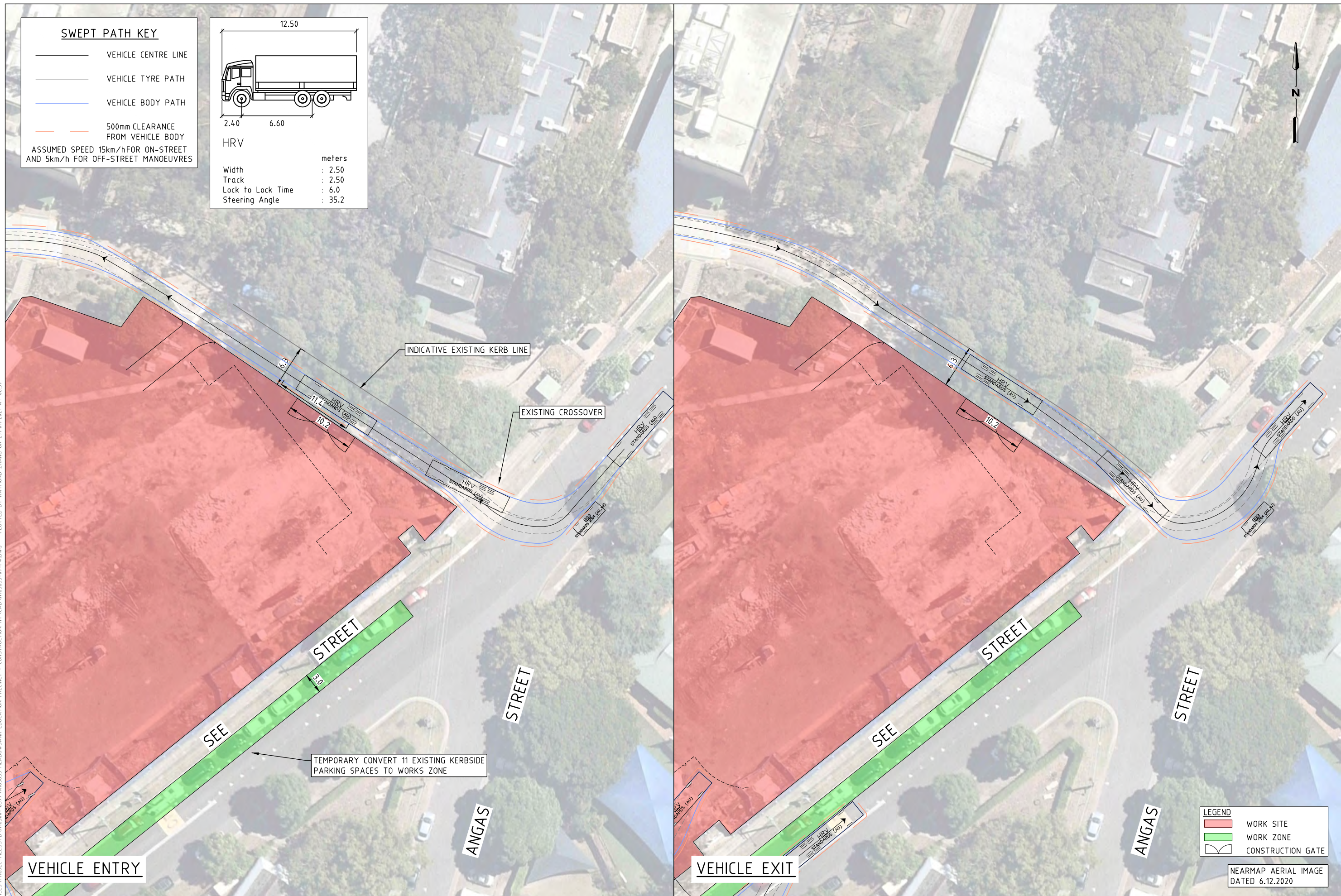
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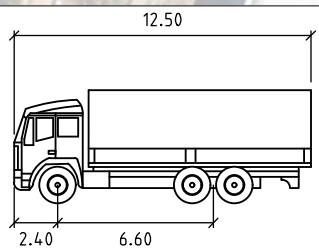


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SWEPT PATH KEY

- VEHICLE CENTRE LINE
 - VEHICLE TYRE PATH
 - VEHICLE BODY PATH
 - 500mm CLEARANCE FROM VEHICLE BODY
- ASSUMED SPEED 15km/h FOR ON-STREET AND 5km/h FOR OFF-STREET MANOEUVRES



HRV

	metres
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 35.2

- LEGEND
- WORK SITE
 - WORK ZONE
 - CONSTRUCTION GATE

NEARMAP AERIAL IMAGE
DATED 6.12.2020



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R.ZHANG

DESIGN CHECK
M.BRINUMS

APPROVED BY
B.MAYNARD

DATE ISSUED
27 JANUARY 2021

SCALE
A3 0 2.5 5 10 1:500

CAD FILE NO.
N183633-07-P4.DWG

MEADOWBANK TAFE
MULTI-STOREY CAR PARK
MAIN WORKS
VEHICLE SWEEP PATH ASSESSMENT

DRAWING NO. N183633-07-09

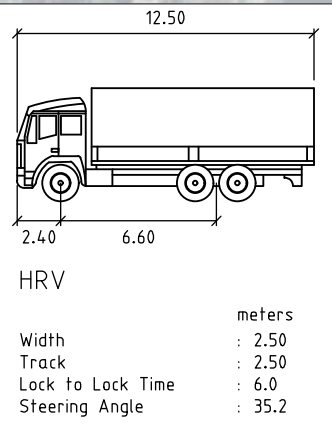
SHEET 09 OF 19

ISSUE P4

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SWEPT PATH KEY

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- ASSUMED SPEED 15km/h FOR ON-STREET AND 5km/h FOR OFF-STREET MANOEUVRES



VEHICLE ENTRY

VEHICLE EXIT

- LEGEND
- WORK SITE
 - WORK ZONE
 - CONSTRUCTION GATE

NEARMAP AERIAL IMAGE
DATED 6.12.2020



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27 JANUARY 2021

SCALE
A3 0 2.5 5 10 1:500

CAD FILE NO.
N183633-07-P4.DWG

MEADOWBANK TAFE
MULTI-STOREY CAR PARK
MAIN WORKS
VEHICLE SWEEP PATH ASSESSMENT

DRAWING NO. N183633-07-10

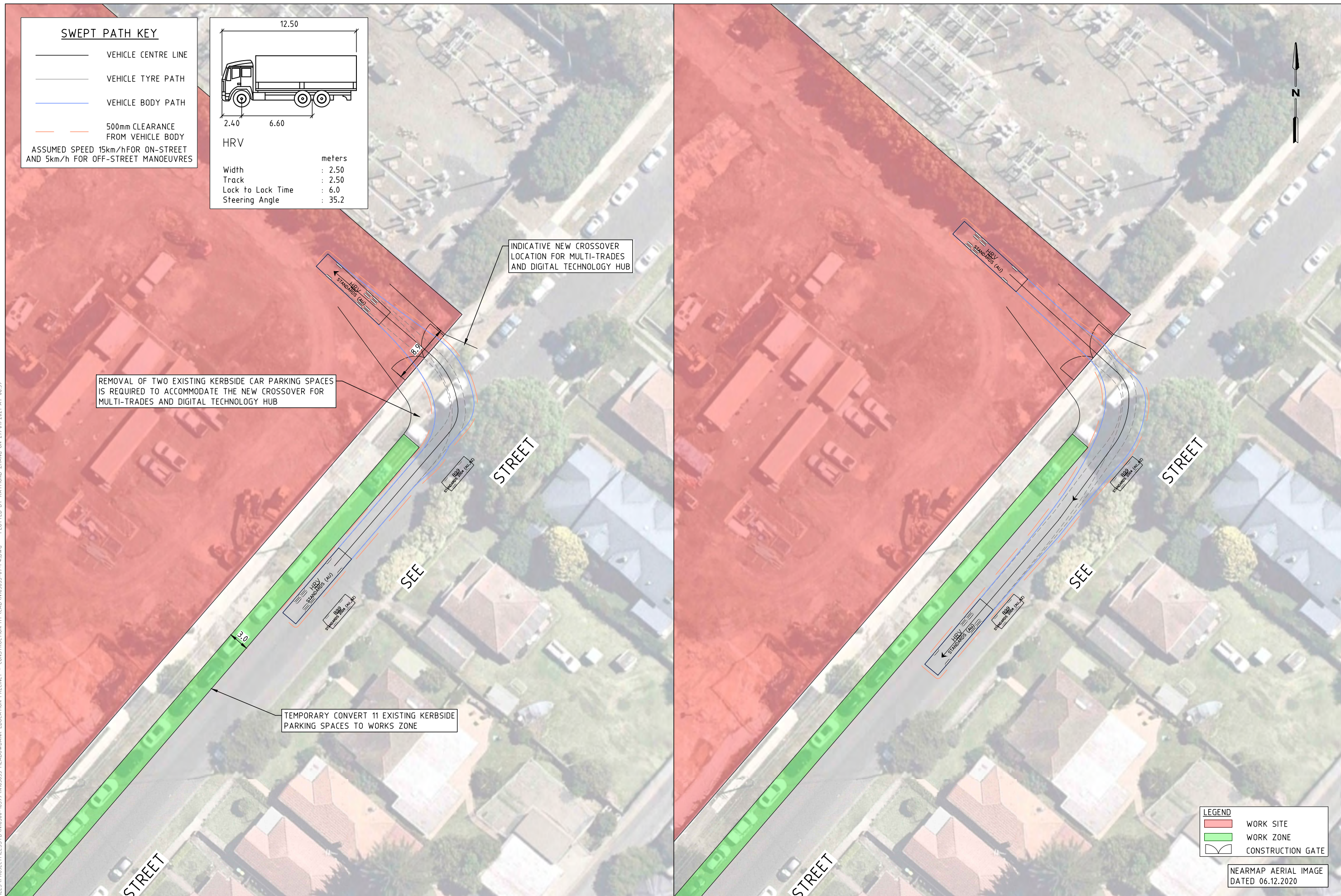
SHEET 10 OF 19

ISSUE P4

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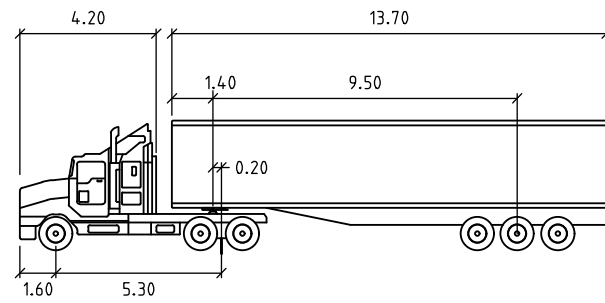
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PM S 19M

	Tractor Width	Trailer Width	Tractor Track	Trailer Track	Lock to Lock Time	Steering Angle	Articulating Angle
PM S 19M	2.50	2.50	2.50	2.50	6.0	27.8	70.0

INDICATIVE NEW CROSSOVER LOCATION FOR MULTI-TRADES AND DIGITAL TECHNOLOGY HUB

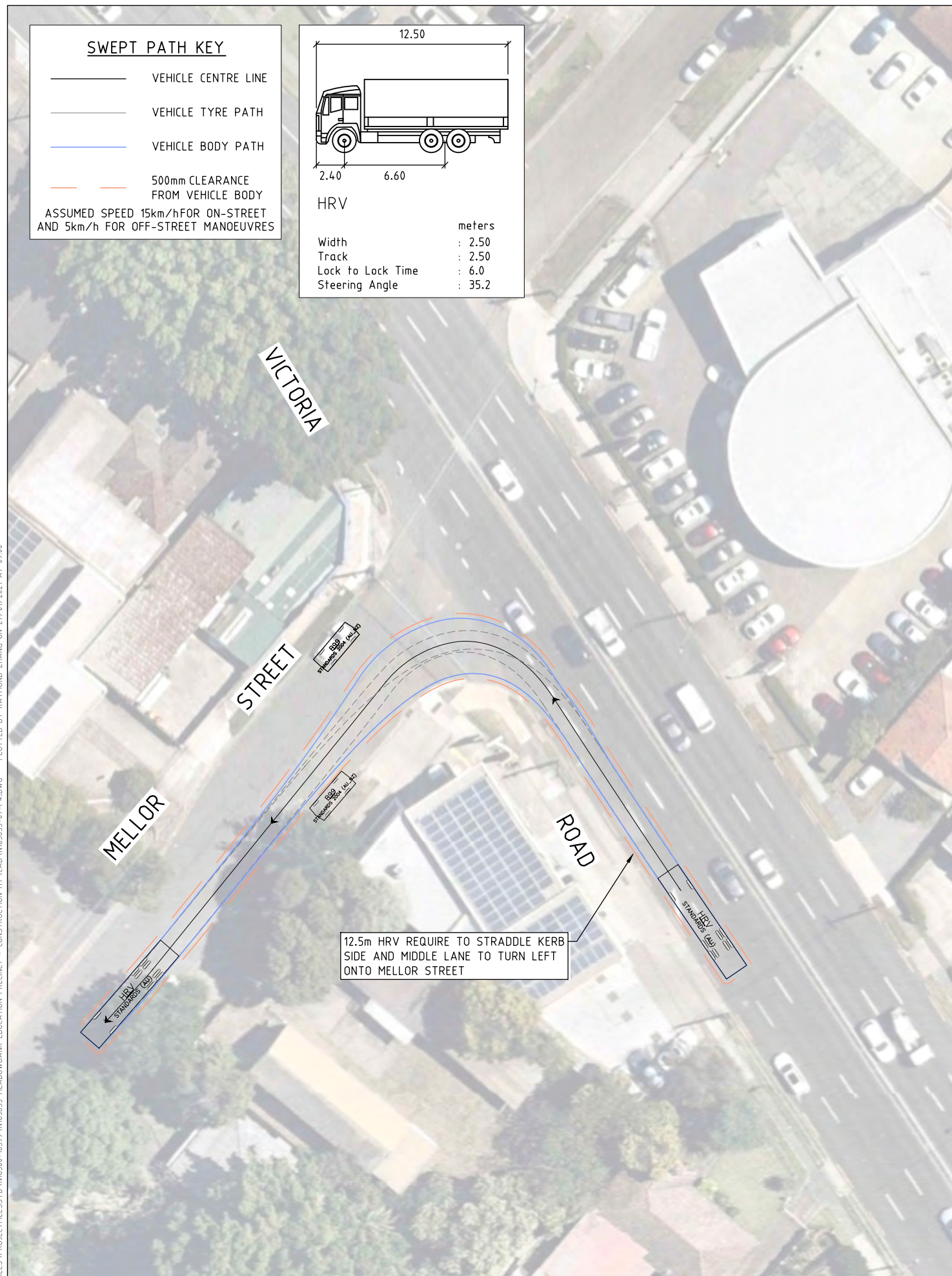
REMOVAL OF TWO EXISTING KERBSIDE CAR PARKING SPACES IS REQUIRED TO ACCOMMODATE THE NEW CROSSOVER FOR MULTI-TRADES AND DIGITAL TECHNOLOGY HUB

TEMPORARY CONVERT 11 EXISTING KERBSIDE PARKING SPACES TO WORKS ZONE

LEGEND	
WORK SITE	
WORK ZONE	
CONSTRUCTION GATE	

NEARMAP AERIAL IMAGE
DATED 06.12.2020

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NEARMAP AERIAL IMAGE
DATED 06.12.2020



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CAD FILE NO.
N183633-07-P4.DWG

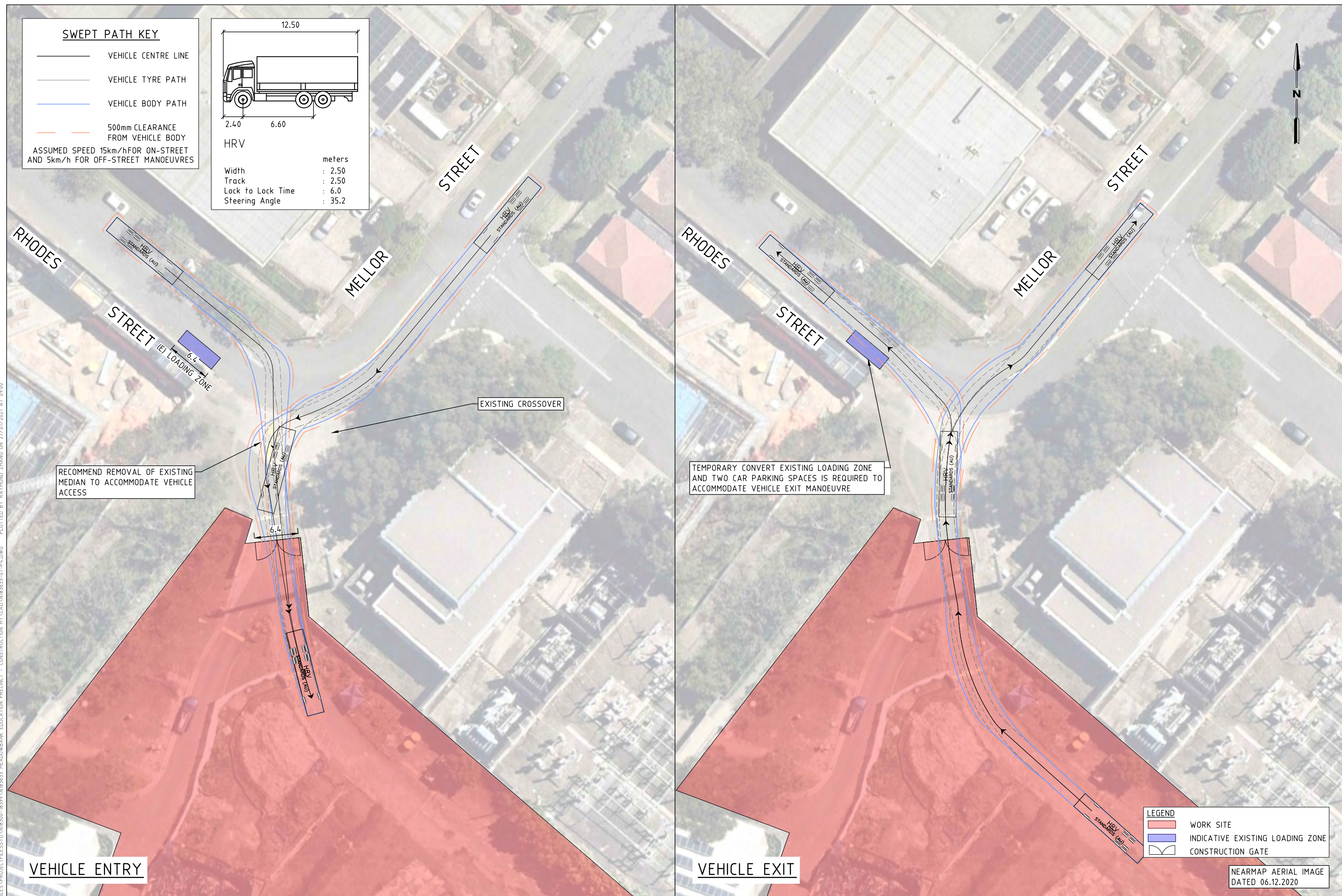
MEADOWBANK TAFE

MAIN WORKS
VEHICLE SWEEP PATH ASSESSMENT

DRAWING NO. N183633-07-14

SHEET 14 OF 19

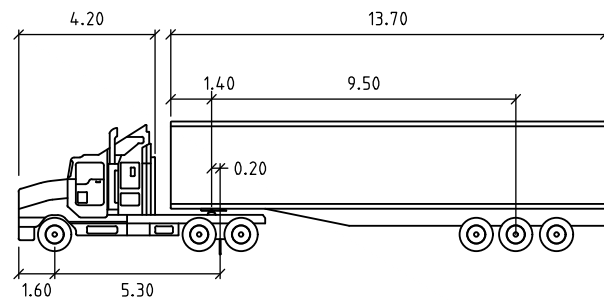
ISSUE P4



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SWEPT PATH KEY

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 - VEHICLE TYRE PATH
 - VEHICLE BODY PATH
 - 500mm CLEARANCE FROM VEHICLE BODY
- ASSUMED SPEED 15km/h FOR ON-STREET AND 5km/h FOR OFF-STREET MANOEUVRES



PM S 19M

Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 27.8
Tractor Track	: 2.50	Articulating Angle	: 70.0
Trailer Track	: 2.50		

TEMPORARY CONVERT EXISTING LOADING ZONE AND TWO CAR PARKING SPACES IS REQUIRED TO ACCOMMODATE VEHICLE EXIT MANOEUVRE

RECOMMEND REMOVAL OF EXISTING MEDIAN TO ACCOMMODATE VEHICLE ACCESS

LEGEND	
	WORK SITE
	INDICATIVE EXISTING LOADING ZONE
	CONSTRUCTION GATE

NEARMAP AERIAL IMAGE
DATED 06.12.2020



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CAD FILE NO.
N183633-07-P4.DWG

MEADOWBANK TAFE
MULTI-TRADE AND DIGITAL TECHNOLOGY HUB
MAIN WORKS
VEHICLE SWEEP PATH ASSESSMENT

DRAWING NO. N183633-07-16

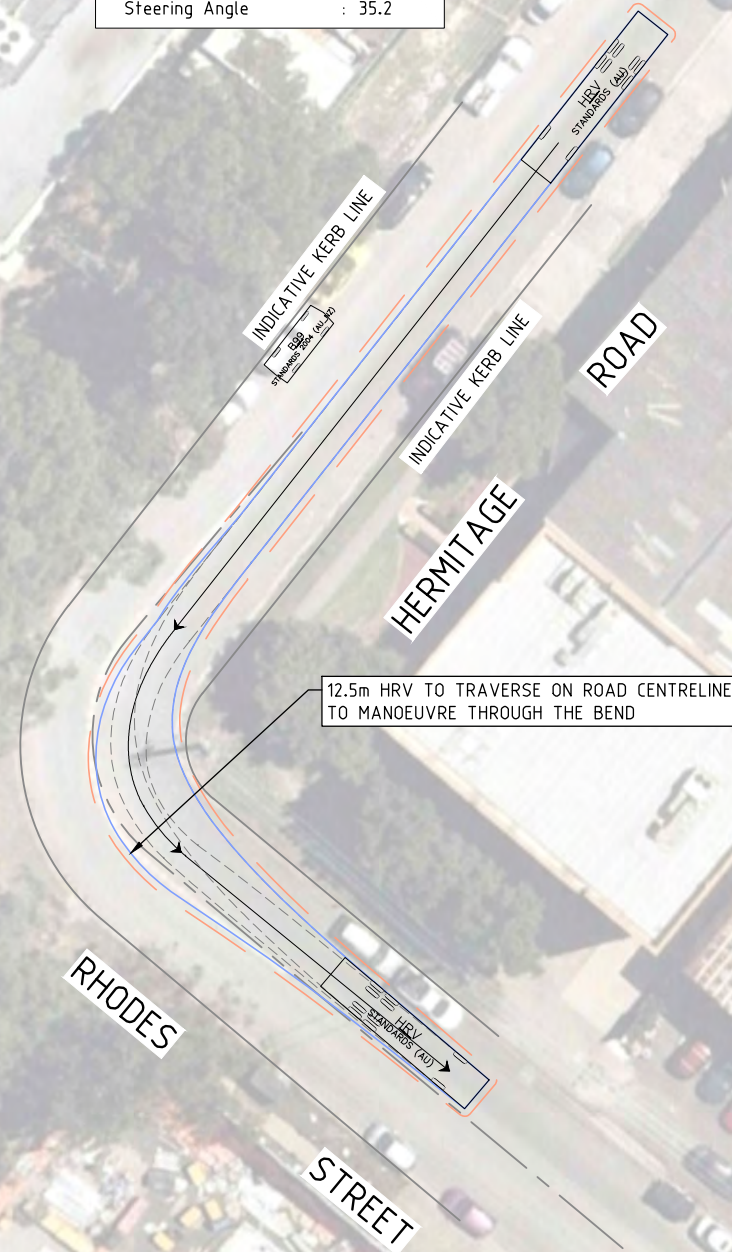
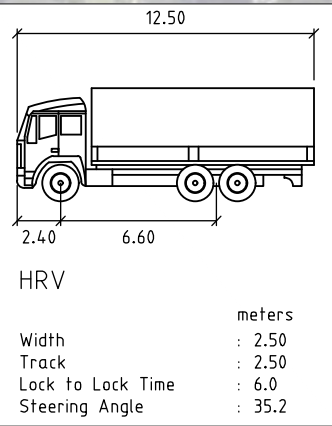
SHEET 16 OF 19

ISSUE P4

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CAD FILE NO.
N183633-07-P4.DWG

MEADOWBANK TAFE

MAIN WORKS
VEHICLE SWEEP PATH ASSESSMENT

DRAWING NO. N183633-07-17

SHEET 17 OF 19

ISSUE P4

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- ASSUMED SPEED 15km/h FOR ON-STREET AND 5km/h FOR OFF-STREET MANOEUVRES

HRV		SRV	
Width	: 2.50	Width	: 2.30
Track	: 2.50	Track	: 2.30
Lock to Lock Time	: 6.0	Lock to Lock Time	: 6.0
Steering Angle	: 35.2	Steering Angle	: 38.0



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MEADOWBANK TAFE

MAIN WORKS
VEHICLE SWEEP PATH ASSESSMENT

DRAWING NO. N183633-07-18

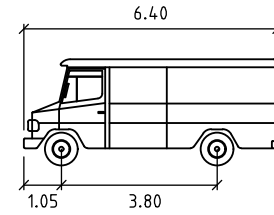
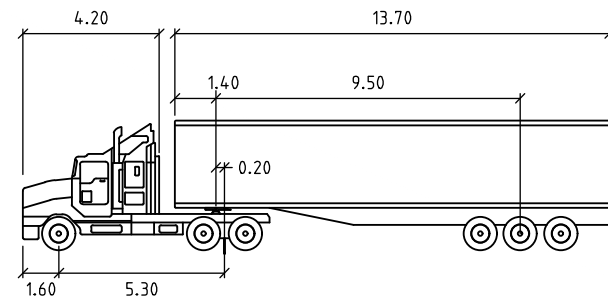
SHEET 18 OF 19

ISSUE P4

\\GTA.COM.AU\PROJECTFILES\PROJECTFILES\SYD\N18300-18399\N183633 MEADOWBANK EDUCATION PRECINCT - CONSTRUCTION\HY\CAD\N183633-07-P4.DWG PLOTTED BY RAYMOND ZHANG ON 27/07/2021 AT 09:00

SWEPT PATH KEY

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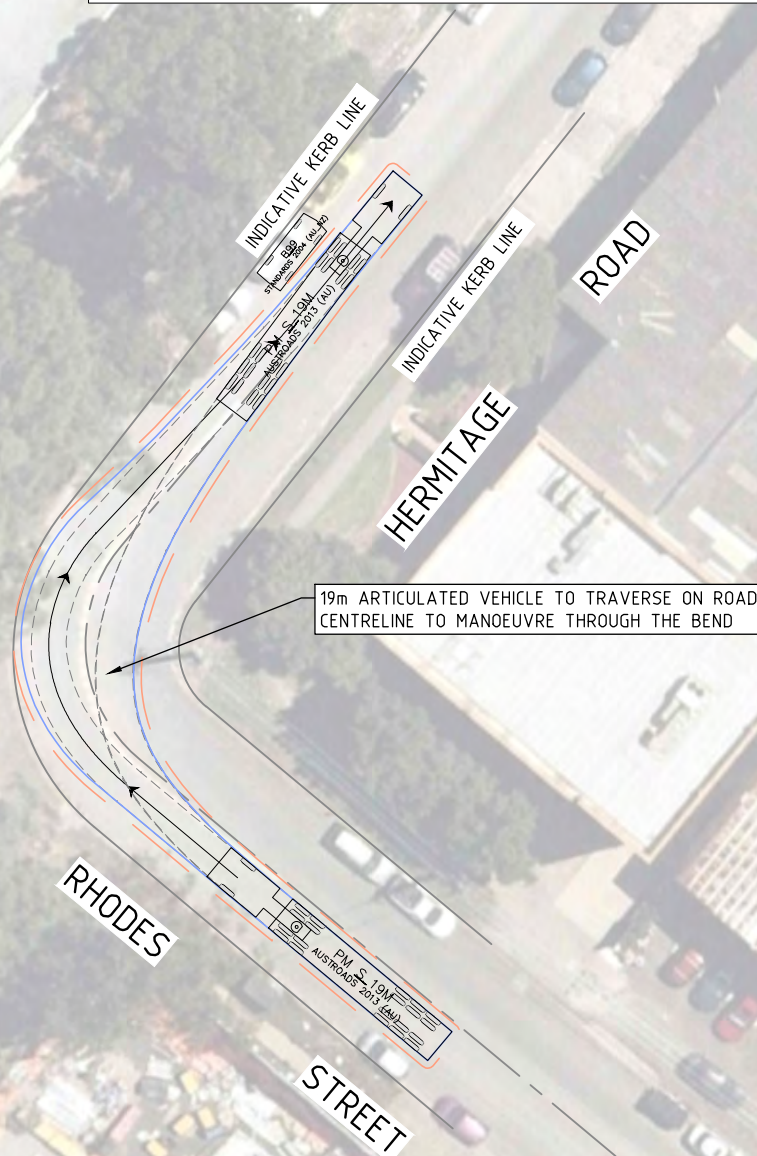


PM S 19M

	meters		
Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 27.8
Tractor Track	: 2.50	Articulating Angle	: 70.0
Trailer Track	: 2.50		

SRV

	meters		
Width	: 2.30		
Track	: 2.30		
Lock to Lock Time	: 6.0		
Steering Angle	: 38.0		



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NOTIFICATION

WARNING

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

DESIGNED
R.ZHANG

APPROVED BY
B.MAYNARD

DESIGN CHECK
M.BRINUMS

DATE ISSUED
27 JANUARY 2021

SCALE
A3 0 2.5 5 10 1:500

CAD FILE NO.
N183633-07-P4.DWG

MEADOWBANK TAFE

MAIN WORKS
VEHICLE SWEEP PATH ASSESSMENT

DRAWING NO. N183633-07-19

SHEET 19 OF 19

ISSUE P4

B. TRAFFIC CONTROL PLANS

B

SITE SPECIFIC NOTES:

- TRAFFIC CONTROLLERS TO MANAGE PEDESTRIAN AND CONSTRUCTION VEHICLE MOVEMENTS AT SITE ACCESSES WHEN IN USE.
- SIGNAGE TO BE REVIEWED ON-SITE TO ALIGN WITH SIGNAGE ASSOCIATED WITH THE SMEEP PROJECT AS REQUIRED.

TRAFFIC MANAGEMENT NOTES:

1. NOT ALL DIMENSIONS SHOWN ARE TO SCALE.
2. LOCATION OF SIGNS ARE TO BE CONFIRMED ON-SITE TO ENSURE APPROPRIATE VISIBILITY.
3. ALL SIGNS TO BE MINIMUM SIZE A.
4. ALL SIGNS TO BE CLASS 1 RETROREFLECTIVE.
5. ALL TRAFFIC CONTROL PLANS ARE TO BE IMPLEMENTED IN ACCORDANCE WITH THE RMS "TRAFFIC CONTROL AT WORK SITES" MANUAL, VER 5 (RMS 2018) AND AUSTRALIAN STANDARDS AS1742.3:2009 MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, PART 3: TRAFFIC CONTROL DEVICES FOR WORKS ON ROADS.
6. THIS TRAFFIC CONTROL PLAN MUST BE SETUP BY A PERSON HOLDING AN "IMPLEMENT TRAFFIC MANAGEMENT PLAN" TICKET AND THE RMS TRAFFIC CONTROL AT WORK SITES CHECKLIST SHALL BE COMPLETED PRIOR TO IMPLEMENTATION.
7. THE ACCREDITED PERSONNEL SHALL IMPLEMENT THE APPROVED TCP BEFORE ANY PHYSICAL WORK COMMENCES AND ENSURE A COPY OF THE TCP IS KEPT ON-SITE. THE ACCREDITED PERSONNEL SHALL ALSO DRIVE THROUGH THE SITE BEFORE WORKS BEGIN TO ENSURE THAT THE TCP HAS BEEN IMPLEMENTED CORRECTLY AND THAT IT WILL WARN, INSTRUCT AND GUIDE ROAD USERS AS DESIGNED. ANY VARIATIONS MADE TO THE PLAN MUST BE MARKED ON THE PLAN AND INITIALED BY THE ACCREDITED PERSONNEL.
8. IT IS THE RESPONSIBILITY OF AN ACCREDITED PERSONNEL WITH A "PREPARE A WORK ZONE TRAFFIC MANAGEMENT PLAN" TICKET TO ENSURE THE FOLLOWING:
 - THE INTEGRITY OF ALL TRAFFIC CONTROL MEASURES THROUGH TO THE FINAL REMOVAL. THIS INCLUDES DAILY CHECKS OF ALL SIGNS AND DEVICES. THE CORRESPONDING RECORDS OF CHECKS SHALL BE KEPT ON FILE FOR AUDITING PURPOSES.
 - VEHICULAR ACCESS AND SERVICING REQUIREMENTS ARE TO BE MAINTAINED AT ALL TIMES TO ADJACENT PROPERTIES AFFECTED BY TRAFFIC CONTROL MEASURES.
 - AT ALL TIMES AN UP-TO-DATE COPY OF "TRAFFIC CONTROL AT WORK SITES" SHOULD BE AVAILABLE FOR REFERENCE AND IMPLEMENTATION AS REQUIRED ON-SITE.
9. ALL WORKERS WILL BE CONFINED TO THE DEDICATED WORKS AREA SHOWN ON THE PLAN.
10. IF THE WORKSITE IS LEFT UNATTENDED IT IS THE CONTRACTOR'S DUTY TO ENSURE THAT THE APPROPRIATE MEASURES ARE TAKEN TO PROVIDE A SAFE ENVIRONMENT FOR VEHICLES AND PEDESTRIANS TO RELEVANT AUSTRALIAN STANDARDS.
11. TRAFFIC CONTROLLERS (T1-34) AND PREPARE TO STOP (T1-18) SIGNS ARE TO BE COVERED OR REMOVED WHEN TRAFFIC CONTROLLER/S ARE NOT ON SITE.
12. ALL SIGNAGE IS TO BE CLEAN, CLEARLY VISIBLE AND NOT OBSCURED.
13. ROADWORK SIGNS TO BE COVERED OR REMOVED WHEN WORKERS ARE NOT ON SITE.
14. ALL WORKERS MUST ADHERE TO THE APPLICABLE SAFE WORK DISTANCE AS DESCRIBED IN AS1742.3:2009.
15. ALL DISTANCES BETWEEN SIGNS ARE TO BE IN ACCORDANCE WITH SECTION 2.5.2 OF AS1742.3:2009. HOWEVER, MODIFICATIONS CAN BE MADE TO SUIT SITE CONDITIONS.

LEGEND

- WORK AREA
- WORK ZONE
- A-CLASS HOARDING/ FENCING
- CONSTRUCTION VEHICLE ACCESS
- T

 TRAFFIC CONTROLLER MANAGING SITE ACCESSES WHEN IN USE
- G

 TRAFFIC CONTROLLER MANAGING GENERAL TRAFFIC AS REQUIRED
- S

 SIGNPOST

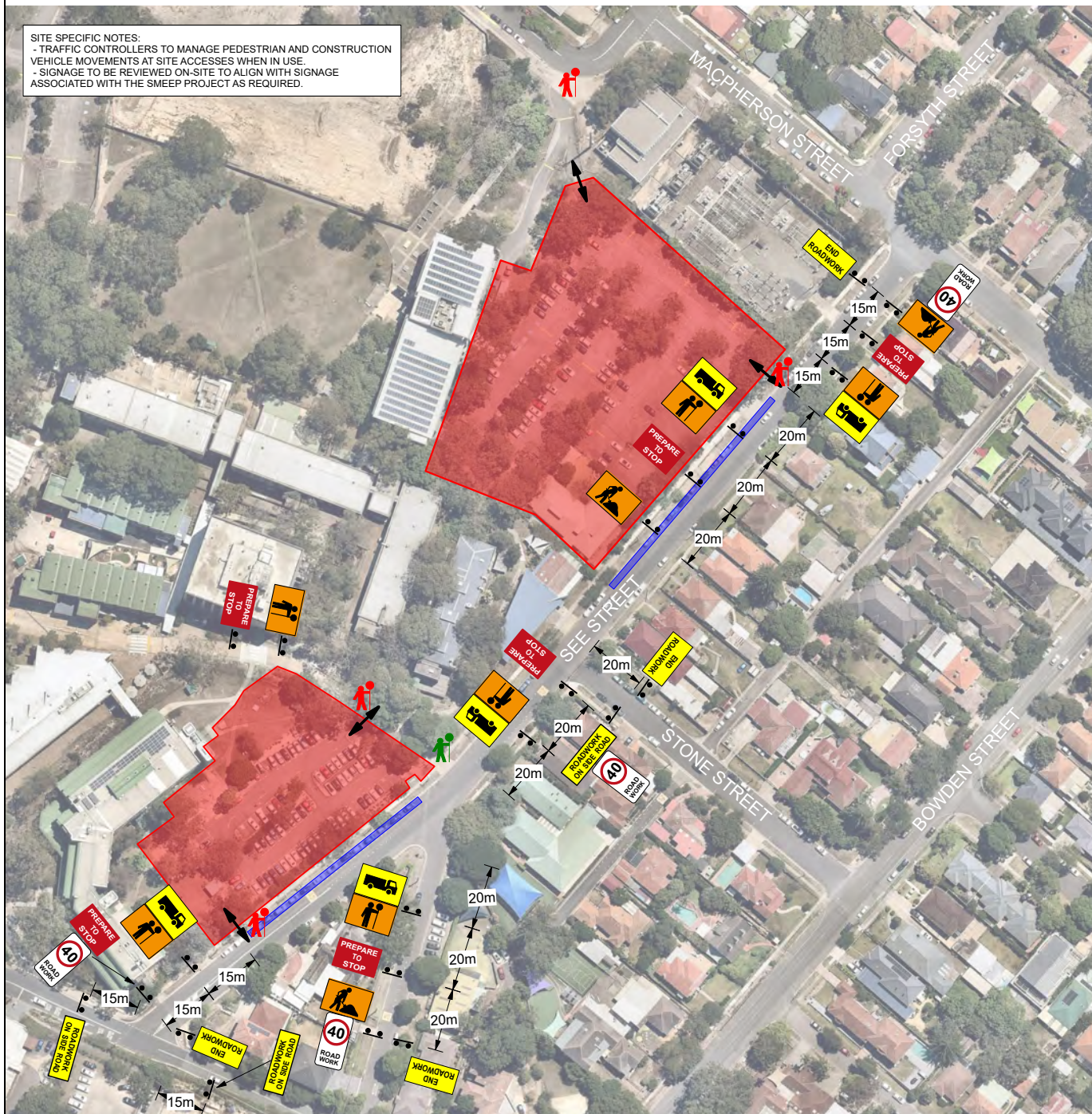


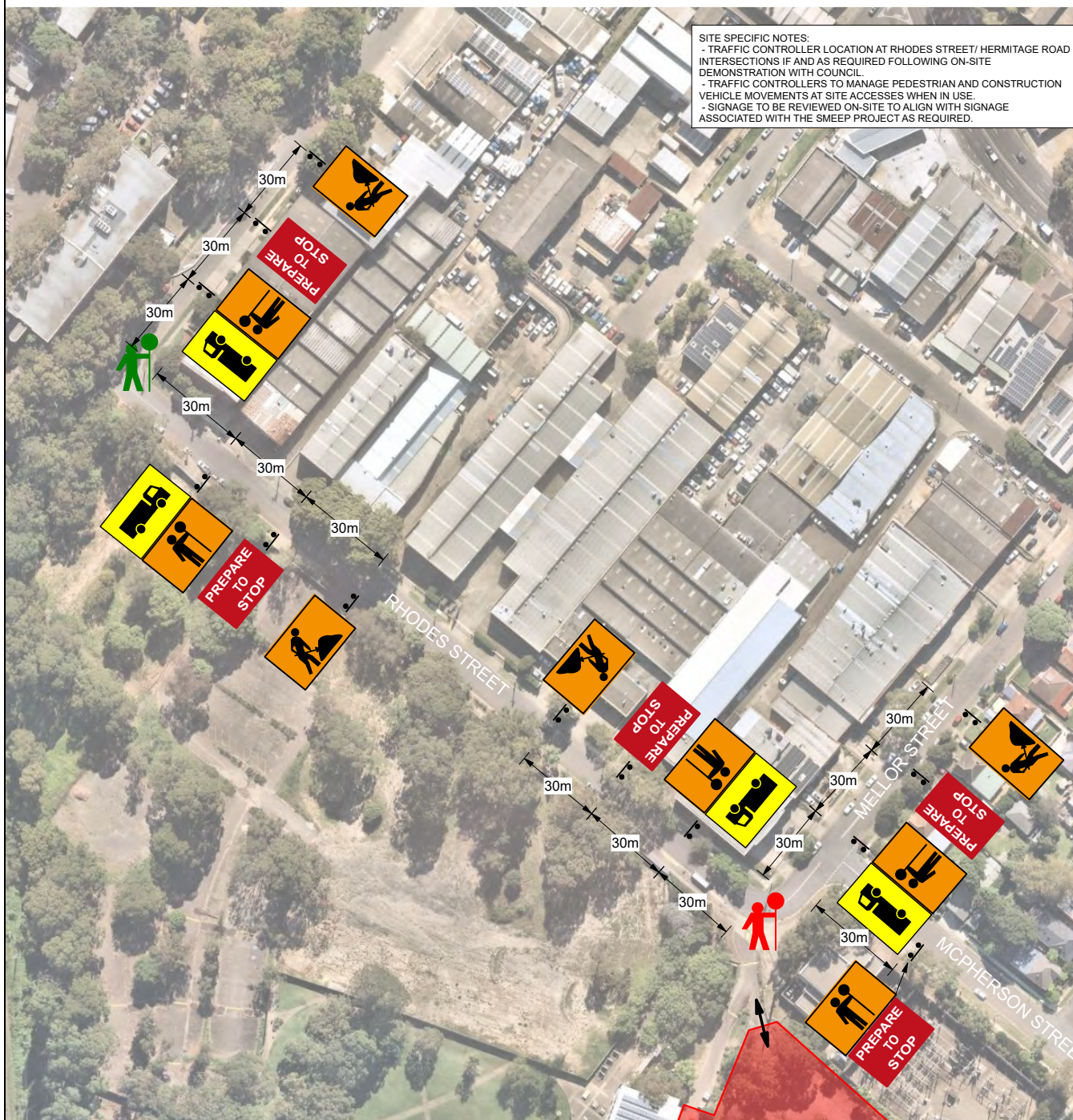
CERTIFICATION

- THE UNDERSIGNED HAS COMPLETED AND OBTAINED:
 - PREPARE A WORK ZONE TRAFFIC MANAGEMENT PLAN
- CERTIFICATE NO: 0051848769 (MACKENZIE BRINUMS)



MEADOWBANK TAPE

MAIN WORKS
TRAFFIC CONTROL PLAN 1DATE: 27/01/2021
DRAWING NO. N183633-03-01-P2

**TRAFFIC MANAGEMENT NOTES:**

1. NOT ALL DIMENSIONS SHOWN ARE TO SCALE.
2. LOCATION OF SIGNS ARE TO BE CONFIRMED ON-SITE TO ENSURE APPROPRIATE VISIBILITY.
3. ALL SIGNS TO BE MINIMUM SIZE A.
4. ALL SIGNS TO BE CLASS 1 RETROREFLECTIVE.
5. ALL TRAFFIC CONTROL PLANS ARE TO BE IMPLEMENTED IN ACCORDANCE WITH THE RMS 'TRAFFIC CONTROL AT WORK SITES' MANUAL, VER 5 (RMS 2018) AND AUSTRALIAN STANDARDS AS1742.3:2019 MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, PART 3: TRAFFIC CONTROL DEVICES FOR WORKS ON ROADS.
6. THIS TRAFFIC CONTROL PLAN MUST BE SETUP BY A PERSON HOLDING AN 'IMPLEMENT TRAFFIC MANAGEMENT PLAN' TICKET AND THE RMS TRAFFIC CONTROL AT WORK SITES CHECKLIST SHALL BE COMPLETED PRIOR TO IMPLEMENTATION.
7. THE ACCREDITED PERSONNEL SHALL IMPLEMENT THE APPROVED TCP BEFORE ANY PHYSICAL WORK COMMENCES AND ENSURE A COPY OF THE TCP IS KEPT ON-SITE. THE ACCREDITED PERSONNEL SHALL ALSO DRIVE THROUGH THE SITE BEFORE WORKS BEGIN TO ENSURE THAT THE TCP HAS BEEN IMPLEMENTED CORRECTLY AND THAT IT WILL WARN, INSTRUCT AND GUIDE ROAD USERS AS DESIGNED. ANY VARIATIONS MADE TO THE PLAN MUST BE MARKED ON THE PLAN AND INITIALED BY THE ACCREDITED PERSONNEL.
8. IT IS THE RESPONSIBILITY OF AN ACCREDITED PERSONNEL WITH A 'PREPARE A WORK ZONE TRAFFIC MANAGEMENT PLAN' TICKET TO ENSURE THE FOLLOWING:
 - THE INTEGRITY OF ALL TRAFFIC CONTROL MEASURES THROUGH TO THE FINAL REMOVAL. THIS INCLUDES DAILY CHECKS OF ALL SIGNS AND DEVICES. THE CORRESPONDING RECORDS OF CHECKS SHALL BE KEPT ON FILE FOR AUDITING PURPOSES.
 - VEHICULAR ACCESS AND SERVICING REQUIREMENTS ARE TO BE MAINTAINED AT ALL TIMES TO ADJACENT PROPERTIES AFFECTED BY TRAFFIC CONTROL MEASURES.
 - AT ALL TIMES AN UP-TO-DATE COPY OF 'TRAFFIC CONTROL AT WORK SITES' SHOULD BE AVAILABLE FOR REFERENCE AND IMPLEMENTATION AS REQUIRED ON-SITE.
9. ALL WORKERS WILL BE CONFINED TO THE DEDICATED WORKS AREA SHOWN ON THE PLAN.
10. IF THE WORKSITE IS LEFT UNATTENDED IT IS THE CONTRACTOR'S DUTY TO ENSURE THAT THE APPROPRIATE MEASURES ARE TAKEN TO PROVIDE A SAFE ENVIRONMENT FOR VEHICLES AND PEDESTRIANS TO RELEVANT AUSTRALIAN STANDARDS.
11. TRAFFIC CONTROLLERS (T1-34) AND PREPARE TO STOP (T1-18) SIGNS ARE TO BE COVERED OR REMOVED WHEN TRAFFIC CONTROLLER/S ARE NOT ON SITE.
12. ALL SIGNAGE IS TO BE CLEAN, CLEARLY VISIBLE AND NOT OBSCURED.
13. ROADWORK SIGNS TO BE COVERED OR REMOVED WHEN WORKERS ARE NOT ON SITE.
14. ALL WORKERS MUST ADHERE TO THE APPLICABLE SAFE WORK DISTANCE AS DESCRIBED IN AS1742.3:2019.
15. ALL DISTANCES BETWEEN SIGNS ARE TO BE IN ACCORDANCE WITH SECTION 2.5.2 OF AS1742.3:2019. HOWEVER, MODIFICATIONS CAN BE MADE TO SUIT SITE CONDITIONS.

LEGEND

- WORK AREA
- WORK ZONE
- A-CLASS HOARDING/ FENCING
- CONSTRUCTION VEHICLE ACCESS
- TRAFFIC CONTROLLER MANAGING SITE ACCESSES WHEN IN USE
- TRAFFIC CONTROLLER MANAGING GENERAL TRAFFIC AS REQUIRED
- SIGNPOST

**CERTIFICATION**

THE UNDERSIGNED HAS COMPLETED AND OBTAINED:
- PREPARE A WORK ZONE TRAFFIC MANAGEMENT PLAN

CERTIFICATE NO: 0051848769 (MACKENZIE BRINUMS)



MEADOWBANK TAPE

MAIN WORKS
TRAFFIC CONTROL PLAN 2

DATE: 27/01/2021
DRAWING NO. N183633-03-02-P2

C. DRIVER CODE OF CONDUCT



C.1. Context and Purpose

The following driver code of conduct seeks to address Condition B21 of SSD 10349, as reproduced below:

B21: A Driver Code of Conduct must be prepared and communicated by the Applicant to heavy vehicle drivers and must address the following:

- (a) minimise the impacts of earthworks and construction on the local and regional road network*
- (b) minimise conflicts with other road users*
- (c) minimise road traffic noise*
- (d) ensure truck drivers use specified routes.*

This code of conduct will be communicated to all site workers during the site induction process. Workers will be reminded of the requirements of the code of conduct regularly in toolbox meetings.

C.2. Travel Speeds

All vehicles associated with the Meadowbank TAFE site are required to travel within the posted speed limits on public roads. In situations where driver's visibility and traffic safety on public roads is affected by weather-related conditions such as heavy rainfall or fog, construction vehicles should reduce their speed limit until visibility and traffic safety has improved.

C.3. Haulage Routes and Timing of Transport

All construction vehicles associated with the Meadowbank TAFE site will follow the designated approach and departure routes. These routes are detailed below and shown in Figure C.1 and Figure C.2.

The proposed routes are as follows:

Approach

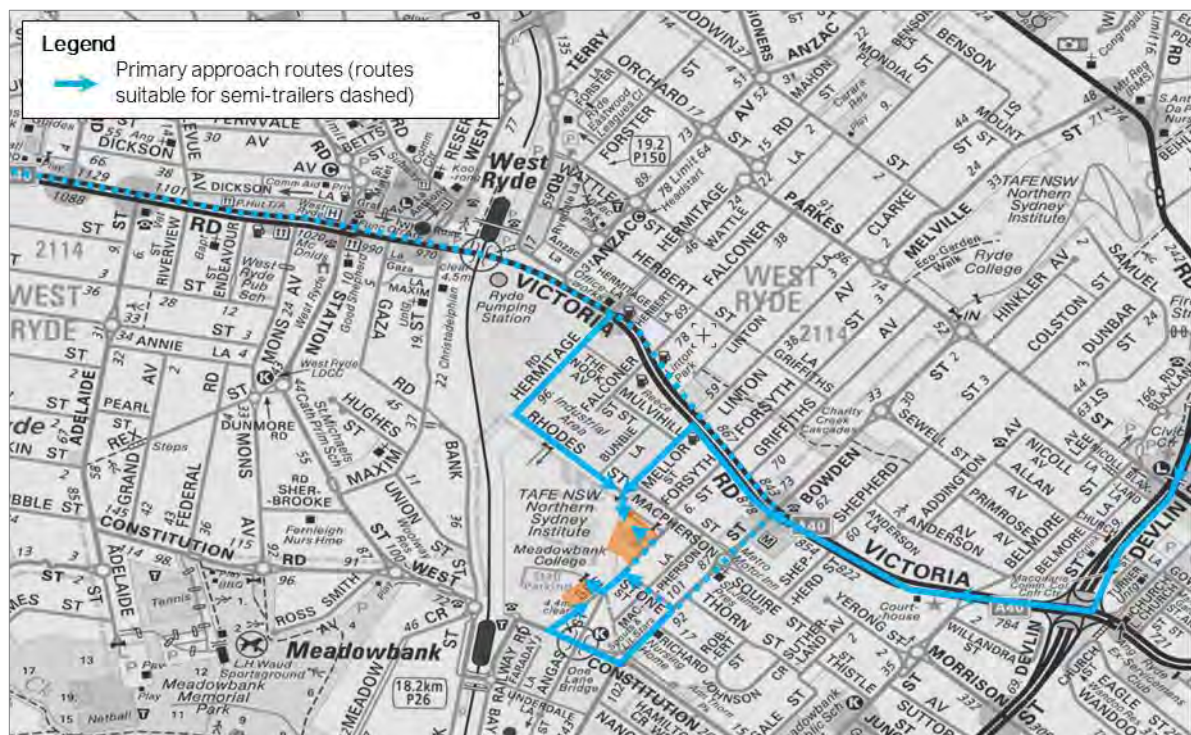
- From north:
 - Pennant Hills Road, Silverwater Road, Victoria Road, Bowden Street, Stone Street (or Constitution Road), See Street
 - Lane Cove Road, Victoria Road, Bowden Street, Stone Street (or Constitution Road), See Street
 - Lane Cove Road, Victoria Road, Mellor Street, Rhodes Street.
- From west:
 - M4 Western Motorway, James Ruse Drive, Victoria Road, Bowden Street, Stone Street (or Constitution Road), See Street
 - M4 Western Motorway, James Ruse Drive, Victoria Road, Hermitage Road, Rhodes Street
 - Old Windsor Road, Cumberland Highway, James Ruse Drive, Victoria Road, Bowden Street, Stone Street (or Constitution Road), See Street
 - Old Windsor Road, Cumberland Highway, James Ruse Drive, Victoria Road, Hermitage Road, Rhodes Street.

APPENDIX: DRIVER CODE OF CONDUCT

Departure

- Towards north:
 - See Street, Stone Street, Bowden Street, Victoria Road, Silverwater Road, Pennant Hills Road
 - Mellor Street, Victoria Road, Silverwater Road, Pennant Hills Road
 - See Street, Stone Street, Bowden Street, Victoria Road, Lane Cove Road.
- Towards west:
 - See Street, Stone Street, Bowden Street, Victoria Road, James Ruse Drive, M4 Western Motorway
 - Mellor Street, Victoria Road, James Ruse Drive, M4 Western Motorway
 - See Street, Stone Street, Bowden Street, Victoria Road, James Ruse Drive, Cumberland Highway, Old Windsor Road
 - Mellor Street, Victoria Road, James Ruse Drive, Cumberland Highway, Old Windsor Road.

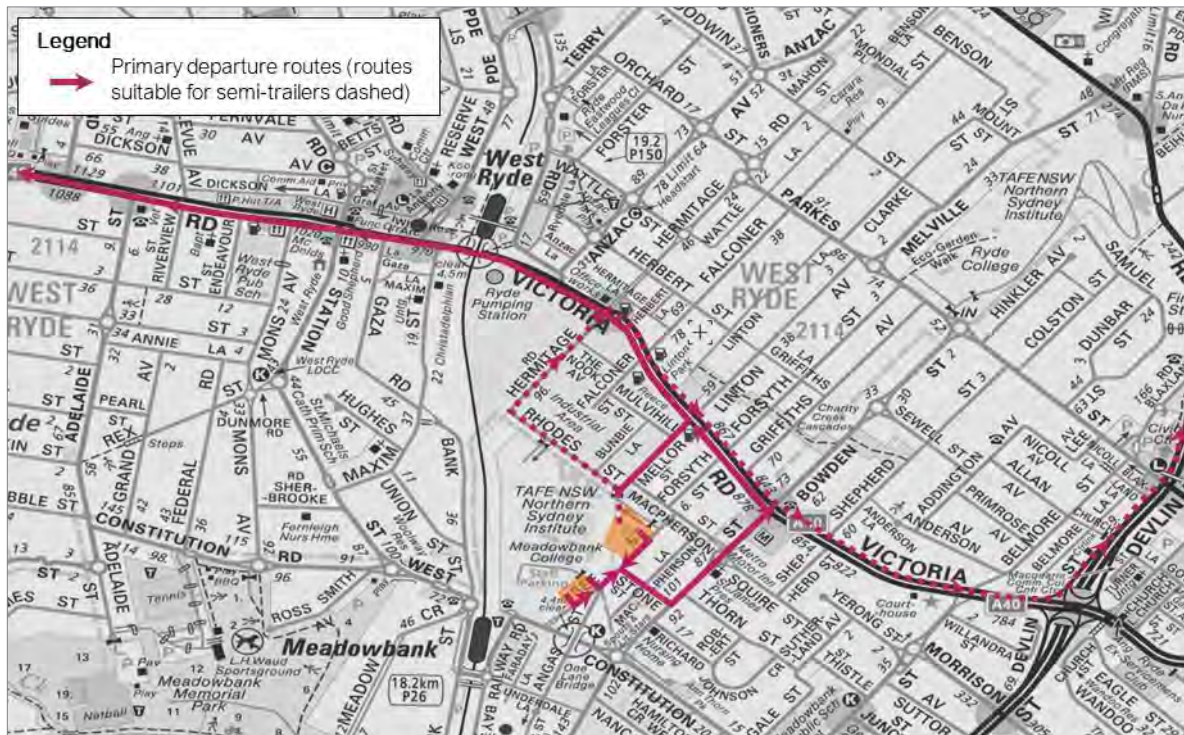
Figure C.1: Construction vehicle approach routes



Base image source: Sydney

APPENDIX: DRIVER CODE OF CONDUCT

Figure C.2: Construction vehicle departure routes



Base image source: Sydney

C.4. Safe Driving Practices

The operators of all vehicles associated with the Meadowbank TAFE site should maintain a high level of awareness and respect for all other road users. All on-site staff will receive a site induction, which will include details regarding the TMP and this code of conduct. Regular toolbox meetings will be held to maintain awareness of required controls. Details of the traffic and access training and induction will focus on:

- objectives of the TMP
- mitigation measures required to be implemented
- traffic and access monitoring and reporting requirements
- incident investigation and response protocols.

Training is to be provided prior to start-up of any traffic and access related management tasks and updated if task, equipment or procedures are expected to change (or have changed).

The following requirements should be adhered to at all times:

- obey all laws and regulations
- do not drive whilst under the influence of alcohol, drugs, nor any medication which may affect ability to drive
- be medically fit to drive at all times and inform site coordinators upon awareness of any medical condition which may affect ability to drive
- drive in a considerate manner at all times and respect the rights of others to use and share the road space

- be respectful to neighbouring properties when entering and exiting the site
- report all vehicle defects to the relevant employer. Serious defects must be corrected immediately, or an alternative vehicle supplied
- any vehicle crash or incident resulting in injury or significant damage to property must be reported to the police
- report any near misses
- always adhere to the site working hours
- only drive construction vehicles when conducting works related to the project
- securely fasten and cover loads, as appropriate
- keep vehicles clean and in good mechanical condition to reduce environmental impacts
- extra care should be taken when driving at dawn or dusk
- vehicles must give way to pedestrians, cyclists and emergency vehicles.

C.5. Maintenance Requirements

The operators of all vehicles associated with the Meadowbank TAFE site should implement a high level of maintenance. The following requirements would be adhered to at all times:

- Ensure vehicles comply with relevant State legislation in relation to roadworthiness and modifications.
- Undergo regular vehicle checks and maintenance.
- Ensure vehicles have correctly fitted mufflers to minimise noise disturbance.

D. CONSTRUCTION WORKER TRANSPORTATION STRATEGY

D

D.1. Context and Purpose

The following Construction Worker Transport Strategy seeks to address Condition B23 of SSD 10349, as reproduced below:

B23: Prior to the commencement of construction, the Applicant must submit a Construction Worker Transportation Strategy to the Certifier. The Strategy must detail the provision of sufficient parking facilities or other travel arrangements for construction workers in order to minimise demand for parking in nearby public and residential streets or public parking facilities. A copy of the strategy must be submitted to the Planning Secretary and Council for information.

This strategy has been developed to minimise the impact of construction workers accessing the site by vehicular means with respect to available parking in surrounding streets.

D.2. Aims and Strategies

The following Aims and Strategies will be implemented for the project.

D.2.1. Public and Active Transport

Aim

- Construction workers will be encouraged to use public and active transport to access the site.

Strategy

- Site induction to include limitations on parking on-site and in surrounding street.
- Public transport connection information to be made available to workers as well as acknowledgement of the pathways from Meadowbank Station through the Meadowbank TAFE to the worker access gates at the work sites.
- Lead representatives from subcontractors to be asked to coordinate their respective worker travel arrangements (including shuttle/ car-pooling as appropriate).

D.2.2. Parking on Public Roads

Aim

- Encourage workers not to park on local public roads.

Strategy

- Include in Site Induction restrictions on parking on local public roads and reinforce in toolbox talks.
- Treat as “CBD site” with no parking available in immediate vicinity of work.
- Advise suitable alternatives away from the site that limit impact on surrounding residents.
- Encourage car-pooling to reduce number of cars parking in the designated parking areas on-site where provided and the Meadowbank Park car park.
- Request that subcontractors with a significant number of workers implement car-pooling arrangements.
- Encourage site staff and management to work remotely where practicable.
- Monitor surrounding streets periodically and issue warnings if workers found to be using on-street parking.

D.2.3. Deliveries and Equipment storage

Aim

- Reduce the need for workers to access site with personal vehicles.

Strategy

- Secure areas to be made available within site to allow storage of materials, tools and equipment, reducing vehicular activity to the site.
- Equipment and tools to be modularised in shipping containers where practical to reduce multiple small deliveries in personal vehicles.
- Where small deliveries are required, dedicated “drop-off” and “pick-up” zones within site to be identified to reduce on-site parking.

E. STAKEHOLDER CORRESPONDENCE

E

Post Approval Consultation Record

Identified Party to Consult:	City of Ryde Council
Consultation type:	Teleconference and email conversations
When is consultation required?	Prior to construction
Why	B16. A Construction Traffic and Pedestrian Management Sub-Plan (CTPMSP) must be prepared to achieve the objective of ensuring safety and efficiency of the road network and address, but not be limited to, the following: (b) be prepared in consultation with Council and TfNSW;
When was consultation scheduled/held	City of Ryde Council: <ul style="list-style-type: none"> • 18/01/21 • 19/01/21 • 20/01/21 • 22/01/21
Identify persons and positions who were involved	Joshua Glanville (City of Ryde Council) Mackenzie Brinums (GTA)
Provide the details of the consultation	A draft Main Works CPTMP was provided to Council on 18/01/21 for review and comment. Following receipt of comments, the CPTMP was updated to address the comments, with details of consultation provided in Appendix E of the report.
What specific matters were discussed?	Reverse manouvres onto the TAFE site from local roads
What matters were resolved?	All of the above.
What matters are unresolved?	N/A
Any remaining points of disagreement?	N/A
How will SINSW address matters not resolved?	N/A

Post Approval Consultation Record

Identified Party to Consult:	TfNSW
Consultation type:	Teleconference and email conversations
When is consultation required?	Prior to construction
Why	B16. A Construction Traffic and Pedestrian Management Sub-Plan (CTPMSP) must be prepared to achieve the objective of ensuring safety and efficiency of the road network and address, but not be limited to, the following: (b) be prepared in consultation with Council and TfNSW;
When was consultation scheduled/held	TfNSW: <ul style="list-style-type: none"> • 18/01/21 • 25/01/21
Identify persons and positions who were involved	Mitch Ryan (TfNSW) Mackenzie Brinums (GTA)
Provide the details of the consultation	A draft CPTMP was provided to TfNSW on 18/01/21 for review and comment. Following receipt of comments, the CPTMP was updated to address the comments, with details of consultation provided in Appendix E of the report.
What specific matters were discussed?	Reverse manoeuvres onto the TAFE site from local roads Swept paths Traffic control
What matters were resolved?	All of the above.
What matters are unresolved?	N/A
Any remaining points of disagreement?	N/A
How will SINSW address matters not resolved?	N/A

Mackenzie Brinums

From: Joshua Glanville <JoshuaG@ryde.nsw.gov.au>
Sent: Wednesday, 20 January 2021 9:40 AM
To: Mackenzie Brinums
Subject: RE: Meadowbank TAFE Hermitage/ Rhodes traffic control

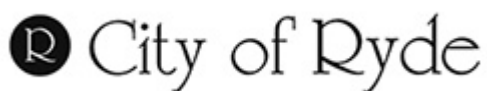
Hi Mack,

I can confirm that those are the only comments on the report.

Kind Regards,

Josh

Joshua Glanville
Traffic & Development Engineer
TRANSPORT
P 0299528109
E JoshuaG@ryde.nsw.gov.au
W www.ryde.nsw.gov.au



Customer Service Centre 1 Pope Street, Ryde (Within Top Ryde City shopping centre)
North Ryde Office Riverview Business Park, Building 0, Level 1, 3 Richardson Place, North Ryde

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From: Mackenzie Brinums <Mackenzie.Brinums@gta.com.au>
Sent: Wednesday, 20 January 2021 9:05 AM
To: Joshua Glanville <JoshuaG@ryde.nsw.gov.au>
Subject: RE: Meadowbank TAFE Hermitage/ Rhodes traffic control

Hi Josh

Thanks for the comments. I'll check with HY to confirm based on site setup and TAFE operations whether these movement can be accommodated and come back to you.

Can you confirm if these are the only comments on the report?

Thanks
Mack

Mackenzie Brinums
Senior Consultant
GTA Consultants
P 02 8448 1800 D 02 8448 1813 M 0414 600 989



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From: Joshua Glanville <JoshuaG@ryde.nsw.gov.au>
Sent: Tuesday, 19 January 2021 1:17 PM
To: Mackenzie Brinums <Mackenzie.Brinums@gta.com.au>
Subject: RE: Meadowbank TAFE Hermitage/ Rhodes traffic control

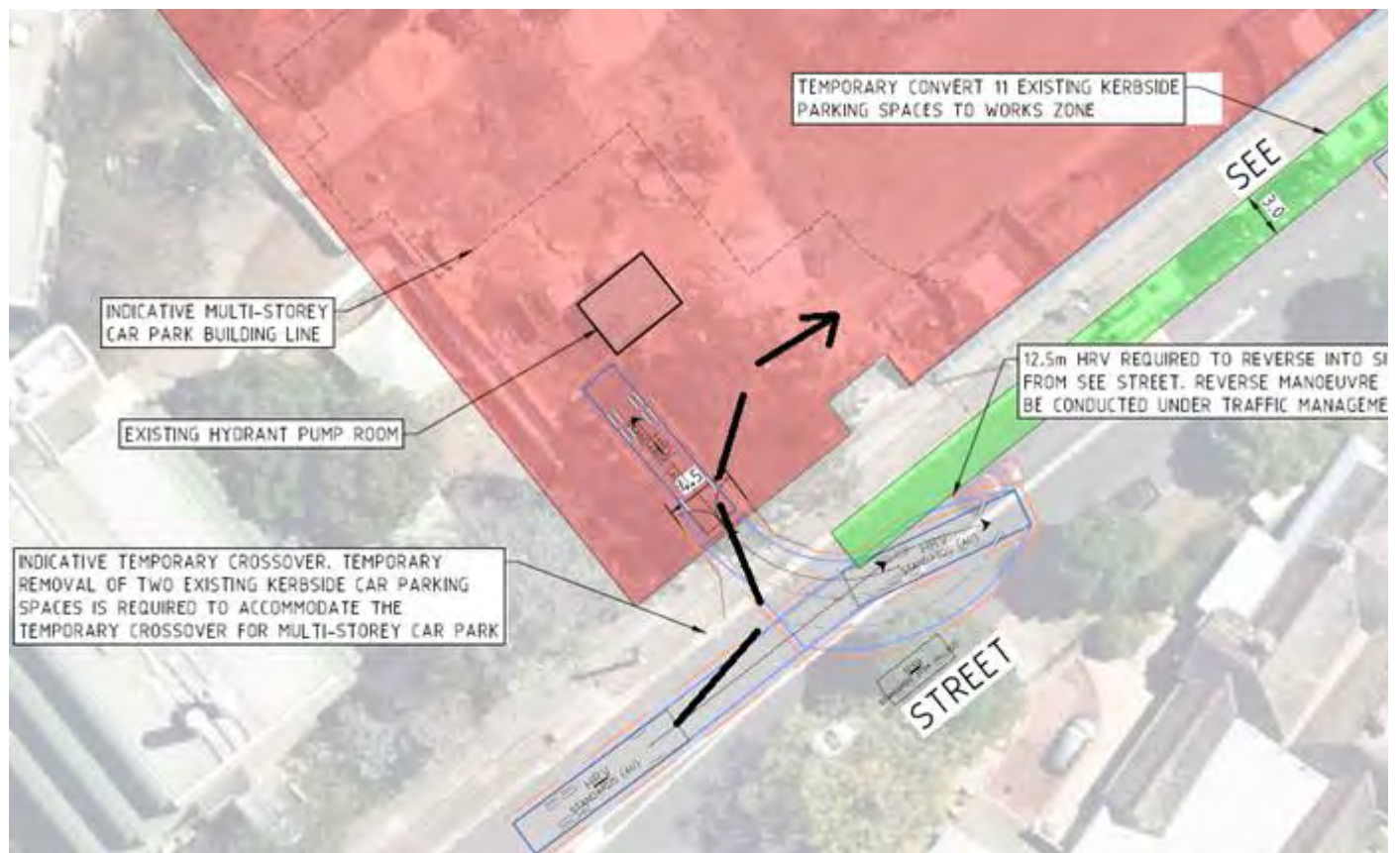
Hi Mackenzie,

Further to our conversations from this morning, I am still not quite convinced that reverse movements from See Street into the construction site are completely necessary.

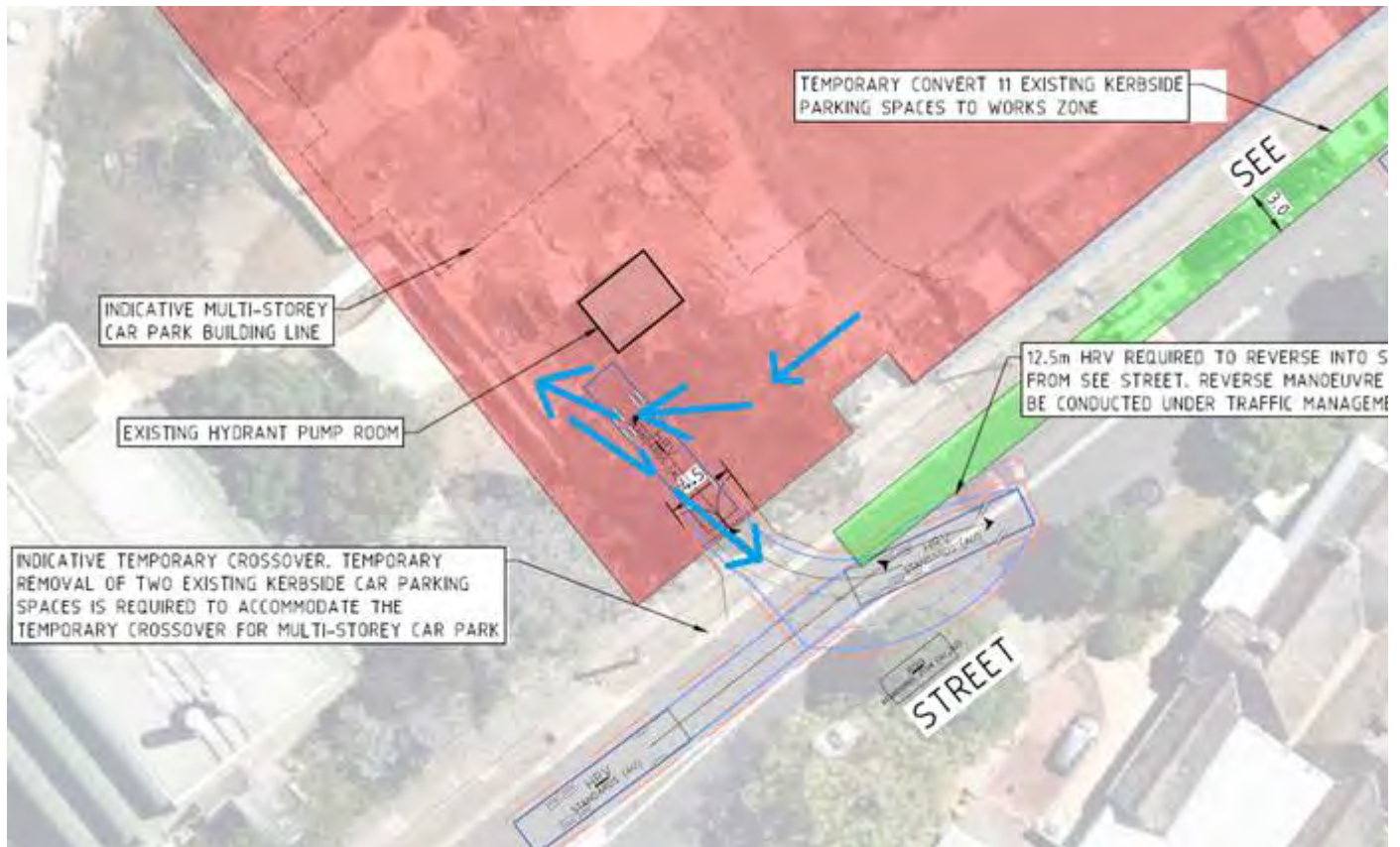
Southern Entrance of MSCP

At the southern entrance to the MSCP, it would seem that trucks would be able to enter and turn immediately left into the site. From there, it would seem that there is enough room for a truck to reverse on the other side of the existing hydrant pump room and then exit the site in a forward direction.

Ingress



Egress



Northern Entrance of MSCP

At the northern entrance, the internal accessway that runs through the TAFE site (past the construction zone) seems to have the ability to allow the 12.5m HRV to enter in a forward direction, turn around and exit in a forward direction as shown below:

Ingress



Egress



Council does not accept reverse movements into the sites, unless there was no other option. However in this particular case, there is no evidence to suggest that forward in and forward out movements are not achievable.

Feel free to contact me if you wish to discuss this further.

Kind Regards,

Josh

Joshua Glanville

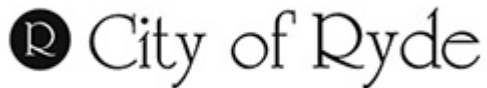
Traffic & Development Engineer

TRANSPORT

P 0299528109

E JoshuaG@ryde.nsw.gov.au

W www.ryde.nsw.gov.au



Customer Service Centre 1 Pope Street, Ryde (Within Top Ryde City shopping centre)

North Ryde Office Riverview Business Park, Building 0, Level 1, 3 Richardson Place, North Ryde

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From: Mackenzie Brinums <Mackenzie.Brinums@gta.com.au>

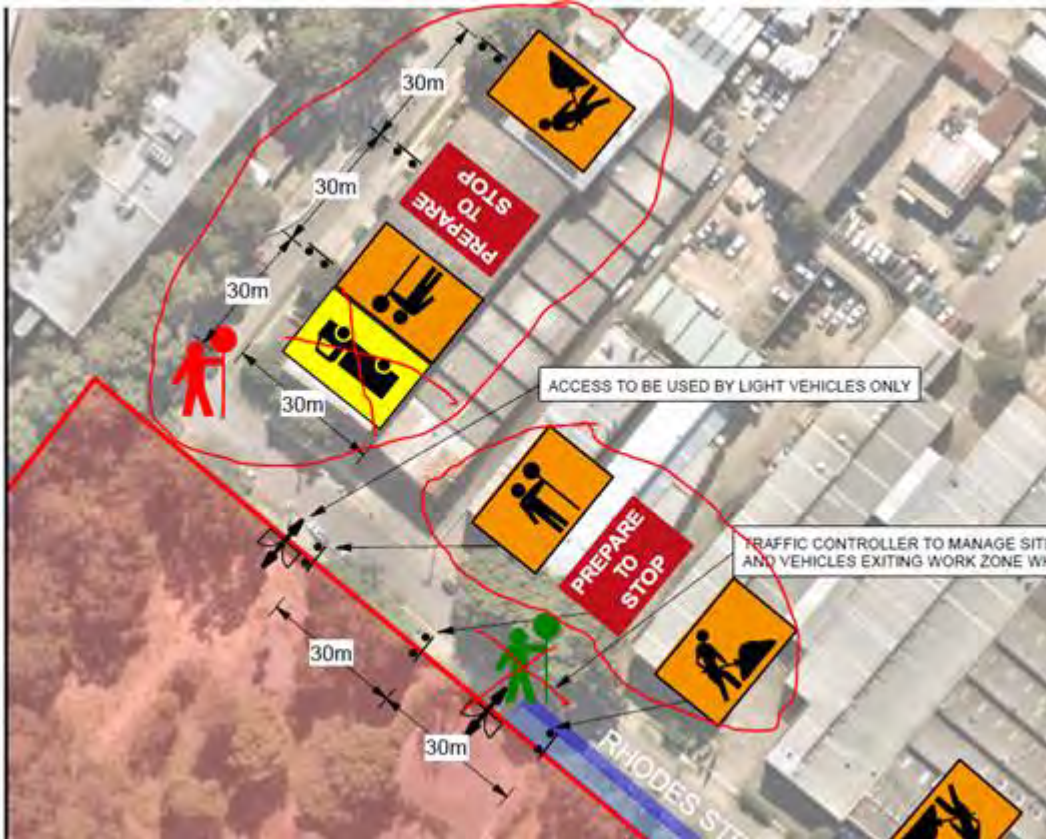
Sent: Tuesday, 19 January 2021 10:00 AM

To: Joshua Glanville <JoshuaG@ryde.nsw.gov.au>

Subject: Meadowbank TAFE Hermitage/ Rhodes traffic control

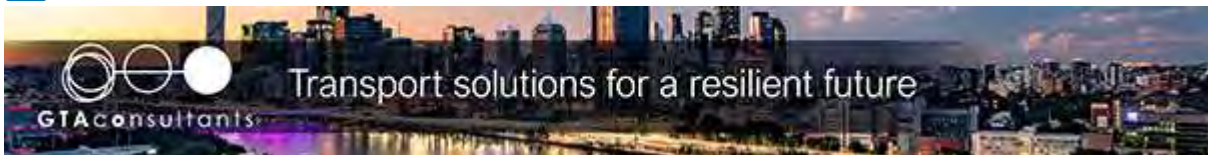
Hi Josh

Thanks for discussing just now. See below for screenshot of the signage and traffic control proposed at Rhodes Street/ Hermitage Road intersection. This is largely already at the intersection as Roberts Pizzarotti have the same issues at this location for their vehicles (their TCP attached).



Cheers

Mackenzie Brinums
 Senior Consultant
 GTA Consultants
 P 02 8448 1800 D 02 8448 1813 M 0414 600 989
 Level 16, 207 Kent Street, Sydney, NSW 2000
Mackenzie.Brinums@gta.com.au
www.gta.com.au



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Mackenzie Brinums

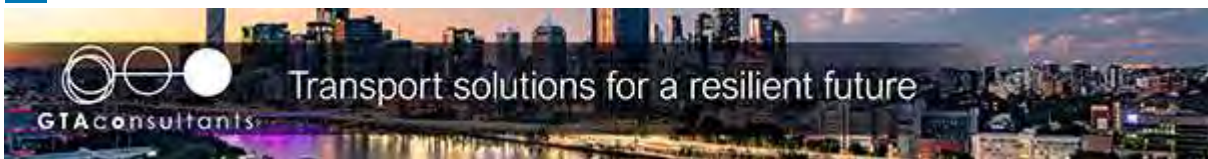
From: Mackenzie Brinums
Sent: Monday, 25 January 2021 1:34 PM
To: Mitch Ryan
Cc: Hang Nghiem; Michael Sada
Subject: RE: Meadowbank TAFE - Main Works CTMP CRM:0181933
Attachments: RE: Meadowbank TAFE Hermitage/ Rhodes traffic control

Thanks Mitch for the comments and for discussing just now.

See my responses in red. Are you able to confirm all okay with the responses for us to finalise the report?

Thanks

Mackenzie Brinums
Senior Consultant
GTA Consultants
P 02 8448 1800 D 02 8448 1813 M 0414 600 989
Level 16, 207 Kent Street, Sydney, NSW 2000
Mackenzie.Brinums@gta.com.au
www.gta.com.au



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From: Mitch Ryan <mitchell.ryan@transport.nsw.gov.au>
Sent: Monday, 25 January 2021 12:05 PM
To: Mackenzie Brinums <Mackenzie.Brinums@gta.com.au>
Subject: RE: Meadowbank TAFE - Main Works CTMP CRM:0181933

Hi Mackenzie,

Thanks for chasing, and apologies for the need.

In review there are really not too many comments to make.

The below are the key comments / questions but nothing that should be difficult / hold things up

- Reversing manoeuvres are generally undesirable due to the increased safety risks posed. Where this is unavoidable it should be kept to a minimum and traffic control is required to control traffic and pedestrian movements. In this project what is the estimated number of reversing manoeuvres? **Noted. We're working through this with Council at the moment to try and reduce/ avoid reverse manoeuvres where possible. Hansen Yuncken have discussed with TAFE and have confirmed trucks entering via the existing driveway along the northern side of the MSCP site will be permitted to turn around at the western end of the driveway so that they can enter and exit the TAFE site in a forward direction. With regard to the southern MSCP access, a concrete boom pump will limit the available manoeuvring area on-site in this location meaning concrete trucks will not be able to turn around on-site and will be required to reverse in to access the concrete pump. Concrete pumping is not possible from on-street due to overhead powerlines etc. On days where the concrete boom pump is not in this location, trucks will be able to enter and exit in a forward direction. It's estimated that concrete pour sequences will occur on two days a week on average over a three month period. See attached correspondence with Council. We'll continue to liaise with Council to meet their requirements regarding reverse manoeuvres and update the CTMP to reflect.**

- Has the TCP(s) been developed in coordination between the SMEEP project Meadowbank TAFE project? Ensure the signage does not conflict between the two concurrent developments. **Yes, a note has also been included on the TCPs to mention that signage is to be reviewed on-site to align with signage associated with the SMEEP project as required.**
- Are TC's proposed for Stone Street near its intersection with See Street? Swept Paths would suggest that opposing HRV movements will be unable to concurrently pass each other at the intersection. More of an issue where a 19m is attempting to enter See Street. **No TC's are proposed at these locations as it is not considered necessary as discussed separately with Council, noting that both intersections provide adequate sight lines to allow construction vehicle drivers to observe and give-way to any traffic on Stone Street and See Street at the intersection before turning into the respective street. This practice is common for many developments in local areas and is also a requirement of the NSW Road Rules.**
- Swept path for HRV's entering See Street from Constitution Road encroach over the stop line from See Street. This means vehicles turning right from See Street may position themselves such that HRV entering See Street (which will have the legal right of way) will be prevented from doing so efficiently or *may* result in the HRV impacting the vehicle. **Similar to the above comment, in the rare event that a HRV is approaching the site at this location and a vehicle is waiting to turn right out of See Street in the location where there is a potential overlap, the driver of the construction vehicle would be able to give-way to allow the vehicle on See Street to exit prior turning into the street. It is also noted that the design vehicles used for swept path analysis are conservative, as they need to represent a broad national vehicle fleet. Construction vehicles are also able to reduce turning speed in practice to reduce the overlap.**
- All parking changes and Work Zones require tabling in Local Traffic Committee prior to implementation. This can be via an expedited electronic voting item, at councils discretion. **Noted**

Kind Regards,

Mitchell Ryan
Network & Safety Officer
Land Use, Networks & Development
Greater Sydney (Planning and Programs)
Transport for NSW

T 02 8849 2685
Level 5, 27 Argyle Street Parramatta NSW 2150



From: Mackenzie Brinums [<mailto:Mackenzie.Brinums@gta.com.au>]
Sent: Monday, 25 January 2021 10:18 AM
To: Mitch Ryan <mitchell.ryan@transport.nsw.gov.au>
Subject: RE: Meadowbank TAFE - Main Works CTMP CRM:0181933

Hi Mitch

Sorry to chase, but is it possible to provide comment today. HY is trying to close out this consent condition as soon as possible this week to avoid delay to the construction program.

Thanks

Mackenzie Brinums
Senior Consultant
GTA Consultants
P 02 8448 1800 D 02 8448 1813 M 0414 600 989
Level 16, 207 Kent Street, Sydney, NSW 2000
Mackenzie.Brinums@gta.com.au
www.gta.com.au



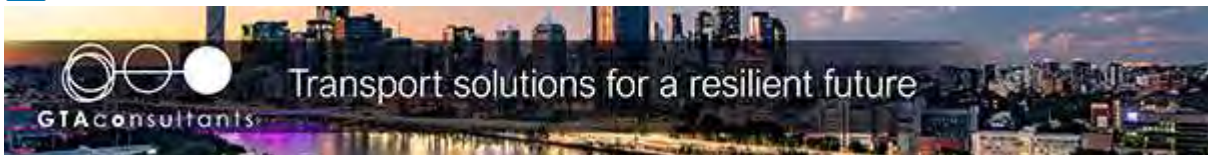


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From: Mackenzie Brinums <Mackenzie.Brinums@gta.com.au>
Sent: Wednesday, 20 January 2021 2:22 PM
To: Mitch Ryan <mitchell.ryan@transport.nsw.gov.au>
Subject: RE: Meadowbank TAFE - Main Works CTMP CRM:0181933

Thanks Mitch – appreciate you getting back to me.

Mackenzie Brinums
Senior Consultant
GTA Consultants
P 02 8448 1800 D 02 8448 1813 M 0414 600 989
Level 16, 207 Kent Street, Sydney, NSW 2000
Mackenzie.Brinums@gta.com.au
www.gta.com.au



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From: Mitch Ryan <mitchell.ryan@transport.nsw.gov.au>
Sent: Wednesday, 20 January 2021 2:20 PM
To: Mackenzie Brinums <Mackenzie.Brinums@gta.com.au>
Cc: Peter Carruthers <Peter.CARRUTHERS@transport.nsw.gov.au>; Brett Maynard <brett.maynard@gta.com.au>; Hang Nghiem <hngkiem@hansenyuncken.com.au>; Vanja Krumpacnik <vkumpacnik@hansenyuncken.com.au>; MSada@hansenyuncken.com.au
Subject: RE: Meadowbank TAFE - Main Works CTMP CRM:0181933

Hi Mackenzie,

Apologies for missing your call. I am just in a meeting / workshop but I have just listened to your voicemail and wanted to drop you a quick note.

Unfortunately I have only returned to the office this week.

While I am happy to review and provide advice / comments to the CTMP as quickly as possible, being realistic and frank, the earliest possible time I could respond will be Friday due to competing priorities and workload.

Hope this is acceptable, but let me and Peter know if there is something I am unaware of.

Kind Regards,


Mitchell Ryan
Network & Safety Officer
Land Use, Networks & Development
Greater Sydney (Planning and Programs)
Transport for NSW



From: Mackenzie Brinums [<mailto:Mackenzie.Brinums@gta.com.au>]
Sent: Monday, 18 January 2021 12:16 PM
To: Yafeng (Alex) Zhu <YafengZ@ryde.nsw.gov.au>; Mitch Ryan <mitchell.ryan@transport.nsw.gov.au>
Cc: John Begley <JohnB@ryde.nsw.gov.au>; Peter Carruthers <Peter.CARRUTHERS@transport.nsw.gov.au>; Brett Maynard <brett.maynard@gta.com.au>; Hang Nghiem <hngkiem@hansenyuncken.com.au>; Vanja Krumpacnik <vkrumpacnik@hansenyuncken.com.au>; MSada@hansenyuncken.com.au
Subject: Meadowbank TAFE - Main Works CTMP CRM:0181933

Hi Alex, Mitch

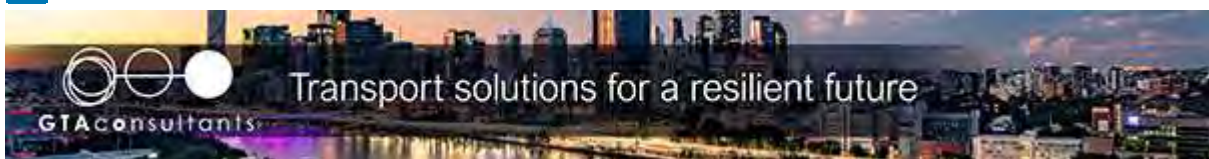
Please see the link below for the draft Main Works CTMP relating to the Meadowbank TAFE project for your review. This builds on the Early Works Phase 2 CTMP and seeks to address your previously provided comments particularly relating to semi-trailer movements. If you could get back to us with any comments as soon as possible to allow us to finalise, it would be much appreciated.

 [210118rep-N183633 Meadowbank TAFE Main Works CTMP A-Dr2.pdf](#)

Any queries, give me a call.

Regards

Mackenzie Brinums
Senior Consultant
GTA Consultants
P 02 8448 1800 D 02 8448 1813 M 0414 600 989
Level 16, 207 Kent Street, Sydney, NSW 2000
Mackenzie.Brinums@gta.com.au
www.gta.com.au



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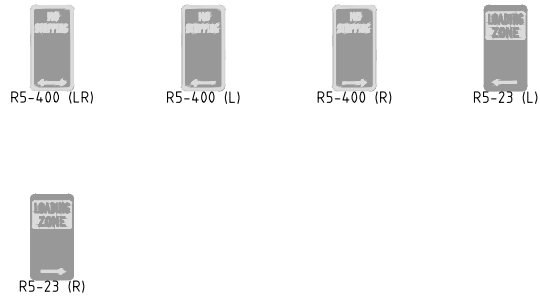
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F. SIGNAGE PLAN





EXISTING SIGNAGE SCHEDULE



RELOCATED/ NEW SIGNAGE SCHEDULE



LEGEND

- WORK SITE
- WORKS ZONE
- EXISTING SIGN
- NEW SIGN

NEARMAP AERIAL IMAGE
DATED 6 DECEMBER 2020



Melbourne 03 9851 9600
Sydney 02 8448 1800
Brisbane 07 3113 5000
Adelaide 08 8334 3600
Perth 08 6169 1000



PRELIMINARY PLAN
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NOTIFICATION

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

DESIGNED
R.ZHANG

APPROVED BY
B.MAYNARD

DESIGN CHECK
M.BRINUMS

DATE ISSUED
13 JANUARY 2021

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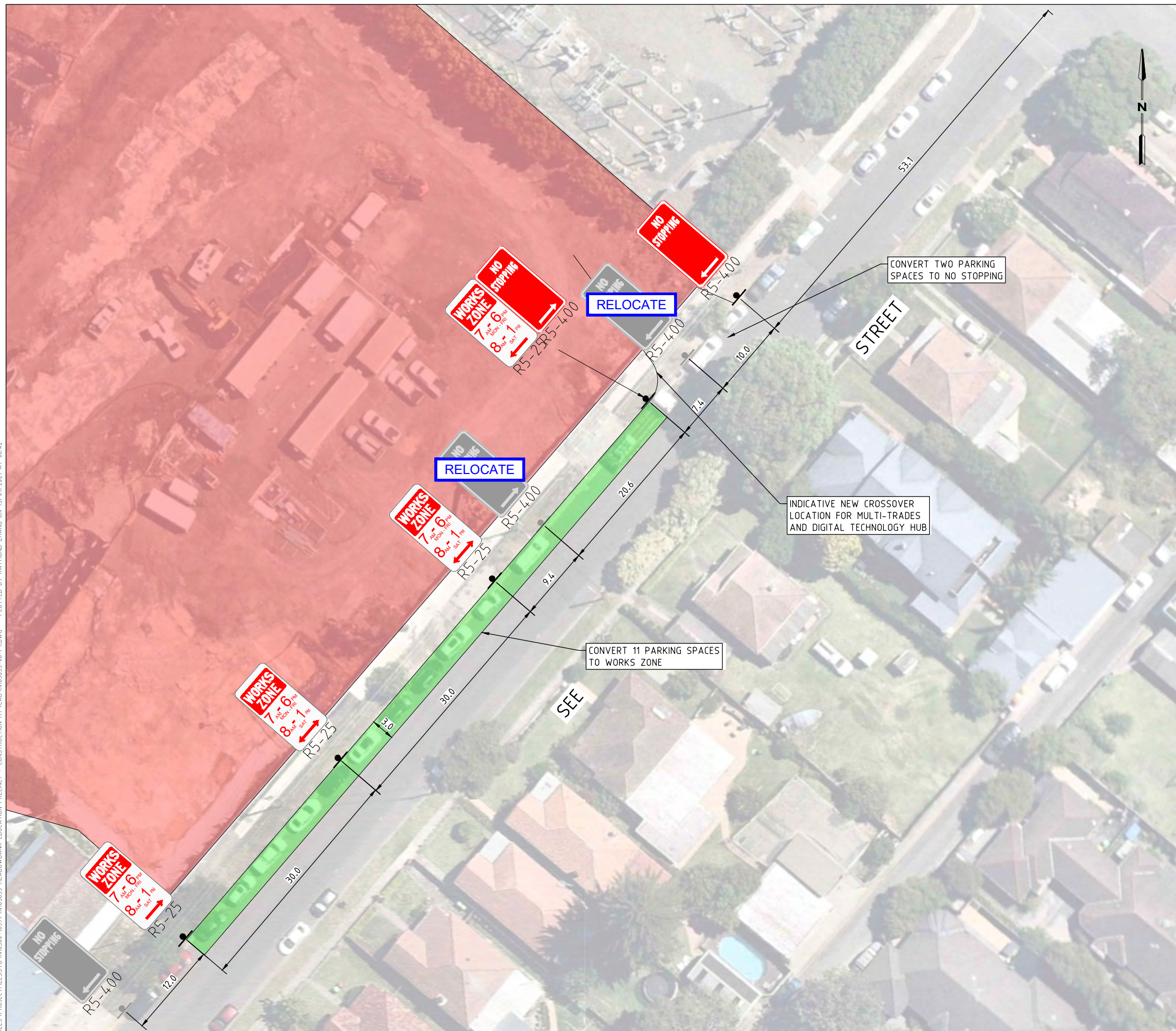
MEADOWBANK TAFE

MAIN WORKS
SIGNAGE PLAN
DRAWING NO. N183633-08-01

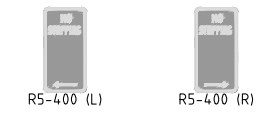
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ISSUE P1

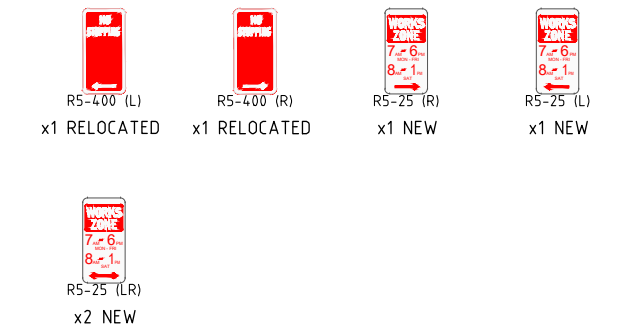
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EXISTING SIGNAGE SCHEDULE



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LEGEND



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DESIGNED
R.ZHANG

APPROVED BY
B.MAYNARD

DESIGN CHECK
M.BRINUMS

DATE ISSUED
13 JANUARY 2021

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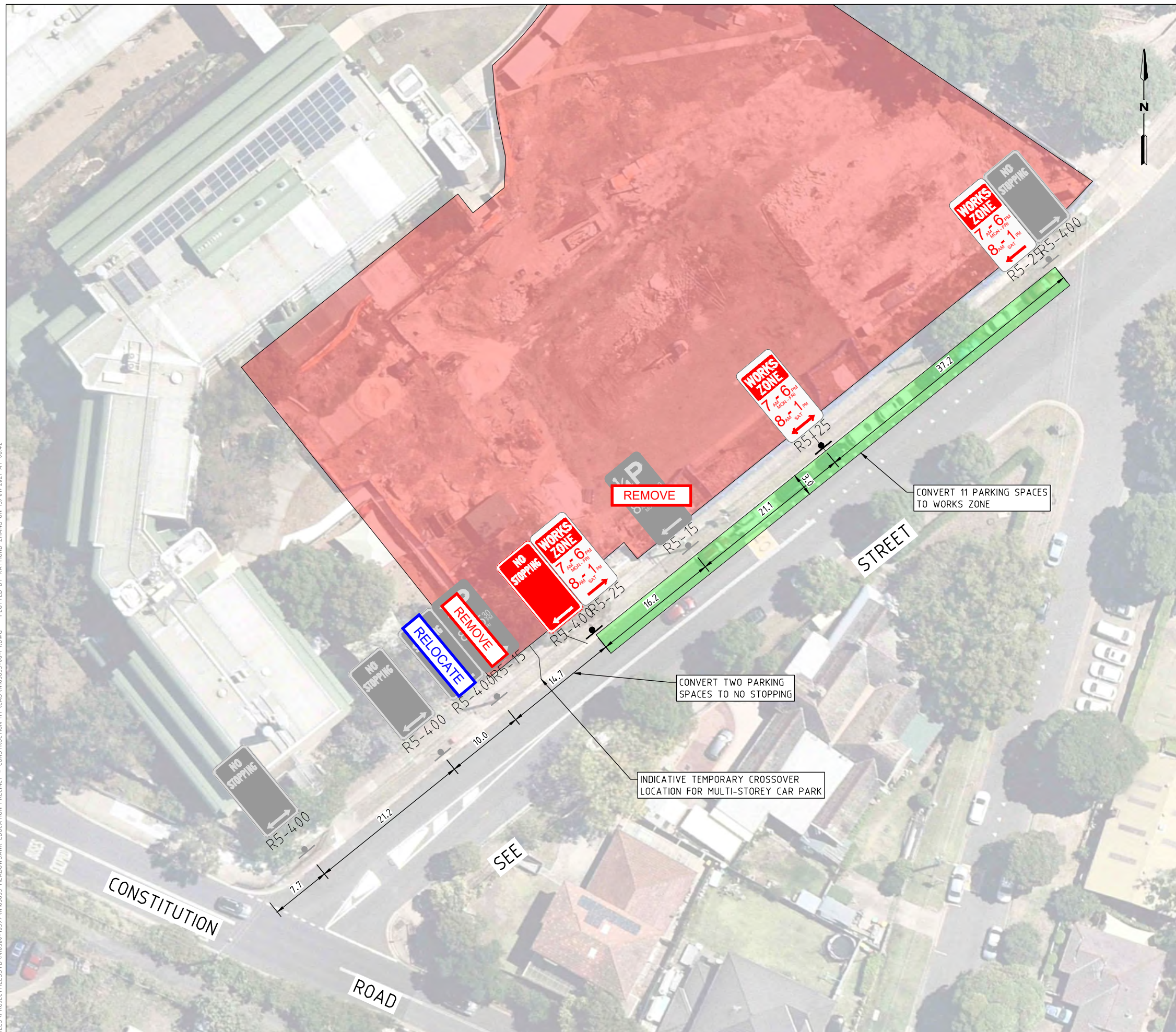
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DRAWING NO. N183633-08-02

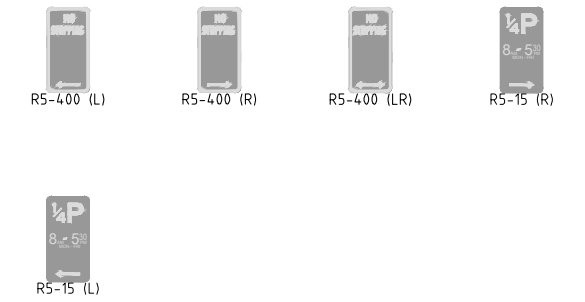
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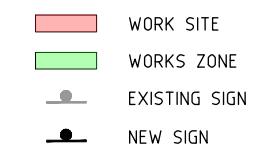
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DESIGNED
R.ZHANG

APPROVED BY
B.MAYNARD

DESIGN CHECK
M.BRINUMS

DATE ISSUED
13 JANUARY 2021

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MEADOWBANK TAFE

MAIN WORKS
SIGNAGE PLAN

DRAWING NO. N183633-08-03

SHEET 03 OF 03

ISSUE P1

BRETT MAYNARD

Director

BE (Hons) (Civil) MEM DipEngPrac
University of Technology, Sydney



MY STORY

With over 20 years' experience in traffic and transport, I have developed strong skills in designing for pedestrians and bicycles, road safety engineering, road layout and design, traffic engineering and assessment, project management and coordination as well as GIS. I am an accredited Level 3 (Senior, Team Leader) Road Safety Auditor. I also have a strong practical background in civil engineering which allows me to provide technical advice and project management input on a broad spectrum of projects.

I have extensive experience in the management of traffic and parking investigations/studies ranging in size from small sites to large corridors and precincts. I have thorough knowledge of the relevant Australian Standards, Austroads traffic management and design guidelines, as well as NSW policies and design standards. My project leadership demonstrates a multi-disciplinary understanding and is focussed on providing appropriate safety and function, while delivering value-for-money outcomes.

SELECTED PROJECTS EXPERIENCE

Rural and Regional Interchanges (10 locations across northern and north-western NSW)

At-Grade Commuter Car Parks – Liverpool (B) Woy Woy (A)&(C), Campbelltown (A)&(D), Penrith, Blacktown, Rooty Hill

Railway Station Upgrade TT&AIAs – Wentworthville, Pendle Hill, Heathcote and Wentworth Falls

CBD and South East Light Rail

Wynyard Walk, Sydney, Public Domain Design and Traffic Management Planning

Bunda Street Shareway, Civic ACT

Westmead Hospital Redevelopment

Dubbo Hospital Redevelopment

Armidale Hospital Redevelopment

Campbelltown Hospital Car Parking Review

Parramatta Park Movement and Access

Woodville Road Urban Design Study

Wilmot and Central Streets Upgrade, Sydney CBD

Sydney Olympic Park Central Precinct

Parramatta Square Parking Access and Circulation

280 George Street Sydney

Riverside Development, Church Street Parramatta

Schofields Aerodrome Redevelopment, Schofields

Direct Factory Outlets Expansion, Homebush

IMAX Redevelopment (The Ribbon), Darling Harbour

95 Crown Street, Wollongong

New Breeze Residential Subdivision, Edmondson Park

Menangle Park Residential Subdivision

'My client focused approach combines strong technical skills with providing appropriate safety and function, while delivering value-for-money outcomes'

SKILLS & EXPERTISE

- Transport Engineering
- Master planning and strategic assessments
- Intersection and network analysis
- Road Safety Audits
- Parking demand assessments

MEMBERSHIPS AND AFFILIATIONS

Engineers Australia

Australian Institute of Traffic Planning & Management (AITPM)

Recent Papers and Presentations

"Affirmative Action for Active Travel" AITPM National Conference, Adelaide 2009, with van den Dool, D.

"Cycling Encouragement Initiatives: using the infrastructure we've got" AITPM National Conference, Brisbane 2010, with Strang, P.

"Shared Spaces for Healthy and Active Places – Can They Work in Canberra?" AITPM National Conference, Adelaide 2014, with McHugh, B., Strang, P. and Humphrey-Robinson, B.

A.7 Construction Noise and Vibration Management Sub-Plan (CNVMSP)

Multi-Trades and Digital Technology Hub and carpark (SSD 10349): Submission of Construction Noise and Vibration Management Sub-Plan in accordance with Condition B17

Condition	Condition requirements	Document reference
B17	The Construction Noise and Vibration Management Sub-Plan (CNVMSP) must address, but not be limited to, the following: (a) be prepared by a suitably qualified and experienced noise expert;	SSD 10349 – B17 – CNVMSP TAFE Meadowbank Multi-Trades and Digital Technology Hub Main Works date 8/12/2020 Appendix B Ben White CV
	(b) describe procedures for achieving the noise management levels in EPA's Interim Construction Noise Guideline (DECC, 2009);	Section 5.3 Construction Noise Criteria Section 5.6 Construction Noise Management
	(c) include the recommended noise management and mitigation measures included within the report titled ' <i>Noise and Vibration Impact Assessment for SSDA TAFE Meadowbank Multi-Trades and Digital Technology Hub (Revision G)</i> ' prepared by JHA Services and dated 30 June 2020;	Section 5.6 Construction Noise Management
	(d) hours of construction in accordance with conditions C3 to C7;	Section 5.1 Construction Noise
	(e) describe the measures to be implemented to manage high noise generating works such as piling, in close proximity to sensitive receivers;	Section 5.6 Construction Noise Management Section 6 Noise and Vibration Monitoring
	(f) include strategies that have been developed with the community for managing high noise generating works;	Section 5.6 Construction Noise Management Section 7 Community Engagement and Notification Section 7.2 Complaints
	(g) describe the community consultation undertaken to develop the strategies in condition B17(f);	Section 5.6 Construction Noise Management Section 7 Community Engagement and Notification Section 7.2 Complaints

		Appendix C Community Letter Box Drop Information
B17	(h) include a complaints management system that would be implemented for the duration of the construction; and	Section 7.2 Complaints
	(i) include a program to monitor and report on the impacts and environmental performance of the development and the effectiveness of the management measures in accordance with Condition B14(d).	Section 6 Noise and Vibration Monitoring Section 7.2 Complaints
B14	(a) detailed baseline data;	Section 4.1 Existing Background Noise Levels at the Site
	(b) details of: (i) the relevant statutory requirements (including any relevant approval, license or lease conditions);	Section 3 Project Requirements Section 5.3.1 Interim Construction Noise Guideline Section 5.4.1 Vibration Criteria – Human Comfort Section 5.4.2 Vibration Criteria – Building Contents and Structure
	(ii) any relevant limits or performance measures and criteria; and	Section 3 Project Requirements Section 5.3.1 Interim Construction Noise Guideline Section 5.4.1 Vibration Criteria – Human Comfort Section 5.4.2 Vibration Criteria – Building Contents and Structure Section 5.5 Summary of Construction Vibration Criteria
	(iii) the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;	Section 5.6 Construction Noise Management Section 5.8 Construction Vibration Management
	(c) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;	Section 5.6 Construction Noise Management Section 5.8 Construction Vibration Management Section 6 Noise and Vibration Monitoring
	(d) a program to monitor and report on the: (i) impacts and environmental performance of the development;	N/A
	(ii) effectiveness of the management measures set out pursuant to paragraph (c) above;	Section 5.6 Construction Noise Management

	(e) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;	N/A
B14	(f) a program to investigate and implement ways to improve the environmental performance of the development over time;	N/A
	(g) a protocol for managing and reporting any: (i) incident and any non-compliance (specifically including any exceedance of the impact assessment criteria and performance criteria);	Section 5.6 Construction Noise Management Section 6 Noise and Vibration Monitoring
	(ii) complaint;	Section 5.6 Construction Noise Management Section 6 Noise and Vibration Monitoring
	(iii) failure to comply with statutory requirements; and	Section 5.6 Construction Noise Management Section 6 Noise and Vibration Monitoring
	(h) a protocol for periodic review of the plan and any updates in response to incidents or matters of non-compliance	N/A





Hansen Yuncken

TAFE Meadowbank
Multi-Trades and Digital Technology Hub
Main Works

Construction Noise and Vibration Management Sub Plan

White Noise Acoustics
303, 74 Pitt Street,
Sydney NSW 2000

ABN: 35 632 449 122

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Document Control

Project Name	TAFE, Meadowbank
Project Number	20074
Document Type	Construction Noise and Vibration Management Sub Plan
Reference Number	2020074_201208_CNVMSP Main Works_BW_R0
Attention	Hang Nghiem

Revision	Date	Reference Number	Drafted By	Approved By
0	8/12/2020	2020074_201208_CNVMSP Main Works_BW_R0	BW	BW

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1 Introduction

White Noise Acoustics has been engaged to undertake the acoustic assessment of the noise and vibration impacts during the proposed main works of the TAFE, Meadowbank project and develop a Construction Noise and Vibration Management Plan.

The assessment has been undertaken in conjunction with the requirements of the EPA's Interim Construction Noise Guideline and the projects *Conditions of Consent* including the following:

1. The *Noise and Vibration Impact Assessment for SSDA TAFE Meadowbank Multi-Trades and Digital Technology Hub (Revision G)* prepared by JHA Services and dated 30 June 2020.
2. The projects *Development Consent* including item B17.

This report includes the recommended noise and vibration mitigations and management controls for the required works associated with the Main Works construction activities on the site to ensure impacts to surrounding receivers are minimised as result of the construction activities on the site.

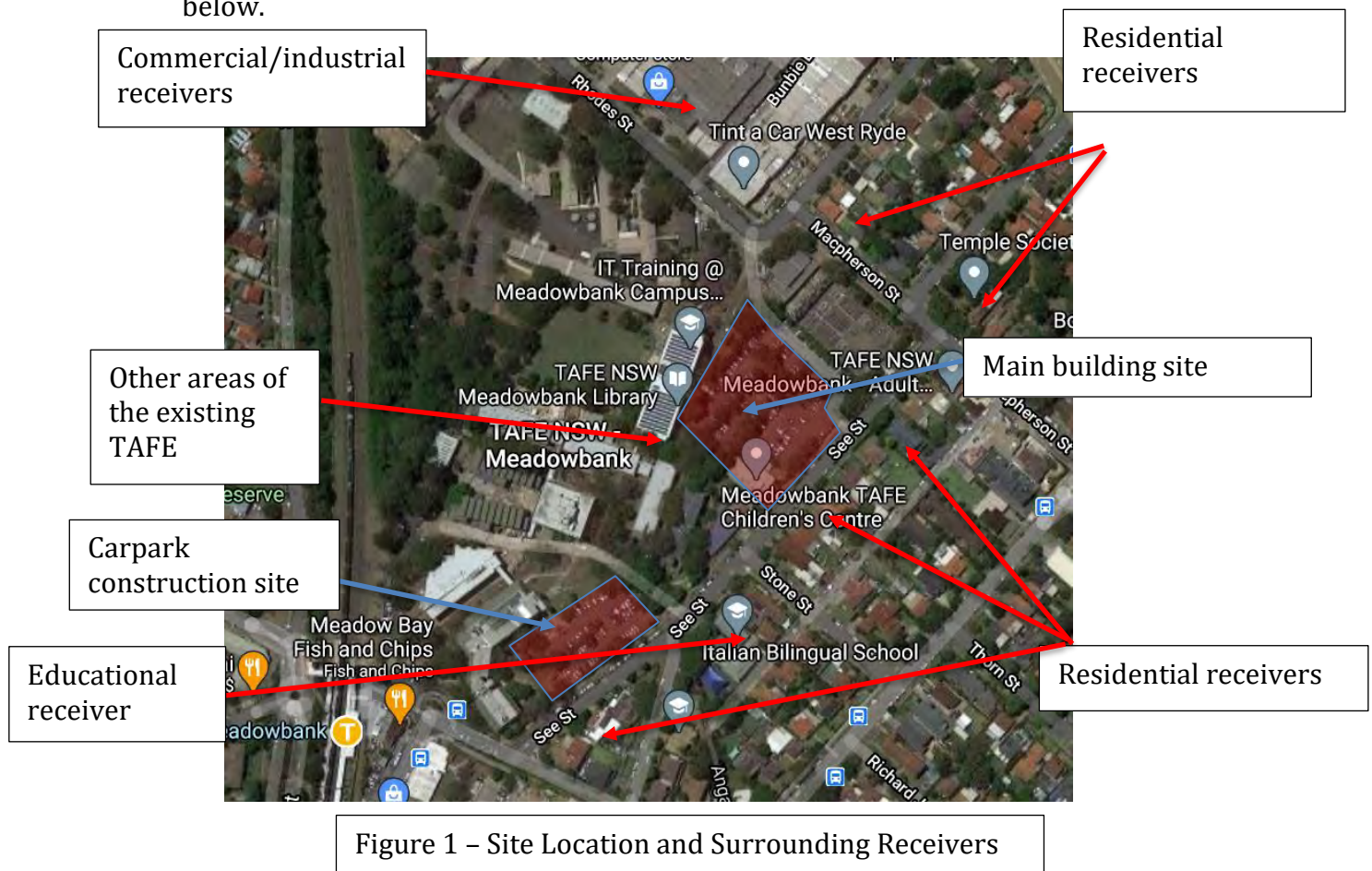
2 Development Description

The proposed development includes the redevelopment of the TAFE Meadowbank site to include the proposed Multi-Trades and Digital Technology Hub and carpark. The required construction works include demolition of existing structures and construction of the project on the Meadowbank site.

The surrounding receivers to the site comprise a number of residential, commercial and school receivers including the following:

1. Commercial/industrial receivers to the north of the site on Rhodes Street.
2. An education receiver to the south of the site on See Street.
3. Residential receivers to the north of the site on Macpherson Street.
4. Residential receivers to the south of the site on See Street.

The site location, in relation to surrounding buildings, is shown in Figure 1 below.



3 Project Requirements

The Construction Noise and Vibration Management plan for the project has been developed in compliance with the *Conditions of Consent* for the project the EPA's Interim Construction Noise Guideline and the following project documentation:

1. The *Noise and Vibration Impact Assessment for SSDA TAFE Meadowbank Multi-Trades and Digital Technology Hub (Revision G)*' prepared by JHA Services and dated 30 June 2020.
2. The *Development Consent* for the project including item B17 which includes the following:

B17. The Construction Noise and Vibration Management Sub-Plan (CNVMSP) must address, but not be limited to, the following:

- (a) be prepared by a suitably qualified and experienced noise expert;
- (b) describe procedures for achieving the noise management levels in EPA's *Interim Construction Noise Guideline* (DECC, 2009);
- (c) include the recommended noise management and mitigation measures included within the report titled '*Noise and Vibration Impact Assessment for SSDA TAFE Meadowbank Multi-Trades and Digital Technology Hub (Revision G)*' prepared by JHA Services and dated 30 June 2020;
- (d) hours of construction in accordance with conditions C3 to C7;
- (e) describe the measures to be implemented to manage high noise generating works such as piling, in close proximity to sensitive receivers;
- (f) include strategies that have been developed with the community for managing high noise generating works;
- (g) describe the community consultation undertaken to develop the strategies in condition B17(f);
- (h) include a complaints management system that would be implemented for the duration of the construction; and
- (i) include a program to monitor and report on the impacts and environmental performance of the development and the effectiveness of the management measures in accordance with condition B14(d).

4 Existing Acoustic Environment

The site of the project comprises an area within the existing TAFE Meadowbank precinct.

Noise levels at the site are predominantly a result of surrounding roadways and existing land uses within proximity of the site.

The previously conducted *Noise and Vibration Impact Assessment for SSDA TAFE Meadowbank Multi-Trades and Digital Technology Hub (Revision G)* prepared by JHA Services and dated 30 June 2020 includes background noise levels which have been recorded at the site and have been used as the basis of this report.

4.1 Existing Background Noise Levels at the site

Section 3.2 of the *Noise and Vibration Impact Assessment for SSDA TAFE Meadowbank Multi-Trades and Digital Technology Hub (Revision G)* prepared by JHA Services and dated 30 June 2020 includes details of the noise survey undertaken at the site in August 2019.

A summary of the acoustic survey is detailed in the tables below.

Table 1 – Results of the Previously Conducted Noise Survey at the Site

Measurement Location	Time of Measurement	L _{A90, 15min} dB(A)	Comments
Location 1 – Corner of See and Macpherson Streets	Day	41	Background noise levels associated with existing traffic movements on surrounding roadways
Location 2 – South of the site on See Street	Day	42	

Noise levels based on levels detailed within the *Noise and Vibration Impact Assessment for REF, TAFE Meadowbank* prepared by JHA and dated 20/3/2020.

5 Construction Noise and Vibration Assessment

This section of the report details the assessment of noise associated with the proposed works to be undertaken as part of the Main Works. Activities associated with the proposed TAFE, Meadowbank project, including:

1. Construction of the building.
2. Internal fit out and fittings of the building.

The assessment has been undertaken to assess the potential noise and vibration impacts from the main works on surrounding receivers.

5.1 Construction Noise

The assessment of construction noise impacts generated from works on the site has been undertaken in accordance with the requirements of the Environmental Protection Authorities (EPA) Interim Construction Noise Guideline as required by the *Conditions of Consent*.

The EPA's Interim Construction Noise Guideline defines normal day time hours as the following:

2.2 Recommended standard hours

The recommended standard hours for construction work are shown in Table 1; however, they are not mandatory. There are some situations, as described below, where construction work may need to be undertaken outside of these hours. The likely noise impacts and the ability to undertake works during the recommended standard hours should be considered when scheduling work.

Table 1: Recommended standard hours for construction work

Work type	Recommended standard hours of work*
Normal construction	Monday to Friday 7 am to 6 pm Saturday 8 am to 1 pm No work on Sundays or public holidays
Blasting	Monday to Friday 9 am to 5 pm Saturday 9 am to 1 pm No blasting on Sundays or public holidays

* The relevant authority (consent, determining or regulatory) may impose more or less stringent construction hours.

Construction works on the site will be undertaken in accordance with the hours approved and included in the *Conditions of Consent* which include the following:

Construction Hours

- C3. Construction, including the delivery of materials to and from the site, may only be carried out between the following hours:
 - (a) between 7am and 6pm, Mondays to Fridays inclusive;
 - (b) between 8am and 1pm, Saturdays; and
 - (c) no work may be carried out on Sundays or public holidays.
- C4. Notwithstanding condition C3, provided noise levels do not exceed the existing background noise level plus 5dB, works may also be undertaken during the following hours:
 - (a) between 6pm and 7pm, Mondays to Fridays inclusive; and
 - (b) between 1pm and 4pm, Saturdays.
- C5. Construction activities may be undertaken outside of the hours in condition C3 if required:
 - (a) by the Police or a public authority for the delivery of vehicles, plant or materials; or
 - (b) in an emergency to avoid the loss of life, damage to property or to prevent environmental harm; or
 - (c) where the works are inaudible at the nearest sensitive receivers.
- C6. Notification of such construction activities as referenced in condition C4 must be given to affected residents before undertaking the activities or as soon as is practical afterwards.
- C7. Rock breaking, rock hammering, sheet piling, pile driving and similar activities may only be carried out between the following hours:
 - (a) 9am to 12pm, Monday to Friday;
 - (b) 2pm to 5pm Monday to Friday; and
 - (c) 9am to 12pm, Saturday.

5.2 Proposed Appliances

The proposed appliances which will be used as part of the demolition and construction of the project are detailed in the table below.

Table 2 – Noise Level from Expected Demolition Appliances

Tasks	Equipment	Sound Power Levels per task dB(A) L ₁₀	Aggregate Sound Power Level per Task dB(A) L ₁₀
Construction Activities	Welding	101	120
	Saw cutter	109	
	Dump truck	109	
	Concrete saw	119	
	Power hand tools	109	
	Movement of forklifts and trucks	105	
	Concrete pumping	110	
	Concrete finishing (concrete helicopters)	95	
	Form working fixing (including hampering)	90	
	Cranes	110	

Notes: Noise levels of proposed equipment to be used on the site based on the Australian Standard AS2436-2010 and noise level measurements previously undertaken of similar equipment on construction sites.

5.3 Construction Noise Criteria

This section of the report details the relevant construction noise criteria which is applicable to the site including the EPA's *Interim Construction Noise Guideline* (ICNG).

5.3.1 Interim Construction Noise Guideline

Noise criteria for construction and demolition activities are discussed in the *Interim Construction Noise Guideline* (ICNG). The ICNG also recommends procedures to address potential impacts of construction noise on residences and other sensitive land uses. The main objectives of the ICNG are summarised as follows:

- Promote a clear understanding of ways to identify and minimise noise from construction works;
- Focus on applying all “feasible” and “reasonable” work practices to minimise construction noise impacts;
- Encourage construction to be undertaken only during the recommended standard hours unless approval is given for works that cannot be undertaken during these hours;
- Streamline the assessment and approval stages and reduce time spent dealing with complaints at the project implementation stage; and
- Provide flexibility in selecting site-specific feasible and reasonable work practices in order to minimise noise impacts.

The ICNG contains a quantitative assessment method which is applicable to this project. Guidance levels are given for airborne noise at residences and other sensitive land uses.

The quantitative assessment method involves predicting noise levels at sensitive receivers and comparing them with the Noise Management Levels (NMLs). The NML affectation categories for receivers have been reproduced from the guidelines and are listed in the table below.

Table 3 – Noise Management Levels from Construction – Quantitative Assessment

Receiver Type	Time of Day	Noise Management Level LAeq(15minute) ^{1,2}	How to Apply
Residential	Recommended standard hours: Monday to Friday 7 am to 6 pm Saturday 8 am to 3.30 pm No work on Sundays or public holidays	Noise affected RBL + 10 dB	<p>The noise affected level represents the point above which there may be some community reaction to noise.</p> <ul style="list-style-type: none"> Where the predicted or measured LAeq(15minute) is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to meet the noise affected level. The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.
		Highly noise affected 75 dBA	<p>The highly noise affected level represents the point above which there may be strong community reaction to noise.</p> <ul style="list-style-type: none"> Where noise is above this level, the relevant authority (consent, determining or regulatory) may require respite periods by restricting the hours that the very noisy activities can occur, taking into account: <ol style="list-style-type: none"> Times identified by the community when they are less sensitive to noise (such as before and after school for works near schools, or mid-morning or mid-afternoon for works near residences. If the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.
	Outside recommended standard hours	Noise affected RBL + 5 dB	<ul style="list-style-type: none"> A strong justification would typically be required for works outside the recommended standard hours. The proponent should apply all feasible and reasonable work practices to meet the noise affected level. Where all feasible and reasonable practices have been applied and noise is more than 5 dB above the noise affected level, the proponent should negotiate with the community.

Table 3 – Continued

Receiver Type	Time of Day	Noise Management Level LAeq(15minute) ^{1,2}	How to Apply
Office, retail outlets	When in use	Highly noise affected 70 dBA	The external noise levels should be assessed at the most-affected occupied point of the premises
Classrooms at schools and other educational institutions	When in Use	45 dB(A) internally	The external noise levels should be assessed at the most-affected occupied point of the premises
<p><i>Note 1 Noise levels apply at the property boundary that is most exposed to construction noise, and at a height of 1.5 m above ground level. If the property boundary is more than 30 m from the residence, the location for measuring or predicting noise levels is at the most noise-affected point within 30 m of the residence. Noise levels may be higher at upper floors of the noise affected residence.</i></p> <p><i>Note 2 The RBL is the overall single-figure background noise level measured in each relevant assessment period (during or outside the recommended standard hours). The term RBL is described in detail in the NSW Industrial Noise Policy (EPA 2000).</i></p>			

Based on the table above the suitable construction noise management levels for works undertaken on the site is detailed in the table below.

Table 4 – Site Construction Noise Management Levels

Noise Source	Time Period	Receiver Type	Construction Noise Management Level	'High Noise Affected' Level
Construction Noise	Construction works to be undertaken in compliance with the project's approvals	Receivers to the south of the site	52 dB(A) LAeq (15min)	75 dB(A) LAeq (15min)
		Residence to the north	51 dB(A) LAeq (15min)	75 dB(A) LAeq (15min)
		Commercial receivers to the north	51 dB(A) LAeq (15min)	70 dB(A) LAeq (15min)
		School/Education receivers to the south	52 dB(A) LAeq (15min)	45 dB(A) LAeq (15min) internally when in use
Note 1: Construction noise management levels based on the Interim Construction Noise Guideline				

5.4 Construction Vibration Assessment

This section of the report details the assessment of construction vibration impacts on surrounding receivers.

The effects of ground borne vibration on buildings may be segregated into the following three categories:

- Human comfort – vibration in which the occupants or users of the building are inconvenienced or possibly disturbed. Refer to further discussion in Section 5.4.1.
- Effects on building contents – where vibration can cause damage to fixtures, fittings and other non-building related objects. Refer to further discussion in Section 5.4.2.
- Effects on building structures – where vibration can compromise the integrity of the building or structure itself. Refer to further discussion in Section 5.4.2.

5.4.1 Vibration Criteria – Human Comfort

Vibration effects relating specifically to the human comfort aspects of the project are taken from the guideline titled “*Assessing Vibration – A Technical Guideline*”. (AVTG) This type of impact can be further categorised and assessed using the appropriate criterion as follows:

- Continuous vibration – from uninterrupted sources (refer to Table 5).
- Impulsive vibration – up to three instances of sudden impact e.g. dropping heavy items, per monitoring period (refer to Table 6).
- Intermittent vibration – such as from drilling, compacting or activities that would result in continuous vibration if operated continuously (refer to Table 7).

Table 5 - Continuous vibration acceleration criteria (m/s²) 1 Hz-80 Hz

Location	Assessment period	Preferred Values		Maximum Values	
		z-axis	x- and y-axis	z-axis	x- and y-axis
Residences	Daytime	0.010	0.0071	0.020	0.014
	Night-time	0.007	0.005	0.014	0.010
Offices, schools, educational institutions and places of worship	Day or night-time	0.020	0.014	0.040	0.028
		0.04	0.029	0.080	0.058
Workshops	Day or night-time	0.04	0.029	0.080	0.058

Table 6 - Impulsive vibration acceleration criteria (m/s²) 1 Hz-80 Hz

Location	Assessment period	Preferred Values		Maximum Values	
		z-axis	x- and y-axis	z-axis	x- and y-axis
Residences	Daytime	0.30	0.21	0.60	0.42
	Night-time	0.10	0.071	0.20	0.14
Offices, schools, educational institutions and places of worship	Day or night-time	0.64	0.46	1.28	0.92
Workshops	Day or night-time	0.64	0.46	1.28	0.92

Table 7 Intermittent vibration impacts criteria (m/s^{1.75}) 1 Hz-80 Hz

Location	Daytime		Night-time	
	Preferred Values	Maximum Values	Preferred Values	Maximum Values
Residences	0.20	0.40	0.13	0.26
Offices, schools, educational institutions and places of worship	0.40	0.80	0.40	0.80
Workshops	0.80	1.60	0.80	1.60

5.4.2 Vibration Criteria – Building Contents and Structure

The vibration effects on the building itself are assessed against international standards as follows:

- For transient vibration: British Standard BS 7385: Part 2-1993 “Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration” (BSI 1993); and
- For continuous or repetitive vibration: German DIN 4150: Part 3 – 1999 “Effects of Vibration on Structure” (DIN 1999).

5.4.2.1 Standard BS 7385 Part 2 - 1993

For transient vibration, as discussed in standard BS 7385 Part 2-1993, the criteria are based on peak particle velocity (mm/s) which is to be measured at the base of the building. These are summarised in Table 8 and illustrated in the Figure below.

Table 8 - Transient vibration criteria as per standard BS 7385 Part 2 - 1993

Line in Figure below	Type of Building	Peak Component Particle Velocity in Frequency Range of Predominant Pulse	
		4 Hz to 15 Hz	15 Hz and Above
1	Reinforced or framed structures Industrial and heavy commercial buildings	50 mm/s at 4 Hz and above	
2	Unreinforced or light framed structures Residential or light commercial type buildings	15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz	20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above

Standard BS 7385 Part 2 – 1993 states that the values in Table 8 relate to transient vibration which does not cause resonant responses in buildings. Where the dynamic loading caused by continuous vibration events is such that it results in dynamic magnification due to resonance (especially at the lower frequencies where lower guide values apply), then the values in Table 8 may need to be reduced by up to 50% (refer to Line 3 in the Figure below).

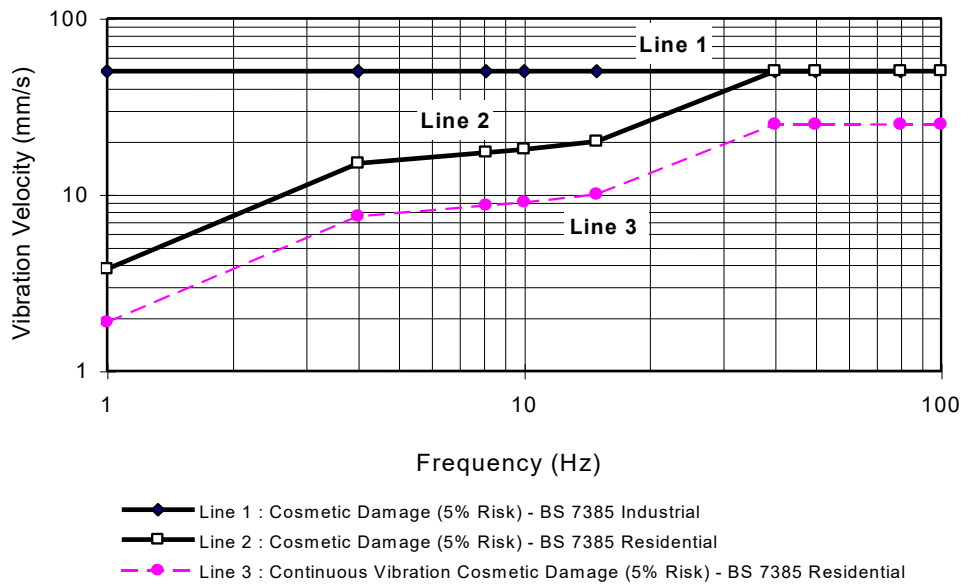


Figure 2 - BS 7385 Part 2 – 1993, graph of transient vibration values for cosmetic damage

In the lower frequency region where strains associated with a given vibration velocity magnitude are higher, the recommended values corresponding to Line 2 are reduced. Below a frequency of 4 Hz where a high displacement is associated with the relatively low peak component particle velocity value, a maximum displacement of 0.6 mm (zero to peak) is recommended. This displacement is equivalent to a vibration velocity of 3.7 mm/s at 1 Hz.

The standard also states that minor damage is possible at vibration magnitudes which are greater than twice those given in Table 8, and major damage to a building structure may occur at values greater than four times the tabulated values.

Fatigue considerations are also addressed in the standard and it is concluded that unless calculation indicates that the magnitude and number of load reversals is significant (in respect of the fatigue life of building materials) then the values in Table 8 should not be reduced for fatigue considerations.

5.4.2.2 Standard DIN 4150 Part 3 - 1999

For continuous or repetitive vibration, standard DIN 4150 Part 3-1999 provides criteria based on values for peak particle velocity (mm/s) measured at the foundation of the building; these are summarised in Table 9. The criteria are frequency dependent and specific to particular categories of structures.

Table 9 - Structural damage criteria as per standard DIN 4150 Part 3 - 1999

Type of Structure	Peak Component Particle Velocity, mm/s			
	Vibration at the foundation at a frequency of			Vibration of horizontal plane of highest floor at all frequencies
	1 Hz to 10 Hz	10 Hz to 50 Hz	50 Hz to 100 Hz ¹	
Buildings used for commercial purposes, industrial buildings and buildings of similar design	20	20 to 40	40 to 50	40
Dwellings and buildings of similar design and/or use	5	5 to 15	15 to 20	15
Structures that, because of their sensitivity to vibration, do not correspond to those listed in lines 1 and 2 and are of great intrinsic value (e.g. buildings that are under a preservation order)	3	3 to 8	8 to 10	8
<i>Note 1: For frequencies above 100Hz, at least the values specified in this column shall be applied.</i>				

5.5 Summary of Construction Vibration Criteria

Based on the details of the vibration criteria detailed in the sections above the recommended construction vibration impact criteria to protect the neighbouring receivers to the site includes the following:

1. Residential buildings – 10 mm/s.
2. Commercial buildings – 10 mm/s.
3. Educational receivers – 7 mm/s.

5.6 Construction Noise Management

Construction noise management has been undertaken such that noise from the construction activities on the site will be mitigated to surrounding receivers. The proposed construction noise mitigations have been developed in conjunction with those included in the *Noise and Vibration Impact Assessment for SSDA TAFE Meadowbank Multi-Trades and Digital Technology Hub (Revision G)* prepared by JHA Services and dated 30 June 2020.

A project update was sent to surrounding receivers on 30/10/2020 detailing the anticipated construction activities and noise generating works. The following management measures for high noise works were proposed:

A copy of this letterbox drop is attached in Appendix B. This letterbox drop aims at undertaking the community consultation requirement to develop strategies to manage high noise works under Condition B17(f).

Based on the assessment conducted of the expected construction noise levels generated from the Main Works activities, levels are generally expected to require the building contractor to engage in management of activities on the site and engagement with the local community.

As there are neighbouring within close proximity to the site the use of high noise emitting equipment are to be managed as detailed in this section of the report. The following management controls are recommended to mitigate construction noise levels on the site:

1. All requirements of the *Conditions of Consent* are followed.
2. Plant and equipment should be located such that noise and vibration emissions are limited to surrounding receivers when possible, including:
 - a. Use of alternative appliances during sensitive periods when possible.
3. Any equipment to be switched off when not in use.
4. Toolbox meetings should be undertaken with all contractors commencing works on the site detailing the requirements to limit noise impacts to neighbouring properties, including their responsibilities as detailed in this report.
5. All plant and equipment are to be maintained such that they are in good working order.
6. A register of complaints is to be recorded in the event of complaints being received, including location, time of complaint, nature of the complaint and actions resulting from the complaint.
7. If required, a noise level measurement of any offending plant item generating complaints is to be conducted. If the magnitude of noise levels is found to be above suitable levels, noise mitigations must be undertaken to reduce noise levels to within the recommended Noise Management levels.
8. Where possible the ripping or saw cutting of material should be undertaken in lieu of hammering.

In the event noise levels are found to exceed permissible levels and additional noise reduction is necessary then all possible and practical mitigations are required to be included in the construction of the project. Possible acoustic treatments and controls may include the following:

1. Use of alternative appliances to complete the required works which result in reduced noise impacts on surrounding neighbours.
2. Review of periods and locations when noisy appliances are undertaken, such as undertaking noisy works on locations with the greatest distance to residential receivers during morning periods if possible.
3. Construction of acoustic screening to permanently located high noise generating equipment, such as pumps and generators.
4. Scheduling of high noise generating works outside of noise sensitive periods if possible. This would include periods when exams and the like are being conducted within the educational facilities.
5. Other site-specific treatments and controls which may become possible once works commence.

5.7 Construction Traffic

Construction traffic accessing the site, including the movements of heavy vehicles, are required to comply with the projects *Conditions of Consent*.

5.8 Construction Vibration Management

An assessment of the potential for vibration generated as part of the required construction activities on the project (including excavation and demolition) has been undertaken.

To ensure the vibration impact criteria detailed in this report are complied with, the following safe working mitigations and/or working distances should be implemented as detailed in the table below.

Table 10 – Vibration Mitigation

Construction Phase	Activity	Vibration Mitigation
Construction works	Materials and Equipment Movement	Minimize dropping of materials and equipment where possible. The location of storing of materials should be conducted at a location with a maximum distance to existing buildings where possible.

In addition to the above, Toolbox meetings should be undertaken with all contractors commencing works on the site detailing the requirements to limit vibration impacts to neighbouring properties. This should include their responsibilities as detailed in this report and the required responses to vibration events.

6 Noise and Vibration Monitoring

As part of the management of noise and vibration from the proposed demolition and excavation activities to be undertaken on the site the following noise and vibration measurements are recommended to be undertaken:

1. Noise –
 - a. Attended noise level measurements of typical demolition and excavation activities should be undertaken at site.

Attended construction noise surveys of the site and surrounding impacts on neighbours should be undertaken during the following as a minimum:

- i. Start of Demolition
 - ii. Commencement of any rock breaking or sawing on the site.
 - iii. In response to any ongoing complaints received from neighbours.
2. Vibration – Based on the construction activities required to be undertaken as part of the Main Works vibration is not expected to be generated with a magnitude which would exceed levels detailed in Section 5.4 above.

It is noted that the major source of vibration which includes excavation will be completed as part of the Early Works Phase 2 works and are not included in the Main Works phase of the project.

7 Community Engagement and Notification

Community notification of the proposed construction period and periodic updates regarding scheduled works is required to be conducted.

The community notification is to be undertaken in accordance with the *Community Communication Strategy* dated October 2020, and included in Appendix C.

The community notification will be undertaken in accordance with the *Community Communication Strategy*, including Table 3, which may include the following:

- Provision of newsletters.
- Letter box drops to neighbours within close proximity will be undertaken during the construction phase of the project, the letter box drop will include:
 - Notification of expected programme for use of high noise emitting equipment.
 - Method of contact for the complaints.
 - Hours when equipment will be in use, working hours.
- Face to face meetings and briefings.
- A4, single or double sided, printed in colour that can include FAQs if required.
- Notifications are distributed under varying templates with different headings to suit different purposes:
 - Works notification are used to communicate specific information/ impacts about a project to a more targeted section of the community.
 - Project update is used when communicating milestones and higher level information to the wider community i.e. project announcement, concept design/DA lodgement, construction award, completion. Always includes the project summary, information booths/ sessions if scheduled, progress summary and contact info.

7.1 Proposed Program

The proposed program for the required works is detailed and provided by Hansen Yuncken for the proposed activities to be undertaken as part of the project.

The expected period of the commences in April 2021 with the projected completion in 2022.

7.2 Complaints

The management and handling of complaints during the construction phase of the project will be undertaken in accordance with the requirements of the *Community Communication Strategy* dated October 2020.

In the event of a complaint being made directly to Hansen Yuncken, it will be redirected to the following SINSW communication channels:

1. Phone: 1300 482 651
2. Email: schoolinfrastructure@det.nsw.edu.au

The management and action of complaints will be undertaken in accordance with the requirements of the *Community Communication Strategy*, including Section 8.5 (*Enquiries and Complaints Management*) and included in Appendix C.

In the event of complaints site assessment including noise and vibration measurements/monitoring will be undertaken as detailed in section 6 of this report.

A schedule of the complaints will include a record of the complaints made and include any actions undertaken as result, including investigations and changes to work practices, and as detailed in the *Community Communication Strategy*.

8 Conclusion

This report details the construction noise and vibration assessment of the proposed Main Works activities to be undertaken as part of the proposed TAFE Meadowbank project.

An assessment of noise and vibration impacts from the required processes to be undertaken during the Main Works for the activities has been undertaken and suitable treatments, management controls, periodic measurements and community engagement have been detailed in this report.

The assessment has been undertaken in conjunction with the requirements of the EPA's Interim Construction Noise Guideline, the projects *Conditions of Consent*.

This report includes the recommended noise and vibration mitigations and management controls for the operation of demolition, excavation and construction activities on the site to ensure impacts to surrounding receivers are minimised as required by the projects *Conditions of Consent*.

For any additional information please do not hesitate to contact the person below.

Regards



Ben White
Director
White Noise Acoustics

9 Appendix A – Glossary of Terms

<i>Ambient Sound</i>	The totally encompassing sound in a given situation at a given time, usually composed of sound from all sources near and far.
<i>Audible Range</i>	The limits of frequency which are audible or heard as sound. The normal ear in young adults detects sound having frequencies in the region 20 Hz to 20 kHz, although it is possible for some people to detect frequencies outside these limits.
<i>Character, acoustic</i>	The total of the qualities making up the individuality of the noise. The pitch or shape of a sound's frequency content (spectrum) dictate a sound's character.
<i>Decibel [dB]</i>	The level of noise is measured objectively using a Sound Level Meter. The following are examples of the decibel readings of every day sounds; <ul style="list-style-type: none"> 0dB the faintest sound we can hear 30dB a quiet library or in a quiet location in the country 45dB typical office space. Ambience in the city at night 60dB Martin Place at lunch time 70dB the sound of a car passing on the street 80dB loud music played at home 90dB the sound of a truck passing on the street 100dB the sound of a rock band 115dB limit of sound permitted in industry 120dB deafening
<i>dB(A)</i>	<i>A-weighted decibels</i> The ear is not as effective in hearing low frequency sounds as it is hearing high frequency sounds. That is, low frequency sounds of the same dB level are not heard as loud as high frequency sounds. The sound level meter replicates the human response of the ear by using an electronic filter which is called the "A" filter. A sound level measured with this filter switched on is denoted as dB(A). Practically all noise is measured using the A filter. The sound pressure level in dB(A) gives a close indication of the subjective loudness of the noise.
<i>Frequency</i>	Frequency is synonymous to <i>pitch</i> . Sounds have a pitch which is peculiar to the nature of the sound generator. For example, the sound of a tiny bell has a high pitch and the sound of a bass drum has a low pitch. Frequency or pitch can be measured on a scale in units of Hertz or Hz.
<i>Loudness</i>	A rise of 10 dB in sound level corresponds approximately to a doubling of subjective loudness. That is, a sound of 85 dB is twice as loud as a sound of 75 dB which is twice as loud as a sound of 65 dB and so on
<i>L_{Max}</i>	The maximum sound pressure level measured over a given period.
<i>L_{Min}</i>	The minimum sound pressure level measured over a given period.
<i>L₁</i>	The sound pressure level that is exceeded for 1% of the time for which the given sound is measured.
<i>L₁₀</i>	The sound pressure level that is exceeded for 10% of the time for which the given sound is measured.
<i>L₉₀</i>	The level of noise exceeded for 90% of the time. The bottom 10% of the sample is the L ₉₀ noise level expressed in units of dB(A).
<i>L_{eq}</i>	The "equivalent noise level" is the summation of noise events and integrated over a selected period of time.
<i>Background Sound Low</i>	The average of the lowest levels of the sound levels measured in an affected area in the absence of noise from occupants and from unwanted, external ambient noise sources. Usually taken to mean the L _{A90} value
<i>Ctr</i>	A frequency adaptation term applied in accordance with the procedures described in ISO 717.
<i>dB (A)</i>	'A' Weighted overall sound pressure level

<i>Noise Reduction</i>	The difference in sound pressure level between any two areas. The term “noise reduction” does not specify any grade or performance quality unless accompanied by a specification of the units and conditions under which the units shall apply
<i>NR Noise Rating</i>	Single number evaluation of the background noise level. The NR level is normally around 5 to 6 dB below the “A” weighted noise level. The NR curve describes a spectrum of noise levels and is categorised by the level at 1000 Hz ie the NR 50 curve has a value of 50 dB at 1000 Hz. The NR rating is a tangential system where a noise spectrum is classified by the NR curve that just encompasses the entire noise spectrum consideration.
<i>R_w</i>	Weighted Sound Reduction Index - Laboratory test measurement procedure that provides a single number indication of the acoustic performance of a partition or single element. Calculation procedures for R _w are defined in ISO 140-2:1991 “Measurement of Sound Insulation in Buildings and of Building Elements Part 2: Determination, verification and application of precision data”.
<i>R'_w</i>	Field obtained Weighted Sound Reduction Index - this figure is generally up to 3-5 lower than the laboratory test determined level data due to flanked sound transmission and imperfect site construction.
<i>Sound Isolation</i>	A reference to the degree of acoustical separation between any two areas. Sound isolation may refer to sound transmission loss of a partition or to noise reduction from any unwanted noise source. The term “sound isolation” does not specify any grade or performance quality and requires the units to be specified for any contractual condition
<i>Sound Pressure Level, L_p dB</i>	A measurement obtained directly using a microphone and sound level meter. Sound pressure level varies with distance from a source and with changes to the measuring environment. Sound pressure level equals 20 times the logarithm to the base 10 of the ratio of the rms sound pressure to the reference sound pressure of 20 micro Pascals.
<i>Sound Power Level, L_w dB</i>	Sound power level is a measure of the sound energy emitted by a source, does not change with distance, and cannot be directly measured. Sound power level of a machine may vary depending on the actual operating load and is calculated from sound pressure level measurements with appropriate corrections for distance and/or environmental conditions. Sound power levels is equal to 10 times the logarithm to the base 10 of the ratio of the sound power of the source to the reference sound power of 1 picoWatt
<i>Speech Privacy</i>	A non-technical term but one of common usage. Speech privacy and speech intelligibility are opposites and a high level of speech privacy means a low level of speech intelligibility. It should be recognised that acceptable levels of speech privacy do not require that speech from an adjacent room is inaudible.
<i>Transmission Loss</i>	Equivalent to Sound Transmission Loss and to Sound Reduction Index in terminology used in countries other than Australia. A formal test rating of sound transmission properties of any construction, by usually a wall, floor, roof etc. The transmission loss of all materials varies with frequency and may be determined by either laboratory or field tests. Australian Standards apply to test methods for both situations.

10 Appendix B - Ben White CV

Curriculum Vitae – Benjamin White

58 Carrington Road, Randwick
NSW 2031



Employment Experience:

Director - White Noise Acoustics:
Present

March 2019 –

Director/Engineer - Acoustic Logic Consultancy:
July 2018

March 2001 –

Experience:

Ben White the Director of White Noise has over 17 years of experience in acoustic.

Ben has significant experience in providing acoustic services and expert advice in the following areas:

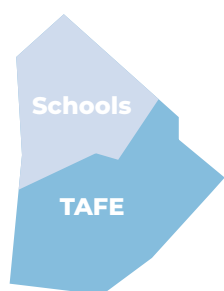
- Residential acoustic reports including aircraft noise (AS2021) assessments, traffic noise, train noise and vibration assessments.
- Noise emission assessments for various projects including assessments with planning requirements using EPA, Department of Planning, Council DCP's and similar regulatory requirements.
- Planning approvals including Development Applications for multi dwelling residential developments, commercial developments, hotels and boarding houses, places of entertainment, carparks, mixed use developments, shopping centres and the like.
- Expert court witness including Land and Environment Court and other expert witness work.
- Project planning and specifications for types of projects including residential, commercial, retail, hotel accommodation, warehouses and industrial developments and mixed-use projects.
- Project delivery for all types of projects including, design advice and project delivery requirements at all stages of projects during design and construction.
- Certification works including on site testing for the provision of certification of all types of projects including items required to comply with Part F5 of the BCA as well as project specific acoustic requirements.
- Mechanical design and advice for the treatments of mechanical services with project requirements.
- External façade design and specification.
- Specialised acoustic design advice including areas of projects.
- Issues with existing building include site surveys and audits as well as advice regarding rectification if required.

11 Appendix C – Community Communication Strategy

Meadowbank Education and Employment Precinct

Project update

October 2020



Multi-Trades and Digital Technology Hub at TAFE NSW Meadowbank | PLANNING APPROVAL

Project overview

A project is underway to transform TAFE NSW Meadowbank into a technology-focussed campus which will include a new Multi-Trades and Digital Technology Hub, to provide a unique industry innovation and collaboration space. This will transform training delivery to be more digitally interactive and industry-focussed.

Progress summary

The tender for Early Contractor Involvement was awarded to Hansen Yuncken in May to complete design and construction work.

Site establishment works were completed in August with the installation of site fencing and hoarding, site office and work sheds and equipment deliveries.

Early works are now underway to prepare the site for construction.

Accelerated assessment

The State Significant Development (SSD) application for this project was fast tracked by the Department of Planning, Industry and Environment. The SSD was approved on 25 August 2020. This means main works construction can begin soon.

Keeping you updated

We will keep you updated and provide more information about the construction timetable in the coming weeks. You can contact us using the information below.

About the Precinct

The Meadowbank Education and Employment Precinct will reimagine the way we learn and connect.

With education at its heart, the wider Precinct will connect students to training and employment opportunities with local industry and the surrounding community. The Precinct will have improved accessibility with upgraded pedestrian and cycleway routes to help access the stations, schools and TAFE.

School Infrastructure NSW

✉ schoolinfrastructure@det.nsw.edu.au

📞 1300 482 651

🌐 schoolinfrastructure.nsw.gov.au

TAFE NSW

✉ meadowbankprecinct@tafensw.edu.au

📞 1800 752 142



Managing construction impacts

As part of the consent to carry out the work, the main contractor is required to develop plans that details how construction impacts on nearby local residents will be minimized. These impacts include noise, vibration and vehicle movements.

You can view the consent conditions, including those required for managing construction impacts via the Department of Planning, Industry and the Environment's Major Projects portal at planningportal.nsw.gov.au/major-projects/project/14386.

Your feedback

You can contribute to the development of strategies to effectively manage construction impacts. Your feedback is sought on how we propose to manage construction activities listed in the table below. Please provide your feedback by Friday 6 November 2020 via email or phone.

Email: schoolinfrastructure@det.nsw.edu.au
Phone: 1300 482 65

Activity	Consent condition and proposed activities
General	<p>Proposed actions:</p> <ul style="list-style-type: none">■ We will provide advance notice of work to the local community, particularly when we anticipate high noise generating works.■ Noise levels on site will not exceed the noise control guidelines that are outlined in the EPA Environmental Noise Control Manual for construction and demolition works.■ Construction works, including the delivery of materials to and from the site, are currently approved to take place between 7:00am and 6:00pm Mondays to Fridays and between 8:00am and 1:00pm on Saturdays. No night work is currently approved for this project and no work is currently approved on Sundays or public holidays.
Construction	<p>Consent condition:</p> <ul style="list-style-type: none">■ All reasonable steps must be taken to minimise dust generated during all works. <p>Proposed actions:</p> <ul style="list-style-type: none">■ Exposed surfaces and stockpiles will be managed with regular watering to minimise dust.■ Public roads will be kept clean.■ All trucks entering or leaving the site with loads will have their loads covered.
Construction	<p>Consent condition:</p> <ul style="list-style-type: none">■ Measures are to be implemented to ensure road safety and network efficiency during construction. <p>Proposed actions:</p> <ul style="list-style-type: none">■ Trucks will be well maintained and will be required to observe speed limits.■ Trucks will only use approved truck routes to and from the site.
Construction	<p>Consent condition:</p> <ul style="list-style-type: none">■ Achieve the noise management levels in EPA's Interim Construction Noise Guideline (DECC, 2009).■ Measures are to be implemented to manage high noise generating works, in close proximity to sensitive receivers.

Activity	Consent condition and proposed activities
	<p>Proposed actions:</p> <ul style="list-style-type: none">▪ If high noise generating works are planned, neighbours will be notified of this before work starts.▪ If rock breaking, rock hammering, sheet piling, pile driving and similar activities are required, effective equipment will be chosen and respite periods for local residents will be put in place. Rock breaking hours will be strictly limited to approved hours of:<ul style="list-style-type: none">▪ 9:00am to 12:00pm, Monday to Friday▪ 2:00pm to 5:00pm Monday to Friday; and▪ 9:00am to 12:00pm, Saturday.▪ For high noise generating works, if complaints are received, work will be managed to reduce the impact to local residents by implementing shorter time periods, or alternating with quieter work methods where practical.
Construction	<p>Consent condition:</p> <p>Provide a mechanism for the community to discuss or provide feedback regarding construction impacts</p> <p>Proposed actions:</p> <ul style="list-style-type: none">▪ The community information phone line and email address will be available throughout the project and for a minimum of 12 months following completion of the project:<ul style="list-style-type: none">▪ Phone: 1300 482 651▪ Email: schoolinfrastructure@det.nsw.edu.au

Frequently asked questions

Why has the planning approval for this project been fast tracked?

This project was in the fifth wave of projects that had their assessments fast tracked.

The Department of Planning, Industry and Environment (DPIE) made a decision on the SSD applications for the fifth tranche of projects during late August 2020. This will mean the project can get underway sooner and the overall construction pipeline can continue to grow.

Does this mean the usual checks and community consultation will be waived to fast track the projects?

The assessment process is being accelerated, not changed. The usual planning rules and policies will apply, and all projects will be assessed under the Environmental Planning and Assessment Act 1979.

Will the community still get to have a say on projects that are being fast-tracked?

All of the projects being fast tracked have completed the substantive planning work and are post the exhibition and community consultation phase. We will continue to engage and inform the community during the project.

Due to the need to meet requirements under Public Health Orders, a range of digital engagement tools will be used to communicate with the community and stakeholders to seek any comment or feedback. This will include digital project updates, online sharing of information session material, the Precinct website, community information line and mailbox.

When will main works construction begin?

Main works construction will begin soon. We will notify local residents and businesses prior to work starting.

Will street parking be impacted during construction?

There will be minimal impacts to street parking as there will be parking available on site for workers. The impact of our project on the community is considered in our planning. We work with councils and the community to identify issues and put in place mitigation measures.

What steps will be taken to control noise and dust?

The contractor will implement dust and noise control measures. Dust and noise are minimised with hoarding, shade cloth and spraying water.

Will utility services be interrupted as part of construction?

SINSW co-ordinates upgrades or new supplies with local providers to minimise disruption. In the event that there will be any disruption to the local area, we will notify businesses and residents well in advance.

What will the construction hours be?

SINSW works with local council and stakeholders to minimise the impact of construction works on the local community. This means that we comply with the local council's standard working hours. Adherence to these guidelines is often a condition of development approval. Work hours are 7:00am to 6:00pm Monday to Friday and 8:00am to 1:00pm on Saturday.

How will traffic be managed?

Traffic management will be in place where required for the safety of the local community and workers. Traffic controllers will be used to manage entry and exit of vehicles to and from the construction site as necessary. Vehicles will give way to pedestrians at all times.

Who can I contact about the work?

You can contact School Infrastructure NSW during business hours on 1300 482 651 or email schoolinfrastructure@det.nsw.edu.au.

In an emergency, call triple zero (000).

A.8 Construction Waste Management Sub-Plan (CWMSP)

Multi-Trades and Digital Technology Hub and car park (SSD 10349): Submission of Construction Waste Management Sub-Plan (CWMSP) in accordance with Condition B18 & B14

Condition	Condition requirements	Document reference
B18	The Construction Waste Management Sub-Plan (CWMSP) must address, but not be limited to, the following: (a) detail the quantities of each waste type generated during construction and the proposed reuse, recycling and disposal locations; and	TAFE Meadowbank Main Works - Construction Waste Management Sub-Plan date 1/2/2021 CWMSP Pages 2-3
	(b) removal of hazardous materials, particularly the method of containment and control of emission of fibres to the air, and disposal at an approved waste disposal facility in accordance with the requirements of the relevant legislation, codes, standards and guidelines, prior to the commencement of construction.	CWMSP Pages 3-5
B14	(a) detailed baseline data;	N/A
	(b) details of: (i) the relevant statutory requirements (including any relevant approval, license or lease conditions);	CWMSP Pages 3-5
	(ii) any relevant limits or performance measures and criteria; and	CWMSP Page 5
	(iii) the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;	CWMSP Pages 2-3
	(c) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;	CWMSP Pages 3-5

	(d) a program to monitor and report on the: (i) impacts and environmental performance of the development;	Not Applicable
	(ii) effectiveness of the management measures set out pursuant to paragraph (c) above;	Not Applicable
	(e) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;	Not Applicable
	(f) a program to investigate and implement ways to improve the environmental performance of the development over time;	Not Applicable
	(g) a protocol for managing and reporting any: (i) incident and any non-compliance (specifically including any exceedance of the impact assessment criteria and performance criteria);	Not Applicable
	(ii) complaint;	Not Applicable
	(iii) failure to comply with statutory requirements; and	Not Applicable
	(h) a protocol for periodic review / update of the plan and any updates in response to incidents or matters of non-compliance.	Not Applicable





Waste Audit & Consultancy Services (Aust) Pty Ltd
Level 21, 133 Castlereagh Street
Sydney, NSW 2000
Australia
02 9199 4521
www.wasteaudit.com.au

February 1, 2021

Hang Nghiem
Design Manager
Hansen Yuncken Pty Ltd
Sydney Corporate Park
Building 1, L3, 75-85 O'Riordan Street
Alexandria NSW 2015

TAFE Meadowbank Main Works - Construction Waste Management Sub-Plan

This **Construction Waste Management Sub-Plan** (CWMSP) addresses the relevant requirements of the SSD Condition B-18, with regard to management of waste materials from the following Main Works construction activities:

Stage 2:

- Retaining walls
- All structural works, comprising of piles, footings, slabs on ground, suspended slabs, columns, load bearing internal block walls and structural steel
- Installation of inground services

Stage 3:

- Building envelope and façade
- Installation of services throughout
- Internal fit out works
- Construction of kerb and gutter and external pavements
- Landscaping

Stage 4:

- Public domain works

Specifically, SSD Condition B-18 requires that: *The Construction Waste Management Sub-Plan (CWMSP) must address, but not be limited to, the following:*

(a) detail the quantities of each waste type generated during construction and the proposed reuse, recycling and disposal locations; and

(b) removal of hazardous materials, particularly the method of containment and control of emission of fibres to the air, and disposal at an approved waste disposal facility in accordance with the requirements of the relevant legislation, codes, standards and guidelines, prior to the commencement of construction.

The following volumes of materials are estimated to result from Main Works construction activities:

Stage 2				
Materials on Site		Destination/Treatment		
Type of Material	Estimated Volume (m ³)	Onsite (Reuse/Recycle)	Offsite (Reuse/Recycle)	Disposal (Landfill)
Excess Concrete	5	Separated on site and crushed for use in temporary access road construction	Collected by contractor and taken to concrete recycling facility	No disposal to landfill
Scrap Wiring	2	No on-site reuse	Collected by contractor for separation into different grades for recycling	No disposal to landfill
General Waste (All Other Materials)	1	No on-site reuse or recycling	Separated onsite into dedicated receptacles and collected by waste contractor for disposal	Disposal to landfill

Stage 3				
Materials on Site		Destination/Treatment		
Type of Material	Estimated Volume (m ³)	Onsite (Reuse/Recycle)	Offsite (Reuse/Recycle)	Disposal (Landfill)
Excess Concrete	20	Separated on site and crushed for use in temporary access road construction	Collected by contractor and taken to concrete recycling facility	No disposal to landfill
Floor Coverings	10	No on-site reuse	Disposed of into a designated bin and collected for recycling if of the required quality, or disposal to landfill if not	Material that cannot be recycled will be disposed of at landfill facility
Metal Offcuts, Roof Sheeting, Wiring, etc.	10	No on-site reuse	Collected by contractor for separation into different grades for recycling	No disposal to landfill
Used Pallets	30	Reused on site for storage where possible	Collected by contractor and disposed of at recycling facility	No disposal to landfill
Plastic Pallet Wrap	50	Some potential for reuse on site for covering equipment, fittings etc.	Collected by contractor and disposed of at recycling facility	No disposal to landfill
Timber Offcuts	25	Reuse for formwork where possible	Untreated recyclable timber will be collected and recycled at appropriate timber yard. Unrecyclable (treated) timber will be disposed of at landfill	Material that cannot be recycled will be disposed of at landfill facility

Stage 3				
Materials on Site		Destination/Treatment		
Type of Material	Estimated Volume (m ³)	Onsite (Reuse/Recycle)	Offsite (Reuse/Recycle)	Disposal (Landfill)
Plasterboard Offcuts	25	No on-site reuse	Separated and stockpiled onsite and collected by waste contractor for recycling for use as soil improver with gypsum etc. removed	Material that cannot be recycled will be disposed of at landfill facility
Paper/Cardboard Recycling	30	Reuse cardboard boxes for storage where possible	Separated onsite into dedicated receptacles and collected by waste contractor for recycling	No disposal to landfill
Glass (Excess)	5	No on-site reuse	Recyclers consulted as to potential for recycling	No disposal to landfill
Mixed Recyclables	10	No on-site reuse or recycling	Separated onsite into dedicated receptacles and collected by the waste contractor for recycling	No disposal to landfill
Soil, Rock	10	May be reused onsite as fill in services trenches or shoring walls	Uncontaminated materials removed from the site should be reused as clean fill by waste contractor	Material that cannot be reused will be disposed of at licenced landfill facility
General Waste (All Other Materials)	20	No on-site reuse or recycling	Separated onsite into dedicated receptacles and collected by waste contractor for disposal	Disposal to landfill

Stage 4				
Materials on Site		Destination/Treatment		
Type of Material	Estimated Volume (m ³)	Onsite (Reuse/Recycle)	Offsite (Reuse/Recycle)	Disposal (Landfill)
Excess Concrete	2	Separated on site and crushed for use in paving and/or temporary internal road construction	Any materials not reused on site should be sent to a licenced recycling facility	No disposal to landfill
Soil, Rock	4	May be reused onsite as fill in services trenches or shoring walls	Uncontaminated materials removed from the site should be reused as clean fill by waste contractor	Material that cannot be reused will be disposed of at licenced landfill facility
General Waste (All Other Materials)	1	No on-site reuse or recycling	Separated onsite into dedicated receptacles and collected by waste contractor for disposal	Disposal to landfill

In total, Main Works construction activities are expected to produce around **260 cubic metres** of waste materials, of which **238 cubic metres** or **92%** by volume should be able to be diverted from landfill via reuse or recycling.

Reuse, Recycling, & Disposal

The site's waste contractor will provide these services and ensure that there are adequate numbers of clearly marked bins on site to enable effective separation of the materials listed above. Specific locations of disposal facilities on site and removal schedules will be planned in consultation with TAFE Meadowbank prior to commencement of works.

All civil and construction works subcontractors will receive suitable training in separation of waste materials, and practices to be followed in the event that contaminated materials are encountered (see below).

Where contaminated fill/soil is not suitable for onsite retention or is surplus to construction requirements, materials will be remediated by off-site disposal. Materials shall be classified in accordance with EPA (2014) *Waste Classification Guidelines* or an appropriate exemption as created under the *Protection of the Environment Operations (Waste) Regulation 2014*.

All waste materials removed from the site will be taken to suitably licenced facilities for that material type. The waste contractor will provide TAFE Meadowbank with a list of these facilities and their licensing details, prior to commencement of works.

Excavation & Off-Site Disposal

Fill materials shall be classified in accordance with *Waste Classification Guidelines Part 1: Classifying Waste*, November 2014 (EPA 2014) or an appropriate exemption as created under the *Protection of the Environment Operations (Waste) Regulation 2014*.

It is anticipated natural soils/bedrock will require off-site disposal and these shall also be classified in accordance with *Waste Classification Guidelines Part 1: Classifying Waste*, (EPA 2014).

Waste certificates will be prepared for each material type that is to be disposed of. All off-site waste facilities used must be lawfully licensed to receive the materials sent to them for disposal.

The Remediation Contractor must be aware of and conduct all waste disposal in accordance with all relevant regulations. All waste tracking documentation including disposal dockets must be maintained by the Remediation Contractor and must be provided to the Site Contamination (Environmental) Consultant and the client for inclusion in the validation report.

Data Collection & Validation

Validation data is required to be collected to verify the effectiveness of the remedial works and document the final site conditions as being suitable for the proposed future use(s). Validation activities will be required for tracking the movement of waste materials requiring off-site disposal.

Hazardous Materials Management (Including Fibrous Materials)

Section 42 of the *Protection of the Environment Operations (Waste) Regulation 2014* stipulates special transportation, reporting, re-use and recycling requirements relating to asbestos waste.

The requirements for the transportation of asbestos waste include:

- Bonded asbestos material must be securely packaged at all times
- Friable asbestos material must be kept in a sealed container
- Asbestos-contaminated soils must be wetted down
- All asbestos waste must be transported in a covered, leak-proof vehicle

The transporter of asbestos waste must provide the following information to be given to NSW EPA prior to the transportation of asbestos waste loads:

- Source site details including address, name and contact details
- Date of proposed transportation commencement
- Name, address and contact details of disposal site
- Approximate weight of each class of asbestos in each load

The transporter of asbestos waste must ensure the following information is given to the disposal site before or at delivery:

- Unique consignment code issued by EPA in relation to that load
- Any other information specified in the Asbestos and Waste Tyres Guidelines

The requirements relating to the off-site disposal of asbestos waste are as follows:

- Asbestos waste in any form must be disposed of only at a landfill site that may lawfully receive the waste
- When asbestos waste is delivered to a landfill site, the occupier of the landfill site must be informed by the person delivering the waste that the waste contains asbestos
- When unloading and disposing of asbestos waste at a landfill site, the waste must be unloaded and disposed of in such a manner as to prevent the generation of dust or the stirring up of dust
- Asbestos waste disposed of at a landfill site must be covered with virgin excavated natural material or other material as approved in the facility's environment protection licence

All wastes generated and proposed to be disposed of off-site shall be assessed, classified and managed in accordance with the NSW EPA *Waste Classification Guidelines* 2014. Where wastes require immobilisation prior to off-site disposal (to reduce waste classifications) an immobilisation approval shall be sought in accordance with Part 2 of the NSW EPA *Waste Classification Guidelines* 2014. Immobilisations are only anticipated to be required with unexpected finds.

Asbestos Removal Regulations & Codes of Practice

The removal and disposal of asbestos will be managed in accordance with the Work Health and Safety Act 2011 (WHS Act) and WHS Regulation, *How to Safely Remove Asbestos: Code of Practice* (Safe Work NSW 2019a13), *How to Manage and Control Asbestos in the Workplace Code of Practice* (Safe Work NSW 2019b14), the NSW EPA (2014) *Waste Classification Guidelines*, and requirements under the Protection of the Environment Operations (Waste) Regulation (2014) for asbestos waste monitoring.

Excavation, onsite remediation and removal of asbestos impacted soils are required to be conducted by a Class A (during removal of friable asbestos) or a minimum of Class B (during removal of bonded ACM) Asbestos Removal licensed contractor. It will be the requirement of the appointed civil works contractor to obtain the appropriate approvals (as outlined below) and prepare an Asbestos Removal Control Plan (ARCP).

All airborne asbestos fibre monitoring works must be undertaken by a competent person or Licenced Asbestos Assessor, in accordance with SafeWork NSW requirements. Before starting the affected works, a licensed asbestos removal contractor shall be responsible for submitting the appropriate WorkSafe NSW permit (friable or non-friable) to remove asbestos at least five business days prior to the proposed works where required.

Remediation works shall not commence until all required approvals, licences and notifications including waste classification documentation (in accordance with EPA 2014) have been granted.

A licensed asbestos removalist and SafeWork notification regarding the scope of the removal works is required. The known contamination status of the site is expected to involve the removal of >10 m² non-friable (bonded) Asbestos-Containing Material (ACM) and the removal of AF/FA impacted soil. The appointed Remediation Contractor must obtain a site-specific permit approving the works from SafeWork NSW. A permit will not be granted without a current licence and the permit application must be made at least seven days before the work is due to commence.

Removal of non-friable ACM (>10 m²) is required to be conducted by a contractor holding at least a Class B licence. Removal for friable asbestos is required to be conducted by a contractor holding a Class A licence.

Applicable Regulations & Guidelines

The following regulations and guidelines apply with respect to hazardous materials identification, classification, and management and are in line with the Planning Secretary's Environmental Assessment Requirements (SEARs):

- NSW EPA, Sampling Design Guidelines (EPA, 1995);
- Managing Land Contamination: Planning Guidelines - SEPP55 Remediation of Land (DUAP, 1998);
- NSW OEH, Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites (OEH, 2011);
- National Environment Protection Council (NEPC) National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended in 2013), (NEPC, 2013);
- Protection of the Environment Operations (Waste) Regulation 2014
- NSW EPA Waste Classification Guidelines, Part 1: Classifying Waste (EPA, 2014a);
- NSW EPA Waste Classification Guidelines Part 2: Immobilisation of Waste (EPA, 2014b); and
- NSW EPA (2017) Contaminated Sites Guidelines for the NSW Site Auditor Scheme 3rd Edition (EPA, 2017).
- Safe Work NSW *How to Safely Remove Asbestos Code of Practice* 2019

Reference Drawings & Documents

We have received and reviewed the following drawings and documents:

Title	Issue Date
GP-AR-DWG-C1300_GROUND GA FLOOR PLAN_REV_11_A0	25/1/21
GP-AR-DWG-C1310_LEVEL 1 GA FLOOR PLAN_REV_10_A0	25/1/21
GP-AR-DWG-C1320_LEVEL 2 GA FLOOR PLAN_REV_11_A0	25/1/21
GP-AR-DWG-C2000_EXTERNAL ELEVATIONS_REV_8_A0	25/1/21
GP-AR-DWG-C2050_SECTIONS_REV_7_A0	25/1/21
GP-AR-DWG-M1310_LEVEL 01 GA FLOOR PLAN_REV_13_A0	25/1/21
GP-AR-DWG-M1320_LEVEL 02 GA FLOOR PLAN_REV_15_A0	25/1/21
GP-AR-DWG-M1330_LEVEL 03 GA FLOOR PLAN_REV_15_A0	28/1/21
GP-AR-DWG-M1340_LEVEL 04 GA FLOOR PLAN_REV_14_A0	25/1/21
GP-AR-DWG-M1350_LEVEL 05 GA FLOOR PLAN_REV_13_A0	25/1/21
GP-AR-DWG-M1360_LEVEL 06 GA FLOOR PLAN_REV_14_A0	25/1/21
GP-AR-DWG-M1361_LEVEL 06 FLOOR PLAN_REV_14_A0	25/1/21
GP-AR-DWG-M1411_LEVEL 01 RCP - NORTH_REV_8_A0	25/1/21
GP-AR-DWG-M1412_LEVEL 01 RCP - SOUTH_REV_8_A0	25/1/21
GP-AR-DWG-M1421_LEVEL 02 RCP - NORTH_REV_8_A0	25/1/21
GP-AR-DWG-M1422_LEVEL 02 RCP - SOUTH_REV_9_A0	25/1/21
GP-AR-DWG-M1431_LEVEL 03 RCP - NORTH_REV_8_A0	25/1/21
GP-AR-DWG-M1432_LEVEL 03 RCP - SOUTH_REV_8_A0	25/1/21
GP-AR-DWG-M1441_LEVEL 04 RCP - NORTH_REV_9_A0	25/1/21
GP-AR-DWG-M1442_LEVEL 04 RCP - SOUTH_REV_9_A0	25/1/21
GP-AR-DWG-M1451_LEVEL 05 RCP - NORTH_REV_9_A0	25/1/21
GP-AR-DWG-M1452_LEVEL 05 RCP - SOUTH_REV_8_A0	25/1/21
GP-AR-DWG-M1461_LEVEL 06 RCP_REV_9_A0	25/1/21
GP-AR-DWG-M1500_ROOF PLAN_REV_8_A0	25/1/21

Title	Issue Date
GP-AR-DWG-M2000_EXTERNAL ELEVATIONS_REV_7_A0	25/1/21
GP-AR-DWG-M2010_EXTERNAL ELEVATIONS_REV_8_A0	25/1/21
GP-AR-DWG-M2020_EXTERNAL ELEVATIONS_REV_8_A0	25/1/21
GP-AR-DWG-M2030_EXTERNAL ELEVATIONS_REV_8_A0	25/1/21
GP-AR-DWG-M2040_EXTERNAL ELEVATIONS_REV_8_A0	25/1/21
GP-AR-DWG-M2050_EXTERNAL ELEVATIONS_REV_8_A0	25/1/21
GP-AR-DWG-M2060_EXTERNAL ELEVATIONS_REV_3_A0	25/1/21
GP-AR-DWG-M2500_OVERALL SECTIONS_REV_8_A0	25/1/21
GP-AR-DWG-M2505_OVERALL SECTIONS_REV_9_A0	25/1/21
GP-AR-DWG-M2510_OVERALL SECTIONS_REV_8_A0	25/1/21
GP-AR-DWG-S0100_EXISTING SITE PLAN_REV_7_A0	25/1/21
GP-AR-DWG-S0101_DEMOLITION SITE PLAN_REV_8_A0	25/1/21
GP-AR-DWG-S0102_PROPOSED SITE PLAN_REV_8_A0	25/1/21
HP-IR-DWG-S0100	28/1/21
NR-CV-DWG-S0401 [12]	26/1/21

This CWMSP has been prepared by:



Peter Hosking
Director
Waste Audit & Consultancy Services (Aust) Pty Ltd
February 1, 2021

A.9 Construction Soil and Water Management Sub-Plan (CSWMSP)

Multi-Trades and Digital Technology Hub and car park (SSD 10349): Submission of Construction Soil and Water Management Sub-Plan (CSWMSP) in accordance with Condition B19 & B14

Condition	Condition requirements	Document reference
B19	The Applicant must prepare a Construction Soil and Water Management Sub-Plan (CSWMSP) and the plan must address, but not be limited to the following: (a) be prepared by a suitably qualified expert, in consultation with Council;	Northrop CSWMSP <ul style="list-style-type: none"> Appendix C – CV Appendix D – Consultation Record
	(b) describe all erosion and sediment controls to be implemented during construction, including as a minimum, measures in accordance with the publication Managing Urban Stormwater: Soils & Construction (4th edition, Landcom 2004) commonly referred to as the 'Blue Book';	Northrop CSWMSP <ul style="list-style-type: none"> Section 2 Erosion and Sediment Control Section 3.1 SSD Conditions Appendix A – Soil & Water Management Plans
	(c) provide a plan of how all construction works will be managed in a wet-weather events (i.e. storage of equipment, stabilisation of the Site);	Northrop CSWMSP <ul style="list-style-type: none"> Section 2.3 Wet Weather Management Section 3.1 SSD Conditions
	(d) detail all off-Site flows from the Site; and	Northrop CSWMSP <ul style="list-style-type: none"> Section 2.1 Sediment Basin Appendix B Sediment Basin Calculations Section 3.1 SSD Conditions
	(e) describe the measures that must be implemented to manage stormwater and flood flows for small and large sized events, including, but not limited to, 1 in 5-year ARI and 1 in 100-year ARI.	Northrop CSWMSP <ul style="list-style-type: none"> Section 2 Erosion and Sediment Control Appendix A – Soil & Water Management Plans Section 3.1 SSD Conditions
B14	(a) detailed baseline data;	Northrop CSWMSP <ul style="list-style-type: none"> Section 2 Erosion and Sediment Control

<ul style="list-style-type: none"> • details of: <ul style="list-style-type: none"> • the relevant statutory requirements (including any relevant approval, license or lease conditions); 	Northrop CSWMSP <ul style="list-style-type: none"> • Section 1.2 Related Reports and Documents • Section 2 Erosion and Sediment Control • Section 2.2 Sediment and Erosion Control Measures
(ii) any relevant limits or performance measures and criteria; and	Northrop CSWMSP <ul style="list-style-type: none"> • Section 2.1 Sediment Basin
(iii) the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;	Northrop CSWMSP <ul style="list-style-type: none"> • Appendix A – Soil & Water Management Plans • Appendix B Sediment Basin Calculations
(c) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;	Northrop CSWMSP <ul style="list-style-type: none"> • Section 2.3 Wet Weather Management • Appendix A – Soil & Water Management Plans
(d) a program to monitor and report on the: <ul style="list-style-type: none"> (i) impacts and environmental performance of the development; 	Northrop CSWMSP <ul style="list-style-type: none"> • Appendix A – Soil & Water Management Plans <ul style="list-style-type: none"> • NR-CV-DWG-S0111 Rev 5 • NR-CV-DWG-S0113 Rev 5
(ii) effectiveness of the management measures set out pursuant to paragraph (c) above;	Northrop CSWMSP <ul style="list-style-type: none"> • Appendix A – Soil & Water Management Plans <ul style="list-style-type: none"> • NR-CV-DWG-S0111 Rev 5 • NR-CV-DWG-S0113 Rev 5
(e) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;	Northrop CSWMSP <ul style="list-style-type: none"> • Appendix A – Soil & Water Management Plans <ul style="list-style-type: none"> • NR-CV-DWG-S0111 Rev 5 • NR-CV-DWG-S0113 Rev 5
(f) a program to investigate and implement ways to improve the environmental performance of the development over time;	N/A
(g) a protocol for managing and reporting any: <ul style="list-style-type: none"> (i) incident and any non-compliance (specifically including any exceedance of the impact assessment criteria and performance criteria); 	N/A

	(ii) complaint;	N/A
	(iii) failure to comply with statutory requirements; and	N/A
	(h) a protocol for periodic review / update of the plan and any updates in response to incidents or matters of non-compliance.	N/A





CIVIL ENGINEERING REPORT: SOIL & WATER MANAGEMENT
PLAN

Meadowbank TaFE

See Street, Meadowbank

PREPARED FOR
Hansen Yuncken
B1 L3 75-85 O'Riordan Street

Alexandria NSW 2015
Tel: (02) 9770 7691

Ref: NR-CV-RPT-0003
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Civil Engineering Report: Soil & Water Management Plan

Revision Schedule

Date	Revision	Issue	Prepared By	Approved By
06.10.20	1	Preliminary	J. Gilligan	J. Gilligan
13.10.20	2	Preliminary	J. Gilligan	J. Gilligan
12.11.20	3	Final	J. Gilligan	J. Gilligan

Northrop Consulting Engineers Pty Ltd

ACN 064 775 088 | ABN 81 094 433 100

Level 2, 3 Horwood Place, Parramatta NSW 2150

02 9241 4188 | sydney@northrop.com.au | www.northrop.com.au

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1. General

1.1 Introduction

Northrop Consulting Engineers Pty Ltd (Northrop) have been engaged by Hansen Yuncken to prepare the Civil Engineering design and documentation in support of a Construction Certificate for the proposed Meadowbank TAFE development at See Street, Meadowbank.

This report covers the works shown as the Northrop Drawing Package required for the development of the site including:

- Erosion and Sediment control.

1.2 Related Reports and Documents

This report is to be read in conjunction with the following reports and documents:

1. Detailed Design Phase Civil Documentation prepared by Northrop:
 - NR-CV-DWG-S0111 Specification Notes – Sheet 01
 - NR-CV-DWG-S0113 Specification Notes – Sheet 03
 - NR-CV-DWG-S0201 Sediment and Soil Erosion Control Plan Sheet 01
 - NR-CV-DWG-S0202 Sediment and Soil Erosion Control Plan Sheet 02
 - NR-CV-DWG-S0211 Sediment and Soil Erosion Control Details
2. NSW Department of Housing Manual, “Managing Urban Stormwater Soil & Construction” 2004 (Blue Book)
3. City of Ryde Council Engineering Design Specifications

1.3 The Development

1.3.1 Precinct and Surrounds

The subject site is located within the suburb of Meadowbank in the City of Ryde Council (Council) Local Government Area (LGA). There are two (2) areas of development within the Meadowbank TAFE campus including a proposed Multi-Trades and Digital Technology Hub, and a new multi-story carpark.

The development site for the multi-storey carpark is approximately 4,000m² and is bound by See Street to the south and the existing TAFE development to the west, north and east.

Based on review of the survey undertaken across the site by CMS Surveyors Pty Ltd the general site levels fall from a maximum RL of approximately 27.09 m AHD at the south, to a minimum ground surface RL of approximately 23.61 m AHD at the north. There is limited information on the existing stormwater network which predominantly consists of 150mm and 225mm pipes.

The development for the Multi-Trades and Digital Technology Hub is approximately 10,500m² and is bounded by See Street to the south and substation zone to the east. Generally, the site is steep from RL24.0 at the entrance off See Street to RL13.50 to the north of the new building. There are many split levels for the building to optimise earthworks.

2. Erosion and Sediment Control

The objectives of the erosion and sediment control for the development site are to ensure:

- Adequate erosion and sediment control measures are applied prior to the commencement of construction and are maintained throughout construction; and
- Construction site runoff is appropriately treated in accordance with City of Ryde Council requirements.

As part of the works, the erosion and sedimentation control will be constructed in accordance with Council requirements and “Managing Urban Stormwater Soil & Construction” 2004 (Blue Book) prepared by Landcom, prior to any earthworks commencing on site.

2.1 Sediment Basin

A temporary sediment basin has been designed to capture site runoff during construction and has been located towards the north eastern side of the site, in the lowest point. The construction of the basin will be undertaken in stages to enable maximum runoff capture assisted by diversion swales and direct runoff to the basin.

Calculations to determine the concept design basin size have been based on available geotechnical information regarding soil types and through the use of the Soils and Construction Volume 1 Manual.

To ensure the sediment basin is working effectively it will be maintained throughout the construction works. Maintenance includes ensuring adequate settlement times or flocculation and pumping of clean water to reach the minimum storage volume at the lower level of the settling zone. The settling zone will be identified by pegs to clearly show the level at which design storage capacity is available.

The pumped water from the sediment basin can be reused for dust control during construction.

Overflow weirs are to be provided to control overflows for rainfall events in excess of the design criteria.

The concept sediment basin sizing is summarised in the table below. Detailed sediment basin sizing, configuration and location shall form part of the Detailed Design Documentation.

The sediment basin has been located for future conversion into the permanent water quality basin.

2.2 Sediment and Erosion Control Measures

Prior to any earthworks commencing on site, sediment and erosion control measure shall be implemented generally in accordance with the Construction Certificate drawings and the “Blue Book”. The measures shown on the drawings are intended to be a minimum treatment only as the contractor will be required to modify and stage the erosion and sedimentation control measures to suit the construction program, sequencing and techniques. These measures will include:

- A temporary site security/safety fence is to be constructed around the site, the site office area and the proposed sediment basin.
- Sediment fencing provided downstream of disturbed areas, including any topsoil stockpiles.
- Dust control measures including covering stockpiles, installing fence hessian and watering exposed areas.
- Placement of hay bales or mesh and gravel inlet filters around and along proposed catch drains and around stormwater inlets pits; and
- The construction of a temporary sediment basin as noted above in Section 2.1;
- Stabilised site access at the construction vehicle entry/exits.

Any stockpiled material, including topsoil, shall be located as far away as possible from any associated natural watercourses or temporary overland flow paths. Sediment fences shall be installed to the downstream side of stockpiles and any embankment formation. All stockpiles and embankment formations shall be stabilised by hydroseeding or hydro mulching on formation.

2.3 Wet Weather Management

In circumstances of heavy rain sufficient to affect site access and ground conditions the Site Manager and Site HSE Committee representative should complete a site inspection before work commences. The inspection needs to focus on.

- The suitability of pedestrian access to the amenities and into the construction work areas
- The suitability of access for plant and equipment
- The suitability of ground conditions for plant and equipment to operate
- Nominate the construction zones suitable for work to commence
- Actions to remediate those areas not suitable for work to commence (de-water; prepare ground conditions and access ways etc.)

It is noted that the storage of equipment during wet weather will be placed in areas to not prohibit or disrupt operation of the sediment and soil erosion control measures.

3. Further Commentary

3.1 SSD Conditions

The Minister for Planning and Open Spaces has provided Conditions of Consent for the proposed development at See Street, Meadowbank. Conditions associated with the Construction Soil and Water Management Plan have been provided below with further commentary for consideration by School Infrastructure NSW and the Certifying Authority.

B19. Construction Environmental Management Plan

The Applicant must prepare a Construction Soil and Water Management Plan (CSWMSP) and the plan must address, but not be limited to the following:

- (a) be prepared by a suitably qualified expert, in consultation with Council.**
- (b) describe all erosion and sediment controls to be implemented during construction; including as a minimum, measures in accordance with the publication Managing Urban Stormwater: Soils & Construction (4th edition, Landcom 2004) commonly referred to as the 'Blue Book'.**
- (c) Provide a plan of how all construction works will be managed in a wet-weather events (i.e. storage of equipment, stabilisation of the Site);**
- (d) detail all off-Site flows from the Site; and**
- (e) describe the measures that must be implemented to manage stormwater and flood flows for small and large sized events, including, but not limited to, 1 in 5-year ARI and 1 in 100-year ARI.**

Northrop Commentary

The following comments have been provided with respect to Condition B19 for consideration by School Infrastructure NSW and the Certifying Authority.

Northrop Commentary

- (a) Please refer to the CV of the designer provided in Appendix C. Hansen Yuncken have approached City of Ryde Council to initiate discussions regarding the proposed measures to control soil erosion and sedimentation during construction including proposed methods of discharging stormwater from the site.

- (b) Please refer to Section 2 of this report and associated Civil Engineering drawings as listed:

NR-CV-DWG-S0111 Specification Notes – Sheet 01
NR-CV-DWG-S0113 Specification Notes – Sheet 03
NR-CV-DWG-S0201 Sediment and Soil Erosion Control Plan Sheet 01
NR-CV-DWG-S0202 Sediment and Soil Erosion Control Plan Sheet 02
NR-CV-DWG-S0211 Sediment and Soil Erosion Control Details

- (c) Please refer to section 2.3 of the report.

- (d) Once stormwater is collected in the sediment basins and flocculated, clean water is to be discharged to existing site stormwater infrastructure within the development site. From here, clean water is conveyed in the Council owned stormwater infrastructure away from the site.

- (e) Please refer to Section 2 of this report and associated Civil Engineering drawings as listed:

NR-CV-DWG-S0111 Specification Notes – Sheet 01
NR-CV-DWG-S0113 Specification Notes – Sheet 03
NR-CV-DWG-S0201 Sediment and Soil Erosion Control Plan Sheet 01
NR-CV-DWG-S0202 Sediment and Soil Erosion Control Plan Sheet 02
NR-CV-DWG-S0211 Sediment and Soil Erosion Control Details

The erosion and sediment control plans have been designed in accordance with the requirements of NSW Department of Housing Manual, “Managing Urban Stormwater Soil & Construction” 2004 (Blue Book) and City of Ryde Council’s Engineering Design Specifications.

Surface flows generated during storm events up to the 1 in 10-year storm event are directed over land or within the constructed pit and pipe network to the sediment basin. Stormwater runoff that has accumulated in the basin is to be flocculated prior to discharge to the existing stormwater system.

Storm events greater than the 1 in 10 year will still experience flows being directed to the sediment basin however the site will likely become overwhelmed as temporary control measures are not typically sized to cater for such events both in the Blue Book and City of Ryde Council’s requirements. Stormwater will likely overtop the basin and spill to areas downstream of the works within the broader site area. The project design team have consulted with City of Ryde Council to discuss the proposed measures to control soil erosion and sedimentation during construction including proposed methods of discharging stormwater from the site.

Appendix A – Soil & Water Management Plans

NOTE: ALL CIVIL ENGINEERING CONSTRUCTION WORKS TO BE CARRIED OUT IN ACCORDANCE WITH CITY OF RYDE COUNCIL DEVELOPMENT GUIDELINES. THE AFOREMENTIONED GUIDELINES INCLUSIVE OF ALL SPECIFICATIONS TAKE PRECEDENCE OVER NOTES PROVIDED BELOW.

ACCESS AND SAFETY

1. THE CONTRACTOR SHALL COMPLY WITH ALL STATUTORY AND INDUSTRIAL REQUIREMENTS FOR PROVISION OF A SAFE WORKING ENVIRONMENT INCLUDING TRAFFIC CONTROL.
2. THE CONTRACTOR SHALL PROVIDE TRAFFIC MANAGEMENT PLANS FOR THE PROPOSED WORKS COMPLETED BY A SUITABLY QUALIFIED PERSON AND APPROVED BY COUNCIL / REGULATORY AUTHORITY. WORK IS NOT TO COMMENCE ON SITE PRIOR TO APPROVAL OF TRAFFIC MANAGEMENT SCHEME.
3. THE CONTRACTOR SHALL ENSURE THAT AT ALL TIMES ACCESS TO BUILDINGS ADJACENT THE WORKS IS NOT DISRUPTED.
4. WHERE NECESSARY THE CONTRACTOR SHALL PROVIDE SAFE PASSAGE OF VEHICLES AND/OR PEDESTRIANS THROUGH OR BY THE SITE.
5. THE CONTRACTOR SHALL ENSURE PUBLIC ACCESS EXTERNAL TO THE SITE IS IN ACCORDANCE WITH COUNCIL'S / AUTHORITY / SITE MANAGERS REQUIREMENTS.

TREE PROTECTION

1. REFER TO LANDSCAPE / ARCHITECTS/NORTHROP'S PLAN FOR TREES TO BE RETAINED AND PROTECTED.
2. ANY EXISTING/PROPOSED TREES WHICH FORM PART OF THE FINAL LANDSCAPING PLAN SHALL BE PROTECTED FROM CONSTRUCTION ACTIVITIES BY:
 - 2.1. PROTECTING THEM WITH BARRIER FENCING OR SIMILAR MATERIALS INSTALLED OUTSIDE THE DRIP LINE.
 - 2.2. ENSURING THAT NOTHING IS NAILED TO ANY PART OF THE TREE.
 - 2.3. CARE IS TAKEN NOT TO CUT ROOTS UNNECESSARILY. COUNCIL'S AND/OR INDEPENDENT ARBORISTS TO BE CONSULTED WHERE TREE ROOTS ARE TO BE REMOVED AND/OR CUT.

SEDIMENT AND SOIL EROSION	
1.	THE SEDIMENT & EROSION CONTROL PLAN PRESENTS CONCEPTS ONLY. THE CONTRACTOR SHALL AT ALL TIMES BE RESPONSIBLE FOR THE ESTABLISHMENT & MANAGEMENT OF A DETAILED SCHEME MEETING COUNCILS AND OTHER REGULATORY AUTHORITY REQUIREMENTS AND MAKE PAYMENT OF ALL FEES.
2.	THE CONTRACTOR SHALL INSTIGATE ALL SEDIMENT AND EROSION CONTROL MEASURES IN ACCORDANCE WITH STATUTORY REQUIREMENTS AND IN PARTICULAR THE 'BLUE BOOK' (MANAGING URBAN STORMWATER SOILS AND CONSTRUCTION), PRODUCED BY THE DEPARTMENT OF HOUSING AND COUNCILS POLICIES. THESE MEASURES ARE TO BE INSPECTED AND MAINTAINED ON A DAILY BASIS.
3.	THE CONTRACTOR SHALL ENSURE THAT ALL SOIL AND WATER MANAGEMENT WORKS ARE LOCATED AS INSTRUCTED IN THE DRAWINGS AND ADHERE TO ALL REGULATORY AUTHORITY REQUIREMENTS.
4.	THE CONTRACTOR SHALL INFORM ALL SUB CONTRACTORS OF THEIR RESPONSIBILITIES IN MINIMISING THE POTENTIAL FOR SOIL EROSION AND POLLUTION TO DOWNSTREAM LANDS AND WATERWAYS.
5.	WHERE PRACTICAL, THE SOIL EROSION HAZARD ON THE SITE SHALL BE KEPT AS LOW AS POSSIBLE. TO THIS END, WORKS SHOULD BE UNDERTAKEN IN THE FOLLOWING SEQUENCE. 5.1.CONSTRUCT TEMPORARY STABILISED SITE ACCESS INCLUSIVE OF SHAKE DOWN / WASH PAD. 5.2.INSTALL ALL TEMPORARY SEDIMENT FENCES AND BARRIER FENCES. WHERE FENCES ADJACENT EACH OTHER, THE SEDIMENT FENCE CAN BE INCORPORATED INTO THE BARRIER FENCE. 5.3.INSTALL SEDIMENT CONTROL MEASURES AS OUTLINED ON THE APPROVED PLANS.
6.	UNDERTAKE SITE DEVELOPMENT WORKS SO THAT LAND DISTURBANCE IS CONFINED TO AREAS OF MINIMUM WORKABLE SIZE.
7.	AT ALL TIMES AND IN PARTICULAR DURING WINDY AND DRY WEATHER, LARGE UNPROTECTED AREAS WILL BE STABILISED / KEPT MOIST (NOT WET) TO KEEP DUST UNDER CONTROL ENSURING CONFORMITY TO REGULATORY AUTHORITY REQUIREMENTS.
8.	ANY SAND USED IN THE CONCRETE CURING PROCESS (SPREAD OVER THE SURFACE) SHALL BE REMOVED AS SOON AS POSSIBLE AND WITHIN TO WORKING DAYS FROM PLACEMENT.
9.	WATER SHALL BE PREVENTED FROM ENTERING THE PERMANENT DRAINAGE SYSTEM UNLESS THE CATCHMENT AREA HAS BEEN STABILISED AND/OR ANY LIKELY SEDIMENT BEEN FILTERED OUT.
10.	TEMPORARY SOIL AND WATER MANAGEMENT STRUCTURES SHALL BE REMOVED ONLY AFTER THE LANDS THEY ARE PROTECTING ARE STABILISED / REHABILITATED.
11.	ALLOW FOR GRASS STABILISATION OF EXPOSED AREAS, OPEN CHANNELS AND ROCK BATTERS DURING ALL PHASES OF CONSTRUCTION.
12.	EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED TO ENSURE THAT THEY OPERATE EFFECTIVELY. REPAIRS AND/OR MAINTENANCE SHALL BE UNDERTAKEN REGULARLY AND AS REQUIRED, PARTICULARLY FOLLOWING RAIN EVENTS.
13.	RECEPTORS FOR CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHINGS, LIGHT-WEIGHT WASTE MATERIALS AND LITTER SHALL BE DISPOSED OF IN ACCORDANCE WITH REGULATORY AUTHORITY REQUIREMENTS. CONTRACTOR TO PAY ALL FEES AND PROVIDE EVIDENCE OF SAFE DISPOSAL.
14.	IF A TEMPORARY SEDIMENT BASIN IS REQUIRED, ENSURE SAFE BATTER SLOPES IN ACCORDANCE WITH THE GEOTECHNICAL REPORT. MAINTAIN ADEQUATE STORAGE VOLUME IN ACCORDANCE WITH PLANS. TEMPORARY PUMP (CLEAN FLOCCULATED) WATER TO AUTHORITIES STORMWATER SYSTEM. ENSURE WHOLE DISTURBED SITE RUN-OFF IS DIRECTED TO TEMPORARY SEDIMENT BASIN.

EXISTING SERVICES

1.	ALL UTILITY SERVICES INDICATED ON THE DRAWINGS ORIGINATE FROM SUPPLIED DATA OR DIAL BEFORE YOU DIG SEARCHES, THEREFORE THEIR ACCURACY AND COMPLETENESS IS NOT GUARANTEED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE AND CONFIRM THE LOCATION AND LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE SUPERINTENDENT. CLEARANCES SHALL BE OBTAINED FROM THE RELEVANT SERVICE AUTHORITY. NOTE SERVICE AUTHORITY REQUIREMENTS FOR LOCATING OF SERVICES PRIOR TO COMMENCEMENT OF WORKS.
2.	CARE TO BE TAKEN WHEN EXCAVATING NEAR EXISTING SERVICES. NO MECHANICAL EXCAVATION IS TO BE UNDERTAKEN OVER ANY COMMUNICATION, GAS OR ELECTRICAL SERVICES. HAND EXCAVATION ONLY IN THESE AREAS.
3.	THE CONTRACTOR SHALL PROTECT AND MAINTAIN ALL EXISTING SERVICES THAT ARE TO BE RETAINED IN THE VICINITY OF THE PROPOSED WORKS, ANY AND ALL DAMAGE TO THESE SERVICES AS A RESULT OF THESE WORKS SHALL BE REPAIRED BY THE CONTRACTOR UNDER THE DIRECTION OF THE SUPERINTENDENT AT THE CONTRACTORS EXPENSE.
4.	THE CONTRACTOR SHALL ALLOW IN THE PROGRAM FOR THE ADJUSTMENT (IF REQUIRED) OF EXISTING SERVICES IN AREAS AFFECTED BY WORKS.
5.	THE CONTRACTOR SHALL ALLOW IN THE PROGRAM FOR THE CAPPING OFF, EXCAVATION AND REMOVAL (IF REQUIRED) OF EXISTING SERVICES IN AREAS AFFECTED BY WORKS UNLESS DIRECTED OTHERWISE ON THE DRAWINGS OR BY THE SUPERINTENDENT.
6.	THE CONTRACTOR SHALL ENSURE THAT AT ALL TIMES SERVICES TO ALL BUILDINGS ARE NOT AFFECTED BY THE WORKS AND ARE MAINTAINED AND NOT DISRUPTED.
7.	PRIOR TO COMMENCEMENT OF ANY WORKS THE CONTRACTOR SHALL GAIN APPROVAL OF THE PROGRAM FOR THE RELOCATION AND/OR CONSTRUCTION OF TEMPORARY SERVICES AND FOR ANY ASSOCIATED INTERRUPTION OF SUPPLY.
8.	THE CONTRACTOR SHALL CONSTRUCT TEMPORARY SERVICES TO MAINTAIN EXISTING SUPPLY TO BUILDINGS REMAINING IN OPERATION DURING WORKS TO THE SATISFACTION AND APPROVAL OF THE SUPERINTENDENT. ONCE DIVERSION IS COMPLETE AND COMMISSIONED THE CONTRACTOR SHALL REMOVE ALL SUCH TEMPORARY SERVICES AND MAKE GOOD TO THE SATISFACTION OF THE SUPERINTENDENT.
9.	THE CONTRACTOR IS TO ALLOW TO POTHOLE ANY SERVICES WITHIN A PUBLIC RESERVE WITHIN THE EXTENT OF WORKS (E.G. STORMWATER CROSSINGS).

EARTHWORKS

1. AT THE COMMENCEMENT OF FILLING OPERATIONS FOR BULK EARTHWORKS A GEOTECHNICAL ENGINEER IS TO VISIT THE SITE & CONFIRM THE SUITABILITY OF THE METHODOLOGY OF ACHIEVING THE REQUIRED COMPACTION EARTHWORKS REQUIREMENTS.
2. STRIP TOPSOIL, VEGETABLE MATTER AND RUBBLE TO EXPOSE NATURALLY OCCURRING MATERIAL AND STOCKPILE ON SITE AS DIRECTED BY THE SUPERINTENDENT.
3. WHERE FILLING IS REQUIRED TO ACHIEVE DESIGN SUBGRADE, PROOF ROLL EXPOSED NATURAL SURFACE WITH A MINIMUM OF TEN PASSES OF A VIBRATING ROLLER (MINIMUM STATIC WEIGHT OF 10 TONNES) IN THE PRESENCE OF THE SUPERINTENDENT OR CERTIFYING ENGINEER.
4. THE CONTRACTOR IS TO ALLOW FOR A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER TO PROVIDE ADVICE AND CERTIFICATION OF ANY WORKS ASSOCIATED WITH TREATING OR MANAGING UNSUITABLE GROUND CONDITIONS THROUGHOUT THE CONTRACT (e.g. STABILITY OF EXCAVATIONS, POOR SUBGRADE, THE EXISTING QUARRY AREA etc).
5. ALL SOFT, WET OR UNSUITABLE MATERIAL IS TO BE REMOVED AS DIRECTED BY THE SUPERINTENDENT AND REPLACED WITH APPROVED MATERIAL SATISFYING THE REQUIREMENTS BELOW.
6. PROVIDE CERTIFICATES VERIFYING THE QUALITY OF IMPORTED MATERIAL FOR THE SUPERINTENDENTS APPROVAL.
7. ALL FILL MATERIAL SHALL BE PLACED IN MAXIMUM 200mm THICK LAYERS (LOOSE) AND COMPACTED AT OPTIMUM MOISTURE CONTENT (w_o - 2%) TO ACHIEVE A DRY DENSITY DETERMINED IN ACCORDANCE WITH A53289.2.1.1, A53289.5.7.1 AND A53289.5.8.0 OF NOT LESS THAN THE FOLLOWING STANDARD MINIMUM DRY DENSITY;

<u>LOCATION</u>	<u>COMPACTION REQUIREMENT</u>
LANDSCAPED AREAS	98% SMD
ROADS	100% SMD (IN ACCORDANCE WITH
COUNCIL SPECIFICATIONS)	
PAVED AREAS	100% SMD (IN ACCORDANCE WITH
COUNCIL SPECIFICATIONS)	

8. TESTING OF THE SUBGRADE SHALL BE CARRIED OUT BY AN APPROVED N.A.T.A. REGISTERED LABORATORY AT THE CONTRACTORS EXPENSE UNLESS AGREED DIFFERENTLY WITH THE PRINCIPAL.
9. ALLOW THE FOLLOWING COMPACTION TESTING BY N.A.T.A. REGISTERED LABORATORY FOR PLATFORMS AND FILL LAYERS IN ACCORDANCE WITH THE LATEST VERSION OF A53798. (MINIMUM 3 TESTS PER LAYER) OR 1 TEST PER MATERIAL TYPE PER 2500sq.m OR 1 TEST.
10. WHERE TEST RESULTS ARE BELOW THE SPECIFIED COMPACTION, RECOMPACT (TYING FIRST AS NECESSARY) AND RETEST UNTIL SPECIFIED COMPACTION STANDARDS ARE ACHIEVED, OTHERWISE SUBGRADE REPLACEMENT IS REQUIRED IF COMPACTION STANDARDS ARE NOT ACHIEVED.
11. ALLOW FOR EXCAVATION IN ALL MATERIALS AS FOUND U.N.O. NO ADDITIONAL PAYMENTS WILL BE MADE FOR EXCAVATION IN WET OR HARD GROUND.

EARTHWORKS (cont)

<p>12.</p> <p>11.</p> <p>12.</p> <p>13.</p> <p>14.</p> <p>15.</p> <p>2.</p> <p>12.</p> <p>DEEP EXCAVATIONS</p> <p>13.</p> <p>14.</p> <p>15.</p>	<p>WHERE THERE IS INSUFFICIENT EXCAVATED MATERIAL SUITABLE FOR FILLING OR SUBGRADE REPLACEMENT, THE CONTRACTOR IS TO ALLOW TO IMPORT FILL. IMPORTED FILL SHALL COMPLY WITH THE FOLLOWING:</p> <p>BE OF VIRGIN EXCAVATED NATURAL MATERIAL OR</p> <p>CONTRACTOR TO PROVIDE EVIDENCE IMPORT IS SUITABLE FOR USE.</p> <p>PLASTICITY INDEX BETWEEN 2-15% AND CBR > 8</p> <p>FREE FROM ORGANIC AND PERISHABLE MATTER</p> <p>MAXIMUM SIZE 50mm, PASSING 75 MICRON SIEVE (-25%)</p> <p>THE CONTRACTOR SHALL PROGRAM THE EARTHWORKS OPERATION SO THAT THE WORKING AREAS ARE ADEQUATELY DRAINED DURING THE PERIOD OF CONSTRUCTION. THE SURFACE SHALL BE GRADED AND SEALED OFF TO REMOVE DEPRESSIONS, ROLLERS MARKS AND SIMILAR WHICH WOULD ALLOW WATER TO POND AND PENETRATE THE UNDERLYING MATERIAL. ANY DAMAGE RESULTING FROM THE CONTRACTOR NOT OBSERVING THESE REQUIREMENTS SHALL BE RECTIFIED AT THEIR COST.</p> <p>IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE AND MAINTAIN THE INTEGRITY OF ALL SERVICES, CONDUITS AND PIPES DURING CONSTRUCTION, SPECIFICALLY DURING THE BACKFILLING AND COMPACTION PROCEDURE. ANY AND ALL DAMAGE TO NEW OR EXISTING SERVICES AS A RESULT OF THESE WORKS SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST.</p> <p>DEEP EXCAVATIONS</p> <p>PRIOR TO THE COMMENCEMENT OF EXCAVATION WORKS GREATER THAN 15m IN DEPTH, THE CONTRACTOR SHALL OBTAIN THE SERVICES OF A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER TO DETERMINE THE STABILITY OF MATERIAL BEING EXCAVATED AND BENCHING REQUIREMENTS / MINIMUM BATTER SLOPES.</p> <p>THE CONTRACTOR MUST PROVIDE THE SUPERINTENDENT AND OR THE DESIGN ENGINEER WITH A COPY OF THE GEOTECHNICAL ENGINEERS REPORT PRIOR TO PRACTICAL COMPLETION.</p> <p>THE CONTRACTOR IS TO PROVIDE SAFETY BARRIERS, FENCING AND THE LIKE IN ACCORDANCE WITH OHS&S AND REGULATORY AUTHORITY REQUIREMENTS AND TO ENSURE THE WORK SITE IS SAFE AT ALL TIMES.</p> <p>REFER GEOTECHNICAL REPORT FOR GENERAL CONTAMINATION WASTE HANDLING.</p>
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LANDSCAPING	
1.	REFER TO DRAWINGS BY OTHERS FOR DETAILS OF PROPOSED LANDSCAPING TREATMENT.
2.	IF NO LANDSCAPING PLANS EXIST OR PLANS DO NOT SPECIFY GENERAL SURFACE STABILISATION THEN ALL DISTURBED SURFACE TO BE TEMPORARILY STABILISED WITH HYDROMULCH UPON COMPLETION OF WORKS. A 500mm STRIP OF TURF (CT2 COUCH) IS TO BE PLACED BEHIND ALL NEW KERB.

STORMWATER DRAINAGE

1. ALL PIPES SHALL BE CLASS 2 RUBBER-RING JOINTED RCP U.N.O. WHERE UPVC PIPES HAVE BEEN SPECIFIED, THE FOLLOWING CLASS PIPEWORK IS TO BE ADOPTED U.N.O. $\phi 100\text{mm}$ OR LESS TO BE CLASS 'SN10' AND ABOVE $\phi 100\text{mm}$ TO BE CLASS 'SN8'. CLASS 4 PIPES ARE TO BE USED WHERE COVER OVER THE PIPE IS BELOW 600mm AND BENEATH A TRAFFICABLE PAVEMENT.
2. ALL UPVC PIPES ARE TO MEET GBCA BEST PRACTICE GUIDELINES.
3. UPVC STORMWATER LINES PASSING UNDER FLOOR SLABS TO BE CONCRETE ENCASED.
4. FRC PIPES EQUAL TO THAT OF THE STEEL REINFORCED CONCRETE PIPE CLASS SPECIFIED ON THE DRAWINGS MAY BE USED SUBJECT TO APPROVAL FROM THE SUPERINTENDENT.
5. ALL PIPE ARE TO BE LAID AT 1.0% MIN GRADE U.N.O.
6. COVERS
- 6.1. USE HOT DIPPED GALVANISED COVERS AND GRATES COMPLYING WITH RELEVANT COUNCIL AND AUSTRALIAN STANDARDS. ALL GRATES TO BE HEELSAFE TYPE GRATES
- 6.2. ALL COVERS AND GRATES TO BE POSITIONED IN A FRAME AND MANUFACTURED AS A UNIT.
- 6.3. ALL COVERS AND GRATES TO BE FITTING WITH POSITIVE COVER LIFTING KEYS
- 6.4. OBTAIN SUPERINTENDENTS APPROVAL FOR THE USE OF CAST IRON SOLID COVERS AND GRATES. (CAST IRON SOLID COVERS (IF APPROVED) TO CONSIST OF CROSS-WEBBED, CELLULAR CONSTRUCTION WITH THE RIBS UPPERMOST TO ALLOW INFILLING WITH CONCRETE. INSTALL POSITIVE COVER LIFTING KEYS AND PLASTIC PLUGS).
- 6.5. UNLESS DETAILLED OR SPECIFIED OTHERWISE, COVERS AND GRATES TO BE CLASS 'D' IN VEHICULAR PAVEMENTS AND CLASS 'B' ELSEWHERE
- 6.6. ALL GRATED TRENCH DRAINS SHOULD BE CLASS 'D' HEEL SAFE WITHIN VEHICULAR PAVEMENTS AND CLASS 'B' HEEL SAFE WITHIN PEDESTRIAN PAVEMENTS.
7. ALL PIPE BENDS, JUNCTIONS, ETC ARE TO BE PROVIDED USING PURPOSE MADE FITTINGS OR STORMWATER PITS.
8. ALL CONNECTIONS TO EXISTING DRAINAGE STRUCTURES SHALL BE MADE IN A TRADESMAN-LIKE MANNER AND CEMENT RENDERED TO ENSURE A SMOOTH FINISH.
7. ENSURE PIPEWORK DOES NOT PROTRUDE BEYOND THE INSIDE FACE OF THE PIT WALL. PIPEWORK IS TO FINISH FLUSH WITH INTERNAL WALL (UNLESS OTHERWISE NOTED OR DETAILLED). CONNECTION TO BE RENDERED AND MADE NEAT ON THE INSIDE FACE OF THE PIT
8. THE CONTRACTOR SHALL SUPPLY AND INSTALL ALL FITTINGS AND SPECIALS INCLUDING VARIOUS PIPE ADAPTORS TO ENSURE PROPER CONNECTION BETWEEN DISSIMILAR PIPEWORK.
9. U.N.O. MATERIAL USED FOR BEDDING OF PIPES SHALL BE APPROVED NON-COHESIVE GRANULAR MATERIAL HAVING HIGH PERMEABILITY AND HIGH STABILITY WHEN SATURATED AND FREE OF ORGANIC AND CLAY MATERIAL.
10. BEDDING SHALL BE U.N.O TYPE HS2 UNDER ROADS AND H2 UNDER GENERAL AREAS IN ACCORDANCE WITH CURRENT RELEVANT INDUSTRY STANDARDS, AND GUIDELINES.
11. THE CONTRACTOR SHALL ENSURE AND PROTECT THE INTEGRITY OF ALL STORMWATER PIPES DURING CONSTRUCTION. ANY AND ALL DAMAGE TO THESE PIPES AS A RESULT OF THESE WORKS SHALL BE REPAIRED BY THE CONTRACTOR UNDER THE DIRECTION OF THE SUPERINTENDENT AND AT NO EXTRA COST TO THE CONTRACT.
- NOTE THAT THE PIT COVER LEVEL NOMINATED IN GUTTERS ARE TO THE INVERT OF THE GUTTER WHICH ARE 40mm LOWER THAN THE PAVEMENT LEVEL AT LIP OF GUTTER. REFER KERB DETAILS FOR CONFIRMATION.

SUBSOIL DRAINAGE

13. $\phi 100\text{mm}$ SUBSOIL DRAINAGE LINES WITH NON-WOVEN GEOTEXTILE FILTER SOCK SURROUND SHALL BE CONNECTED TO A STORMWATER DRAINAGE PIT (AT MIN 1% LONGITUDINAL GRADE) AND PROVIDED IN THE FOLLOWING LOCATIONS;
- 13.1. THE HIGH SIDE OF PROPOSED TRAFFICKED PAVEMENT AREAS.
- 13.2. ALL PLANTER AND TREE BEDS PROPOSED ADJACENT TO PAVEMENT AREAS
- 13.3. BEHIND RETAINING WALLS (IN ACCORDANCE WITH RETAINING WALL DETAILS)
- 13.4. UPSTREAM OF STORMWATER PITS
- 13.5. BENEATH FLEXIBLE PAVEMENT ALONG A SAG PROFILE
- 13.6. ALL OTHER AREAS SHOWN ON DRAWINGS.
- 13.7. CONTRACTOR IS TO MAKE ALLOWANCE IN BOTH TENDER AND CONSTRUCTION COSTING TO ALLOW FOR SUBSURFACE DRAINAGE BEHIND ALL RETAINING WALLS / ABOVE LOCATIONS AND TO MAKE CONNECTION TO STORMWATER SYSTEM.
14. WHERE SUBSOIL DRAINAGE PASSES BENEATH BUILDINGS / PAVED AREAS AND/OR PAVEMENTS. CONTRACTOR TO ENSURE $\phi 100\text{mm}$ CLASS 'SN10' UPVC DRAINAGE LINE IS USED AND THAT PROPRIETARY FITTINGS ARE USED TO RECONNECT SUBSOIL DRAINAGE LINE.
15. THE CONTRACTOR SHALL INSTALL INSPECTION OPENINGS / CLEAROUTS TO ALL SUBSOIL DRAINAGE LINES AND DOWNPIPE LINES AS SPECIFIED ON DRAWINGS AND IN ACCORDANCE WITH COUNCIL SPECIFICATIONS. HOWEVER AS A MINIMUM THEY ARE TO BE PLACED AT MAXIMUM 30m CENTRES AND AT ALL UPSTREAM ENDPOINTS.
16. PROVIDE 3.0m LENGTH OF $\phi 100$ SUBSOIL DRAINAGE LINE WRAPPED IN NON-WOVEN GEOTEXTILE FILTER FABRIC TO THE UPSTREAM SIDE OF STORMWATER PITS, LAID IN STORMWATER PIPE TRENCHES AND CONNECTED TO DRAINAGE PIT.
17. IN AREAS WHERE DUMPED / HAND PLACED ROCK IS USED AS A MEANS OF SCOUR PROTECTION, CONTRACTOR IS TO EXCAVATE A MINIMUM OF 100mm FROM PROPOSED SURFACE, LEVEL AND COMPACT SUBGRADE AS SPECIFIED. ROCK TO THEN BE PLACED ON GEOTEXTILE FILTER FABRIC A34.
18. THE CONTRACTOR IS TO ENSURE THAT A MINIMUM 150mm CLEARANCE IS PROVIDED BETWEEN THE INTERNAL FACE OF PIPE AND ADJACENT INTERNAL PIT WALLS
19. WHERE TRENCHES ARE IN ROCK, THE PIPE SHALL BE BEDDED ON A MIN 50mm CONCRETE BED (OR 75mm THICK BED OF 12mm BLA METAL) UNDER THE BARREL OF THE PIPE. THE PIPE COLLAR AT NO POINT SHALL BEAR ON THE ROCK. (E.G. CLEAN 5-12mm AGGREGATE)

<h2 style="text-align: center; margin: 0;">PRECAST STORMWATER PITS</h2>	
1.	THE USE OF PRE-CAST STORMWATER DRAINAGE PITS IS NOT ACCEPTED WITHOUT CONFIRMATION FROM NORTHROP ENGINEERS AND THE CONTRACTOR REGARDING QUALITY CONTROL AND CERTIFICATION OF FINISHES.
2.	REFER MANUFACTURERS SPECIFICATIONS FOR INSTALLATION GUIDELINES.
3.	PRECAST PIT TO BE PLACED ON MINIMUM 150mm THICK CONCRETE PAD AND BED MINIMUM 50mm WHILST CONCRETE IS STILL PARTIALLY WET.
4.	MASS PENETRATION IS CORED THROUGH PIT FACE TO ALLOW CONNECTION AND IS NOT OVERIZED.
5.	ENSURE A SEALED FINISH AT PIPE CONNECTIONS BY HAND-APPLYING MINIMUM 150mm THICK CONCRETE AROUND PIPE AT THE EXTERNAL FACE OF THE PIT. ENSURE CONCRETE DOES NOT AFFECT THE INTEGRITY OF THE SUBSOIL DRAINAGE CONNECTED TO THE PIT.
6.	ENSURE A SMOOTH SEALED FINISH AT PIPE CONNECTIONS BY HAND APPLYING CONCRETE AROUND THE PIPE ON THE INTERNAL FACE OF THE PIT TO FILL IN ANY VOIDS CREATED WHEN PENETRATION FOR THE PIPE WAS CORED.
7.	ENSURE PIPEWORK DOES NOT PROTRUDE BEYOND THE INSIDE FACE OF THE PIT WALL. PIPEWORK IS TO FINISH FLUSH WITH INTERNAL WALL (UNLESS OTHERWISE NOTED OR DETAILED). CONNECTION TO BE RENDERED AND MADE NEAT ON THE INSIDE FACE OF THE PIT.
8.	ENSURE THE OUTLET PIPE IS CONNECTED AT THE INVERT LEVEL OF THE PIT TO DRAIN. ALTERNATIVELY FILL THE BASE OF THE PIT WITH MASS CONCRETE (MIN 50mm THICK) OR APPROVED GROUTING COMPOUND (LESS THAN 50mm THICK) TO DRAIN.
9.	PROVIDE CONCRETE BENCHING TO SIDES OF PIT TO SUIT PIPE DIAMETER. HEIGHT TO MATCH MINIMUM 1/3 PIPE DIAMETER.

RAINWATER REUSE	
1.	PROVIDE RAINWATER RE-USE SYSTEM TO SUPPLY WATER FOR IRRIGATION OR FOR OTHER USES AS NOTED.
2.	GUTTER GUARD TO BE INSTALLED ON ALL EAVES GUTTERS.
3.	PRESSURE PUMP / TAP TO BE PROVIDED FOR THE REUSE OF CAPTURED RAIN WATER.
4.	A PERMANENT SIGN IS TO BE LOCATED IN THE VICINITY OF THE TANK STATING THE WATER IS "NON POTABLE WATER" WITH APPROPRIATE HAZARD IDENTIFICATION.
5.	ALL RAINWATER SERVICES SHALL BE CLEARLY LABELED "NON POTABLE WATER" WITH APPROPRIATE HAZARD IDENTIFICATION.
6.	PIPEWORK USED FOR RAINWATER SERVICES SHALL BE COLOURED LILAC IN ACCORDANCE WITH AS1345.
7.	ALL VALVES AND APERTURES SHALL BE CLEARLY AND PERMANENTLY LABELED WITH SAFETY SIGNS TO COMPLY WITH AS1319.
8.	AN AIR GAP OR RPZD MUST BE INSTALLED TO ENSURE BACKFLOW PREVENTION (IF MAINS 'TOP UP' / BYPASS UTILISED)
9.	RAINWATER TANK RETICULATION SYSTEM AND MAINS WATER BYPASS ARRANGEMENT TO BE INSTALLED IN ACCORDANCE WITH AS/NZS 3500.12-2003 AND THE NSW CODE OF PRACTICE - PLUMBING AND DRAINAGE.
10.	A FIRST FLUSH FILTRATION DEVICE IS REQUIRED TO BYPASS THE FIRST 1mm OF RAINWATER.

SIGNAGE AND LINEMARKING

<ol style="list-style-type: none">1. ALL SIGNAGE TO BE INSTALLED IN ACCORDANCE WITH AUSTRALIAN STANDARDS 1742 / RMS STANDARDS AND SPECIFICATIONS.2. LINE MARKING AND PAINT SHALL BE IN ACCORDANCE WITH AS1742.3 AND RMS STANDARDS.3. PAINT SHALL BE TYPE 3 CLASS 'A' AND THE COLOUR SHALL BE WHITE AND NOT SUBJECT TO DISCOLOURATION BY BITUMEN FROM ROAD SURFACE. ALL PAINT TO BE APPLIED BY MECHANICAL SPRAYER. LINE MARKING SHALL BE APPLIED AT A WET THICKNESS OF BETWEEN 0.35mm AND 0.40mm4. PAINT SHALL BE APPLIED AT A WET THICKNESS OF BETWEEN 0.35mm AND 0.40mm.5. CARPARK LINEMARKING TO BE 80mm WIDE.6. WHEEL STOPS TO BE PROVIDED FOR PARKING SPOTS ADJACENT TO A WALL WITHIN 1.1m OF THE FACE OF KERB IN ACCORDANCE WITH AS1428.17. REFER TO AUSTRROADS FOR REMOVAL OF LINEMARKING.
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SITWORKS

1. ALL WORKS TO BE IN ACCORDANCE WITH RELEVANT LOCAL COUNCIL / REGULATORY AUTHORITIES REQUIREMENTS, ALL SPECIFICATIONS AND AUSTRALIAN STANDARDS. CONFLICTS BETWEEN SAID DOCUMENTS SHALL BE REFERRED TO THE SUPERINTENDENT FOR DIRECTION.
2. THE CONTRACTOR IS TO REVIEW THE DRAWINGS PRIOR TO PRICING AND COMMENCEMENT AND REPORT ANY DISCREPANCIES TO NORTHPROP
3. ANY PRODUCTS SPECIFIED OR USED TO BE VERIFIED BY THE CONTRACTOR AS BEING SAFE AND APPROPRIATE FOR USE. NORTHPROP DO NOT TAKE ANY RESPONSIBILITY FOR THE USE OF UNSAFE PRODUCTS
4. THE CONTRACTOR IS TO DESIGN, OBTAIN APPROVALS AND CARRY OUT REQUIRED TEMPORARY TRAFFIC CONTROL PROCEDURES DURING CONSTRUCTION IN ACCORDANCE WITH ALL REGULATORY AUTHORITIES, INCLUSIVE OF LOCAL COUNCIL REGULATIONS AND REQUIREMENTS.
5. THE CONTRACTOR IS TO OBTAIN ALL AUTHORITY APPROVALS AS REQUIRED PRIOR TO COMMENCEMENT OF WORKS.
6. RESTORE ALL PAVED, COVERED, GRASSED AND LANDSCAPED AREAS TO THEIR ORIGINAL CONDITION OR AS DIRECTED BY THE SITE SUPERINTENDENT ON COMPLETION OF WORKS. WHERE PLANTING OF NEW GRASS IS NECESSARY REFER TO LANDSCAPE ARCHITECT AND / OR ARCHITECT DOCUMENTATION.
7. ON COMPLETION OF ANY TRENCHING WORKS, ALL DISTURBED AREAS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION OR AS DIRECTED BY THE SITE SUPERINTENDENT, INCLUDING KERBS, FOOTPATHS, CONCRETE AREAS, GRAVEL, GRASSED AREAS AND ROAD PAVEMENTS.
8. THE CONTRACTOR SHALL ARRANGE ALL SURVEY SETOUT TO BE CARRIED OUT BY A REGISTERED SURVEYOR PRIOR TO COMMENCEMENT OF WORKS. THE CONTRACTOR IS TO ENSURE THAT SURVEY BOUNDARIES ARE DERIVED FROM A CADASTRAL SURVEY RATHER THAN A DETAIL SURVEY.
9. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND EXISTING LEVELS ONSITE PRIOR TO LODGMENT OF TENDER AND ONSITE WORKS. THE PRICE AS TENDERED SHALL BE INCLUSIVE OF ALL WORKS SHOWN ON THE TENDER PROJECT DRAWINGS. ADDITIONAL PAYMENTS FOR WORKS SHOWN ON THE TENDER PROJECT DRAWINGS WILL NOT BE APPROVED.
10. DO NOT OBTAIN DIMENSIONS BY SCALING DRAWINGS.
11. IN CASE OF DOUBT OR DISCREPANCY REFER TO SUPERINTENDENT FOR CLARIFICATION OR CONFIRMATION PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
12. WHERE NEW WORKS ABUT EXISTING THE CONTRACTOR SHALL ENSURE THAT A SMOOTH EVEN PROFILE, FREE FROM ABRUPT CHANGES IS OBTAINED. MAKE SMOOTH TRANSITION TO EXISTING FEATURES AND MAKE GOOD WHERE JOINED.
13. TRENCHES THROUGH EXISTING ROAD AND CONCRETE PAVEMENTS SHALL BE SAWCUT TO FULL DEPTH OF CONCRETE AND A MIN 50mm IN BITUMINOUS PAVING.
14. ALL CIVIL ENGINEERING DESIGN HAS BEEN DOCUMENTED UNDER THE ASSUMPTION THAT ALL NECESSARY SITE CONTAMINATION REMEDIATION WORKS HAVE BEEN SATISFACTORILY COMPLETED (IF APPLICABLE) AND THAT THE SITE IS NOT AFFECTED BY ANY SOIL STRATA OR GROUNDWATER TABLE CONTAMINATION.
15. NOTES ON DETAILS PROVIDED TAKE PRECEDENCE OVER SPECIFICATION NOTES UNLESS IN CONTRADICTION WITH COUNCIL/AUTHORITY SPECIFICATIONS/DETAILS. CONTRACTOR TO CONSULT WITH NORTHPROP FOR ANY DISCREPANCIES.
16. IF THE CONTRACTOR DISCOVERS HAZARDOUS/CONTAMINATED MATERIAL THE CONTRACTOR SHALL CONSULT WITH AN ENVIRONMENTAL SPECIALIST. REFER HAZWAT REPORT
17. THE CONTRACTOR IS RESPONSIBLE FOR DEALING WITH COMMUNITY COMPLAINTS ASSOCIATED WITH THE WORKS UNDER THE CONTRACT AND TO COMPENSATE FOR/RECTIFY ANY DAMAGE REASONABLY CAUSED BY THE CONTRACTOR.
18. THE TERM 'MAKE GOOD' OR 'MAKE NEAT' IS IN REFERENCE TO THE SATISFACTION OF NORTHPROP OR CERTIFYING ENGINEER. THE CONTRACTOR IS TO SEEK CLARIFICATION FROM NORTHPROP OR THE CERTIFYING ENGINEER IF NECESSARY
19. TOLERANCES TO BE IN ACCORDANCE WITH COUNCIL/AUTHORITY REQUIREMENTS.

SERVICE TRENCHES

20. SAWCUT EXISTING SURFACES PRIOR TO EXCAVATION. BACKFILL ALL TRENCHES UNDER EXISTING ROADS, PAVEMENTS AND PATHS WITH STABILISED SAND 5% CEMENT OR DGS40 MATERIAL (5% CEMENT) COMPACTED IN 200mm THICK LAYERS TO 98% MMD TO UNDERSIDE OF PAVEMENT.
21. BACKFILL ALL TRENCHES NOT UNDER ROADS, PAVEMENTS, PATHS AND BUILDINGS WITH APPROVED EXCAVATED OR IMPORTED MATERIAL COMPACTED TO 95% SMD.

<h1>NOT FOR CONSTRUCTION</h1>	
DRAWING TITLE CIVIL DOCUMENTATION	DRAWING NUMBER NR-CV-DWG-S01
SPECIFICATION NOTES - SHEET 01	JOB NUMBER 193030
	DRAWING SHEET SIZE

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE	CLIENT	ARCHITECT	ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WORK. NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY. THIS DRAWING MAY HAVE BEEN PREPARED USING COLOUR, AND MAY BE INCOMPLETE IF COPIED TO BLACK & WHITE	 NORTHROP Sydney Level 11 345 George Street, Sydney NSW 2000 Ph (02) 9241 4188 Fax (02) 9241 4324 Email sydney@northrop.com.au ABN 81 094 433 100	PROJECT	DRAWING TITLE	DRAWING NUMBER	
1	ISSUED FOR INFORMATION	JO		NS	15.05.20	HANSEN YUNCKEN GRAY PUKSAND				MEADOWBANK TAFE	CIVIL DOCUMENTATION	NR-CV-DWG-S0111	
2	50% DETAILED DESIGN	JO		JG	11.06.20							JOB NUMBER	REVISION
3	75% DETAILED DESIGN	JO		JG	09.07.20							193030	5
4	100% DETAILED DESIGN	JO		JG	05.08.20								
5	ISSUED FOR INFORMATION	JO	JG	NS	28.08.20								
						DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED	THE COPYRIGHT OF THIS DRAWING REMAINS WITH NORTHROP CONSULTING ENGINEERS PTY LTD				DRAWING SHEET SIZE = A1		

NOTE: ALL CIVIL ENGINEERING CONSTRUCTION WORKS TO BE CARRIED OUT IN ACCORDANCE WITH CITY OF RYDE COUNCIL DEVELOPMENT GUIDELINES. THE AFOREMENTIONED GUIDELINES INCLUSIVE OF ALL SPECIFICATIONS TAKE PRECEDENCE OVER NOTES PROVIDED BELOW.

3D INFORMATION DISCLAIMER






PLEASE BE ADVISED 12D DESIGN FILE, IF SUPPLIED, IS DEEMED TO BE AN ACCURATE REFLECTION OF NORTHROP'S DESIGN AT THE TIME OF FINAL DESIGN DEVELOPMENT AND MAY NOT FULLY REFLECT THE DESIGN SURFACE AS PRESENTED. HOWEVER THIS INFORMATION SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO INCORPORATION IN THE CONSTRUCTION WORKS.

YOU ARE FURTHER ADVISED THAT ISSUED HARDCOPY/PDF PLANS AND DOCUMENTS TAKE PRECEDENCE OVER THE SUPPLIED ELECTRONIC INFORMATION AND ANY INCONSTANCIES SHOULD IMMEDIATELY BE REPORTED TO NORTHROP CONSULTING ENGINEERS FOR VERIFICATION PRIOR TO THEIR INCORPORATION IN THE WORKS.

NORTHROP CONSULTING ENGINEERS TAKES NO RESPONSIBILITY FOR USE OF NON-VERIFIED 3D DESIGN INFORMATION USED IN THE WORKS.

THE USE OF THE 3D MODEL INFORMATION SHALL CONSTITUTE ACKNOWLEDGMENT AND ACCEPTANCE OF THE ABOVE STATEMENTS BY THE RECIPIENT.

SAFETY IN DESIGN

	THE FOLLOWING ITEMS HAVE BEEN IDENTIFIED AS SAFETY RISKS
	INTERCEPTION OF EXISTING SERVICES
	FALL DURING CONSTRUCTION
	VEHICULAR TRAFFIC
	DEEP TRENCHES

CONCRETE MASONRY

EXPOSURE CLASSIFICATION: MODERATE/MILD (>10km FROM COAST)

CONCRETE MASONRY

CM1. MASONRY CONSTRUCTION IS TO CONFORM TO AS3700-2001.

- MORTAR CLASSIFICATION = M3
- DURABILITY CLASSIFICATION OF BUILT IN COMPONENTS = R1
- DURABILITY GRADE OF EXTERNAL MASONRY UNITS = PROTECTED

CM2. THE CHARACTERISTIC UNCONFINED COMPRESSIVE STRENGTH OF THE MASONRY UNITS SHALL BE 15MPa OR GREATER.

CM3. BED UNITS IN FRESHLY PREPARED MORTAR, UNIFORMLY MIXED CEMENT, LIME AND SAND IN THE RATIO OF 1:16 or 1:0:5 CONFORMING TO AS3700-2001.

CM4. GROUT FILL FOR BLOCKWORK

- COMPRESSIVE STRENGTH = N20MPa
- MAXIMUM AGGREGATE SIZE = 10mm
- SLUMP = 225mm
- MINIMUM PORTLAND CEMENT CONTENT = 300kg/m³
- COMPACT THE GROUT USING A MECHANICAL VIBRATOR AT CONTROL OR CONSTRUCTION JOINTS IN SLABS

CM5. CONTROL JOINTS IN UNREINFORCED WALLS SHALL BE PROVIDED AS FOLLOWS;

CLASS A & S - 5m MAX CTS

CLASS M - 5m MAX CTS (UP TO 4m HIGH WALL), 3.9m MAX CTS (4.0m to 8.5m HIGH WALL).

CLASS H - 4.5m MAX CTS (UP TO 4m HIGH WALL), 3.2m MAX CTS (4.0m to 8.5m HIGH WALL).

- JOINTS TO BE 0.47m MINIMUM FROM CORNERS.
- JOINTS TO BE 4.5m MAXIMUM FROM CORNERS.
- WHERE THE HEIGHT OF THE WALL CHANGES BY MORE THAN 20%, AT THE POSITION OF THE CHANGE.
- WHERE THE WALL CHANGES IN THICKNESS.
- AT CONTROL OR CONSTRUCTION JOINTS IN SLABS.
- AT JUNCTIONS OF WALLS CONSTRUCTED OF DIFFERENT MASONRY MATERIAL.

CM6. PROVIDE SLIDING HORIZONTAL TIES ACROSS JOINTS IN UNREINFORCED WALLS EQUIVALENT TO M.E.T. 3-3 AT 400 CTS VERTICALLY IN EACH FACE OF THE BLOCKS.

CM7. CONTROL JOINTS IN REINFORCED WALLS SHALL BE PROVIDED AT 12.0m CENTRES, PROVIDE R16-400 (600 LONG) DOWELS, PAINT ONE END WITH BITUMEN & PROVIDED EXPANSION CAP.

CM8. THE BOTTOM COURSE OF ALL REINFORCED BLOCKWORK SHALL CONSIST OF E-SHAPED BLOCKS TO ENABLE CLEANOUT AND TYPING OF STEEL.

- FULLY BED FACE SHELLS ONLY.
- CLEAN OUT ALL CORES AFTER EACH DAY'S LAYING.
- ENSURE STARTER BARS ARE CORRECTLY LOCATED IN FOOTINGS.

CM9. MASONRY TIES SHALL BE HOT DIP GALVANISED WITH MINIMUM COATING MASS OF 300g/m² AND MEDIUM DUTY CLASSIFICATION FOR CAVITIES UP TO 60mm WIDE & HEAVY DUTY FOR CAVITIES OVER 60mm WIDE. ANY FACE FIXED TIES SHALL BE FIXED USING A SCREW FIXING AND SHALL NOT BE NAILED.

CM10. THE TOP COURSE OF ALL FREESTANDING HOLLOW BLOCK MASONRY SHALL CONSIST OF SOLID CAPPING BLOCKS.

CM11. SPACING OF MASONRY TIES:

- ADJACENT TO WINDOWS AND RETURN WALLS = 400mm VERTICAL AND HORIZONTAL.
- SOLID MASONRY = 400mm VERTICAL AND HORIZONTAL.
- OTHERWISE = 800mm VERTICAL AND HORIZONTAL.

CM12. NON-LOADBEARING HOLLOW BLOCK WALLS SHALL FINISH 20mm SHORT OF SLAB SOFFIT AND SHALL BE FASTENED TO THE SOFFIT USING M.E.T. - 4 SLIDING TIES OR APPROVED EQUIVALENT AT 400mm CENTRES U.N.O.

CM13. LOADBEARING HOLLOW BLOCK WALLS SHALL BE CAPPED WITH M.E.T. GRAPHITE GREASED SLIP JOINT OVER TOP COURSE OF BLOCKWORK.

CM14. WHERE MASONRY ADJOINS STRUCTURAL STEEL OR PASSES A RETURN WALL ON THE INNER SKIN, INSTALL MEDIUM DUTY TIES AT 400 MAXIMUM CTS. SHOT FIX TIES TO STEEL WORK.

CM15. MINIMUM COVER TO REINFORCEMENT FROM THE INSIDE FACE OF THE FACE SHELL IS TO BE 25mm.

CM16. NO AIR ENTRAINING AGENTS (BYCOL, ETC.) ARE TO BE USED WITHOUT PRIOR WRITTEN PERMISSION FROM NORTHROP CONSULTING ENGINEERS.

CM17. MATERIALS INCLUDING MORTAR, CONCRETE AND GROUT SHALL COMPLY WITH SECTION 10 OF AS3700-2001. MASONRY UNITS SHALL COMPLY WITH AS/NZS 4455.1-2008. WALL TIES SHALL COMPLY WITH AS/NZS 2699.1-2000.

CM18. MASONRY SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 11 OF AS3700-2001.

CM19. DO NOT CONSTRUCT UNREINFORCED OR NON-LOAD BEARING REINFORCED MASONRY WALLS ON SUSPENDED CONCRETE SLABS UNTIL SLAB HAS BEEN STRIPPED AND DE-PROPPED.

CM20. ALL LINTELS SUPPORTING BLOCKWORK ARE TO BE HOT DIP GALVANISED WITH MINIMUM COATING MASS OF 300g/m². PROVIDE 1 LINTEL TO EACH WALL LEAF. DO NOT CUT ON SITE. KEEP LINTELS 6mm CLEAR OF DOOR HEADS AND WINDOW FRAMES. PACK MORTAR BETWEEN THE ANGLE UPSTAND AND SUPPORT MASONRY UNITS.

MINIMUM BEARING EACH END OF LINTELS:

- SPANS 0mm To 1800mm = 200mm BEARING EACH END.
- SPANS 1801mm To 3000mm = 400mm BEARING EACH END.

PROPPING OF LINTELS:

TO PREVENT DEFLECTION OR EXCESSIVE ROTATION, TEMPORARILY PROP PROPRIETARY COLD-FORMED LINTELS UNTIL THE MASONRY REACHES ITS REQUIRED STRENGTH. MINIMUM PROPPING PERIOD IS TO BE 7 DAYS.

IF BLOCKWORK IS NOT REQUIRED TO BE ARTICULATED, PROVIDE JOINTS AT MAX 8.0m CENTRES.



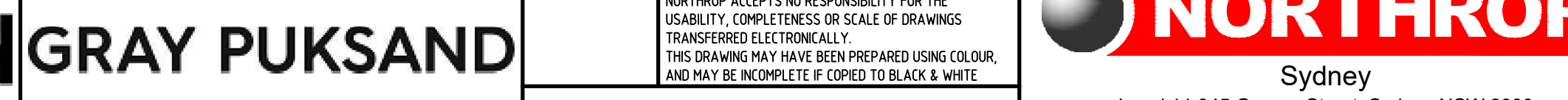
CONCEPT SOIL & WATER MANAGEMENT NOTES

- ALL WORK IS TO BE CARRIED OUT IN ACCORDANCE WITH RELEVANT ORDINANCES AND REGULATIONS. NOTE IN PARTICULAR THE REQUIREMENTS OF LANDCOMS MANAGING URBAN STORMWATER, SOILS AND CONSTRUCTION' (THE 'BLUE BOOK'). THIS SOIL AND WATER MANAGEMENT PLAN DETAILS THE ACTIONS TO BE TAKEN FOR THE MANAGEMENT AND DEWATERING OF STORMWATER DURING CONSTRUCTION OF THE PROPOSED BUILDING.
- INSTALL SEDIMENT PROTECTION FILTERS ON ALL NEW AND EXISTING STORMWATER INLET PITS IN ACCORDANCE WITH EITHER THE MESH AND GRAVEL INLET FILTER DETAIL SD6-11 OR THE GEOTEXTILE INLET FILTER DETAIL SD6-12 OF THE 'BLUE BOOK'.
- ESTABLISH ALL REQUIRED SEDIMENT FENCES IN ACCORDANCE WITH DETAIL SD6-8 OF THE 'BLUE BOOK'.
- INSTALL SEDIMENT FENCING AROUND INDIVIDUAL BUILDING ZONES/AREAS AS REQUIRED AND AS DIRECTED BY THE SUPERINTENDENT.
- ALL TRENCHES INCLUDING ALL SERVICE TRENCHES AND SWALE EXCAVATION SHALL BE SIDE-CAST TO THE HIGH SIDE AND CLOSED AT THE END OF EACH DAYS WORK.
- THE CONTRACTOR SHALL ENSURE THAT ALL VEGETATION (TREE, SHRUB & GROUND COVER) WHICH IS TO BE RETAINED SHALL BE PROTECTED DURING THE DURATION OF CONSTRUCTION. REFER ARCHITECTS PLANS FOR TREES TO BE KEPT.
- ALL VEGETATION TO BE REMOVED SHALL BE MULCHED ONSITE AND SPREAD/STOCKPILED AS DIRECTED BY THE SUPERINTENDENT.
- STRIP TOPSOIL IN AREAS DESIGNATED FOR STRIPPING AND STOCKPILE FOR RE-USE AS REQUIRED. ANY SURPLUS MATERIAL SHALL BE REMOVED FROM SITE AND DISPOSED OF IN ACCORDANCE WITH EPA GUIDELINES.
- CONSTRUCT AND MAINTAIN ALL MATERIAL STOCKPILES IN ACCORDANCE WITH DETAIL SD4-1 OF THE 'BLUE BOOK' (INCLUDING CUT-OFF SWALES TO THE HIGH SIDE AND SEDIMENT FENCES TO THE LOW SIDE).
- ENSURE STOCKPILES DO NOT EXCEED 2.0m HIGH. PROVIDE WIND AND RAIN EROSION PROTECTION AS REQUIRED IN ACCORDANCE WITH THE 'BLUE BOOK'.
- PROVIDE WATER TRUCKS OR SPRINKLER DEVICES DURING CONSTRUCTION AS REQUIRED TO SUPPRESS DUST.
- ONCE CUT/FILL OPERATIONS HAVE BEEN FINALIZED ALL DISTURBED AREAS THAT ARE NOT BEING WORKED ON SHALL BE RE-VEGETATED AS SOON AS IS PRACTICAL.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING A DETAILED WRITTEN RECORD OF ALL EROSION & SEDIMENT CONTROLS ON-SITE DURING THE CONSTRUCTION PERIOD. THIS RECORD SHALL BE UPDATED ON A DAILY BASIS & SHALL CONTAIN DETAILS ON THE CONDITION OF CONTROLS AND ANY / ALL MAINTENANCE, CLEANING & BREACHES. THIS RECORD SHALL BE KEPT ON-SITE AT ALL TIMES AND SHALL BE MADE AVAILABLE FOR INSPECTION BY THE PRINCIPAL CERTIFYING AUTHORITY AND THE SUPERINTENDENT DURING NORMAL WORKING HOURS.
- GROUNDWATER SEEPAGE RATES AND QUALITY TO BE MONITORED AND TREATED IF REQUIRED DURING CONSTRUCTION IN ACCORDANCE WITH REQUIREMENTS OF SUPERVISING GEOTECHNICAL ENGINEER.

BASIN MANAGEMENT NOTES

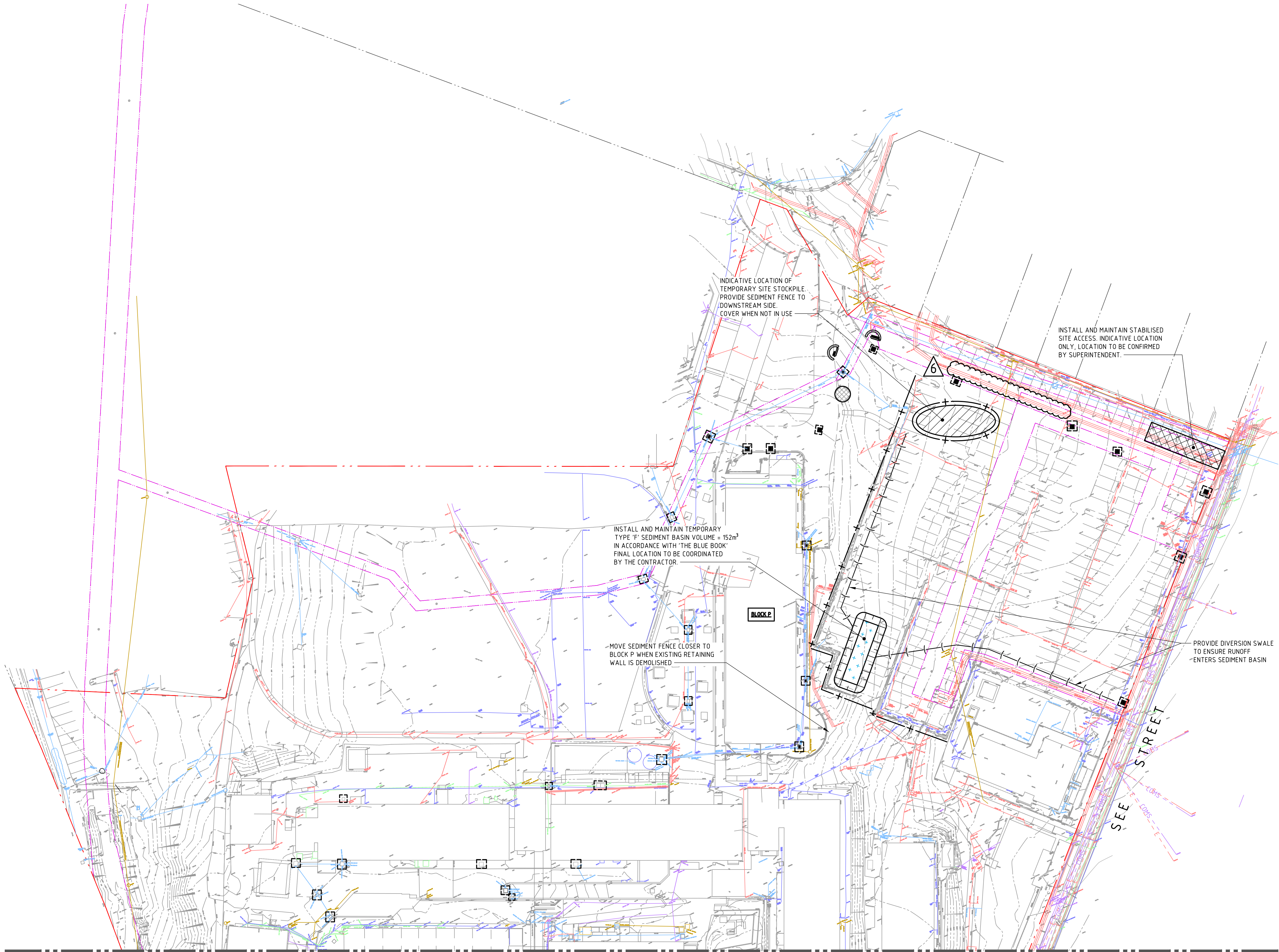
- PRIOR TO ANY FORECAST WEATHER EVENT, LIKELY TO RESULT IN SEDIMENT LADEN RUNOFF ON THE SITE, ANY EXISTING DETENTION BASINS/TRAPS SHALL BE DEWATERED TO PROVIDE SUFFICIENT CAPACITY TO CAPTURE SEDIMENT LADEN WATER FROM THE SITE.
- ANY SEDIMENT LADEN WATER CAPTURED ON-SITE MUST BE TREATED TO ENSURE IT WILL ACHIEVE COUNCIL'S WATER QUALITY OBJECTIVES PRIOR TO ITS RELEASE FROM SITE. A SAMPLE OF THE RELEASED TREATED WATER MUST BE KEPT ON-SITE IN A CLEAR CONTAINER WITH THE SAMPLE DATE RECORDED.
- NO ALUMINIUM BASED PRODUCTS MAY BE USED TO TREAT TURBID WATER (FLOCCULATING/COAGULANTS) ON-SITE WITHOUT THE PRIOR WRITTEN PERMISSION FROM AN APPROPRIATE COUNCIL OFFICER. THE APPLICANT MUST HAVE DEMONSTRATED ABILITY TO USE SUCH PRODUCTS CORRECTLY AND WITHOUT ENVIRONMENTAL HARM PRIOR TO ANY APPROVAL.
- THE CHEMICAL/AGENT (FLOCCULATING/COAGULANTS) USED IN TYPE D AND TYPE F BASINS TO TREAT TURBID WATER CAPTURED IN THE BASIN MUST BE APPLIED IN CONCENTRATIONS SUFFICIENT TO ACHIEVE COUNCIL'S WATER QUALITY OBJECTIVES (TSS < 50mg/L, TURBIDITY < 60 NTU, 6.5 < pH < 8.5) WITHIN THE 5-DAY RAINFALL DEPTH USED TO CALCULATE THE CAPACITY OF THE BASIN, AFTER A RAINFALL EVENT.
- ALL MANUFACTURERS INSTRUCTIONS MUST BE FOLLOWED FOR THE USE OF ANY CHEMICALS/AGENTS USED ON-SITE, EXCEPT WHERE APPROVED BY THE RESPONSIBLE PERSON OR AN APPROPRIATE COUNCIL OFFICER.
- SUFFICIENT QUANTITIES OF CHEMICALS/AGENTS TO TREAT TURBID WATER (FLOCCULATING/COAGULANTS) MUST BE PLACED SUCH THAT WATER ENTERING THE BASINS/SEDIMENT TRAP MIXES WITH THE CHEMICALS/AGENTS AND IS CARRIED INTO THE BASIN/TRAP.
- ANY BASIN MUST BE DEWATERED AS SOON AS PRACTICAL, ONCE WATER CAPTURED IN THE BASIN ACHIEVES COUNCIL'S WATER QUALITY OBJECTIVES.
- INSPECT THE SEDIMENT BASINS AFTER EACH RAINFALL EVENT AND/OR WEEKLY. ENSURE THAT ALL SEDIMENT IS REMOVED ONCE THE SEDIMENT STORAGE ZONE IS FULL. ENSURE THAT OUTLET AND EMERGENCY SPILLWAY WORKS ARE MAINTAINED IN A FULLY OPERATIONAL CONDITION AT ALL TIMES.

DRAWN: JOHN O
DESIGNED: T. BUGAEV
JOB MANAGER: N. SUTHERLAND
VERIFIER: J. O'LLIGAN

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2	50% DETAILED DESIGN	JO		JG	11.06.20							REVISION 5
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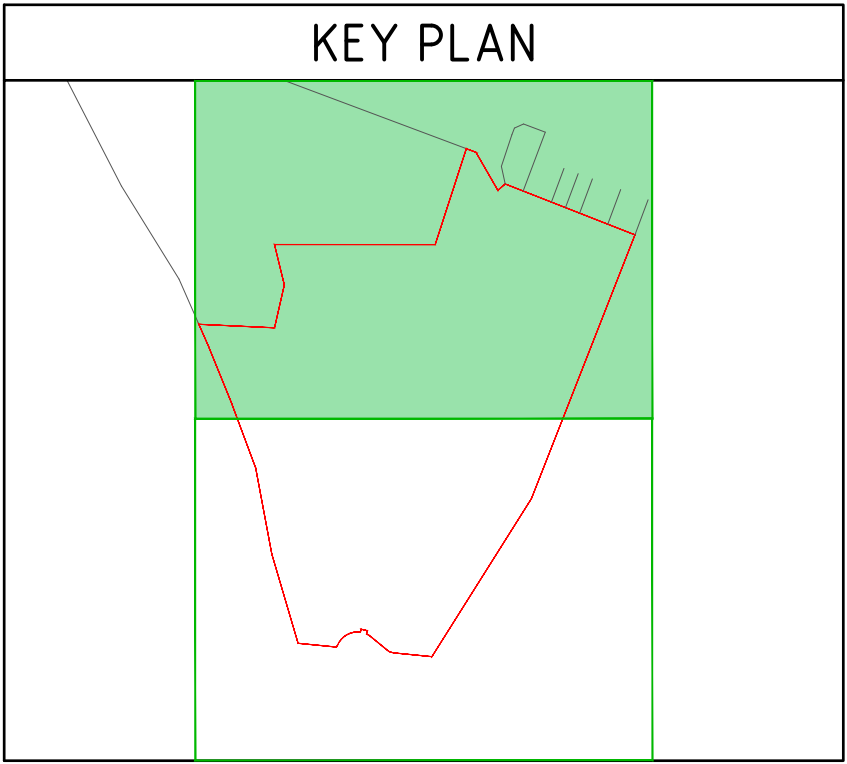
DRAWN: JOHN O
DESIGNED: T. BUGAEV
JOB MANAGER: N. SUTHERLAND
VERIFIER: J. GILLIGAN



FOR CONTINUATION REFER TO SHEET 02

LEGEND	
	SITE BOUNDARY LINE
	ADJACENT BOUNDARY LINE
	EASEMENT LINE
	EXISTING CONTOURS
	SEDIMENT FENCE
	SECURITY FENCE
	WIRE MESH AND GRAVEL SEDIMENT FILTER
	DROP INLET SEDIMENT TRAP
	STABILISED SITE ACCESS
	STOCKPILE
	SEDIMENT BASIN
	TEMPORARY DIVERSION SWALE TO SEDIMENT BASIN

- GENERAL NOTES**
- REFER SPECIFICATIONS NOTES FOR SEDIMENT AND SOIL EROSION CONTROL GENERAL REQUIREMENTS.
 - ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL / RELEVANT AUTHORITY SPECIFICATIONS AND DETAILS.
 - ALL SEDIMENT AND SOIL EROSION CONTROL MEASURES TO BE INSTALLED IN ACCORDANCE WITH THE 'BLUE BOOK'. CONTRACTOR TO ENSURE THESE MEASURES ARE IN PLACE AND MAINTAINED AT ALL TIMES DURING CONSTRUCTION WORKS.
 - CONTRACTOR TO PROVIDE 'WIRE MESH AND GRAVEL SEDIMENT FILTER' TO ALL PAVED / ROAD AREAS (BOTH PROPOSED AND EXISTING) IN ACCORDANCE WITH THE 'BLUE BOOK'.
 - CONTRACTOR TO PROVIDE 'GEOTEXTILE INLET FILTER TRAPS' TO ALL STORMWATER DRAINAGE INLETS (BOTH PROPOSED AND EXISTING) IN ACCORDANCE WITH THE 'BLUE BOOK'.



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4	100% DETAILED DESIGN	JO		JG	05.08.20
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6	RE-ISSUED FOR INFORMATION	JO	JG	NS	03.09.20

HANSEN YUNCKEN

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GRAY PUKSAND

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SCALE 1:500 @ A1

0 5 10 15 20 25m

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Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT
MEADOWBANK TAPE

DRAWING TITLE
CIVIL DOCUMENTATION
SEDIMENT AND SOIL EROSION CONTROL PLAN - SHEET 01

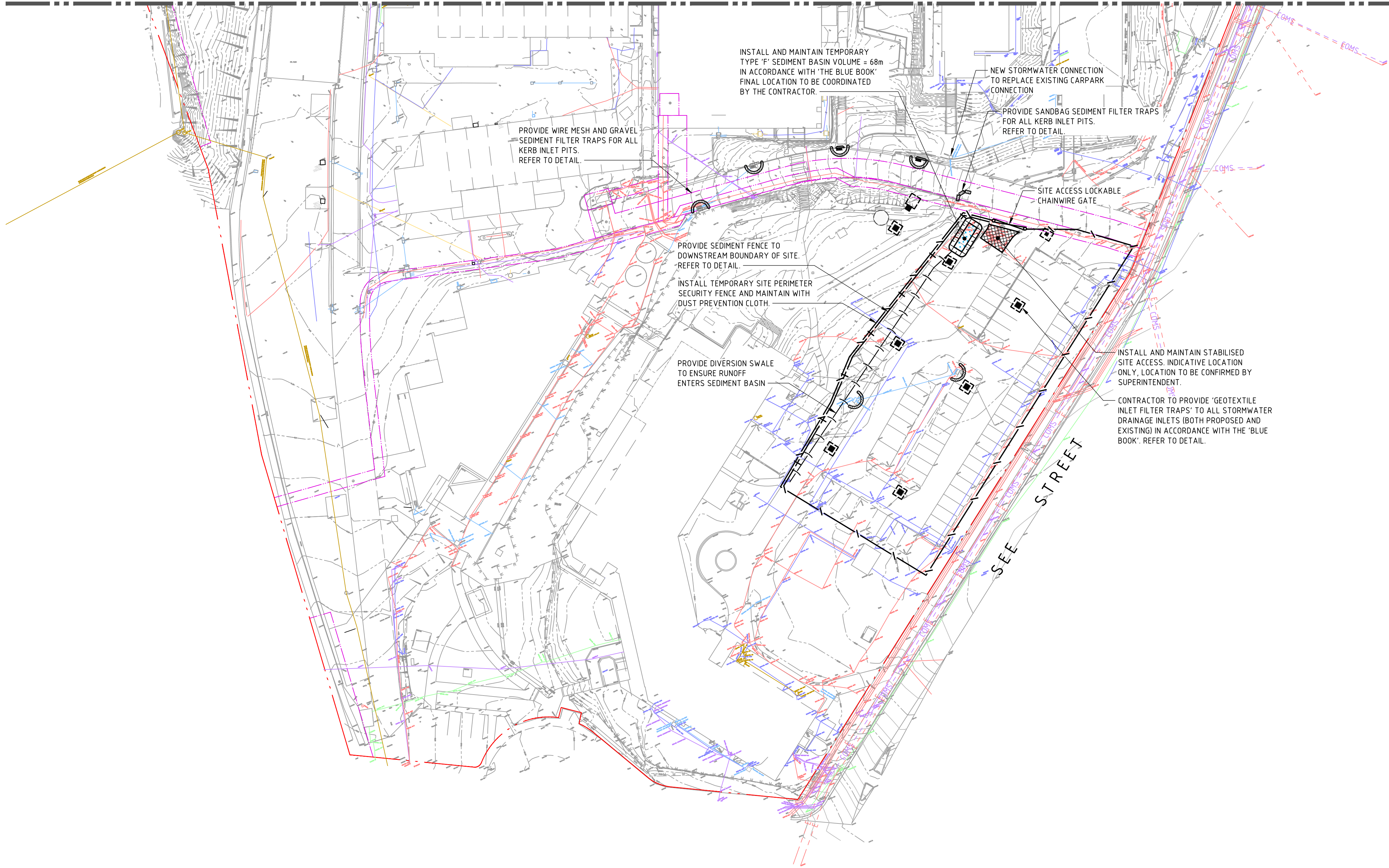
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NR-CV-DWG-S0201

JOB NUMBER
193030

REVISION
6

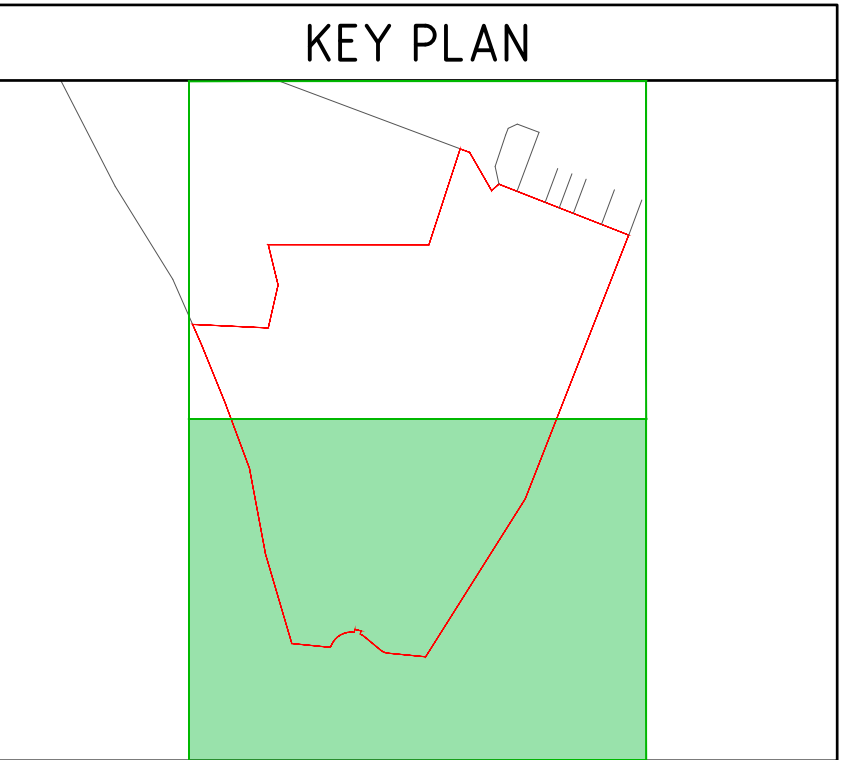
DRAWING SHEET SIZE = A1

FOR CONTINUATION REFER TO SHEET 01



LEGEND	
	SITE BOUNDARY LINE
	ADJACENT BOUNDARY LINE
	EASEMENT LINE
	EXISTING CONTOURS
	SEDIMENT FENCE
	SECURITY FENCE
	WIRE MESH AND GRAVEL SEDIMENT FILTER
	DROP INLET SEDIMENT TRAP
	STABILISED SITE ACCESS
	STOCKPILE
	SEDIMENT BASIN
	TEMPORARY DIVERSION SWALE TO SEDIMENT BASIN

GENERAL NOTES	
1.	REFER SPECIFICATIONS NOTES FOR SEDIMENT AND SOIL EROSION CONTROL GENERAL REQUIREMENTS.
2.	ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL / RELEVANT AUTHORITY SPECIFICATIONS AND DETAILS.
3.	ALL SEDIMENT AND SOIL EROSION CONTROL MEASURES TO BE INSTALLED IN ACCORDANCE WITH THE 'BLUE BOOK'. CONTRACTOR TO ENSURE THESE MEASURES ARE IN PLACE AND MAINTAINED AT ALL TIMES DURING CONSTRUCTION WORKS.
4.	CONTRACTOR TO PROVIDE 'WIRE MESH AND GRAVEL SEDIMENT FILTER' TO ALL PAVED / ROAD AREAS (BOTH PROPOSED AND EXISTING) IN ACCORDANCE WITH THE 'BLUE BOOK'.
5.	CONTRACTOR TO PROVIDE 'GEOTEXTILE INLET FILTER TRAPS' TO ALL STORMWATER DRAINAGE INLETS (BOTH PROPOSED AND EXISTING) IN ACCORDANCE WITH THE 'BLUE BOOK'.



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DRAWN: JOHN O
DESIGNED: T. BUGAEV
JOB MANAGER: N. SUTHERLAND
VERIFIER: J. OLLIGAN

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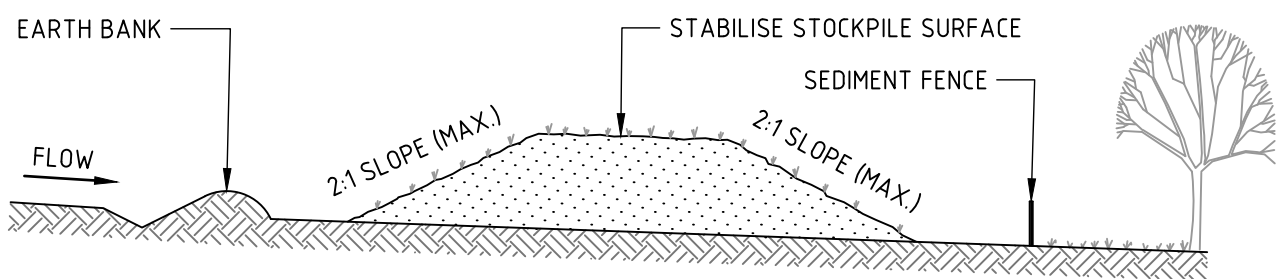
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PROJECT	MEADOWBANK TAPE
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DRAWING TITLE	CIVIL DOCUMENTATION
SEDIMENT AND SOIL EROSION CONTROL PLAN - SHEET 02	

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JOB NUMBER	193030
REVISION	5
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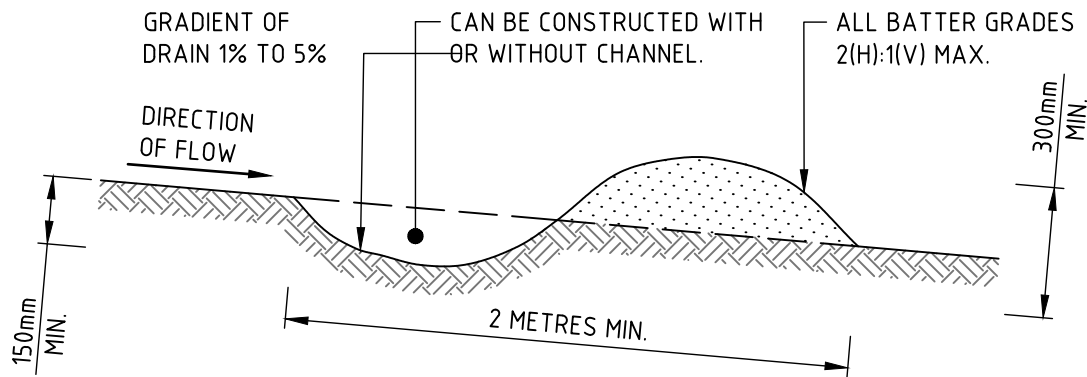
JOB MANAGER: N. SUTHERLAND VERIFIER: J. O'LLIGAN
DESIGNED: T. BUCAEV
DRAWN: JOHN O



CONSTRUCTION NOTES

1. PLACE STOCKPILES MORE THAN 2m (PREFERABLY 5m) FROM EXISTING VEGETATION, CONCENTRATED WATER FLOW, ROADS AND HAZARD AREAS.
2. CONSTRUCT ON THE CONTOUR AS LOW, FLAT, ELONGATED MOUNDS.
3. WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2m IN HEIGHT.
4. WHERE THEY ARE TO BE IN PLACE FOR MORE THAN 10 DAYS, STABILISE FOLLOWING THE APPROVED ESCP OR SWMP TO REDUCE THE C-FACTOR TO LESS THAN 0.10.
5. CONSTRUCT EARTH BANKS (STANDARD DRAWING 5-5) ON THE UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES AND SEDIMENT FENCES (STANDARD DRAWING 6-8) 1 TO 2m DOWNSLOPE.

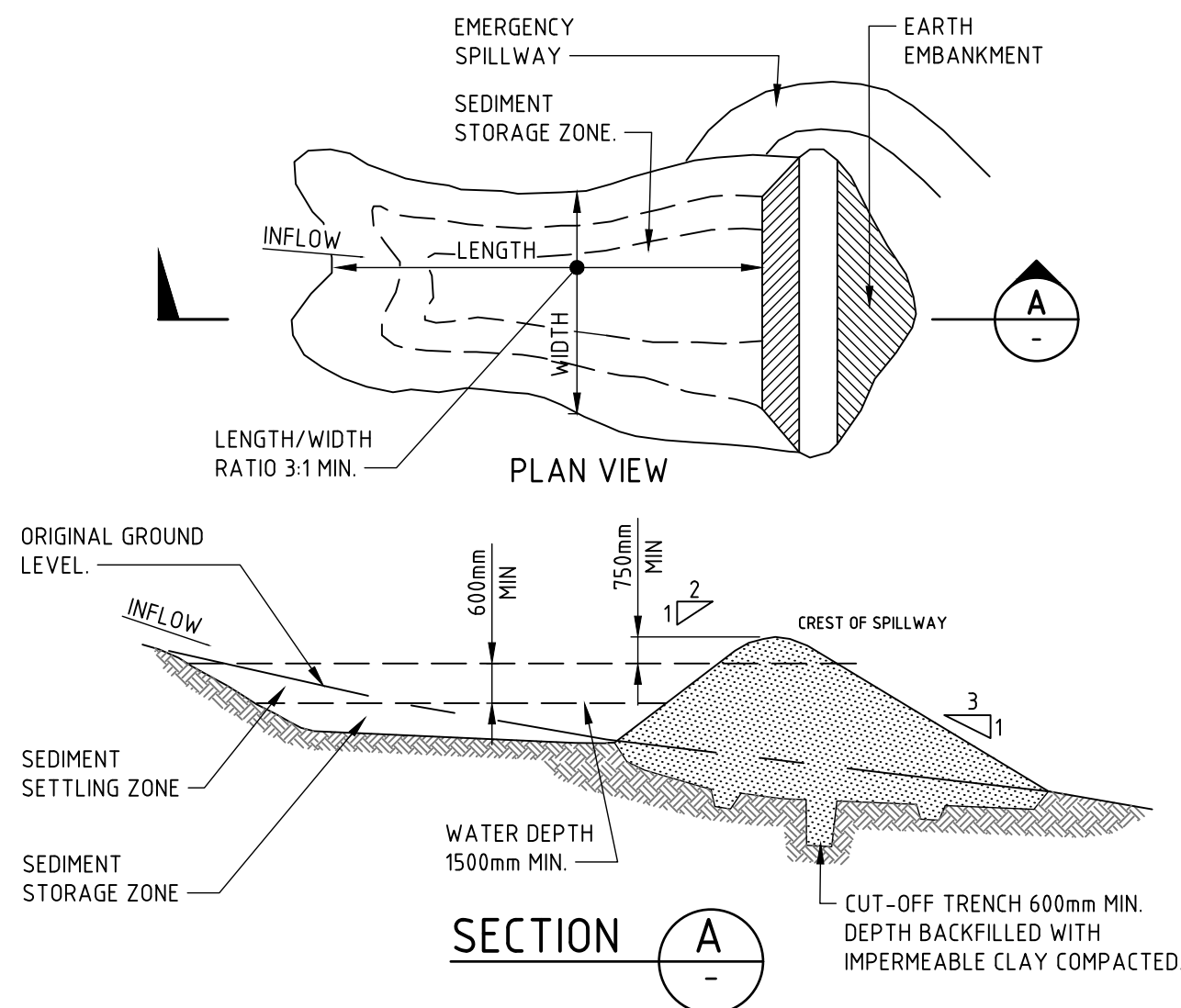
STOCKPILE



CONSTRUCTION NOTES

1. BUILD WITH GRADIENTS BETWEEN 1 AND 5 PERCENT.
2. AVOID REMOVING TREES AND SHRUBS IF POSSIBLE - WORK AROUND THEM.
3. ENSURE THE STRUCTURES ARE FREE OF PROJECTIONS OR OTHER IRREGULARITIES THAT COULD IMPEDE WATER FLOW.
4. BUILD THE DRAINS WITH CIRCULAR, PARABOLIC OR TRAPEZOIDAL CROSS SECTIONS, NOT V SHAPED.
5. ENSURE THE BANKS ARE PROPERLY COMPACTED TO PREVENT FAILURE.
6. COMPLETE PERMANENT OR TEMPORARY STABILISATION WITHIN 10 DAYS OF CONSTRUCTION.

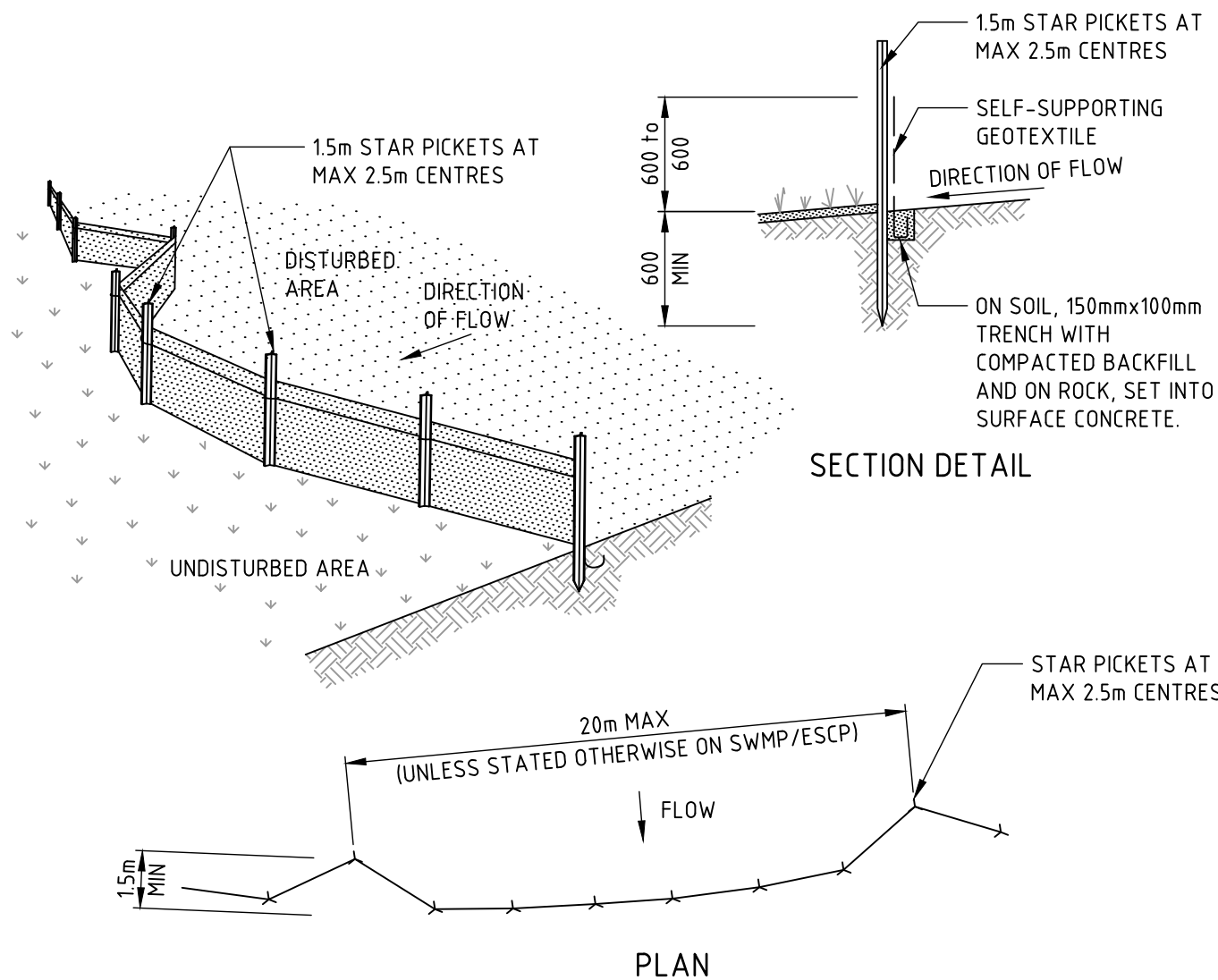
NOTE: ONLY TO BE USED AS TEMPORARY BANK WHERE MAXIMUM UPSLOPE LENGTH IS 80 METRES.
DRAINAGE SWALE - LOW FLOW



CONSTRUCTION NOTES

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

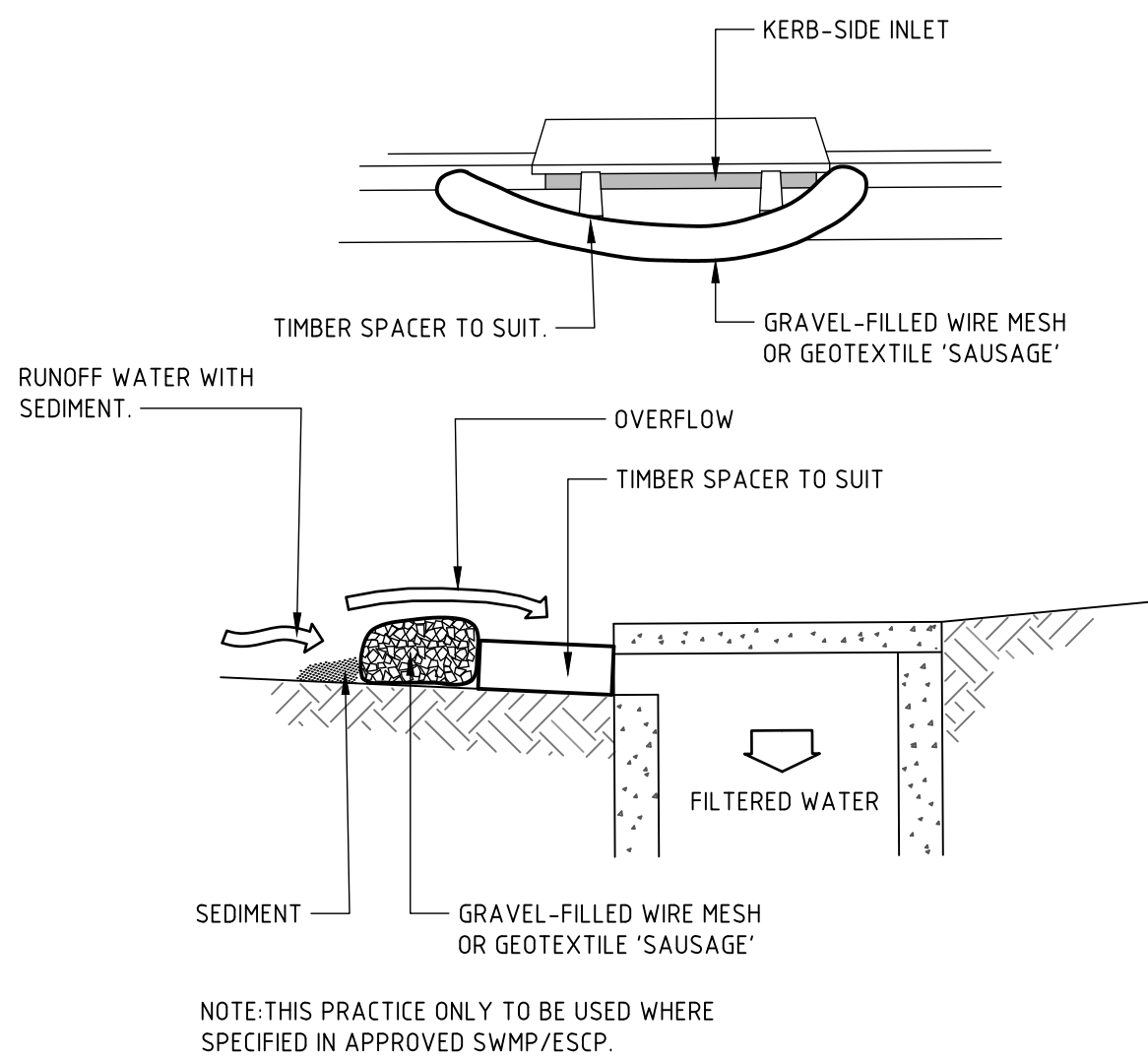
(APPLIES TO 'TYPE D' AND 'TYPE F' SOILS ONLY)
EARTH BASIN - WET



CONSTRUCTION NOTES

1. CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DRAWING TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION. THE CATCHMENT AREA SHOULD BE SMALL ENOUGH TO LIMIT WATER FLOW IF CONCENTRATED AT ONE POINT TO 50 LITRES PER SECOND IN THE DESIGN STORM EVENT, USUALLY THE 10-YEAR EVENT.
2. CUT A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
3. DRIVE 1.5 METRE LONG STAR PICKETS INTO GROUND AT 2.5 METRE INTERVALS (MAX) AT THE DOWNSLOPE EDGE OF THE TRENCH. ENSURE ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
4. FIX SELF-SUPPORTING GEOTEXTILE TO THE UPSLOPE SIDE OF THE POSTS ENSURING IT GOES TO THE BASE OF THE TRENCH. FIX THE GEOTEXTILE WITH WIRE TIES OR AS RECOMMENDED BY THE MANUFACTURER. ONLY USE GEOTEXTILE SPECIFICALLY PRODUCED FOR SEDIMENT FENCING. THE USE OF SHADE CLOTH FOR THIS PURPOSE IS NOT SATISFACTORY.
5. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150mm OVERLAP.
6. BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE.

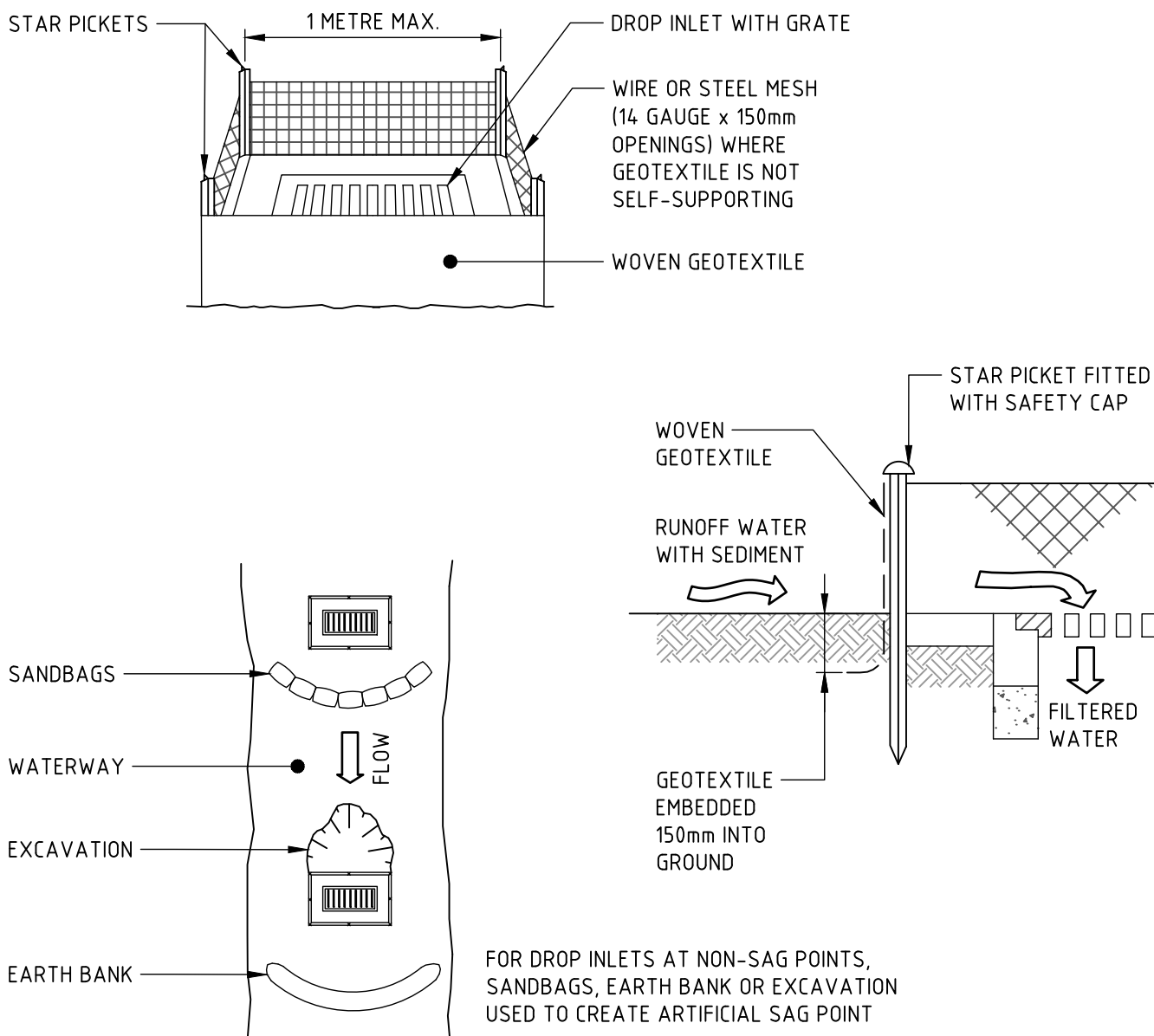
SEDIMENT FENCE



CONSTRUCTION NOTES

1. INSTALL FILTERS TO KERB INLETS ONLY AT SAG POINTS.
2. FABRICATE A SLEEVE MADE FROM GEOTEXTILE OR WIRE MESH LONGER THAN THE LENGTH OF THE INLET PIT AND FILL IT WITH 25mm TO 50mm GRAVEL.
3. FORM AN ELLIPTICAL CROSS-SECTION ABOUT 150mm HIGH x 400mm WIDE.
4. PLACE THE FILTER AT THE OPENING LEAVING AT LEAST A 100mm SPACE BETWEEN IT AND THE KERB INLET. MAINTAIN THE OPENING WITH SPACER BLOCKS.
5. FORM A SEAL WITH THE KERB TO PREVENT SEDIMENT BYPASSING THE FILTER.
6. SANDBAGS FILLED WITH GRAVEL CAN SUBSTITUTE FOR THE MESH OR GEOTEXTILE PROVIDING THEY ARE PLACED SO THAT THEY FIRMLY ABUT EACH OTHER AND SEDIMENT-LADEN WATERS CANNOT PASS BETWEEN.

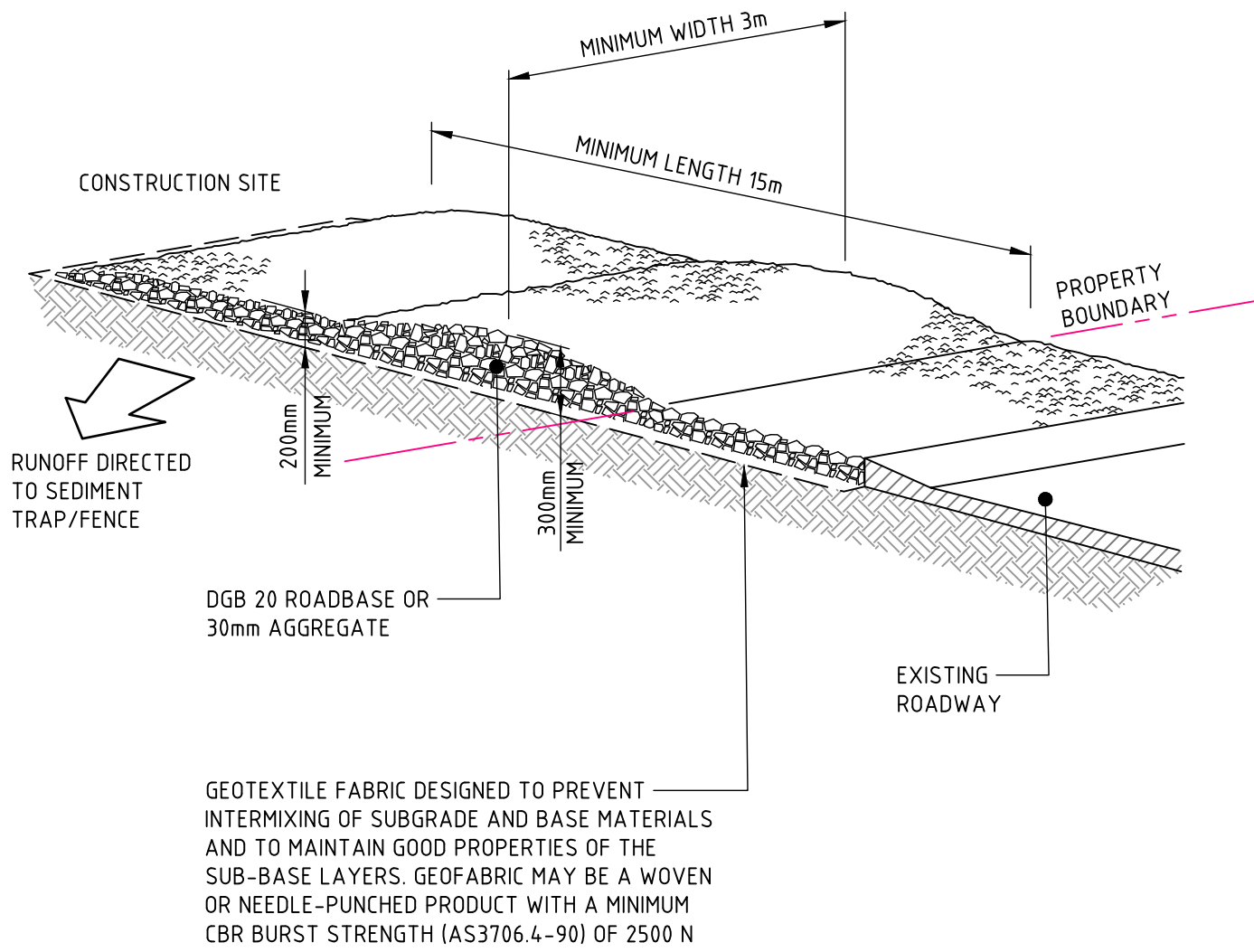
WIRE MESH AND GRAVEL SEDIMENT FILTER



CONSTRUCTION NOTES

1. FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE OR STRAW BALES.
2. FOLLOW STANDARD DRAWING 6-7 AND STANDARD DRAWING 6-8 FOR INSTALLATION PROCEDURES FOR THE STRAW BALES OR GEOFABRIC. REDUCE THE PICKET SPACING TO 1 METRE CENTRES.
3. IN WATERWAYS, ARTIFICIAL SAG POINTS CAN BE CREATED WITH SANDBAGS OR EARTH BANKS AS SHOWN IN THE DRAWING.
4. DO NOT COVER THE INLET WITH GEOTEXTILE UNLESS THE DESIGN IS ADEQUATE TO ALLOW FOR ALL WATERS TO BYPASS IT.

GEOTEXTILE INLET FILTER TRAPS




CONSTRUCTION NOTES

1. STRIP THE TOPSOIL, LEVEL THE SITE AND COMPACT THE SUBGRADE.
2. COVER THE AREA WITH NEEDLE-PUNCHED GEOTEXTILE.
3. CONSTRUCT A 200mm THICK PAD OVER THE GEOTEXTILE USING ROAD BASE OR 30mm AGGREGATE.
4. ENSURE THE STRUCTURE IS AT LEAST 15 METRES LONG OR TO BUILDING ALIGNMENT AND AT LEAST 3 METRES WIDE.
5. WHERE A SEDIMENT FENCE JOINS ONTO THE STABILISED ACCESS, CONSTRUCT A HUMPS IN THE STABILISED ACCESS TO DIVERT WATER TO THE SEDIMENT FENCE.

STABILISED SITE ACCESS

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2	50% DETAILED DESIGN	JO		JG	11.06.20							
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Appendix B – Sediment Basin Calculations

SWMP Commentary, Detailed Calculations

Note: These "Detailed Calculation" spreadsheets relate only to high erosion hazard lands as identified in figure 4.6 or where the designer chooses to use the RUSLE to size sediment basins. The "Standard Calculation" spreadsheets should be used on low erosion hazard lands as identified by figure 4.6 and where the designer chooses not to run the RUSLE in calculations.

1. Site Data Sheet

Site Name: Meadowbank Tafe

Site Location: Multi Trades and Digital Technology Hub

Precinct:

Description of Site:

Site area	Sub-catchments						Remarks
Total catchment area (ha)	0.66						
Disturbed catchment area (ha)	0.66						

Soil analysis (enter sediment type if known, or laboratory particle size data)

Sediment Type (C, F or D) if known:	f						From Appendix C
% sand (fraction 0.02 to 2.00 mm)							Soil texture should be assessed through mechanical dispersion only. Dispersing agents (e.g. Calgon) should not be used
% silt (fraction 0.002 to 0.02 mm)							
% clay (fraction finer than 0.002 mm)							
Dispersion percentage							E.g. enter 10 for dispersion of 10%
% of whole soil dispersible							See Section 6.3.3(e). Auto-calculated
Soil Texture Group	f						Automatic calculation from above

Rainfall data

Design rainfall depth (days)	5						See Sections 6.3.4 (d) and (e)
Design rainfall depth (percentile)	80						See Sections 6.3.4 (f) and (g)
x-day, y-percentile rainfall event	30						See Section 6.3.4 (h)
Rainfall R-factor (if known)	3500						See Appendix B
IFD: 2-year, 6-hour storm (if known)	10.5						See IFD chart for the site

RUSLE Factors

Rainfall erosivity (R -factor)	3500						Auto-filled from above RUSLE LS factor calculated for a high rill/interrill ratio.
Soil erodibility (K -factor)							
Slope length (m)							
Slope gradient (%)							
Length/gradient (LS -factor)							
Erosion control practice (P -factor)	1.3	1.3	1.3	1.3	1.3	1.3	
Ground cover (C -factor)	1	1	1	1	1	1	

Calculations

Soil loss (t/ha/yr)							
Soil Loss Class							See Section 4.4.2(b)
Soil loss (m ³ /ha/yr)							
Sediment basin storage volume, m ³							See Sections 6.3.4(i) and 6.3.5 (e)

4. Volume of Sediment Basins, Type D and Type F Soils

Basin volume = settling zone volume + sediment storage zone volume

Settling Zone Volume

The settling zone volume for *Type F* and *Type D* soils is calculated to provide capacity to contain all runoff expected from up to the y-percentile rainfall event. The volume of the basin's settling zone (V) can be determined as a function of the basin's surface area and depth to allow for particles to settle and can be determined by the following equation:

$$V = 10 \times C_v \times A \times R_{x\text{-day, } y\text{-}\%ile} \text{ (m}^3\text{)}$$

where:

10 = a unit conversion factor

C_v = the volumetric runoff coefficient defined as that portion of rainfall that runs off as stormwater over the x-day period

$R_{x\text{-day, } y\text{-}\%ile}$ = is the x-day total rainfall depth (mm) that is not exceeded in y percent of rainfall events. (See Sections 6.3.4(d), (e), (f), (g) and (h)).

A = total catchment area (ha)

Sediment Storage Zone Volume

In the detailed calculation on Soil Loss Classes 1 to 4 lands, the sediment storage zone can be taken as 50 percent of the settling zone capacity. Alternately designers can design the zone to store the 2-month soil loss as calculated by the RUSLE (Section 6.3.4(i)(ii)). However, on Soil Loss Classes 5, 6 and 7 lands, the zone must contain the 2-month soil loss as calculated by the RUSLE (Section 6.3.4(i)(iii)).

Place an "X" in the box below to show the sediment storage zone design parameters used here:

X	50% of settling zone capacity,
X	2 months soil loss calculated by RUSLE

Total Basin Volume

Site	C_v	$R_{x\text{-day, } y\text{-}\%ile}$	Total catchment area (ha)	Settling zone volume (m ³)	Sediment storage volume (m ³)	Total basin volume (m ³)
	0.51	30	0.66	100.98	50	151.47

Note that designers should achieve a minimum 3:1 length:width ratio in Type D or F basins

SWMP Commentary, Detailed Calculations

Note: These "Detailed Calculation" spreadsheets relate only to high erosion hazard lands as identified in figure 4.6 or where the designer chooses to use the RUSLE to size sediment basins. The "Standard Calculation" spreadsheets should be used on low erosion hazard lands as identified by figure 4.6 and where the designer chooses not to run the RUSLE in calculations.

1. Site Data Sheet

Site Name: Meadowbank Tafe

Site Location: Multi-storey carpark

Precinct:

Description of Site:

Site area	Sub-catchments						Remarks
Total catchment area (ha)	0.295						
Disturbed catchment area (ha)	0.295						

Soil analysis (enter sediment type if known, or laboratory particle size data)

Sediment Type (C, F or D) if known:	f						From Appendix C
% sand (fraction 0.02 to 2.00 mm)							Soil texture should be assessed through mechanical dispersion only. Dispersing agents (e.g. Calgon) should not be used
% silt (fraction 0.002 to 0.02 mm)							
% clay (fraction finer than 0.002 mm)							
Dispersion percentage							E.g. enter 10 for dispersion of 10%
% of whole soil dispersible							See Section 6.3.3(e). Auto-calculated
Soil Texture Group	f						Automatic calculation from above

Rainfall data

Design rainfall depth (days)	5						See Sections 6.3.4 (d) and (e)
Design rainfall depth (percentile)	80						See Sections 6.3.4 (f) and (g)
x-day, y-percentile rainfall event	30						See Section 6.3.4 (h)
Rainfall R-factor (if known)	3500						See Appendix B
IFD: 2-year, 6-hour storm (if known)	10.5						See IFD chart for the site

RUSLE Factors

Rainfall erosivity (R -factor)	3500						Auto-filled from above RUSLE LS factor calculated for a high rill/interrill ratio.
Soil erodibility (K -factor)							
Slope length (m)							
Slope gradient (%)							
Length/gradient (LS -factor)							
Erosion control practice (P -factor)	1.3	1.3	1.3	1.3	1.3	1.3	
Ground cover (C -factor)	1	1	1	1	1	1	

Calculations

Soil loss (t/ha/yr)							
Soil Loss Class							See Section 4.4.2(b)
Soil loss (m ³ /ha/yr)							
Sediment basin storage volume, m ³							See Sections 6.3.4(i) and 6.3.5 (e)

4. Volume of Sediment Basins, *Type D* and *Type F* Soils

Basin volume = settling zone volume + sediment storage zone volume

Settling Zone Volume

The settling zone volume for *Type F* and *Type D* soils is calculated to provide capacity to contain all runoff expected from up to the y-percentile rainfall event. The volume of the basin's settling zone (V) can be determined as a function of the basin's surface area and depth to allow for particles to settle and can be determined by the following equation:

$$V = 10 \times C_v \times A \times R_{x\text{-day, } y\text{-}\%ile} \text{ (m}^3\text{)}$$

where:

10 = a unit conversion factor

C_v = the volumetric runoff coefficient defined as that portion of rainfall that runs off as stormwater over the x-day period

$R_{x\text{-day, } y\text{-}\%ile}$ = is the x-day total rainfall depth (mm) that is not exceeded in y percent of rainfall events. (See Sections 6.3.4(d), (e), (f), (g) and (h)).

A = total catchment area (ha)

Sediment Storage Zone Volume

In the detailed calculation on Soil Loss Classes 1 to 4 lands, the sediment storage zone can be taken as 50 percent of the settling zone capacity. Alternately designers can design the zone to store the 2-month soil loss as calculated by the RUSLE (Section 6.3.4(i)(ii)). However, on Soil Loss Classes 5, 6 and 7 lands, the zone must contain the 2-month soil loss as calculated by the RUSLE (Section 6.3.4(i)(iii)).

Place an "X" in the box below to show the sediment storage zone design parameters used here:

X	50% of settling zone capacity,
X	2 months soil loss calculated by RUSLE

Total Basin Volume

Site	C_v	$R_{x\text{-day, } y\text{-}\%ile}$	Total catchment area (ha)	Settling zone volume (m ³)	Sediment storage volume (m ³)	Total basin volume (m ³)
	0.51	30	0.295	45.135	23	67.7025

Note that designers should achieve a minimum 3:1 length:width ratio in Type D or F basins

Appendix C – CV



James Gilligan

Associate | Senior Civil Engineer

BE (Civil) MIEAust CPEng NER

James is a Senior Civil Engineer with over twelve years' experience managing and delivering buildings and complex civil infrastructure projects requiring design from the concept phase through to construction and post construction stages.

James also has particular experience in project management and contract administration. James' technical background includes civil design of utilities, earthworks, stormwater and roads for subdivision and buildings projects across all types of development including Education, Residential, Commercial & Industrial.

Project Experience

Urban Redevelopment

- Frasers Central Park, Broadway
- Tailors Walk, Pemberton Street, Botany
- 150 Epping Road, Lane Cove
- Glebe Affordable Housing Project, Glebe
- Altrove Stage 7 & 9, Schofields
- Airds Subdivision Works, Airds
- Pemulwuy Southern Lands, Pemulwuy
- Stellar Apartments, Ryde
- 10 Hall Street, Bondi
- McEvoy Street, Waterloo

Public Domain and Open Spaces

- Endeavour Energy Southern Carpark, Huntingwood
- Windsor Station Bus Interchange, Windsor
- Waterfall Station Easy Access Upgrade
- New Acton South Carpark, Canberra
- Elara Neighbourhood Centre, Elara
- Hurstville Bus Interchange, Hurstville
- Twin Creeks Golf Club, Luddenham
- Croom Regional Sporting Complex, Croom

Infrastructure / Utilities Coordination

- Southern Sydney Freight Line
- North West Rail Link
- Sydney International Airport – Stage 2B

Aged Care & Retirement Living

- St Mary's Aged Care Facility, St Mary's
- The Abbey Aged Care Facility, Mittagong
- Anglican Retirement Village, Glenhaven
- Oran Park Aged Care Facility, Oran Park
- Zhiva Living, Dural

Commercial / Industrial

- Ingram Micro Warehouse
- Goodyear Warehouse
- 1-5 Interchange Drive, Eastern Creek
- 2-4 Interchange Drive Eastern Creek
- 9-11 Interchange Drive, Eastern Creek
- 17-19 Interchange Drive, Eastern Creek
- 21-23 Interchange Drive, Eastern Creek
- Bunnings Distribution Centre, Eastern Creek
- Basalt Road, Greystanes
- Blum Australia Warehouse, Hoxton Park
- Masters Home Improvement, Penrith
- Masters Home Improvement Wagga Wagga
- AMP Shopping Centre, Glenmore Park
- Kingsford Smith Distribution Centre, Mascot
- Danks Hardware Distribution Centre

Health

- Manly AYA
- Westmead Hospital
- Cumberland Hospital
- Bungarabee House Relocation, Blacktown

Education

- Passfield Park School
- Jordon Spring Public School
- Alex Avenue Public School
- Western Sydney University, Westmead
- Barker College Junior School and Early Learning Centre
- Westmead Catholic College
- Catherine Field Public School
- Wagga Wagga Public School
- East Leppington Public School
- Meadowbank TAFE

Appendix D - Consultation Record

Post Approval Consultation Record

Identified Party to Consult:	City of Ryde Council
Consultation type:	Email Correspondence
When is consultation required?	Prior to Commencement of Construction
Why	B19. The applicant must prepare a Construction Soil and Water Management Plan (CSWMSP) and the plan must address, but not limited to the following to the following: (a) be prepared by a suitably qualified expert, in consultation with Council;
When was consultation scheduled/held	Initial email sent to Sandra Bailey 19/10/20 Follow up email sent to Sanju Reddy on 21/10/20 Response received from Sanju Reddy on 09/11/20
When was consultation held	Initial email sent to Sandra 19/10/20 Follow up email sent on 21/10/20 Response received on 09/11/20
Identify persons and positions who were involved	Sandra Bailey – Manager Development Assessment – City of Ryde Sanju Reddy – Senior Coordinator Building & Development Advisory Service – City of Ryde
Provide the details of the consultation	The Construction Soil and Water Management Sub-Plan required consultation with Council to ensure that it satisfied any council concerns with the development.
What specific matters were discussed?	All matters associated to the Construction Soil and Water Management Sub-Plan
What matters were resolved?	Nil
What matters are unresolved?	Nil
Any remaining points of disagreement?	Nil
How will SINSW address matters not resolved?	Not Applicable

Adam Rowston

From: Adam Rowston
Sent: Monday, 19 October 2020 9:59 AM
To: sandrab@ryde.nsw.gov.au; cityofryde@ryde.nsw.gov.au
Cc: Hang Nghiem; Vanja Krumpacnik
Subject: SSD 10349 - B19 - Construction Soil and Water Management Plan - Consultation
Attachments: SSD 10349 - B19 - Submission to Council for Review.pdf

Hi Sandra,

In accordance with Condition B19a of SSD 10349, for the Multi-Trades and Digital Technology Hub at Meadowbank TAFE, please find attached Construction Soil and Water Management Plan for your review and comment.

Regards,
Adam Rowston
Cadet

HANSEN YUNCKEN

Hansen Yuncken Pty Ltd
Sydney Corporate Park
Building 1, L3, 75-85 O'Riordan Street
Alexandria NSW 2015
PO Box 7002 Alexandria NSW 2015
M 0427 774 292
ARowston@hansenyuncken.com.au
www.hansenyuncken.com.au

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Adam Rowston

From: Adam Rowston
Sent: Wednesday, 21 October 2020 3:48 PM
To: Sanju Reddy
Cc: Hang Nghiem; Vanja Krumpacnik; Thebridge, Mark
Subject: SSD 10349 - Multi-Trades and Digital Technology Hub - CWC1 Conditions
Attachments: SSD 103049 - SSD MATRIX - COUNCIL INVOLVEMENT.pdf; SSD 10349 - CWC1 - Submission to Council Attachments.zip

Hi Sanju,

As previously discussed with Hang, the following email provides a summary of the project and conditions relating to CWC1 that require council involvement.

The project works have been broken up into four Crown Works Certificates in accordance with our staging plan.

The four CWC's are as broken up as follows:

- CWC1
 - o Bulk excavation
 - o Remediation
 - o Shoring walls
 - o Minor services diversions
- CWC2
 - o Retaining walls
 - o All structural works and associated services works
- CWC3
 - o Building envelope & façade
 - o Internal fit out
 - o Landscaping
 - o External pavements
- CWC4
 - o Public domain works

We are currently in the process of obtaining CWC1 only.

Please see attached a filtered SSD Matrix showing the conditions we are meeting for CWC1 that require council involvement.

The following is a summary of the attachments provided in this email, the requirements from council and their current status.

B8 & B9 – Dilapidation Reports

In accordance with Condition B8C and B9 of SSD 10349, please find attached cover letter inclusive of onedrive link to the Dilapidation Reports.

Can you please provide acknowledgement of receipt and that the dilapidation reports have been downloaded at your earliest convenience.

Please note that this was previously sent to yourself and cityofryde@ryde.nsw.gov.au on 14/10/20.

B10 – Community Communication Strategy

The Community Communication Strategy for this project is not being developed by Hansen Yuncken. However, this will be sent over in a different package.

B16 – Construction Traffic and Pedestrian Management Sub-Plan (CTPMSP)

In accordance with Condition B16b of SSD 10349, the CTPMSP has been developed in consultation with the Council.

Please note that consultation with the Council has already been completed with Yafeng (Alex) Zhu. The email trail has been attached for your reference.

B19 – Construction Soil and Water Management Plan (CSWMSP)

In accordance with Condition B19a of SSD 10349, please find attached Construction Soil and Water Management Plan for your review and comment.

If the Council is satisfied with the documentation provided, please provide written approval accepting the Construction Soil and Water Management Plan.

Please note that this was sent to Sandra on 19/10/20

B23 – Construction Worker Transportation Strategy

The Construction Worker Transportation Strategy is included within the Construction Traffic and Pedestrian Management Sub-Plan and included within the consultation process mentioned above (B16).

Once the report is finalised, a copy will be sent to Council for information.

B30 – Construction Car Parking and Service Vehicle Layout

The Construction Car Parking and Service Vehicle Layout is included within the Construction Traffic and Pedestrian Management Sub-Plan and included within the consultation process mentioned above (B16).

Once the report is finalised, a copy will be sent to Council for information.

C25 – Disposal of Seepage and Stormwater

In accordance with condition C25 of SSD 10349, please find attached certification and drawings detailing the proposed disposal of Stormwater for your review and comments.

If the Council is satisfied with the documentation provided, please provide written approval accepting the proposed Disposal of Seepage and Stormwater.

C38 – Engineering Works

In accordance with Condition C38 of SSD 10349, please find attached design certificates and drawings for your written acceptance.

If the Council is satisfied with the documentation provided, please provide written acceptance of the documentation provided.

C39 – Ground Anchors

In accordance with Condition C39 of SSD 10349, please find attached design statement confirming that the design is in compliance with C39.

If the Council is satisfied with the design statement provided, please provide written acceptance.

If you wish to discuss please don't hesitate to call.

Regards,
Adam Rowston
Cadet



Hansen Yuncken Pty Ltd
Sydney Corporate Park
Building 1, L3, 75-85 O'Riordan Street
Alexandria NSW 2015
PO Box 7002 Alexandria NSW 2015
M 0427 774 292
ARowston@hansenyuncken.com.au
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Adam Rowston

From: Sanju Reddy <SanjuR@ryde.nsw.gov.au>
Sent: Monday, 9 November 2020 5:32 PM
To: Adam Rowston
Cc: Hang Nghiem; Vanja Krumpacnik; Thebridge, Mark
Subject: Initial Council Feedback: 10349 - Multi-Trades and Digital Technology Hub - CWC1 Conditions

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Adam

Please refer to my comments in **blue** text – for items that has been satisfied and in **red** text the conditions that have not yet been satisfied.

Please contact me if you require further clarification.

Thank you
Sanju Reddy

STATUS OF EACH CONDITION

B8 & B9 – Dilapidation Reports

In accordance with Condition B8C and B9 of SSD 10349, please find attached cover letter inclusive of onedrive link to the Dilapidation Reports.

Can you please provide acknowledgement of receipt and that the dilapidation reports have been downloaded at your earliest convenience.

Please note that this was previously sent to yourself and cityofryde@ryde.nsw.gov.au on 14/10/20.

Council Comments:

Dilapidation Reports have been received by City of Ryde and the requirements of the Conditions have been satisfied.

B10 – Community Communication Strategy

The Community Communication Strategy for this project is not being developed by Hansen Yuncken. However, this will be sent over in a different package.

Council Comments:

Council acknowledges receipt of copy of the Community Communication Strategy and hopes that the residents are satisfactory informed and consulted as per the Strategy. Residents that contact Council in relation to the works occurring at the TAFE site will be referred to the contact number and email/ website details provided in the document, where required.

B16 – Construction Traffic and Pedestrian Management Sub-Plan (CTPMSP)

In accordance with Condition B16b of SSD 10349, the CTPMSP has been developed in consultation with the Council.

Please note that consultation with the Council has already been completed with Yafeng (Alex) Zhu. The email trail has been attached for your reference.

Council Comments:

The requirement for these conditions are now satisfactory based on the documents submitted as part of the consultation with Council's Traffic/Transport Team.

B19 – Construction Soil and Water Management Plan (CSWMSP)

In accordance with Condition B19a of SSD 10349, please find attached Construction Soil and Water Management Plan for your review and comment.

If the Council is satisfied with the documentation provided, please provide written approval accepting the Construction Soil and Water Management Plan.

Please note that this was sent to Sandra on 19/10/20

Council Comments:

The requirement for these conditions are now satisfactory based on the documents submitted

B23 – Construction Worker Transportation Strategy

The Construction Worker Transportation Strategy is included within the Construction Traffic and Pedestrian Management Sub-Plan and included within the consultation process mentioned above (B16).

Once the report is finalised, a copy will be sent to Council for information.

Council Comments:

Satisfactory based on the documents submitted as part of the consultation with Council's Traffic/Transport Team.

B30 – Construction Car Parking and Service Vehicle Layout

The Construction Car Parking and Service Vehicle Layout is included within the Construction Traffic and Pedestrian Management Sub-Plan and included within the consultation process mentioned above (B16).

Once the report is finalised, a copy will be sent to Council for information.

Council Comments:

Satisfactory based on the documents submitted as part of the consultation with Council's Traffic/Transport Team.

C25 – Disposal of Seepage and Stormwater

In accordance with condition C25 of SSD 10349, please find attached certification and drawings detailing the proposed disposal of Stormwater for your review and comments.

If the Council is satisfied with the documentation provided, please provide written approval accepting the proposed Disposal of Seepage and Stormwater.

Council Comments:

C25 Disposal of Seepage and Stormwater

The submitted documentation proposes temporary sedimentation basins to be installed during the construction phase to treat run-off prior to discharge into Council's stormwater network. The review has noted the following:

- A note specifying that the pumps are required to be provided during construction have not been provided.
- Pump out points into council's existing network have not been specified on the plan.

Due to obligations of the contractor to provide adequate discharge of stormwater during construction, no further information is required and the documentation is generally acceptable.

C38 – Engineering Works

In accordance with Condition C38 of SSD 10349, please find attached design certificates and drawings for your written acceptance.

If the Council is satisfied with the documentation provided, please provide written acceptance of the documentation provided.

Council Comments:

City of Ryde staff has raised the following issues on 2/11/2020:

C38 Engineering Works

The review of the submitted documentation has noted the following:

- a) The plans demonstrate locations of Council's stormwater lines through the development site. A long section showing the existing and proposed finished surface levels is required to accurately assess the impact to the pipeline. The absence of levels has not allowed for a detailed review to be undertaken.
- b) The documents are required to demonstrate a minimum 1.0m clearance from the outside edges of the existing stormwater to any proposed structures. The following was noted in the review:
 - a. RW2 is proposed to be constructed over Council's pipeline. Details of this wall has not been provided. Clarification is required on the type of structure proposed as part of the landscaping. A removable type of retaining wall, such as timber logs, would be acceptable, however a permanent concrete structure won't be supported.
 - b. An encroachment of the roof eaves into Council's easement has been noted. Although this is localised, clarification is required to be provided on the eaves height and distant encroaching. The provision of a section through this area will assist in demonstrating offsets.
 - c. A stormwater diversion is proposed around the basement wall and is generally acceptable. The diversion is shown on the structural plans but not reflected on the civil plans. A long section of this diversion has not been provided and thus a detailed review has not been undertaken.
- c) Drawings of footings and foundations of the proposed structures have been provided and appear satisfactory.
- d) A compliance certificate from the project Structural Engineer has been provided.

A lack of key documentation, that is, stormwater longitudinal sections and proposed retaining wall footing details through the existing easement, have not been provided and thus a detailed review was unable to be undertaken. Amended documentation is required to be provided prior to satisfaction of this condition of consent.

Revised details were provided to Council on 5 November 2020. The revised details are being reviewed by Council engineers. I will advise you of the status of this matter as soon as the review is completed.

This conditions has not yet been satisfied.

C39 – Ground Anchors

In accordance with Condition C39 of SSD 10349, please find attached design statement confirming that the design is in compliance with C39.

If the Council is satisfied with the design statement provided, please provide written acceptance.

Council Comments:

C39 Ground Anchors

The submitted documentation provides certification that no permanent ground anchors are proposed for the development and temporary anchors do not encroach into the public roadway.

The terms of the conditions have been complied with.

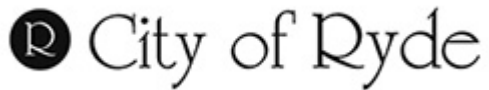
Thank you

Sanju Reddy

Senior Coordinator Building & Development Advisory Service
DEVELOPMENT ASSESSMENT

P (02) 9952 8187

E SanjuR@ryde.nsw.gov.au



Customer Service Centre 1 Pope Street, Ryde (Within Top Ryde City shopping centre)
North Ryde Office Riverview Business Park, Building O, Level 1, 3 Richardson Place, North Ryde

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A.10 Flood Emergency Response Sub-Plan (FERSP)

Multi-Trades and Digital Technology Hub and car park (SSD 10349): Submission of Flood Emergency Response Sub-Plan (FERSP) in accordance with Condition B20 & B14

Condition	Condition requirements	Document reference
B20	The Flood Emergency Response Sub-Plan (FERSP) must address, but not limited to, the following: (a) be prepared by a suitably qualified and experienced person(s) in consultation with the State Emergency Service;	Appendix C - CV Appendix B – Consultation Record
	(b) address the provisions of the <i>Floodplain Risk Management Guidelines</i> (EESG);	Entire report addresses these provisions, this is noted in Section 14 Conclusion
	(c) include details of: (i) the flood emergency responses for the construction phase of the development;	Section 11 Flood Response Preparation Section 12 Flood Response Actions
	(ii) predicted flood levels;	Section 2 Flood Response Summary Section 5 Flood Behavior Section 9 Floor Levels & On-site Refuge Appendix A SSDA Flood Impact Report
	(iii) flood warning time and flood notification;	Section 6 Flood and Evacuation Warnings
	(iv) assembly points and evacuation routes;	Section 8 Assembly Point and Evacuation Routes
	(v) evacuation and refuge protocols; and	Section 12 Flood Response Actions
	(vi) awareness training for employees and contractors.	Section 2.3 Flood Response Actions Section 11.2 Evacuation Drills
B14	(a) detailed baseline data;	Section 2 Flood Response Summary Section 9 Floor Levels and On-Site Refuge Section 12.1 Cancellation of Non-Essential Operations Appendix A – TTW Flood Report

B14	(b) details of: (i) the relevant statutory requirements (including any relevant approval, license or lease conditions);	Not Applicable
	(ii) any relevant limits or performance measures and criteria; and	Not Applicable
	(iii) the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;	Not Applicable
	(c) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;	Not Applicable
	(d) a program to monitor and report on the: (i) impacts and environmental performance of the development;	Not Applicable
	(ii) effectiveness of the management measures set out pursuant to paragraph (c) above;	Not Applicable
	(e) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;	Not Applicable
	(f) a program to investigate and implement ways to improve the environmental performance of the development over time;	Section 13. Revision of this Flood Evacuation Plan
	(g) a protocol for managing and reporting any: (i) incident and any non-compliance (specifically including any exceedance of the impact assessment criteria and performance criteria);	Not Applicable
	(ii) complaint;	Not Applicable
	(iii) failure to comply with statutory requirements; and	Not Applicable

B14	(h) a protocol for periodic review / update of the plan and any updates in response to incidents or matters of non-compliance.	Section 13. Revision of this Flood Evacuation Plan
------------	--	--





FLOOD EMERGENCY RESPONSE PLAN (CONSTRUCTION)

Meadowbank TaFE

See Street, Meadowbank

PREPARED FOR
Hansen Yuncken
Sydney Corporate Park
Building 1, Level 3
75-85 O-Riordan Street
Alexandria NSW 2015

Ref: NR-CV-RPT-0004
Rev: 4
Date: 12.11.20

Flood Emergency Response Plan (Construction)

Revision Schedule

Date	Revision	Issue	Prepared By	Approved By
13.10.20	1	Draft	J. Gilligan	-
19.10.20	2	Draft	J. Gilligan	-
20.10.20	3	Draft	J. Gilligan	-
12.11.20	4	Final	J. Gilligan	-

Northrop Consulting Engineers Pty Ltd

ACN 064 775 088 | ABN 81 094 433 100

Level 2, 3 Horwood Place, Parramatta NSW 2150

02 9241 4188 | sydney@northrop.com.au | www.northrop.com.au

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1. Limitations

1.1 Limitations Statement

Northrop Consulting Engineers Pty Ltd (Northrop) has been retained to prepare this report based on specific instructions, scope of work and purpose pursuant to a contract with its client. It has been prepared in accordance with the usual care and thoroughness of the consulting profession for the use by Hansen Yuncken during the construction phase of the project as required by Condition B20 of SSD 10349.

The report is based on generally accepted practices and standards applicable to the scope of work at the time it was prepared. No other warranty, express or implied, is made as to the professional advice included in this report.

Except where expressly permitted in writing or required by law, no third party may use or rely on this report unless otherwise agreed in writing by Northrop.

Where this report indicates that information has been provided to Northrop by third parties, Northrop has made no independent verification of this information except as expressly stated in the report. Northrop is not liable for any inaccuracies in or omissions to that information.

The report was prepared on the dates shown and is based on the conditions and information received at the time of preparation. It makes no comment or assertions on the structures or their ability to withstand flooding or flood forces.

This report should be read in full, with reference made to all sources. No responsibility is accepted for use of any part of this report in any other context or for any other purpose. Northrop does not purport to give legal advice or financial advice. Appropriate specialist advice should be obtained where required.

To the extent permitted by law, Northrop expressly excludes any liability for any loss, damage, cost or expenses suffered by any third party relating to or resulting from the use of, or reliance on, any information contained in this report.

2. Flood Response Summary

The following provides a summary of the findings of this Flood Emergency Response Plan including a summary of the flood behaviour, floor levels with respect to the flood behaviour, the recommended flood response actions, and the recommended on-site and off-site flood refuge locations.

2.1 Flood Levels

Table 1 – Summary of Flood Behaviour (subject site and vicinity)

Event	1% AEP	PMF
Flood Level (m AHD)	7.50 mAHD	16.25 mAHD
Flood Depth (m)	Up to 0.2m (approx.)	Up to 2.44m
Velocity x Depth Product (m ² /s)	0.04	0.04

2.2 Floor Levels

Table 2 - Internal Floor Levels – Multi Trades and Digital Technology Hub

Floor	Level (m AHD)	Relationship to Flood Levels
Level 1	13.810	Above 1% AEP and below PMF
Level 2	17.620	Above 1% AEP and PMF
Level 3	21.420	Above 1% AEP and PMF
Level 4	25.420	Above 1% AEP and PMF
Level 5	29.220	Above 1% AEP and PMF
Level 6	33.020	Above 1% AEP and PMF

Table 3 - Internal Floor Levels – Multi Storey Carpark

Floor	Level (m AHD)	Relationship to Flood Levels
Ground Floor	25.750	Above 1% AEP and PMF
Level 1	29.150	Above 1% AEP and PMF
Level 2	32.550	Above 1% AEP and PMF

2.3 Flood Response Actions

Table 4 – Flood Response Actions Summary

WHEN	WHAT	BY WHO
Prior to Flooding	Assemble Emergency Kit	First Aid Officer
	Check FloodSafe Kit every three months	First Aid Officer
	Coordinate Evacuation Drills twice per year (minimum)	Site Manager / WHS Officer
	Sign up and maintain Early Warning Network and subscription	Site Manager / WHS Officer
	Monitor weather situation through subscription flood alerts	Site Manager / WHS Officer
	Inductions for new staff to include flood risk associated with the subject site and evacuation procedure	Site Manager / WHS Officer
On-site Refuge	Warning has been issued and RAINFALL HAS STARTED	Site Manager / WHS Officer
	Communicate decision to remain on-site and organise seating and lighting.	Site Manager / WHS Officer
	Cancel non-essential activities for the day	Site Manager / WHS Officer
	All persons in basements below ground floor to move to nominated refuge point – See Street	All
	Seek refuge in-place throughout TAFE above Flood Level	All
	Wait it out at nominated refuge point	All
	Maintain regular communication with staff and facility users.	Site Manager / WHS Officer
	Do not attempt to drive or walk through floodwaters. If stranded on-site and water inundates floor level, call 000 immediately.	All
Once Risk has Passed / After a Flood	Check all services and structural stability of buildings.	Qualified persons
	Return to operation.	Site Manager / WHS Officer

2.4 Key Personnel

Table 3 – Key Personal Summary

Person Organisation	Name	Number
TAFE Security		-
Site Manager	-	-
Work Health and Safety Officer	-	-
First Aid Officer	-	-
SES	-	132 500
Police / Fire / Ambulance	-	000

2.5 Example Signage

Flood Emergency Assembly Point

This property is flood prone with predicted depths up to 2.44 metres.

Cancellation of non-essential services should be taken prior to rainfall commencing.

Once rainfall has commenced, refuge is available at See Street.

Follow the direction of the Site Manager and Hansen Yuncken staff at all times. If no staff are present, contact Security at Meadowbank TAFE. If assistance is required, call the SES on 132 500. If in a life-threatening situation, call 000.



Figure 1 – Emergency Assembly Point

3. Introduction

Northrop Consulting Engineers have been engaged by Hansen Yuncken to prepare a Flood Emergency Response Plan for the construction phase of the Multi-trades and Digital Technology Hub and Multistorey Carpark (the subject site) at Meadowbank TAFE.

This report has been prepared to in response to Condition B20 of SSD 10349.

- Flood Emergency Response Plan: Provide a Flood Emergency Response Sub-Plan (FERSP in consultation with the State Emergency Services
 - (a) be prepared by a suitably qualified and experienced person(s) in consultation with the State Emergency Services.
 - (b) Address the provisions of the Floodplain Risk Management Guidelines
 - (c) Include details of:
 - Flood emergency responses for the construction phase of the development
 - Predicted flood levels
 - Flood warning time and flood notification
 - Assembly points and evacuation routes
 - Evacuation and refuge protocols
 - Awareness training for employees and contractors.

3.1 Subject Site

The subject site is located within the suburb of Meadowbank in the City of Ryde Council (Council) Local Government Area (LGA). There are two (2) areas of development within the Meadowbank TAFE campus including a proposed Multi-Trades and Digital Technology Hub, and a new multi-story carpark.

The development site for the multi-storey carpark is approximately 4,000m² and is bound by See Street to the south and the existing TAFE development to the west, north and east.

This Flood Emergency Response Plan (FERP) has been prepared to:

- Promote satisfactory awareness of expected flood behaviour and flood risks associated with the subject site.
- Nominate roles and responsibilities when preparing for and responding to a flood emergency.
- Identify measures to monitor weather forecasts and highlight warning systems available.
- Provide education and awareness material for training programs with respect to flooding of the subject site.
- Identify potential evacuation and evasion procedures including evacuation routes and flood refuge opportunities.

Contained herein is a description of the methodology and information used to prepare this report, a summary of the likely flood behaviour, recommendations for flood preparation and recommended response actions during a flood event.

4. Methodology and Available Data

This plan was developed based on the flood information obtained from the following locations:

- SSDA Flood Impact Report Meadowbank TAFE – Multi Trades and Digital Technology Hub prepared by TTW dated 03 October 2019.

The expected flood behaviour for the subject site is based on the above flood information and is summarised in the Flood Behaviour section of this plan.

A review of the Bureau of Meteorology (BoM) and State Emergency Service (SES) guidelines have been undertaken to report on the likely warning types described in the Flood and Evacuation Warnings section of this plan.

Consideration has been given to the personnel most likely to be on-site and responsible for flood emergency response. This is outlined in the Flood Response Personnel section of this plan.

Analysis of the site and nearby topography, in combination with the likely flood behaviour has informed the assembly points, evacuation routes and on-site refuge points nominated in the Assembly Point and Evacuation Routes and Floor Levels and On-site Refuge sections of this plan.

Contact numbers for relevant emergency response agencies are noted in the Emergency Contact section of this plan.

Finally, a review of the aforementioned flood studies, NSW State Flood Plan and Emergency Business Continuity Plan have contributed to the recommended preparation and response actions outlined in the Flood Response Preparation and Flood Response Actions sections of this plan.

We have reached out to NSW SES regarding this Flood Emergency Response Plan for their input and comment. This plan should be revised following their formal input.

5. Flood Behaviour

Please refer to Appendix A SSDA Flood Impact Report Meadowbank TAFE – Multi Trades and Digital Technology Hub prepared by TTW dated 03 October 2019.

6. Flood and Evacuation Warnings

A network of rainfall gauge stations is maintained throughout the greater Sydney region. These provide information to the Bureau of Meteorology (BoM) as one source of information informing their flood warning system.

The Bureau should issue one of five types of warnings through local radio, television and through their website <http://www.bom.gov.au>. In addition, the SES may issue a flood bulletin, evacuation warning or evacuation order.

Due to the sensitive nature of this location, it is recommended the Site Manager register for automatic text and email notifications from the Early Warning Network which filters and passes on BoM warnings.

The warning types are as follows:

6.1 Severe Weather Warning

Severe weather warnings are issued by the Bureau for potentially dangerous weather conditions. A description of the threat will be included in the warning along with the time for next issue. It is noted that a severe weather warning does not imply that flooding will eventuate. Warnings are generally updated every six hours, or as the event dictates.

This type of warning should be accompanied with predicted extreme rainfall depth as discussed in the Flood Response section, as well as observed values from around the state.

6.2 Severe Thunderstorm Warning

A severe thunderstorm warning will be issued if there is strong evidence that a severe thunderstorm will develop, or if a severe thunderstorm is reported. Flash flooding may occur during severe thunderstorms. Warnings are generally updated every three hours or shorter as required.

6.3 Flood Alert/ Watch/ Advice

A flood alert/ watch/ advice will be issued if flood producing rain is expected. This provides an early warning that flooding may occur.

6.4 Generalised Flood Warning

A generalised flood warning is to be issued when flooding is expected to occur in a given area. Three hours warning time is expected from issue of warning to peak flood level as per the "Service Level Specification for Flood Forecasting and Warning Services for New South Wales – Version 3.13" (Bureau of Meteorology, 2013).

This is the most likely warning type for the subject site should evacuation need to occur.

6.5 Minor/ Moderate/ Severe Flood Warning

A more detailed flood warning may be issued based on any additional information available. Three hours warning time is expected from issue of warning to peak flood level.

All warnings will be issued through the website, radio and television. Radio frequencies include ABC Sydney (702AM), 2CH (1170AM), 2DAY FM (104.1FM), 2GB (873AM), 2GO FM(107.7FM), 2ME (1638AM), 2SM/GORILLA (1269AM), 2UE (954AM), Coast FM (96.3FM), MIX 106.5 (106.5FM), NOVA (96.9FM), Radio 2Moro (1620AM), SBS Radio (97.7FM), Star 1045 (104.5FM), Sydney's 95.3 (95.3 FM), Triple M (104.9FM), WFSM (101.7FM).

All public and commercial television stations should broadcast warnings.

6.6 SES Flood Bulletins

The SES may issue a flood bulletin providing information of the likely flood consequences and recommended actions.

6.7 Evacuation Warning

The SES may issue an evacuation warning which allows time to prepare for evacuation.

6.8 Evacuation Order

The SES will issue an Evacuation Order if evacuation is required. If this occurs evacuation must be undertaken. Broadcast will be via radio/ TV, door knock, automated telephone message or SMS.

6.9 On-Site Emergency Communication

In the event of an emergency, an air horn and handheld loudspeaker is located within the Flood Emergency Kit. These will be used to obtain people's attention and direct them to the emergency assembly point or facilitate evacuation offsite.

6.10 Early Warning Network Automated Text and Email Service

The facility is to register for automatic alerts with the Early Warning Network (www.ewn.com.au) which will filter the above BoM warnings and send texts and emails to the Site Manager and Work Health and Safety Officer to notify them of the situation.

7. Flood Response Personnel

Summarised in Table 4 below are the facilities nominated emergency personnel, their location and responsibilities in managing flood response.

Table 4 - Flood Response Personnel

	Location	Responsibilities
Site Manager / Work Health and Safety Officer	On-site	<ul style="list-style-type: none"> Coordinate flood evacuation drills. Monitor weather through subscription flood alerts. Receive notifications from the Early Warning Network. Decide when Cancellation of activities, evacuation or refuge is required. Communicate Cancellation and Evacuation to staff and visitors. Liaison with SES or Emergency Services personnel if they attend site. Remain calm and direct visitors and staff through the emergency response procedures.
First Aid Officer	On-site	<ul style="list-style-type: none"> Prepare and maintain Flood Emergency Kit. Prepare and coordinate assistance for staff and visitors with mobility difficulties.
WHS Officer	On-Site	<ul style="list-style-type: none"> Undertake Site Manager duties in a Flood if the Site Manager is not available Maintain calm and direct staff and visitors through the evacuation process.
HY Staff	On-site	<ul style="list-style-type: none"> Maintain calm and direct visitors onsite through evacuation or refuge processes.

It is anticipated the Site Manager and Work Health and Safety Officer, who oversees emergencies and evacuation will be responsible.

All remaining HY staff are to assist with evacuation during a flood emergency.

8. Assembly Point and Evacuation Routes

8.1 Emergency Assembly Point

The following image presents the nominated Emergency Assembly Point for flooding is See Street. All staff and visitors are to immediately proceed to this location following declaration of an emergency.

It is the responsibility of the Site Manager to make everyone onsite aware of the emergency and all staff and visitors are to evacuate to the refuge location early, prior to rainfall commencing.

It should also be noted that major flood events are often accompanied by high winds and thunderstorms.

It is strongly recommended that in the event of a flood, the elevators are not used. There is the potential for flood waters to enter lift shafts, potentially disabling the lifts during a flood event.

In the event where a 1% AEP flood event or above is declared, the facility should cancel any non-essential procedures. This reduces the risk of people endangering themselves travelling to the facility.



Figure 2 – Emergency Assembly Point

9. Floor Levels and On-Site Refuge

9.1 Floor Levels

The proposed Multi Trades and Digital Technology Hub facility has six floors which are considered habitable. The level of each floor is presented below in Table 5. The floor levels with respect to the 1% AEP and PMF flood events are also presented in the below Table 5.

Table 5 - Internal Floor Levels

Floor	Level (m AHD)	Relationship to Flood Levels
Level 1	13.810	Above 1% AEP and below PMF
Level 2	17.620	Above 1% AEP and PMF
Level 3	21.420	Above 1% AEP and PMF
Level 4	25.420	Above 1% AEP and PMF
Level 5	29.220	Above 1% AEP and PMF
Level 6	33.020	Above 1% AEP and PMF

9.2 On-Site Refuge

In the event where an emergency is announced, refuge is to be sought at See Street.

Call the SES on 132 500 if emergency supplies are getting low, or 000 if in a life-threatening situation. Remember if its flooded, forget it.

9.3 Emergency Provisions for Essential Services

It is recommended the following contingency measures be implemented and maintained to facilitate on-site refuge:

- Staff with first aid training on-site at all times during operation.

Do not Drive or Walk through Floodwater.

Remember, If It's Flooded, Forget It!

10. Emergency Contact

For emergency assistance during flood events, please call the SES on 132 500. The SES are also able to provide information on the surrounding area, including closed roads, fallen trees, etc.

If you are in a life-threatening situation please call Police, Fire or Ambulance on 000.

11. Flood Response Preparation

It is the responsibility of the staff to prepare the facility for a flood event. This will be achieved through; adequate design, induction training provided by the Site Manager / Work Health and Safety Officer, nomination of responsible persons, education of flood risks and behaviour, and the preparation and maintenance of a Floodsafe Emergency Kit.

The information presented above is a summary of the flood behaviour and considered key to understanding the risks associated with flooding. This should be available to all staff.

11.1 Structural Certification

It is noted that prior to construction certification should be provided by a suitably qualified structural engineer that the proposal building can withstand the forces of floodwater up to and including the PMF.

11.2 Evacuation Drills

Evacuation drills are designed to increase flood awareness within the centre. These drills are to be undertaken twice per year to familiarise staff of the procedures when responding to a flood event.

For new staff it is expected they will be made familiar with the site flooding conditions and made familiar with the emergency procedures and response during the initial site induction.

11.3 Floodsafe Emergency Kit

Although the storm event may only last a couple hours, there is the potential for flood water to remain for a longer period following completion of rainfall. As such, enough resources should be contained in the Flood Emergency Kit to ensure anyone trapped on site has enough supplies for a prolonged period. In the event where resources are getting low, the SES may be contacted to provide a re-supply/evacuation from the facility.

Potential items for a flood emergency kit are outlined at; <https://www.ses.nsw.gov.au/floodsafe/prepare-your-home/emergency-kit/>. Items outlined on the SES website and some additional items are presented below:

- A copy of the facilities emergency management plan.
- Chemical register.
- Air horn and hand-held loudspeaker.
- Portable radios with spare batteries.
- Torches with spare batteries.
- Lanterns with spare batteries.
- Two-way radio with spare batteries.
- A first aid kit.
- Candles and waterproof matches.
- Waterproof bag for valuables.
- A copy of emergency numbers.

The kit should be kept in the site sheds suitable for easy deployment in the event of an evacuation. The contents of the kit and management during a flood event will be the responsibility of the First Aid Officer.

TRIGGER FOR REVIEW AND EDUCATION:

- Three monthly checking of the emergency kit to ensure all items are in suitable working order.
- Six monthly evacuation drills and reminder of the flood risks.
- Inductions for new staff, highlighting the flood risk associated with the subject site.

BY WHO: Site Manager / Work Health and Safety Officer and First Aid Officer

11.4 Storage of Sensitive Goods

All sensitive goods which are susceptible to damage from flood waters or, if exposed to floodwaters would have significant ramifications to the surrounding area, must not be stored in Level 1 which are susceptible to flooding. Level 2 is above the PMF level and is therefore considered an appropriate place to store goods which are sensitive to water.

11.5 Monitoring of Weather Situation

It is the responsibility of the Site Manager / Work Health and Safety Officer to monitor the weather situation and be aware if a warning has been issued. This will be achieved through automatic text messages and emails from the Early warning Network.

TRIGGER FOR MONITORING:

- Continuous, through subscription flood alerts

BY WHO: Site Manager

12. Flood Response Actions

12.1 Cancellation of Non-Essential Operations

In order to minimise the risk to life, it is recommended all non-essential services be cancelled if a Generalised Flood Warning or Severe Weather Warning with nominated rainfall depth equivalent to a 1% AEP flood event as presented in the following Table 6.

Table 6 - Rainfall triggers for cancellation

Rainfall Depth (mm)	Timescale
51	25-mins
77	1-hour
91	1.5-hours
102	2-hours

Once rainfall has commenced, refuge is to be sought on-site as discussed overleaf.

The aim is to eliminate/reduce the risk to life by removing as many staff and visitors from the floodplain prior to the commencement of rainfall, provided there is enough time for them to return to a safe place of residence.

The Site Manager / Work Health and Safety Officer is responsible for reviewing the weather forecasts and notifying facility users and staff of the decision to close the facility and seek refuge on-site.

When a warning is received, consideration should be given to:

- Cancelling services and appointments for the day of the event.
- Blocking floor wastes and toilets.
- Securing objects that are likely to float and cause damage.
- Relocating chemicals above the predicted water level.
- Moving vehicles away from the site where possible.
- **Wait it out** at the designated refuge points.

12.2 Refuge

Refuge is to be sought at See Street following notification or a major flood event or commencement of rainfall. The procedure for refuge on site should be carried out as the following:

- Sound air horn.
- Communicate decision to remain onsite.
- Communicate to all persons to move to the Emergency Assembly Point on See Street.
- Direct everyone in basement levels to Emergency Assembly Point.
- Roll call to ensure everyone is accounted for.
- Explain that measures in place to make this safe to maintain calm.

- Seek Refuge and Wait it Out.

TRIGGERS FOR REFUGE

Commencement of rainfall in event when a Severe Weather Warning or Generalised Flood Warning is current.

RESPONSIBLE FOR THE DECISION: Site Manager / Work Health and Safety Officer

It should also be noted that major flood events are often accompanied by high winds and thunderstorms.

12.3 Emergency Services Attending Site

There is a possibility that emergency services such as Police, Fire, Ambulance or SES may attend site and assume control from the Site Manager / Work Health and Safety Officer. Once this has occurred, they are in control of the site and any response operations.

TRIGGERS FOR EMERGENCY SERVICES TAKE CONTROL:

- Police, Fire, Ambulance or SES attending site.

RESPONSIBLE FOR THE DECISION: Site Manager / Work Health and Safety Officer

12.4 After a Flood

Once a Final Flood Warning or SES "All Clear" has been received:

- A thorough check of services such as electricity, sewer, water and gas should be undertaken by qualified persons.
- Advice should be sought from a suitably qualified engineer as to the structural integrity of buildings prior to their use.
- Personal protective equipment should be worn during the clean-up and disinfectant used.

TRIGGER FOR RETURN:

- All clear given by SES or emergency services and building inspected by representatives appointed by Hansen Yuncken.

BY WHO: SES, Emergency services, Site Manager / WHS Officer

13. Revision of this Flood Evacuation Plan

This plan shall be reviewed every 12 months or when there is a major operational change or flood event.

Revisions should be undertaken by a suitably qualified flood emergency response consultant.

14. Conclusion

The subject site is affected by flooding caused by overland flow from the upstream catchment. A review of the proposed development has been undertaken in conjunction with the expected flood behaviour and it was concluded that:

- **The Site Manager and Work Health and Safety Officer** will provide adequate direction in flood emergencies.
- **Cancellation of operations** is preferable prior to major and extreme events to eliminate community exposure to flood hazards.
- If rainfall has commenced for a predicted major or extreme event, all persons are to evacuate to See Street.
- Through adoption of this plan, the proposed development adequately minimises the flood risks associated with the subject site generally in line with the Floodplain Risk Management Guideline. The recommendations contained herein assist in managing the risk to life of the staff and visitors to the subject site.

15. References

- SES (2020) Flood Disaster Website
accessed from: <https://www.ses.nsw.gov.au/disaster-tabs-header/flood/> 12 October 2020
- SES (2020) Emergency Business Continuity Plan
accessed from: <http://www.sesemergencyplan.com.au/business/index.php> 12 October 2020
- SES (2020) Flood Planning for the Mobility impaired
accessed from: <https://www.ses.nsw.gov.au/floodsafe/what-floodsafe-means-for-you/mobility-impaired/> 12 October 2020
- Bureau of Meteorology (2013) Service Level Specification for Flood Forecasting and Warning Services for New South Wales – Version 3.13
accessed from: http://www.bom.gov.au/nsw/NSW_SLS_Current.pdf
12 October 2020
- SSDA Flood Impact Report Meadowbank TAFE – Multi Trades and Digital Technology Hub
prepared by TTW dated 03 October 2019.

Appendix A – TTW Flood Report

SSDA Flood Impact Report

Meadowbank TAFE - MULTI-TRADES AND DIGITAL TECHNOLOGY HUB

Prepared for Gray Puksand / 03 October 2019

191346 CAAA

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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 New 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 Flooding

The site is situated within the Charity Creek catchment which has an area of 247 ha incorporating Denistone, West Ryde and Meadowbank. Significant flooding has been known to occur along the existing trunk drainage system which flows from Rhodes St into the proposed Meadowbank School to the north of the site and connects into the TAFE site culvert crossing into Charity Creek.

The site is affected by minor overland flow from See Street to the east of the site, and major overland flow from the open watercourse to the west of the site. The proposed Combined Multi-Trades and Digital Hub building is outside the mainstream flooding extent for the 1% AEP flood but is within the Probable Maximum Flood (PMF) extent. The new building site is therefore classified as Low Flood Risk. The proposed building will be outside the minor overland flowpath which will be managed by site grading and proposed stormwater.

The eastern side of the new building is proposed to have a workshop at low level to tie into the existing library building. The proposed level is below the PMF and further discussion is required with Council

The proposed 1% AEP flood extent from both mainstream and overland flood modelling is shown in figure 1.1.1 below. The flood extent shown in pink is less than 100mm deep and classified as minor overland flow in accordance with Council DCP.

As the proposed and existing buildings within the site are within the PMF extent, a flood evacuation plan will be completed as part of the design development.

The major overland flood levels across the site are follows:

- **1% AEP Flood Level = 7.50m**
- **PMF Flood Level = 16.25m**

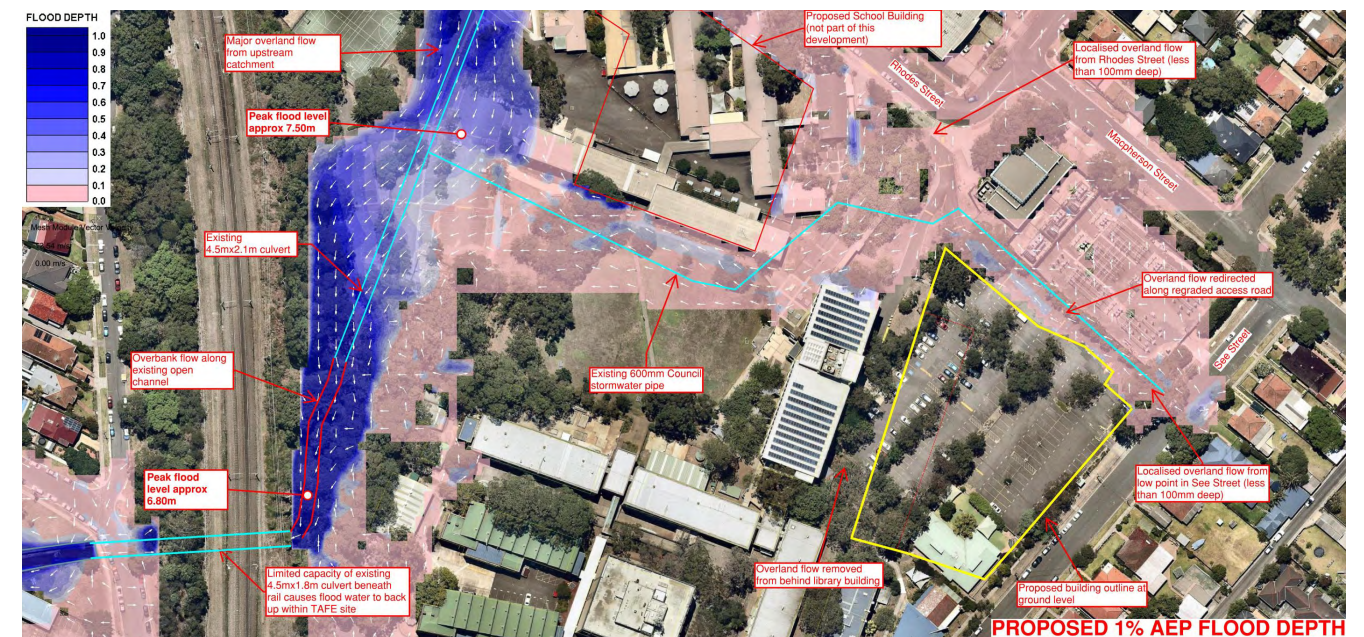


Figure 1.1.1: Proposed 1% AEP flood extent and depth

The flood planning requirements shall be in compliance with the City of Ryde Development Control Plan (DCP) Section 8.2 Stormwater and Floodplain Management. The DCP states that educational development is classed as "Sensitive Use". The following flood mitigation measures will be included: -

- No development is within the Medium or High flood risk areas of site ✓
- Basement parking areas are to be above the minor overland flow 1% AEP level plus 150mm freeboard; ✓
- Basement parking access is to be above the major overland flow PMF level ✓
- Appropriate and safe passage to an area of flood evacuation above the PMF within the new building. ? Architect?
- Overland flow paths will be directed away from the building. ✓
- Building components below the PMF level will need to be designed structurally to withstand the forces of the PMF flood. TTW
- Flood evacuation during the PMF will be to level 2 (17.52m) and levels above within the new building. is mentioned in this report

A flood evacuation management plan and detailed flood modelling that will include finalised external levels, proposed stormwater, building extents and landscaping, will be addressed during the design development stage.

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.

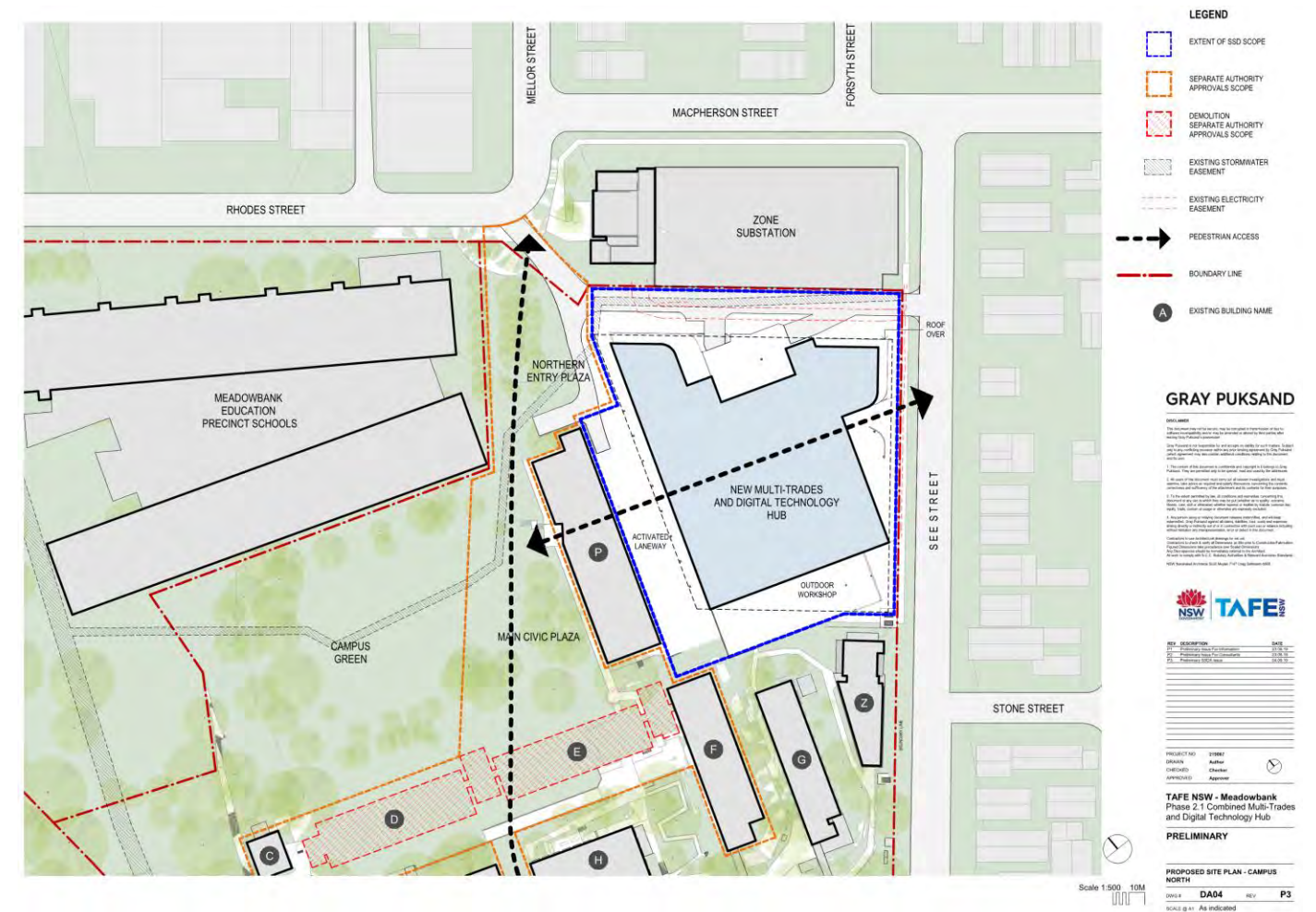
The key project elements can be seen with clarity on the diagram adjacent, placed within the context of proposed adjoining public and high schools, begins to give a feel of the true extent of the Educational Precinct being developed at Meadowbank.

The new Multi Trades hub to the North-East of the sit has a substantial new footprint in the region of 5,350m² encompassing car parking spaces to the basement levels, with an approximate building area approaching 22,000m².

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

This flood impact report addresses and details the following:

- Existing flood regime throughout the site;
- Flooding and overland flow analysis design;
- Consistency with Council's Floodplain risk management study and plans;
- Potential flood impacts of the proposal and impact on the flood affectation of adjacent properties/road;
- Compatibility with the flood hazard of the land;
- Safety of future occupants and visitors shall be carefully considered;
- Provision of protection of underground elements (such as basement carparks) for flood events up to the PMF;
- Evacuation and emergency access for events up to the PMF; and
- Recommendations made in the Parramatta River Ryde Sub Catchments Flood Study Report (SKM, Jan 2015)



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 Multi-Trade 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

4.0 Existing Flooding Regime

The existing site falls within the Charity Creek Catchment which has an area of 247ha incorporating Meadowbank, West Ryde and Denistone to the north of the site.

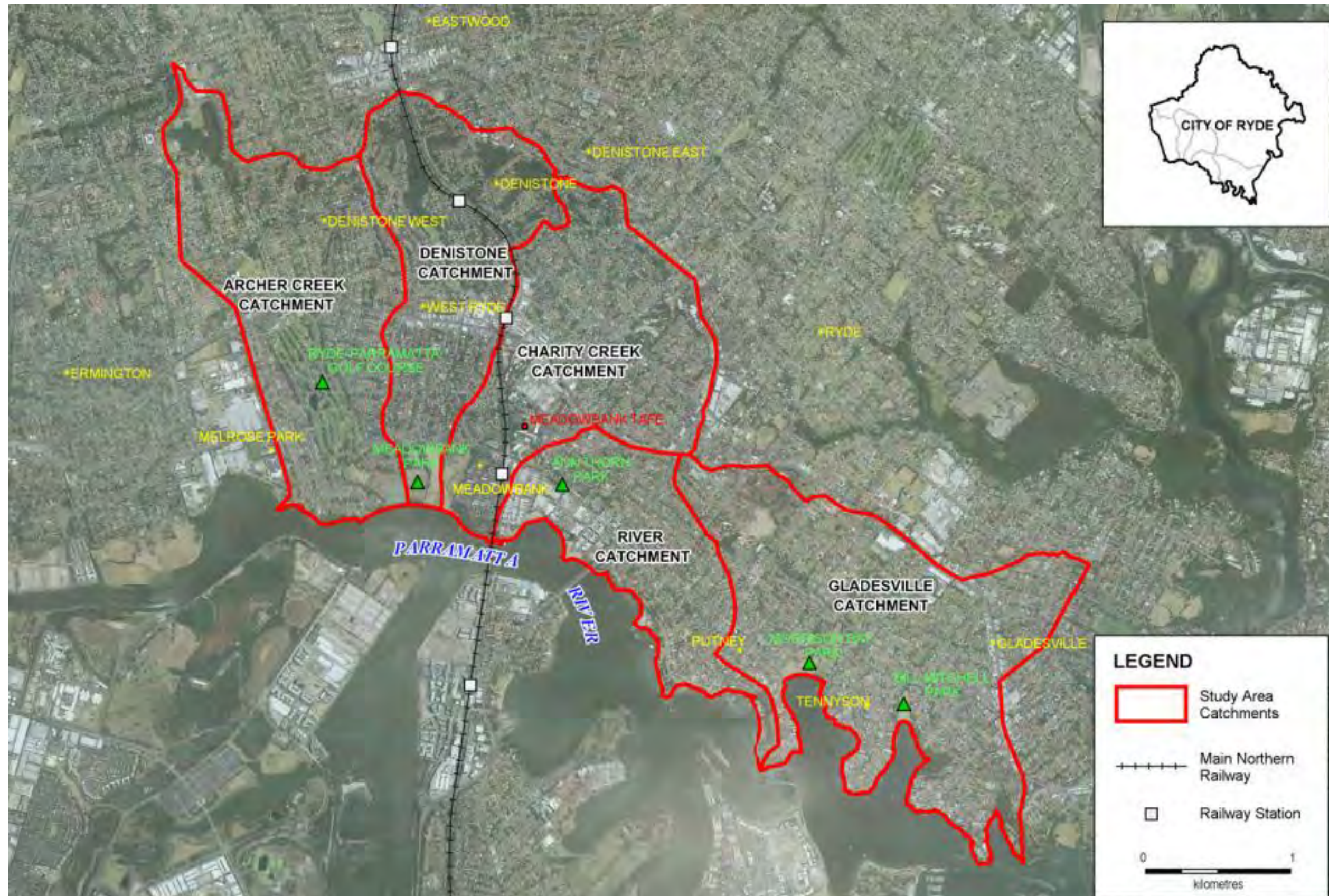


Figure 4.0: Ryde Sub-Catchments of the Parramatta River – SKM Flood Study 2015

Council have completed a flood study; "Parramatta River - Ryde Sub Catchments Flood Study and Floodplain Risk Management Plan" which details the nature of the flood regime through the Charity Creek catchment including the Meadowbank Educational Precinct.

TTW have obtained the flood model from Enstruct who were engaged by the Department of Education to complete a flood study for the Meadowbank School site. This model includes the original flood model used for Council's flood study. TTW have modified this flood model to use current topographical survey data within the TAFE precinct, and include adjustments for the proposed model which includes the new Combined Multi-Trades and Digital Hub building and concept site grading.

The flood modelling has been completed using TUFLOW, which uses a combined 1d/2d model with 2d representation of overland flows across a digital elevation model and 1d representation of stormwater pit and pipe networks, trunk drainage channels, culverts and bridges. Hydrological modelling of rainfall-runoff processes is completed using the DRAINS modelling software, to determine storm event flows across the catchment. No changes to the parameters of the flood model or hydrological model have been made. Figures 4.0.1 and 4.0.2 show the existing 1% AEP and PMF Peak flood depths through the TAFE site, these are also included in Appendix A.

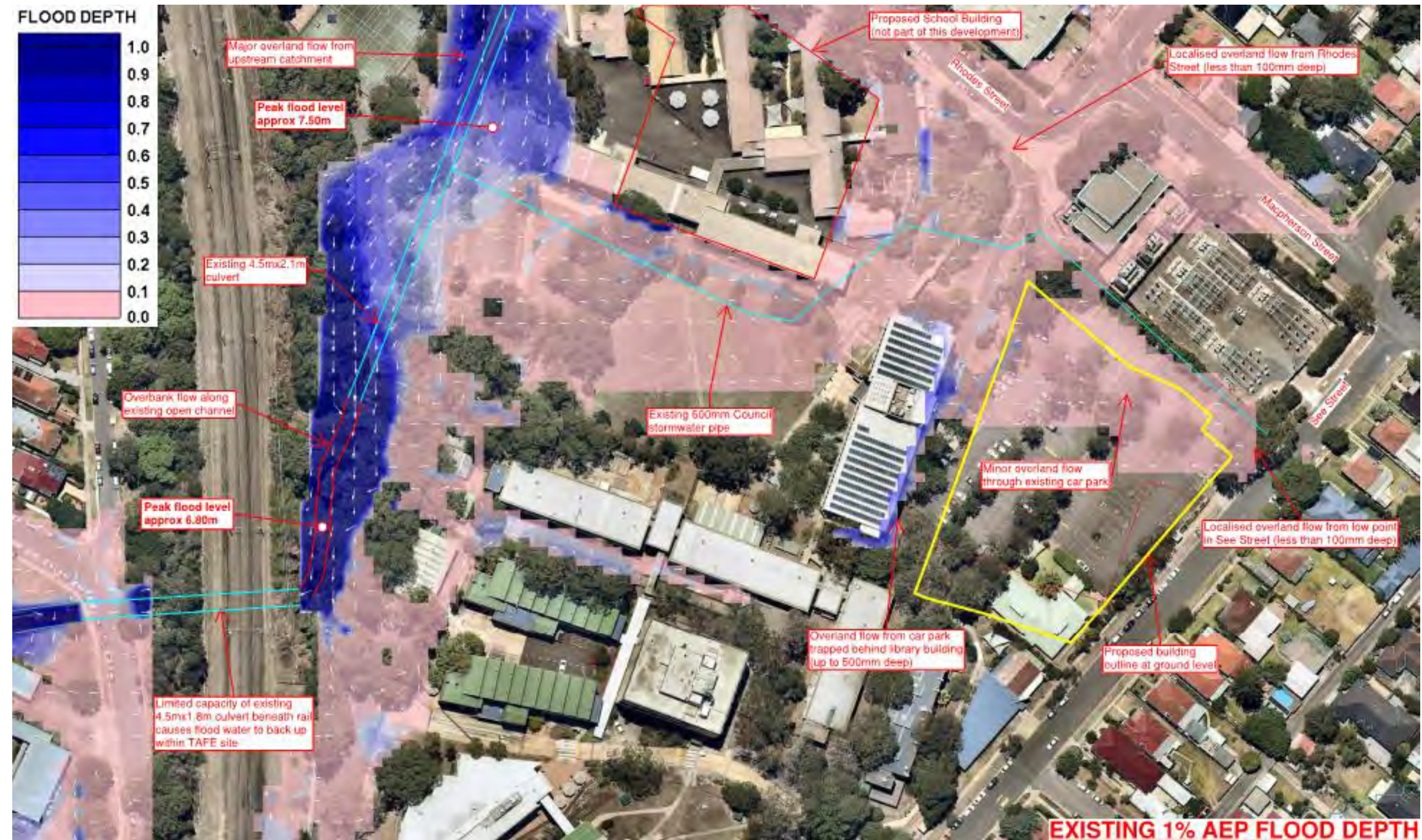


Figure 4.0.1: 1% AEP Existing Peak Flood Depths

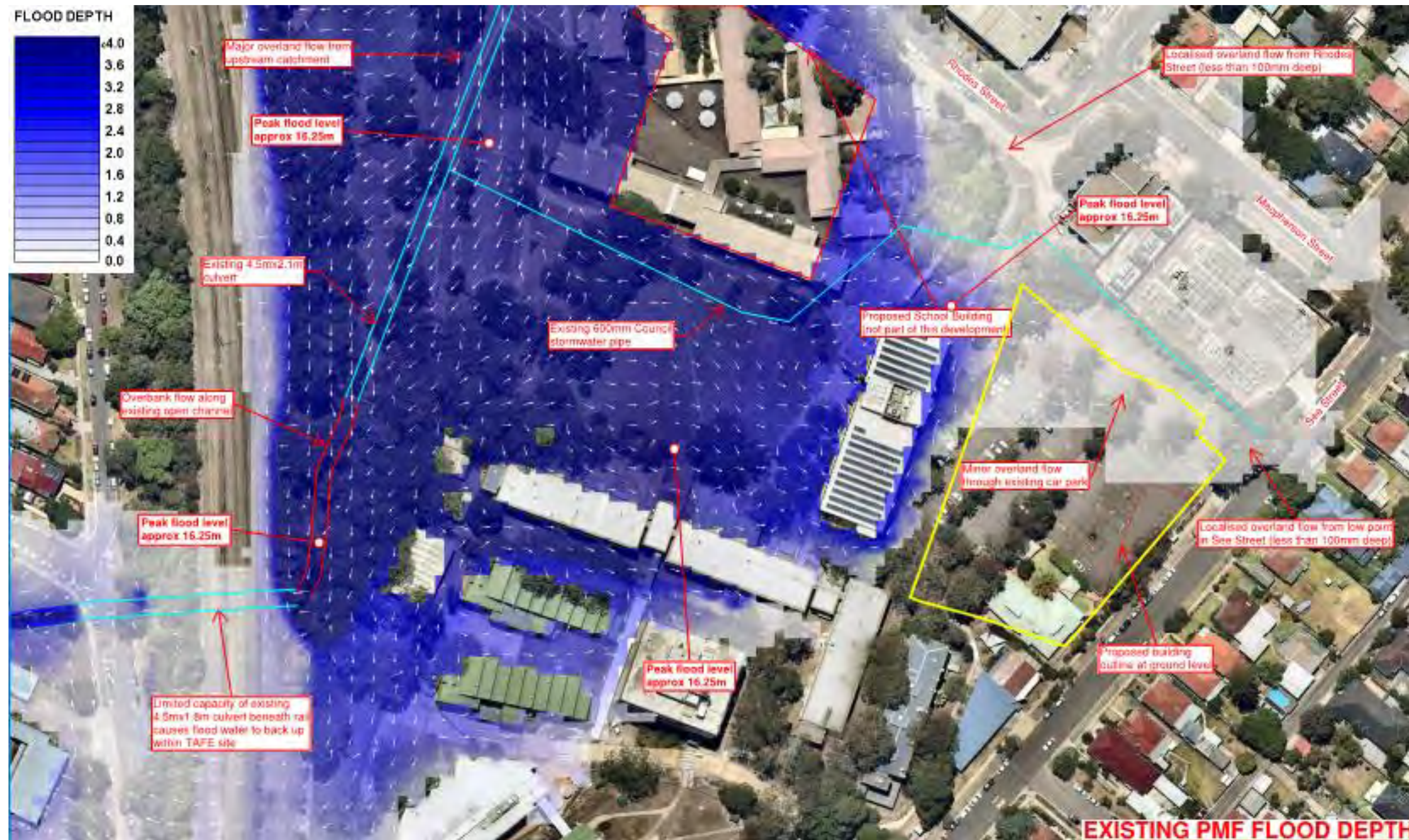


Figure 4.0.2: PMF Existing Peak Flood Depths

There are two mechanisms of flooding across the site during 1% AEP flood.

- Major flooding in excess of 5m deep along the western boundary of the site along the existing culvert and open channel. This overland flow from the upstream catchment is restricted by the capacity of the existing culvert beneath the railway line and allows flood water to back up and flood the TAFE site to a peak flood level of approximately 7.50m.
- Minor overland flow less than 100mm deep that enters the site from a low point in See Street, and Rhodes Street, shaded pink in figure 4.0.2. This localised overland flow is a result of insufficient capacity in the existing stormwater network to convey the 1% AEP flows.

In the PMF event, the major overland flow is restricted at the rail culvert and backs up to flood most of the site to a peak flood level of approximately 16.25m. The peak PMF level occurs around 90 minutes after the start of the storm and around 70 minutes after the 1% AEP flood level (7.50m) is reached. The minor Overland flow from See Street and Rhodes Street remains less than 100mm during the PMF.

5.0 Flooding Design Requirements

5.1 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 ^(b)	Habitable Floor Level	Non-Habitable Level ^(c)	Land Level ^(b)	Floor Level
Surface Drainage/ adjoining ground level ^(a)	-	.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 5.1: City of Ryde Freeboard criteria for Stormwater and Overland Flow

5.2 Secretary's Environmental Assessment Requirements (SEARS)

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

17. Flooding

- Identify flood risk on site (detailing the most recent flood studies for the project area) and consideration of any relevant provisions of the NSW Floodplain Development Manual (2005), including the potential effects of climate change, sea level rise and an increase in rainfall intensity. If there is a material flood risk, include design solutions for mitigation.

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 proposal shall address the relevant provisions, goals and objectives in the following:

- Parramatta River Ryde Sub Catchments Flood Study Report (SKM, Jan 2015)
- Floodplain Development Manual (NSW Government, 2005)
- City of Ryde Development Control Plan 2014 Part 8.2 Stormwater and Floodplain Management City of Ryde Stormwater and Floodplain Management Technical Manual City of Ryde
- Water Sensitive Urban Design Guidelines Australian Rainfall and Runoff (Geoscience Australia, 2019) Australian Runoff Quality (Engineers Australia, 2006)

A Flood Impact Statement, in accordance with City of Ryde Development Control Plan 2014 Part 8.2, shall be prepared and address but is not limited to:

- Consistency with Council's Floodplain risk management study and plans
- Potential flood impacts of the proposal and impact on the flood affectation of adjacent properties/road
- Compatibility with the flood hazard of the land
- As the application seeks to intensify the usage of the land, safety of future occupants and visitors shall be carefully considered
- Provision of protection of underground elements (such as basement car parks) for flood events up to the PMF
- Evacuation and emergency access for events up to the PMF
- Recommendations made in the Parramatta River Ryde Sub Catchments Flood Study Report (SKM, Jan 2015)

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.

6.0 Proposed Flood Regime

6.1 Proposed Flood Analysis

The proposed grading plan of the site was developed into a 3D model and inputted into the TUFLOW model. The proposed location of the Combined Multi-Trades and Digital Hub building is within a minor overland flow path through the existing car park. Site grading and stormwater drainage around the building will redirect and convey the flow away from the building and along the northern access driveway and towards the open landscaped area. The proposed development has no impact on the major flooding to the west of the site and has no impact to external existing development. Figures 6.1.1 and 6.1.2 show the proposed 1% AEP and PMF Peak flood depths through the TAFE site following development, these are also included in Appendix A.

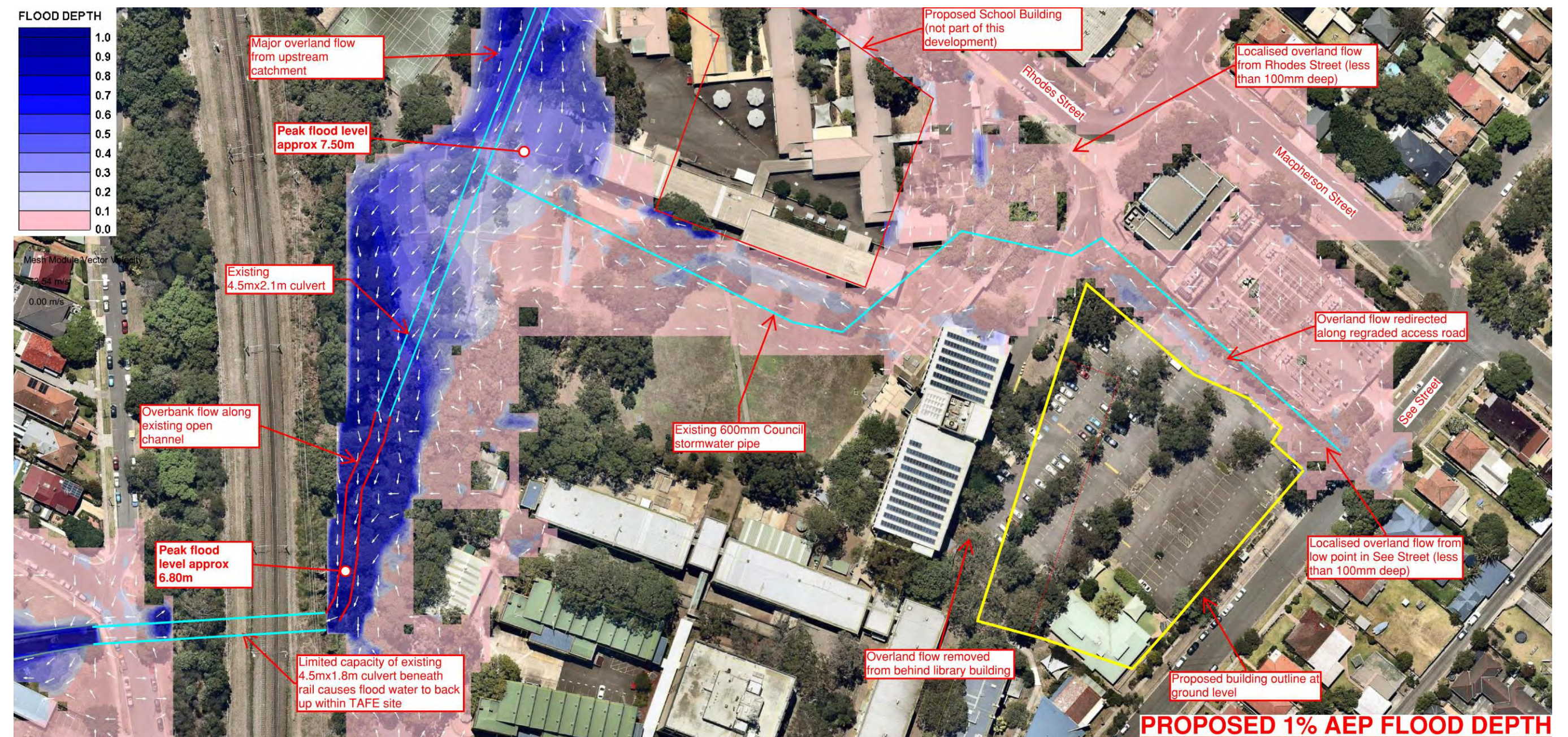


Figure 6.1.1 1% AEP Proposed Peak Flood Depths

The proposed flood model results show that the 1% AEP minor overland flow from See Street can be managed through site grading and stormwater management. Detailed flood modelling will be required following design development of site levels, building form and landscaping.

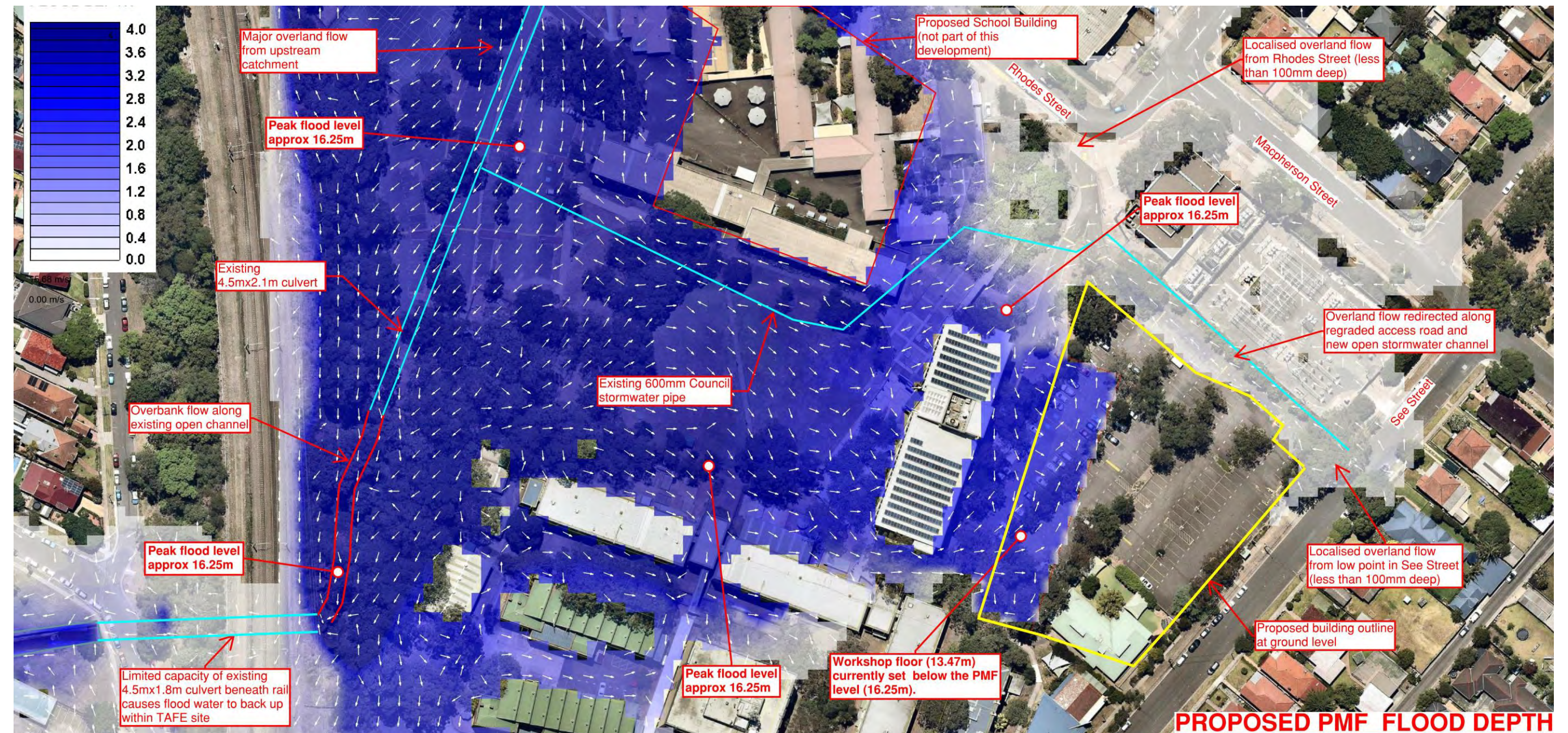


Figure 6.1.2. PMF Proposed Peak Flood Depths

The proposed flood model results show that the minor overland flow from See Street can be managed through site grading and stormwater management. The major flooding from the west of the site does not impact the new building in the 1% AEP flood which is at RL 7.50m but does impact the building in the peak PMF at RL16.25m.

6.2 Consistency with City of Ryde Policy

The City of Ryde provides a basis for assessing the flood risk (hazard) via Section 4.0 Flooding and Overland Flow of the City of Ryde Council's Development Control Plan 2014 Part 8.2 - Stormwater and Floodplain Management.

The development being an educational facility would normally fall under the "Sensitive Uses" category in Table 1 under Schedule 2 of the City of Ryde Policy. It defines the sensitive uses category as "educational establishments which are essential to evacuation during periods of flood or if affected would unreasonably affect the ability of the community to return to normal activities after flood events".

Level 1 of the building has been designated as a workshop facility for trades and will be structurally designed to withstand the forces of the flood in the PMF if inundation of the building at this level would occur in the PMF storm. A flood evacuation and emergency response plan will be required as part of the detailed design development stage to evacuate Level 1 and exterior pedestrians to the Level 2 evacuation zone above the PMF.

The proposed Combined Multi-Trades and Digital Hub Building Level 1 has been designed at FFL 13.47m to be equal with the ground floor of building P. The new building has been designed with direct stair and elevator access to level 2 above set at FFL 17.87m. When considering a 1% AEP storm level of RL7.50 this would indicate a flood free zone between the new multi-trade building and the existing building P directly to the west.

However during the PMF flood event at water level of RL 16.25m the flow will inundate the Level 1 floor to a depth of 2.78m at a very low velocity which is in the order of 0.04 m/s.

The peak PMF storm duration of 90 minutes indicates a time of evacuation of approximately 50 minutes. During the PMF event flood water reaches the equivalent 1% AEP flood level (RL 7.50m) 20 minutes after the onset of the storm. The flood water level reaches the workshop floor level (RL 13.47m) after 50 minutes and the flood level reaches a peak (RL 16.25m) after 80 minutes. The progression of the PMF inundation at these times are shown in figures 6.2.1 – 6.2.3 below.

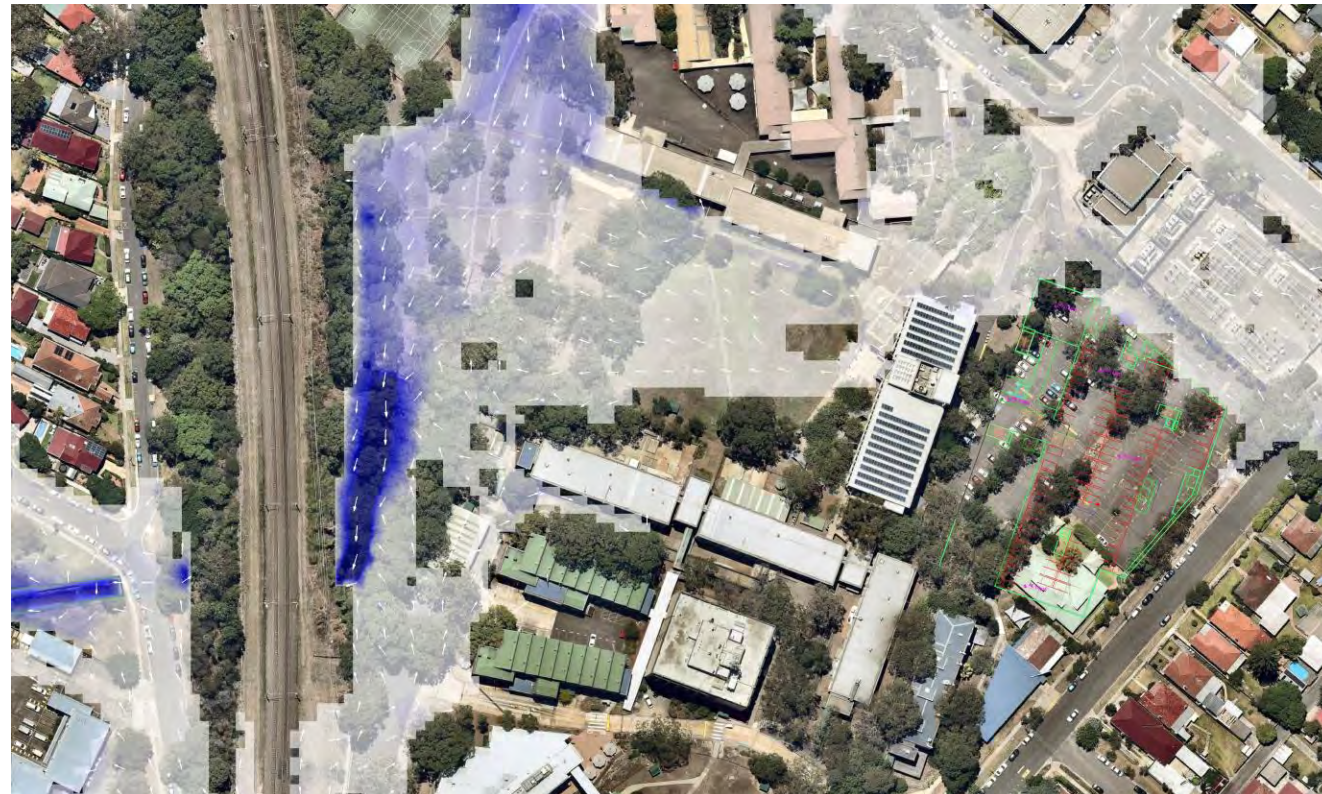


Figure 6.2.1. PMF Inundation at 20 minutes (reaches equivalent peak 1% AEP flood level)

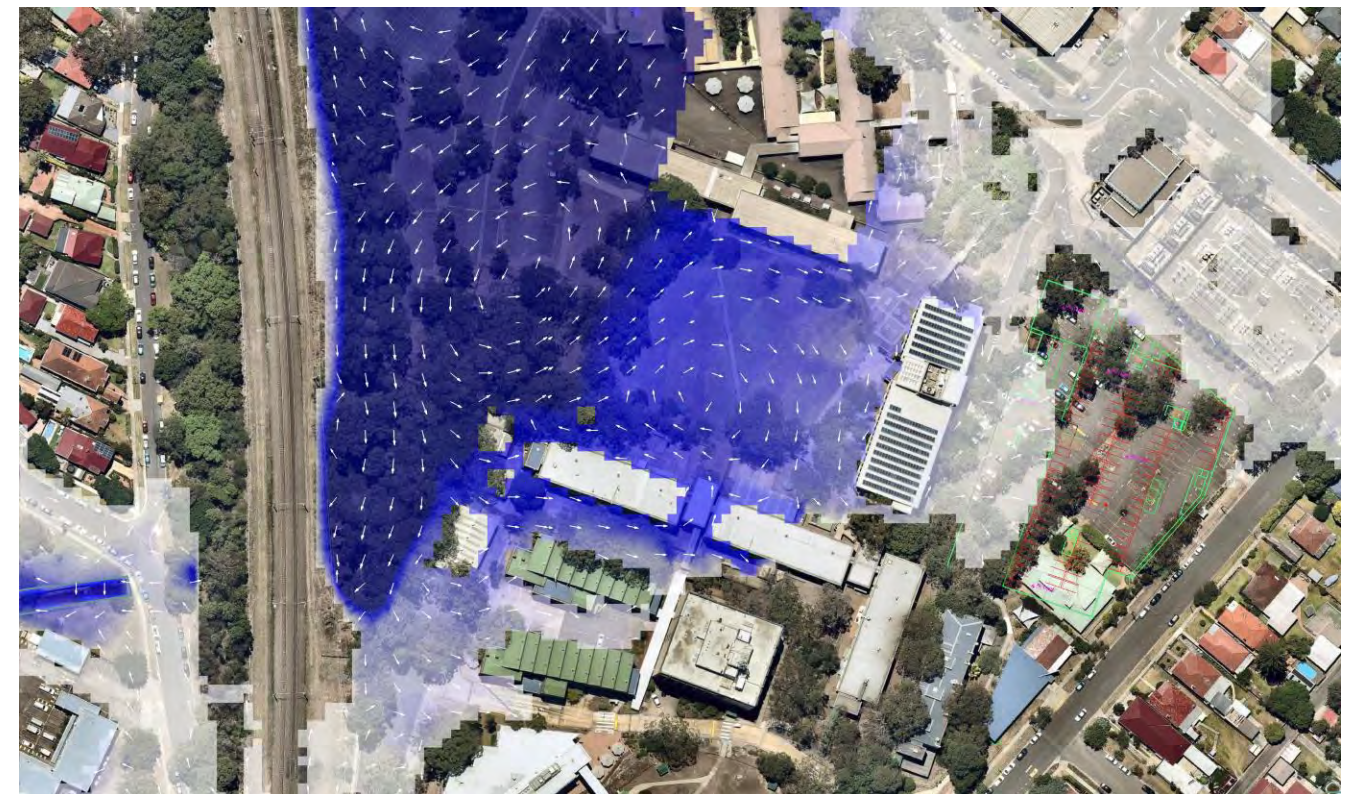


Figure 6.2.2. PMF Inundation at 50 minutes (reaches workshop floor RL 13.47m)

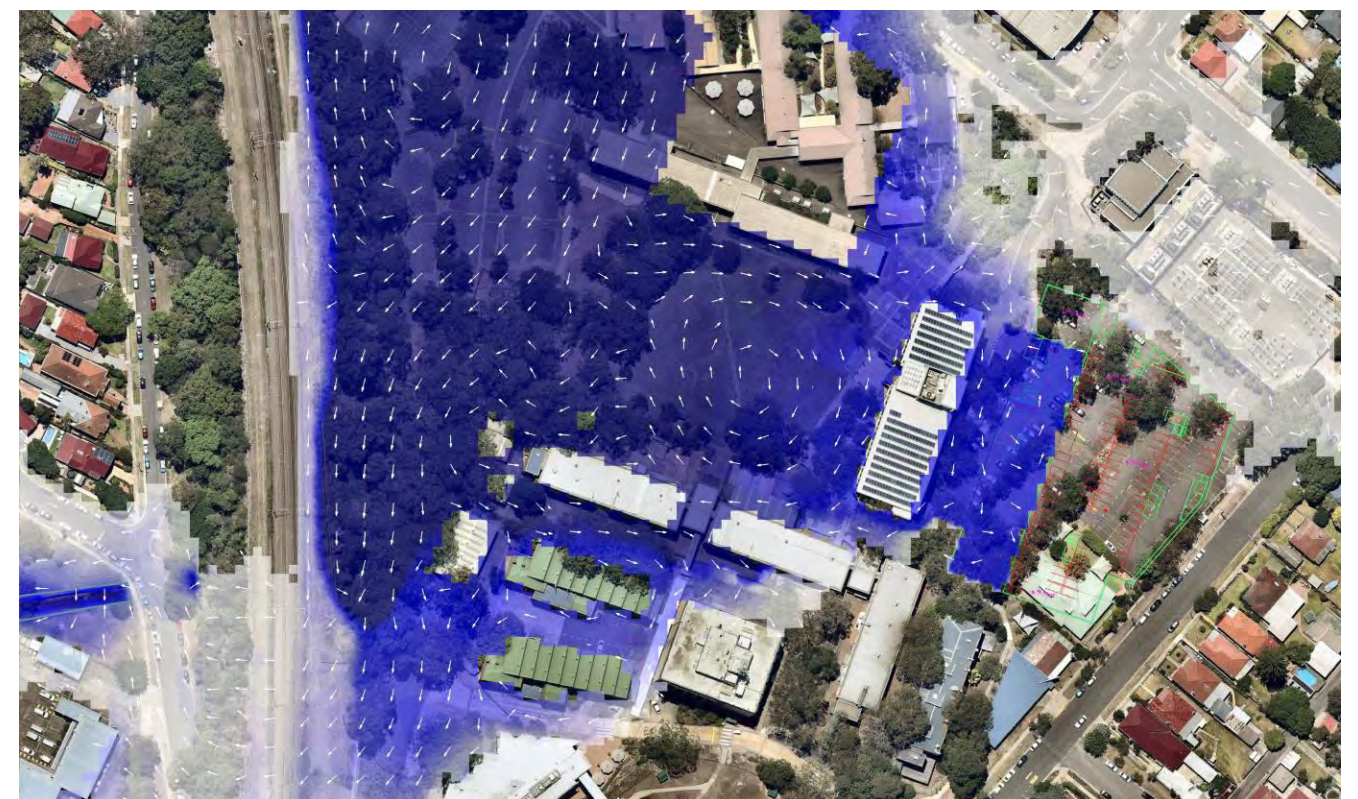


Figure 6.2.3. PMF Inundation at 80 minutes (reaches peak RL 16.25m)

Flood evacuation during the PMF will be to level 2 (17.52m) and above of the new building. The evacuation zone on Level 2 has a gross floor area of 2000sq.m and approximately 3500sq.m per floor above Level 2 would indicate a minimum capacity of 15000 persons.

The very low likelihood of the PMF storm inundation of Level 1 occurring would normally indicate a high risk given the depth of flow is 2.8m and a consequence of potential loss of life. But when it is coupled with evacuation measures being in place with 40 minutes to evacuate and direct access to the floor above the level of risk would be reduced and would allow the community TAFE centre to proceed normally as the Level 1 section of the building is only a small proportion of the TAFE NSW Meadowbank site. The consequence of the inundation of Level 1 would most likely damage the interior building components such as floor coverings, equipment, machinery and storage materials. Critical infrastructure will not be contained within Level 1 and will be isolated to ensure the building functions as normal.

The effect of the community as described above being normal after the PMF flooding pending minor repairs to the interior of the building would not classify the proposed development as a "Sensitive Uses and Facilities" but would classify it as a commercial facility in accordance with Section 4.0 Flooding and Overland Flow of the City of Ryde Council's Development Control Plan 2014 Part 8.2 - Stormwater and Floodplain Management.

Under the commercial facilities controls in Section 4.4.6 the flood risk is categorised as Low as described in Section 4.2.2 as being "Land within the floodplain (i.e. within the extent of the probable maximum flood) but not identified as either High Flood Risk, Medium Flood Risk Precinct or as an Overland Flow Precinct". This is due to the development area being over 6m above the 100 year storm but within the PMF storm.

The car park basement and other floor levels are compliant with Council's requirements.

The proposed flood model confirms that the flood hazard (product of velocity and depth) during the 1% AEP is less than 0.1m²/s for the development and in accordance with Council requirements, refer to figure 6.2.4

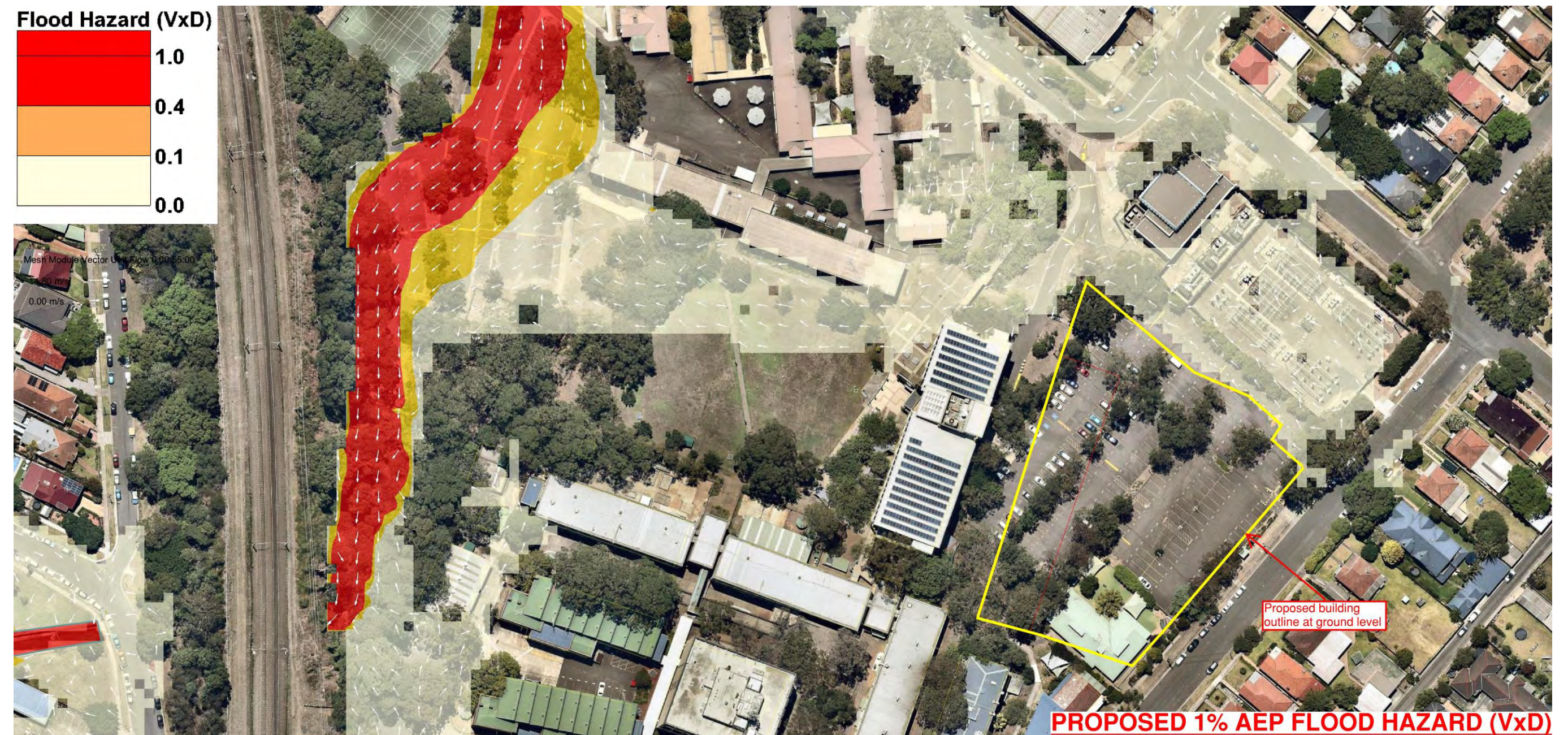


Figure 6.2.4. 1% AEP Peak Flood Hazard (VxD)

6.3 Flood Evacuation Plan

The flood evacuation plan diagrams are depicted below in Figures 6.3.1 and 6.3.2.

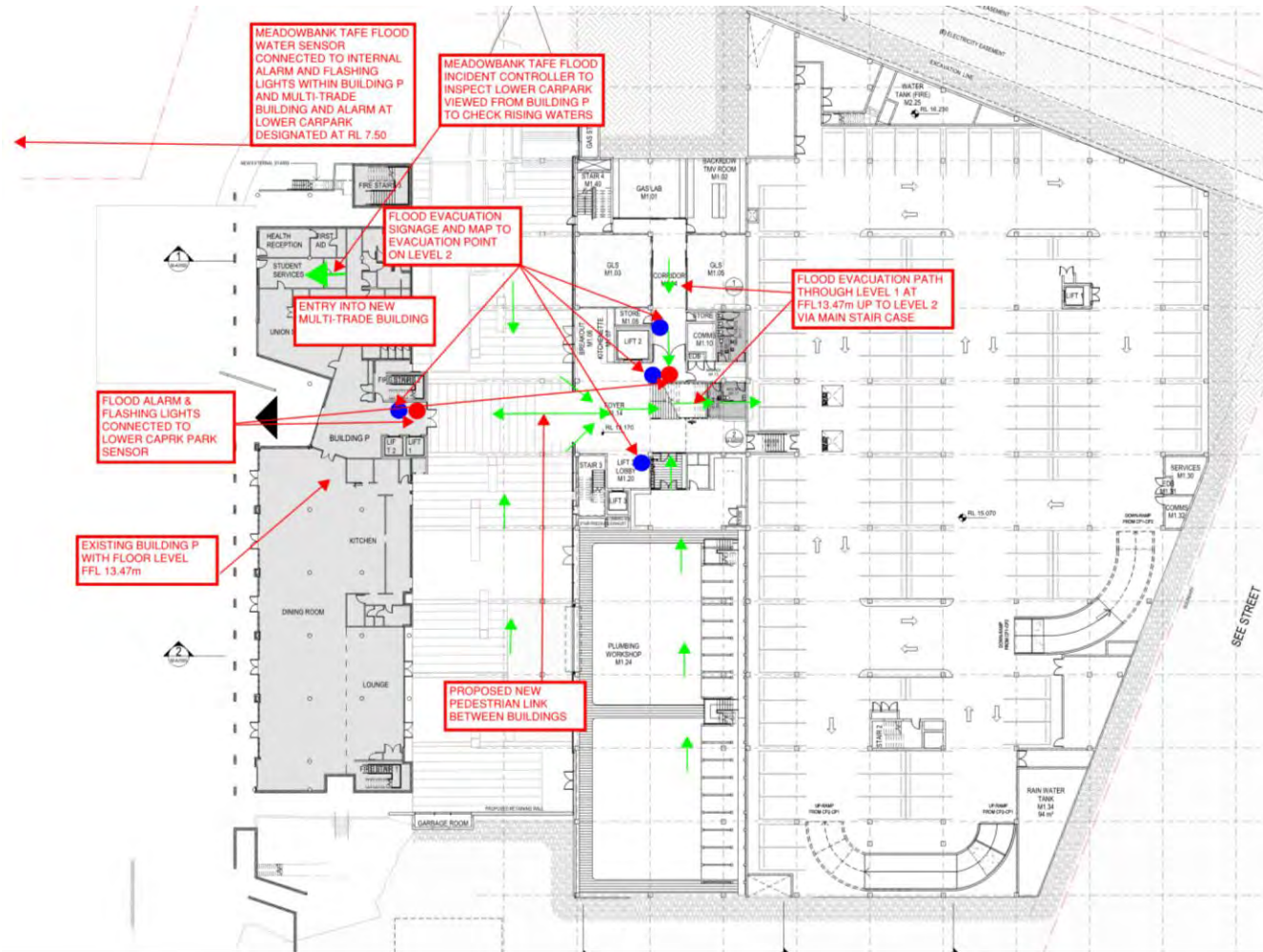


Figure 6.3.1. Flood Evacuation Plan Diagram Level 1

6.4 Flood Education

Site awareness of flooding is a significant issue within the floodplain due to the infrequency of severe floods and the anticipated depths of these floods in a PMF event.

6.4.1 Staff

As part of the preparation for a flood event, the staff managing the building will be made aware of the flood risk and their obligation to evacuate the ground floor when flood flows into the north western lower carpark of the TAFE site. Inductions will be held to educate staff on their role during a flood event. Staff to keep record of student/staff briefings.

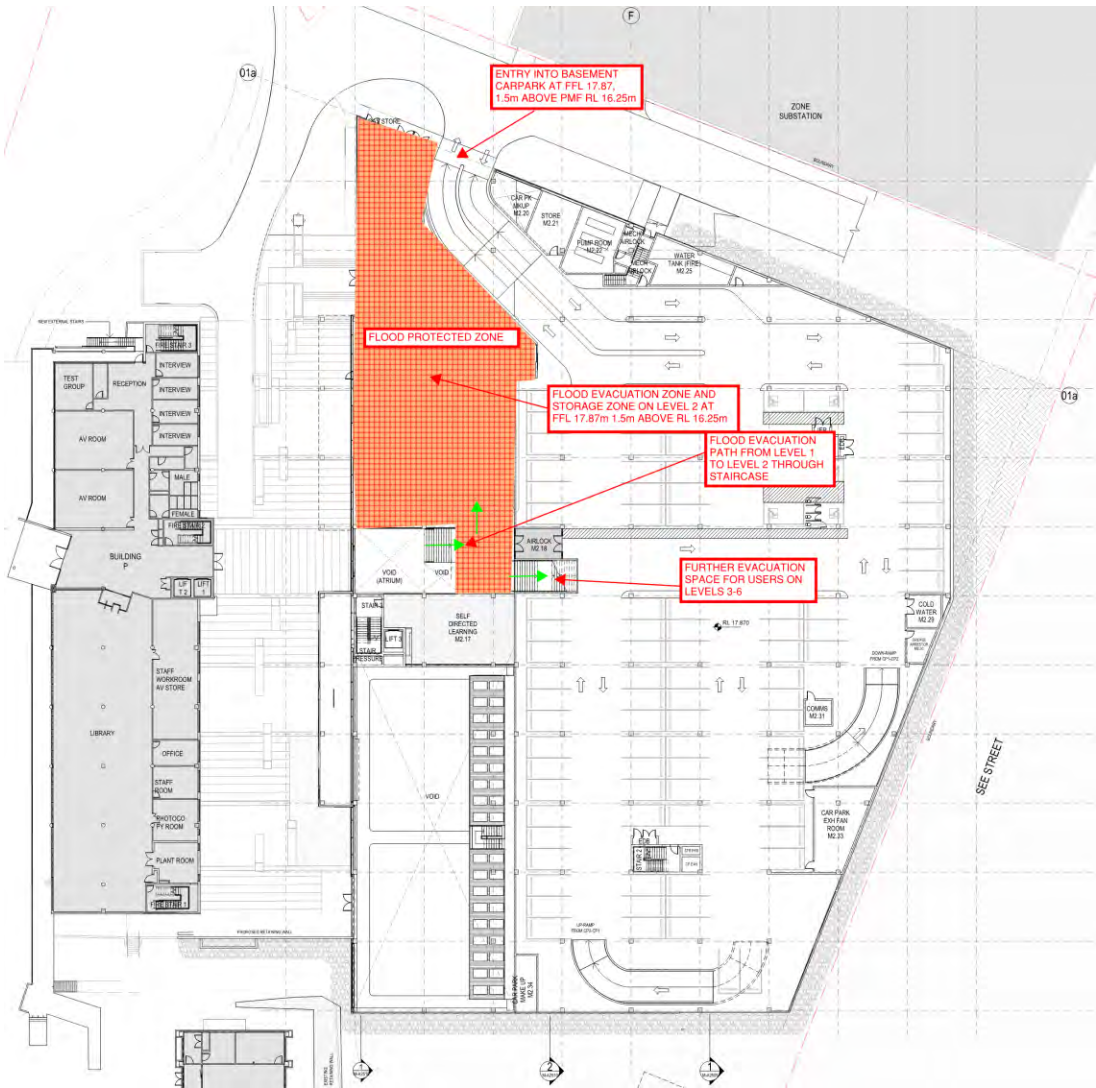


Figure 6.3.2. Flood Evacuation Plan Diagram Level 2

6.4.2 Users/Student/Staff

Users of the site are to be made aware of the flood risk and the response requirement during a flood event which creates stagnant flooding in excess of 2.8m in the western pedestrian connection between buildings P and the Multi-Trade Centre as well as Level 1 in the PMF storm. As part of this procedure, evacuation drills should be conducted regularly to ensure users are aware of the procedures for sheltering on the Level level.

6.5 Flood Evacuation Drills

It is recommended that evacuation drills be held at a minimum of twice yearly to ensure all residents and staff are aware of and familiar with their flood response actions, the sound of the alert and occupancy warning system, and the location of the assembly point.

All staff will be trained in the flood response procedures with mandatory drills to be conducted twice a year as per Iglu Summer Hill's Work Health Safety (WHS) calendar. Personal safety awareness sessions will be conducted at the start of each semester or three (3) time a year.

6.6 Flood Emergency Kit

A Flood Emergency Kit should be prepared prior to a flood event taking place and regularly checked to ensure that supplies within the kit are sufficient and in working condition. This check could occur after the evacuation drill takes place to provide a regular schedule. The Kit should include:

- Radio with spare batteries;
- Torch with spare batteries;
- First aid kit and other medicines;
- Candles and waterproof matches;
- Waterproof bags;
- A copy of the Site's Emergency Management Plan; and
- Emergency contact numbers.

This Emergency Kit should be stored in a waterproof container and is the responsibility of the First Aid Officer.

6.7 Coordination of Flood Response Warnings and Orders

TAFE Meadowbank Staff will decide when to issue Flood Response Warnings and Orders for the site.

A water level sensor device will be provided at the landscaped area south of the communal area as shown in the Figure 1.0. The flood water level sensor will be set up to provide early flood warning when flood water reaches 300mm deep in the in the southern pedestrian connection to provide early warning.

The early warning system installed will be connected to the 24/7 reception and student concierge service, Iglu's Incident Controller, to distribute these warnings to residents.

The Incident Controller will initiate a flood response and occupant warning through a Public Address (PA) system including continuous bell that can alert residents and staff in the event of an emergency immediately followed by door to door entry** to each accommodation located at lower ground level.

Flood Response Plan	
Alarm Condition	Recommended actions
1) Local Councils or Bureau of Meteorology issues an alert, advice or warning.	Meadowbank TAFE NSW Incident Controller to observe ponding levels in Southern Laneway.
2) Flood Water level sensor sending alert High flooding level when depth of ponding in the western lower carpark equals or exceeds RL7.50m at approximately 30 mins	Meadowbank TAFE NSW Incident Controller to confirm the ponding is to RL7.50m depth.
	Send an alert and occupant warning message over the PA system confirming a major flood event. Announce that there is water over the laneway.
	Immediately commence door to door entry to each accommodation at Level 1 AND PEDSTRIAN LINK and evacuating them to Level 2 systematically to where a headcount will be undertaken and numbers reported to the incident controller.
3) Alert will remain in place for approximately 2 hours or such time that the ponding depth recedes	Confirm any remaining people in the Level 1 have been evacuated.
	Confirm that there is no ponding in the lower carpark. Once floodwater subsided below RL 7.50M in the western carpark, the Level 1 floor would be inspected by the incident controller. Once it has been confirmed that the water level has reduced for a period of at least 2 hours and if determined safe a final headcount would be undertaken. Upon confirmation of all persons safe and accounted for the incident controller may announce that residents can return to Level 1 floor and pedestrian area external to the building
4) Flooded areas are to remain off limits until ponding is cleared. The directions of police and SES are to be followed at all times.	