| TAYLOR CONSTRUCTION GROUP PTY LTD |

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN (CEMP)

REFERENCE NO. S11774-R01.1 - CEMP

2 GREEN ROAD AND 172 SHOWGROUND, CASTLE HILL | 16 NOVEMBER 2021

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Construction Environmental Management Plan (CEMP)

2 Green Road and 172 Showground Road
Castle Hill, NSW 2154

Prepared for

Taylor Construction Group Pty Ltd

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by

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Our Reference: S11774-R01.1 - CEMP

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Date: 16 November 2021

Document and revision history

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Title	Construction Environmental Management Plan (CEMP)
Client	Taylor Construction Group Pty Ltd
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Senior Project Manager	Steve Ziaziaris
Senior Site Manager	Rob Frame

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Abbreviations

Term	Description
ACM	Asbestos Containing Materials
ARA	Appropriate Regulatory Authority
Asbestos	The fibrous form of the mineral silicates belonging to the serpentine and amphibole groups of rock-forming minerals, including: actinolite, amosite (Brown Asbestos), anthophyllite, chrysotile (White Asbestos), crocidolite (Blue Asbestos), tremolite, or any mixture containing one or more of these.
CEMP	Construction Environmental Management Plan
DA	Development Application
DEE	Department of Environment and Energy
DPI&E	Department of Primary Industries and Environment
EPA	Environment Protection Authority
ER	Exposure Risk
HSE	Health, Safety and Environment
m	Metres
NSW	New South Wales
OEH	Office of Environment and Heritage
PCBU	Person Conducting a Business or Undertaking
PEMP	Project Environmental Management Plan
POEO	Protection of the Environment Operations Act 1997
POEO Act	Protection of the Environment Operations Act 1997
PPE	Personal Protective Equipment
Risk	The probability that damage to health may occur. Risk = Hazard x Exposure
RMS	Roads and Maritime Service
SDS	Safety Data Sheet
SSD	State Significant Development
SWMS	Safe Work Method Statement
SWMP	Site Waste Management Plan

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1. Introduction

1.1 Background

Hibbs & Associates Pty Ltd (Hibbs) was engaged by Taylor Construction Work Pty Ltd (Taylor), to prepare a Construction Environmental Management Plan for the expansion of the Museums Discovery Centre (MDC). The site is located at 2 Green Road and 172 Showground Road, Castle Hill (the Site).

The Hills TAFE College - Castle Hill Campus (TAFE) is located at Lot 102 DP 1130271, 2 Green Road, Castle Hill and Museum of Applied Arts and Sciences (MDC) is located at Lot 1 DP 1066281, 172 Showground Road, Castle Hill. Both the sites have a combined area of 6.72 hectares.

The proposed expansion of MDC will occupy the western part of 2 Green Road, Castle Hill currently owned by TAFE NSW. The new building proposed as part of the expansion is known as "Building J".

Based on the information, it is planned to expand the adjoining MDC through the construction of the new building (Building J) to provide storage of the powerhouse collection, and archives, spaces for education and public programs, conservation and research. The development also intends to construct a new accessway connecting the MDC and TAFE sites and construct a new car park on the TAFE site.

A Construction Environmental Management Plan (CEMP) is required under section B27 of the development application (ref SSD 10472) to assist Taylor in managing potential human health and environmental risk associated with the proposed development works.

1.2 Purpose of the CEMP

This CEMP has been developed in accordance with the specifications outlined in the development consent conditions issued by the NSW Government Department of Planning, Industry and Environment (NSW DPI&E) date 23 April 2021.

The CEMP will be maintained as a live document and updated as necessary to respond to specific requirements during different construction works. It will also be reviewed and certified by the Taylor, Planning Secretary, The Hills Shire Council (the Council) and certifier prior to the commencement of demolition and construction works.

This CEMP is prepared in accordance with:

- The Guideline for the Preparation of Environmental Management Plans (DIPNR, 2004)
- AS/NZS ISO 14001
- The Development Consent Application number SSD 10472

1.3 Objectives of the CEMP

The objective of the CEMP is to provide a pre-planned and structured approach to the management of any potential environmental issues during the site establishment, demolition works and construction phases of the development. Specifically, the CEMP includes the following:

- Description of the project in detail, site location, work schedules, demolition, and construction activities.

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- Identifies environmental impacts and provides appropriate measures and controls to mitigate or eliminate these impacts.
- Provides mechanisms for compliance with the applicable policies, approvals, licenses, development consent and agreements.
- Establish a framework for environmental management to ensure implementation of mitigation measures and assign the roles and responsibilities of the key personnel
- Develop a monitoring and auditing program to ensure appropriate implementation of mitigation measures and regulatory compliance
- Regularly evaluate construction activities to identify any changes to the construction programme and the need to update the control plans (if required)
- Maintain high levels of environmental awareness amongst the contractor and subcontractors and
- Ensure that the construction works comply with all relevant environmental regulations and standards.

1.4 Development Consent Conditions

Requirements of the development consent issued by NSW DPI&E (Ref: SSD 10472, 2021) pertaining to the CEMP are set out in Table 1.1. The table also shows where, in this document, the requirements are addressed.

All the requirements of the consent condition B27 have been addressed in this CEMP, without any exception, and as such compliance has been achieved.

Table 1.1: Development Consent Conditions (SSD 10472, 2021)

B27 Development Consent Conditions	CEMP Reference
a. Details of:	
i. hours of work	Section 4.2
ii. 24 - hours contact details of the Site Manager	TBC, Table 5.4, Appendix G -Section 1 of PEMP
iii. management of dust and odour to protect the amenity of the neighbourhood	Section 7.0, Appendix O
iv. Stormwater control and drainage	Section 7.0, Appendix H
v. measures to ensure that sediment and other materials are not tracked onto the roadway by vehicles leaving the subject site	Section 7.0, Appendix O,
vi. a groundwater management plan including measures to prevent groundwater contamination	Section 7.0, Appendix G, Appendix O

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B27 Development Consent Conditions	CEMP Reference
vii. external lighting in compliance with AS4282-1997, control of the obtrusive effects of outdoor lighting;	Table 7.1, Section 7.0
viii. community consultation and complaints handling;	Section 5.7
ix. detail the quantities of each waste type generated during construction and the proposed reuse, recycling, and disposal locations	Table 6.1, Appendix I
b. Construction Traffic and Pedestrian Management Sub-Plan	Appendix D
c. Construction Noise and Vibration Management Sub-Plan	Appendix K
d. Construction Soil and Water Management Sub-Plan	Appendix H
e. Construction Waste Management Sub-Plan	Appendix I
f. an unexpected finds protocol for contamination and associated communications procedure	Table 7.1, Appendix J.1
g. an unexpected finds protocols for contamination, Aboriginal and non-Aboriginal heritage, and associated communications procedures; and	Table 6.1, Table 7.1, Appendix J.2
h. waste classification (for materials to be removed) and validation (for materials to remain) be undertaken to confirm the contamination status in these areas of the site	Table 6.1, Table 7.1, Appendix J.1

1.5 Reference Documents

This CEMP has been prepared based on the following documents:

- Project Environmental Management Plan (Taylor 2021b)
- Construction Traffic and Pedestrian Management Sub-Plan (TTPA, 2021)
- Construction Noise and Vibration Management Sub-Plan (Northrop SY181569-AUR03)
- Construction Methodology (Taylor 2021a)
- Sediment and Erosion Control Plan (Northrop, 2021) - Drawing No. J-WD-C-2.01, J-WD-C-2.11
- Site Waste Management Plan (SWMP) (Taylor 2021c)

1.6 Limitations

The recommendations and control measures contained in this document are based upon information provided by Taylor and upon the assumption that all provided information is correct and that all relevant information has been provided. Information obtained from third parties has not been independently verified by Hibbs, unless otherwise stated in this CEMP.

This CEMP does not relieve the contractor, or any other party involved in the project from their specific legal responsibilities with respect to compliance with safety, health and environmental regulations and standards. Where there are conflicts or differences stipulated in Taylor, sub-contractors or applicable legal requirements, the more stringent will prevail.

1.7 Structure of the CEMP

The remainder of this CEMP is structured as follows:

- Section 2 describes the location of the Project and Site details,
- Section 3 describes the scope of the Project,
- Section 4 describes the scope of construction and demolition activities, working hours, and the project schedule,
- Section 5 describes the basis for environmental management of the construction works including environmental policy statement, roles and responsibilities, communication, awareness and training, auditing and environmental commitments,
- Section 6 describes the potential environmental impacts arising from the construction and demolition works,
- Section 7 describes the committed mitigation measures or management actions to minimise or lessen potential impacts on sensitive receptors,
- Section 8 describes the required environmental monitoring program as well as internal and external auditing requirements,
- Section 9 provides the requirements for updating this CEMP during the construction phase.

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2. Site Details

2.1 Site Location

Site identification details are provided in Table 2.1 below.

Table 2.1: Site identification details

Site Address	2 Green Road & 172 Showground Road, Castle Hill, NSW	
Title Identification	Lot 102 DP 1130271 and Lot 1 DP 1066281	
Current Owner	TAFE is owned by the Minister Administering the Technical and Future Education Commission. MDC is owned by the Museum of Applied Arts and Sciences (MAAS)	
Local Government Authority	The Hills Shire Council	
Council Zoning	2 Green Road Castle Hill	R2 - Low Density Residential, SP2 - Infrastructure (Classified Road)
	172 Showground Road Castle Hill	R3 - Medium Density Residential, SP2 - Infrastructure
Current Land Use	2 Green Road - The Hills TAFE College 172 Showground Road - Museum Discovery Centre	
Site Area	The Hills TAFE College covers a total area of approximately 3.8 ha whereas the MDC covers approximately 2.9 hectares.	

2.2 Site Setting and Sensitive Receptors

The TAFE campus caters for approximately 400 enrolled students and contains a large institutional building set within a landscape featuring a high tree canopy. Based on Secretary's Environmental. Assessment Requirements (SEARs) letter, it is understood that Building J is approximately 6,990 m2 (after subdivision), and 24 existing car parking spaces within the footprint of the proposal will be relocated to the eastern end of the TAFE site near Green Road. The current surround land uses in a 500-meter radius comprises:

- Residential areas to the east and north
- Gingerbread Kindergarten Kellyville to the north
- Just For Kids Childcare to the east (cnr of Showground and Green Road)
- Shopping Centre (e.i. Hills Super Centre, Officeworks, Bunnings, Total Tools) to the south

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3. Project Description

According to the Project Environmental Management Plan (PEMP) prepared by Taylor (Taylor 2021A), the following development will be undertaken at the subject Site:

- Site clearing/tree removal and demolition of existing carparks
- Construction of the proposed new Building J which will cater for the following uses:
  - Storage for the Powerhouse collection and archives
  - Flexible spaces for education and public programs, workshops, talks, exhibitions, and events
  - Suits of conservation laboratories and collection workshops
  - Photographs, digitisation, and collection documentation facilities
  - Workspace for staff, researchers, industry partners and other collaborators
  - Components of the image and research library
  - Object and exhibition preparation, packing, quarantine and holding areas
- Construction of new vehicle accessways to maintain connectivity to the MDC and TAFE sites

4. Construction Details

4.1 Work Program

The project will be carried out for 17 months. The proposed time frame for the works is available in Appendix C. A summary of the work program is outlined below:

- Commence Works on-site / Site possession (21 August 2021 - 17 September 2021)
- Design / Documentation (28 June - 09 November 2021)
- Safety in Design Workshop (16 August 2021 - 2 August 2021)
- Approvals (19 July 2021 - 26 October 2021)
- Permits and Plans (05 July 2021 - 20 August 2021)
- Subcontractor Procurement (05 July 2021 - 04 May 2022)
- Construction (21 August 2021 - 03 November 2022)

4.2 Working Hours

To complete all works within the programme duration, all the construction, including the delivery of plant, equipment's and any material to and from the site will be carried out between the following hours:

- between 7 am and 5 pm, Monday to Friday inclusive; and
- between 8 am and 1 pm, Saturdays
- no work will be carried out on Sunday or public holidays

construction activities may be undertaken outside of the permitted hours:

- if required by the Police or public authority for the delivery of vehicles, plant or materials; or

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- in an emergency to avoid the loss of life, damage to property or to prevent environmental harm; or
- where the works are inaudible at the nearest sensitive receivers.
- notification of such construction activities will be given to affected residents before undertaking the activities or as soon as is practical afterwards.

Rock breaking, rock hammering, sheet piling, piledriving and similar activities will only be carried out between the following hours:

- 9.00 am to 12.00 pm, Monday to Friday:
- 2.00 pm to 5.00 pm, Monday to Friday; and
- 9.00 am to 12.00 pm, Saturday.

4.3 Construction Activities

4.3.1 Site Access

According to the Construction Traffic and Pedestrian Management Sub-Plan (TTPA, 2021), the existing road network serving the Site comprises

- Old Windsor Road
- M7 Motorway
- Showground Road
- Windsor Road
- Green Road
- Northwest Boulevard, and
- Victoria Avenue

Vehicle access to the construction Site is proposed via the existing MDC access crossover along Showground Road, and the vehicles up to 18.1m truck and dog trailer will enter and exit the Site via the main driveway on Showground Road. The one-off 19m semi access will enter the Site via an existing driveway along Windsor Road and exit via Showground Road. Refer to Appendix D for Construction Traffic and Pedestrian Management Sub-Plan (TTPA, 2021).

Access to the Site will be provided via security-controlled gates, and all personnel entering the Site will be required to undertake a site induction.

Pedestrian activities are currently removed from the construction area by the erected temporary chain wire fences.

Mobile cranes will be utilised within the Site for material handling with the maximum lift for the project up to approximately 10.5 tonnes.

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One mobile trained on-site personnel (with retractable gate) will be present at the site accesses to manage pedestrian movements and assist with vehicle's ingress and egress. Only one vehicle at a time will enter or exit the site at these accesses. Therefore, the provision of one personnel is considered appropriate to manage/monitor the construction and pedestrian traffic.

4.3.2 Site Establishment

A Site establishment plan prepared by Taylor in consultation with Public Works Advisor is attached in Appendix E.

Taylor has anticipated that the Site will have an average workforce of 80 men/women per day throughout the life of the project. The Site office, meeting room, lunch shed, ablution blocks, induction room and change room will be installed and maintained by Taylor for the workforce.

All sediment and soil erosion control measures will be installed in accordance with the sediment and control plan prepared by Northrop 2021 (drawings no J-WD-C-2.01, J-WD-C-2.11). Please refer to Appendix H.

Prior to commencing any earthworks, Taylor will closely study existing as-built documentation, "dial before you dig" plans, complete ground-penetrating radar scans and complete pot holing by hand where insufficient information is available. The safe management of existing services and uninterrupted supply to existing facilities will be maintained as the highest priority and all services will be treated as live.

4.3.3 Construction and Demolition Equipment

The following is the list of the primary equipment's that will be used during the demolition of the existing car park and vehicle accessway along the eastern and north-eastern parts of the site and further during construction works:

- 22.5t Excavator
- 17.5t Excavator
- 6.5t Excavator
- Skid steer
- Truck and Dogs
- Rigid Trucks
- Tree chippers
- Chain saws
- Concrete saws
- Attachments for excavators - grabs, hammer
- Concrete trucks
- Concrete pump truck
- Crane
- Glass lifter
- Bin Truck

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- Small utility vehicle van

The on-site equipment list might be further updated, based on the construction needs/requirements.

4.3.3 Site Fencing

The existing perimeter hoarding, gates and fences will be reviewed for suitability. NSW Government Waratah Shade will be installed to external Site fence and hoarding will be installed where applicable.

4.3.4 Site Clearing and demolition

Alliance Geotechnical conducted the preliminary and detailed site investigation for the Site area to determine the extent of ground condition and classification of materials (please refer to Report No: 8325-ER-1-1 dated 16 September 2019 and 8325-ER-1-2 dated 17 September 2019). Based on the conducted assessments Alliance Geotechnical conclude that the Site is suitable for the proposed land use setting.

The Site demolition plan prepared by Taylor is presented in Appendix F (Drawing No. J-WD-A1200). Upon commencement of work following task will be undertaken by Taylor:

- removal of approximately 337 existing trees. The cutting or preparation of trees will be conducted between 7 am - 9:30 am in accordance with approved DA hours.
- after completion of trees removal, Site clearing including demolition of the existing car park, service location and investigation will be carried out by Taylor.
- following the completion of removal works, salvage and relocation work and loading out/disposal of Site topsoil will be carried out.

5. Environmental Management System

5.1 Environmental Policy

Taylor maintains an Environmental Policy (please refer to Appendix L) in which they regard the appropriate and correct management of environmental issues as an integral component of their business and has developed an environmental management system that addresses all aspects of the International Standard ISO 14001:2004: "Environmental Management Systems - Requirements with guidance for use".

In addition to this Taylor is also committed to:

- Work proactively with their clients, regulators, and other community stakeholders to enable environmental issues to be addressed at an early stage of development
- Take local community views into consideration and ensure that they inform, listen to and respond to reasonable concerns relating to Taylor projects.
- Undertake construction activities in a manner that is consistent with the principles of ecologically sustainable development.
- Prevent pollution and reduce adverse environmental impacts of construction activities on the natural, built and cultural environment.
- Promote the efficient use of natural resources and reduce waste through the use of the waste hierarchy - avoid, reduce, re-use, recycle and dispose of.

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- Set realistic environmental objectives and targets at all relevant levels within the company and continually monitor performance.
- Promote environmental awareness among all employees and subcontractors to achieve our environmental objectives.
- Continually improve their environmental performance through periodic review and evaluation of policy and management systems to ensure they remain suitable, adequate and effective.

Encourage a sense of personal responsibility for environmental issues amongst employees and subcontractors through effective communication, training and positive organisational culture.

5.2 Environmental Risk Assessment

The methodology for risk assessments is based on the requirements described AS/NZS 4360 (Risk Assessment) and HSE-R-01 HSE Risk Register (Section D Environmental Aspects).

Taylor Construction procedure requires an initial Project Risk Assessment to be undertaken at the commencement of each project. The Risk Assessment is to be conducted in the form of a workshop and is to include the project/ site manager, HSE manager, key members of the project team and, to the extent required, key subcontractors, and is to be recorded on form HSE-R-01 HSE Risk Register.

The HSE Risk Register is to be developed to address both legal and other requirements covered in this plan and is to be referenced to implement systems and work practices that will eliminate or minimize the likelihood of injury, illness or incident occurring.

When developing the Project HSE Risk Register, members of the workshop will take into consideration available information which is relevant to the works and is contained in any published copies of the HSE Acts; WHS regulation; Australian/ National Standards; codes of practice; available internal and external industry bulletins/ alerts and industry reports to identify and document any known or foreseeable hazards associated with those tasks.

The completed Environmental Risk Assessment can be found in Appendix O.

5.2.1 Safe work method statement

Taylor’s site managers or their nominees are responsible for ensuring that subcontractors include environmental issues in their task-specific safe work method statement (SWMS) by using SE-F-14 Taylor's form.

5.3 Environmental Objectives and Targets

Environmental objectives and targets are set by Taylor at a corporate level and will be monitored throughout the construction work to ensure that their key performance indicators are met and to maintain a high environmental performance. The objectives and targets are outlined in Table 5.1.

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Table 5.1: Environmental objectives and targets

Objective	Target
Effective site environmental Controls	• Achieve alignment with Taylors and Client expectations in relation to best practice control measures. • Fulfil environmental obligations.
Increase amount of waste being recycled, reduce waste disposal cost	• Eighty-five percent (85%) of waste to be recycled
Environmental performance	• Zero major environmental incidents and no breaches. • Zero infringement notices. • All environmental spills to be reported to Taylor within 2 hours of occurrence. • Environmental inspection completed weekly, when required (refer to Appendix P).
Reduce the environmental impact of operations	• Environmental issues identified and controlled prior to causing negative impacts on the project or on the environment.
Effective implementation of the environmental system	• Eighty percent (80%) or better internal audit results. • Full compliance with planning approval requirements.
Carefully handling community issues	• Zero valid complaints. • All complaints reported to a Taylors representative.

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5.4 Roles and Responsibilities of the Project Team

The key roles and responsibilities for Taylor's team responsible for the delivery of the project are listed in Table 5.2 below. An organisational chart displaying the hierarchy of the positions is presented in Appendix N.

Table 5.2 Roles and Responsibilities

Role and Contact Information	Responsibilities
General Manager Refurbishment & Live Environment - **Ben Folkard** **0414 705 457**	• Demonstrating genuine interest in workplace health and safety; supporting all the project/ site managers to encourage environmental incident prevention. • Assessing and allocating appropriate resources and equipment within the company for the effective implementation of the workplace health safety and environment management system and the management of WHS&E related hazard/ risks relevant to the construction projects. • Confirming that legislative obligations are met, and that Taylor Construction Environmental Policy is effectively implemented throughout all company construction projects under their control. • Ensuring compliance with Taylor Construction accredited QSE systems is maintained and implemented across all Taylor managed projects under their control. • Provide leadership in the development of project teams to ensure the fostering of the business culture and approach to doing business with our clients, consultants, and subcontractors. • Attend sites on a regular basis to ensure compliance with workplace environmental and programming requirements of both the head contract and the company' systems. • Provide visible commitment to a safe and healthy work environment by ensuring regular reviews are undertaken, and by participating in safety and health meetings and consultation regarding WHS&E matters. • Encourage and promote environmental compliance within the company by participating and openly consulting with employees in respect to their health and wellbeing. • Ensure that project/ site managers have developed and implemented systems, which will ensure subcontractors/ suppliers engaged by the company comply with the health safety management and environmental systems and the relevant HSE legislation. • Consider workplace health safety and environmental matters with other senior members of the organisation as part of normal business practice and incorporate WHS&E into meeting agendas. • Support the WHS&E manager in ensuring project/ site managers have developed and implemented systems which will ensure subcontractors and suppliers engaged by the company comply with the WHS&E management systems and the relevant legislation. • Respond to non-conformance by any member of the company who fails to discharge their duties as set by the Responsibility Statement and actively participate in dispute resolution where required. • Allow appropriate budget allocations for WHS&E management and improvement. • Facilitate a systematic approach of workplace health, safety and environment identification, and assessment and facilitate control and monitoring of related risks that may arise through both normal and adverse operating conditions.

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Role and Contact Information	Responsibilities
Senior Project Manager - Steve Ziaziaris **0413 182 641**	• Ensure that environmental, health and safety obligations are carried out by everyone working in their operations. • Communicate to their employees, workers, and visitors that health and safety and concern for the environment are top priorities on Taylor Projects and that everyone shares in the obligation to perform work in a safe, healthful, environmentally protective manner. • Analyse work procedures to identify hazards; ensure measures are implemented to eliminate or control those hazards. • Ensure safe operating procedures are in place and are observed. • Curtail or stop work being carried out under their authority if they reasonably believe that continuation of the work poses an imminent danger to health or safety. Upon directing that work be curtailed or stopped, if the situation cannot be corrected immediately, the Manager must notify the WHS&E Manager • Ensure that self-assessment inspections are performed regularly, that records are retained and that deficiencies identified in any inspection (self-assessment or HSE inspections) are addressed. • Consulting with Taylor's construction manager and the HSE manager to ensure enough resources are allocated to the project to comply with legislative and Taylor's WHS&E requirements. • Ensuring compliance with safety legislation, regulations, licensing conditions and authorities' requirements relevant to all construction work. • Ensure adequate Taylor's site supervision is maintained throughout all hours of operation and those assigned with supervisory roles are competent and authorised to do so (e.g., PM, SM, or foreman). • Ensure incidents are investigated and appropriate action taken as required by Taylor's site Safety Plan requirements in consultation with the WHS&E manager. • Providing visible commitment to a safe and healthy work environment by ensuring regular reviews are undertaken, and by participating in health and safety meetings and consultation regarding WHS&E matters • Ensure safety Notices issued and/ or visits made to the project by industrial representatives and/ or SafeWork NSW are reported to both managing director and WHS&E manager. • Selecting appropriate subcontractors, giving due regard to their ability to comply with legislative and Taylor's WHS&E requirements. • The project manager is required to participate in at least one formal site HSE inspection per month on a project under their control. • Report back to Taylor's senior managers on project HSE incidents, any external authority visits and/ or Notices issued by external authorities. • Oversee the development and implementation of a site evacuation and emergency procedures and overseeing at least one spontaneous evacuation drill every six months and assessing the results of that drill. • Supporting the site manager in the management of employee, subcontractor, and supplier's performance in complying with Taylor's Environmental Plan and the site-specific rules for the project. • Be familiar with the emergency plan, the emergency assembly area and emergency coordinators for their project and participate in emergency drills.

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Role and Contact Information	Responsibilities
HSE Manager - Andrew Andreou 0404 492 614	• Oversees development and implementation of Taylor policies and procedures related to environmental health and safety and that provide additional support for environmental. • Develops and maintains electronic systems and technology solutions related to environmental health and safety. • Disseminates information and provides guidance regarding compliance with federal, state, and local regulations and Taylor policies and procedures. • Provides guidance, direction, and oversight to help ensure adherence to federal, state, and local regulations and Taylor policies and procedures instituted to protect the health and safety of employees, workers, visitors, and the environment. • Overseeing the implementation of Taylor's Health, Safety and Environmental Management System throughout all Taylor Construction activities. • Ensure that a systematic internal reporting system exists to guarantee that information about environmental hazards and unsafe practices is promptly conveyed to senior management and acted on • Maintaining good relationship with government regulatory authorities. • Setting targets and allocating priorities within the framework of the QSE System. • Safeguarding compliance and maintenance of the company's third-party accreditations. • Planning and delivering training in environmental management and/ or arranging for the appropriate internal or external trainers/ facilitators to conduct the training. • Researching, developing, and implementing new procedures and forms, and updating the manual as required. • Reviewing, analysing, and reporting on safety and environment project performance to Taylor's managing director, sector managers and any party as arranged by the managing director. • Ensuring compliance with environmental legislation, regulations, licensing conditions and authorities' requirements. • Ensuring Taylor's workplace health safety and environment performance is reviewed on a regular basis (i.e., arranging for internal and external audits). • Ensure that periodic audits of the effectiveness of management structures and risk controls for environmental performance are conducted. • Reviewing internal and external (independent) audit reports and, in consultation with the directors and the project manager, develop appropriate Action Plans if necessary. • Identifying environmental hazards, assessing risks and in consultation with project teams select risk control measures for site-specific situations. • When required, acting as the lead investigator in workplace incidents/ accidents, liaise with external authorities in managing them and report back to managing director and/ or sector managers on outcomes of investigations. • Ensuring WHS&E policies and procedures are implemented on all projects and that a specific site Environmental Plan is prepared and implemented for all projects.

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Role and Contact Information	Responsibilities
Project Safety Advisor - TBC	• Providing visible commitment to a safe and healthy work environment by ensuring regular reviews are undertaken, and by participating in safety and health meetings and consultation regarding WHS&E matters. • Ensure workplace hazards and environmental, health and safety-related policies and procedures are communicated to employees, workers, and visitors. • Assisting the WHS&E manager and project teams in implementing Taylor's health, safety and environmental procedures, policies, and project systems in line with best practice and the relevant statutory legislation. • Reporting any serious environmental incident or near miss and unexpected finds immediately to the WHS&E manager. • Safeguarding compliance and maintenance of the company's third-party accreditations. • Assisting project teams and subcontractors in meeting their workplace health safety and environmental obligations. • Ensuring compliance to this project Environmental plan. • Monitoring subcontractor's compliance with the site environmental Plan, and subcontractor compliance to their Safe Work Method Statements by conducting regular task observation/ audits. • Undertaking regular workplace inspections to identify hazards and unsafe/ unhealthy workplace conditions and practices. • Be familiar with the emergency plan, the emergency assembly area and emergency coordinators for the project and participate in emergency drills. • Assisting the site manager/ area foreman in the supervision of subcontractors. • Ensuring WHS&E items identified by safety inspections and or audits are rectified within specified timelines in consultation with the Site manager, and subcontractors. • Reporting incidents and/ or identified environmental hazards and appropriate risk control measures to line managers. • Ensuring all workplace health and safety and environment documents are maintained and filed in accordance with Taylor Construction filing requirements. • Coordinating or conducting site toolbox talks and ensure subcontractors regularly consult with their employees on matters relating to environmental issues. • Liaising with the project/ site manager to implement controls on hazards identified. • Completing Safe Work Method Statement checklists for the site (task observation); • Collating completed contractor required forms, authority to work permits and checklists. • Acting site safety representative for the site (unless another person has been elected to perform this role as per the consultation statement S-F-04 WHS Consultation Statement). • Other HSE and/ or CW's issues or activities that may require their attention.

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Role and Contact Information	Responsibilities
Senior Site Manager – Rob Frame 0412 053 357	• Providing visible commitment to a safe and healthy work environment by ensuring regular reviews are undertaken, and by participating in safety and health meetings and consultation regarding WHS&E matters. • Facilitating the process to ensure the project team and the WHS&E manager are consulted and participate in the development of the project specific WHS&E Risk Assessment. This is to be done prior to such activities commencing. • Ensure that prior to the works commencing a formal assessment of the emergency control equipment requirements has been completed and that these remain effective throughout the duration of the project. (e.g., first aid, nurse call, emergency warning alarms, fire extinguishers, spill kits, lighting, and signage) • Ensure workplace hazards and environmental, health and safety-related policies and procedures are communicated to employees, workers, and visitors. • Ensure individuals working in their operations have the proper safety equipment and personal protective equipment to perform their work safely. • Leading or participating in formal site safety inspections weekly and record results using SE-F-02 HSE Inspection Checklist. Daily informal inspections should be noted in site diary. • Unexpected finds – ensure that all unexpected finds are treated, reported, and managed in accordance with Taylor's unexpected finds procedure. • Environmental Controls – ensure all environmental controls (sediment and erosion, noise, hours of operation, etc) as mentioned by permits or building approvals are adhered to and workers are advised of these requirements during the site induction process. • Emergency Response and Training Plan - Contribute to the development of the ERP, ensure that all employees, workers, and others know about the plan, and communicate the importance of participating in drills and otherwise following procedures set out in the plan. • Groundwater Protection Program - Report any hazardous materials or other pollutants spilled to or discovered in soil or groundwater to EH&S for appropriate emergency or non-emergency clean up. • Hazardous Material and Waste Management - Inform employees and workers that hazardous materials and hazardous waste, except as expressly authorized by regulations, licenses or permits, may not be disposed of via the sewer system, or other unsafe or environmentally damaging routes; and to stress the importance of proper hazardous material/waste management. • Training - Ensure that everyone working in their operations is appropriately trained to identify and mitigate potential hazards. Ensure that work requiring training is performed only by persons who have received the proper training. • Hazardous Spill Response - Upon request, provide assistance in hazardous material spill clean-up, preparing written reports about reportable releases and notifying appropriate persons about reportable spills. • Noise Monitoring and Hearing Conservation - Conduct noise surveys to determine exposure levels. • Environmental Procedures / Permits – ensure activities requiring internal and or external permit or approvals do not commence until permit or approval has been formally granted the user has the responsibility for providing relevant information to obtain permits, meeting permit conditions, and any responsibility. Taylor site management shares in the responsibility to advise those performing the works of Taylors procedure and permit requirements. • Ensuring WHS&E items identified by safety inspections and or audits are rectified within specified timelines in consultation with the project manager, Project safety advisor and subcontractors.

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Role and Contact Information	Responsibilities
Senior Site Manager – Rob Frame 0412 053 357	• Ensuring that all plant and equipment used on Taylor Construction sites are environmentally safe, correctly maintained and that the operator is appropriately licensed or qualified to operate and or use that equipment. • Utilizing experience and judgement to shut down and/ or evacuate any part of the site if a major health and safety and environmental risk occurs. • Reviewing, coordinating, and implementing emergency evacuation procedures and participating in drills at specified intervals (quarterly). • Implementing, through consultation with the project manager, the Site environmental plan and procedures in accordance with WHS&E legislation, regulations, codes of practice, Australian Standards and/ or other statutory requirements. • Ensuring no work is undertaken on site until the relevant SWMS has been reviewed and signed off in accordance with form SE-F-14 Safe Work Method Statement Review Form. • Monitoring subcontractor's compliance with the site Environmental Plan and subcontractor's compliance to their Safe Work Method Statements by conducting regular task observation /audits. • Ensuring all workers and, if required, visitors, are site-inducted and aware of any environmental compliance obligations. • Assisting with implementing and undertaking formal and proactive consultation measures between the project team and subcontractors. • Ensuring items identified by Environmental or system audits findings are rectified and closed out within specified timelines in consultation with the project manager, site manager, site safety advisor and subcontractors. • Consulting with all persons on Environmental issues, including changes to the workplace layouts and access egress points, and encourage the involvement of all personnel in achieving a safe and healthy site.
Site Manager / Foreman – Brad Prescott 0411 388 059	• First response in managing site-specific workplace environmental issues in the first instance, and discussing these with the project manager, site manager and/ or site safety advisor as required. • Assisting the site manager with developing, planning, implementing, and reviewing site-specific emergency and evacuation procedures. • Identifying any environmental hazards and assessing any risks on site and implementing risk control measures. • Leading or participating in formal site safety inspections weekly using form SE-F-02 HSE Inspection Checklist. Note: informal inspections should be noted in site diary. • In consultation with the project manager and the senior site manager, and utilizing experience and judgement, shut down and/ or evacuate any part of the site if a major environmental risk or situation occurs. • When requested by the Site manager participate in any environmental incident and assist with the Investigating, recording, and reporting, • Be familiar with the emergency plan, the emergency assembly area and emergency coordinators for the project and participate in emergency drills. • Monitoring the use of personal protective equipment (PPE) by site personnel. • Were requested by the site manager, assist with monitoring of environmental issues (e.g., dust, noise, air quality) • Assist the site manager with reviewing, coordinating, and implementing emergency evacuation procedures and participating in drills at specified intervals, minimum every six months.

Role and Contact Information	Responsibilities
Site Manager / Foreman – Brad Prescott 0411 388 059	• Ensuring that all plant and equipment used on Taylor Construction sites are environmentally safe to use, appropriately maintained and that the operator is correctly licensed or qualified for operating that equipment.
Senior Contract Administrator - Scott Dobson 0414 984 567 **Site Engineer – Jason Gikler 0421 009 885**	• Support the project and site management in the management of employee, subcontractor, and suppliers' performance in complying with Taylor Construction WHS&E and the site-specific rules for the project. • Assist the project/ site manager to ensure the site environmental plans and associated documentation, including standard forms, procedures, and templates, remain current and up to date. • Where required, assist the project and site manager with site inductions. • Include in subcontract agreement the requirement for subcontractors to carry out their works in accordance with the company's or subcontractor's approved QSE Plans. • Forward to subcontractors a copy of HSE subcontractor requirement Contractor's HSE Requirements QSE-F-15.23 (letter template), ensuring this is completed and returned by subcontractor prior to commencing. • At the tender interview stage, discuss with the subcontractors their obligation for managing HSE requirements by issuing to them relevant sections of the tender interview form and ensuring this is completed by subcontractor prior to commencing on site. • Request and obtain from the subcontractor prior to their arrival to site copies of their Workers Compensation and Public Liability Certificates of Currency, environmental and or council licences and or required permits ensuring they are current and that copies are available on site. • Ensure that all completed copies of form Contractor's HSE Requirements QSE-F-15.23 (letter template) are returned and filed in the project files. • Ensure that the latest copies of Project Plans and WHS&E Risk Assessments are uploaded onto Project Centre, or preferred data control system used, and engaged subcontractors have access to these. • Ensure all external complaints/ incidents are recorded on SE-F-21 Incident Report Form and filed in the External Complaints Register or Hammertech • Assist project and site management in the general administration of WHS&E where requested. • Be familiar with the emergency plan, the emergency assembly area and emergency coordinators for the project and participate in emergency drills.
Cadet – Cecilia Tran	• Provide general assistance to management on an assigned project. • Provide administrative assistance in managing site safety, quality assurance and environmental management systems. • Maintain project registers and records up to date. • Where requested provide assistance with site contract administration and tendering. • Manage project document control and provide design management assistance. • Assist the project/ site manager to ensure the site QSE plans and associated documentation, including standard forms, procedures, and templates, remain current and up to date. • Fulfil responsibilities as outlined in the 'Taylor Cadet Program Guidelines', including undertaking an approved course of study at an Australian University. • Assist project and site management in the general administration of HSE where requested. • Monitor the use of personal protective equipment (PPE) by site personnel. • Complete site diaries as per project administration requirements.

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Role and Contact Information	Responsibilities
First Aid Officers - TBC	• Provide first aid to persons ill or injured on site • Recording all such assistance provided • Liaising with the site manager and/or site foreman to achieve first aid obligations.
PCBU and Workers - TBC	• Attending Taylor Construction site-specific induction prior to commencing work on site. • Taking reasonable care for their individual health and safety and that of others on site, including members of the public. • Familiarising themselves and adhering to Taylor Construction corporate policies. • Performing only those works in which they possess the required competencies for or have been suitably trained to perform. • Taking corrective actions to eliminate hazards within the workplace and /or reporting those hazards they cannot correct. • Reporting all injuries to a first aid officer or supervisor. • Cooperating with Taylor Construction management in all requirements imposed in the interest of health, safety the environment and wellbeing. • Never intentionally or recklessly interfering with, misusing, or removing any items and/ or equipment provided in the interest of health and safety. • Complying with all site safety instructions and abiding by the procedures and work practices identified in the Workplace Heath Safety Project Plans and/ or as directed or informed by the site manager/ foreman. • Complying with all relevant workplace health and safety legislation, standards, and codes of practice. • Reporting promptly to a site manager/ foreman any unsafe conditions, practices or defects discovered in any control measures, including personal protective equipment. • Maintaining safe work practices when working with, or near, hazardous substances, so that their own health and safety, and the health and safety of those around them, is maintained. • Using personal protective equipment (PPE) as required. The equipment should be kept clean and maintained in an appropriate manner. • Practicing a high-standard personal hygiene in and around all amenity areas such as lunch, change and toilet facilities by washing thoroughly and removing all protective clothing before eating, drinking, and smoking. • Do not perform any activity or act that endangers or impacts on the environment.

5.5 Competence, Training and Awareness

Taylor will ensure that all staff working on this site are provided with the environmental training required to competently carry out their work.

Taylor will also ensure all site staff and contractors are project inducted by the site manager or other relevant personnel prior to commencing work. A training/induction register will also be maintained in the site office.

As per the Taylor Project Environmental Management Plan, the site induction, as a minimum, must include the following environmental information:

- Community issues.

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- Hours of operation.
- Noise and vibration.
- Dust Management.
- Traffic access.
- Storage and handling of chemicals.
- Waste management: recycling, disposal and litter.
- Soil and water issues: controls, tracking of mud off-site.

If any significant environmental issues arise, these must also be incorporated into the site-specific induction. These might include the following:

- Environmentally sensitive areas of the site.
- Contamination issues.
- Environmental controls and management.
- Noise emissions.
- Plant emissions.
- Archaeology and heritage management.

Taylor will utilize an Induction Form and Agenda (SE-F-11) and an Induction Register (SE-F-11a) for keeping the records.

5.6 Communications

Taylor HSE Manager will be the point of contact for specific environmental management issues both internally and externally. The CEMP will be available for review by all relevant stakeholders.

5.6.1 Internal

Essential information relating to project environmental management will be communicated through toolbox talks and inductions.

Environmental alerts will periodically be prepared and sent to sites for posting on notice boards. Key changes to environmental legislation will be sent by email to all project managers and site managers.

5.6.2 Regulator Site Visits and Written Communications

If an authorised officer (Council, DPIE, WorkCover, EPA, OEH or DEE representative) visits the site, the HSE manager or construction manager should be contacted for assistance or advice. While a worker can request that a manager can assist them, they cannot refuse to answer questions. An authorised officer must show their identification on request and has the right to ask any person on site questions relating to environmental issues.

Any penalty infringement notices or official warnings from regulators are to be treated as 'incidents' and reported in the incident report form, investigated and corrective actions assigned and completed to address the root cause of the infringement.

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Any communication from a regulator must be notified to the HSE manager. Records of all communications must be retained and appropriately filed.

5.7 Community Complaints

Community complaints should be treated as 'incidents': they must be reported to the HSE manager, be thoroughly investigated and reported on SharePoint. Reference to these are also to be documented and included in site diary entries. The Project or Site Manager should try to resolve the issue with the community member in a conciliatory manner.

As per the development consent section C3. Taylor will ensure that a 24-hour contact telephone number is continually attended by a person with authority over the works for the duration of the development.

Taylor utilizes three different forms/procedures for handling community complaints these include:

- SE-F-21 Incident Report Form
- SE-F-22 Incident Investigation Form
- SE-F-23 KPI Monthly Report

5.8 Emergency Planning

An Emergency Response Plan has been developed for this site based on a template provided in the SE-P-07 Project Emergency Control Management Plan. Additional information for the management and control of emergency situations can be found in the Project Workplace Health and Safety Plan (WHS-PLAN-02) and a spill response procedure flow chart which is contained in Appendix M.

Emergency response posters and flow charts will be posted in the site and induction office, WHS notice boards in crib rooms and other areas of the site as required.

In case of any emergencies, the contact details are listed in Table 5.3.

Table 5.3 Emergency contact details

Service	Contact Phone Number
24 - hours contact details of the Site Manager	0488 022 764
Fire and Rescue	000
Ambulance	000
Police (emergency)	000
Local Police (non-emergency)	02 9680 5399
SES	132 500
EPA	131 555
Department of Planning and Environment	1300 305 695
Office of Environment and Heritage	1300 361 967
Hills Shire Council - Appropriate Regulatory Authority (ARA)	02 9843 0555
SafeWork NSW	13 10 50
Poison Information Centre	13 11 26

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5.9 Incident and Investigation Reporting

As per the Taylor Project Environmental Management Plan (PEMP), any environmental incidents that occur must be reported to the Project/Site Manager as soon as possible. In addition, any major environmental incidents must also be reported to the HSE manager in accordance with the Incident Reporting and Investigation Procedure QSE-OP-05. The priority is to ensure that the situation is controlled as soon as possible and to avoid further or environmental impacts. Reporting shall not delay any immediate incident response.

Incident reports must be completed and forwarded to the HSE Manager within 24 hours and must be kept for a minimum of five (5) years.

Environmental incidents that cause or threaten to cause, material environmental harm must be reported to the Appropriate Regulatory Authority (ARA) as soon as possible. In this project, the ARA is The Hills Shire Council. This would include any spillage or lead of substances that cause water or land pollution. Material environmental harm means harm that is not trivial and/or costs more than $10,000 to clean up. The phone number for the ARA will be included in the Emergency Response Plan.

If the site manager believes that the incident may be reportable to the ARA, contact the HSE manager for further advice prior to making an investigation report.

All environmental incidents that cause or could potentially result in environmental harm are to be investigated, and corrective actions implemented following the investigation. Depending on the severity of the incident, key site personnel, the HSE manager, witnesses, etc should be consulted on the investigation and in determining appropriate corrective or preventative actions.

The forms and procedures mentioned are listed below:

- QSE-OP-05 Incident Reporting and Investigation Procedure
- SE-F-21 Incident Report Form
- SE-F-22 Incident Investigation Form

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6. Environmental Impacts

The construction works will be primarily carried out within the Museum Discovery Centre area and Castle Hill Tafe zone. Taylor simultaneously accommodates the operational needs of the adjacent MDC and Castle Hill Tafe Buildings, facilitate full-time MAAS access to the loading dock and roller doors therefore there are projected to be fewer environmental risks associated with construction works and normal operation of remaining buildings .

The potential environmental impacts identified during the pre-construction works, site establishment and construction stage of the project are outlined in Table 6.1.

Table 6.1: Construction impacts

Aspects	Impacts
Safety and Public	The Museum Discovery Centre (MDC) and Castle Hill Tafe Buildings will remain functional and open to the public during the construction. Much of the work will be carried out in the fenced area where the existing perimeter hoardings, gates, and fences will be reviewed for suitability. NSW Government Waratah Shade cloth will be installed to external site fences and hoarding lines where applicable. As children will attend both the existing MDC and Castle Hill Tafe sites, allowance has been made for the semi-permanent chain-link fence to be installed to all internal perimeters.
Circulation Impacts	Most of the works will have a minor impact on the foot traffic and circulation of the general public. Vehicular movements on the Showground Road, Green Road, Victoria Avenue will be maintained at all times as per Construction Traffic and Pedestrian Management Sub-Plan presented in Appendix D.
Pedestrian Access	The works should have a minimal interface with pedestrians. However, there will be some stages to the construction that will require closing access to pedestrians. Temporary chain wire fences would be erected around the perimeter of the site. Onsite personnel and traffic controllers would be present during construction hours to manage construction vehicle entry and exit and pedestrian movements at the site access, noting that pedestrian/cyclist priority would be given. Outside of construction hours, gates would be installed to prevent pedestrians from entering the construction site. All construction-related traffic movements within the site will occur under the supervision of on-site personnel and traffic controllers, with trucks escorted between the access gate and the road. To minimise disruption to pedestrian and cyclist movements, it is advised that truck movements are managed, wherever possible, to occur outside of peak commuting periods.

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Aspects	Impacts
Noise and Vibration	These impacts and mitigation measures are explored more in the Construction Noise and Vibration Management Sub-Plan (Appendix K) which states that provided recommendations need to be implemented to minimize the noise level in surround area. It is expected that any construction Noise & Vibration impact upon the surrounding buildings will be minimised in accordance with NSW Interim Construction Noise Guidelines For those exceeding the Highly Noise Affected Level, a suitable mitigation and management measures will be required for the project, i.e locate the noisiest equipment as far from the residences and TAFE buildings as possible, acoustic barriers are used for noisy equipment. The assessment has shown site specific plan developed to ensure that appropriate work practices are implemented during the demolition, excavation, and construction to minimise noise and vibration impact upon the surrounding buildings, providing a construction noise management plan so as to comply with the relevant consent conditions and the Interim Construction Noise Guideline.
Access and Traffic	The impact of traffic to and from the site will be limited to construction deliveries and removals will vary from time to time depending on the time of the day, weather, and project stage Traffic Conditions - it was found that an additional 133 trips would be generated from the new development. It was concluded that this volume of traffic would be negligible in the context of the existing traffic flows along Windsor Road and Showground Road. No queuing or marshalling of trucks will be permitted on public roads in the vicinity of the site. All vehicles transporting loose materials will be required to ensure the entire load is covered using a tarpaulin or similar impervious material. The vehicle driver will need to take all precautions to prevent any excess dust or dirt particles from depositing onto the roadway during travel to and from the site. All deliveries and works will be carried out within the site at the designated works zones/on-site loading areas. If there is a requirement to operate any material handling machinery on public access roads, the contractor will be required to seek separate Council/Police/RMS/Sydney Buses approval prior to the event. It is not expected that this level of traffic movement would create any adverse road safety and network efficiency impacts on the surrounding road network and general traffic, cyclists and pedestrians and bus services. The Construction Traffic and Pedestrian Management Sub-Plan (Appendix D) include detailed vehicle movements, delivery areas and procedures.

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Aspects	Impacts
Air Quality	The main air quality impacts that may arise during the demolition of the existing car park/vehicle accessway and construction activities of Building J are dust generation and to lesser extent odour emission and air emissions (such as CO_2, NOx, CO, HC and SO_2) due to exhaust emission from equipment/machinery used during work and volatile organic compounds (VOCs) from the solvent paints and sealant materials. Where there is a potential impact on local air quality the contractor will implement dust control measures. The control measures applicable to site activity are available in the Environmental Risk Assessment presented in Appendix O.
Water Quality	Water sprays will be used for dust suppression during demolition/excavation. This poses a risk of causing runoff of concrete slurry. All works will be carried out in a manner that ensures the protection of the water quality objectives and environmental values. The runoff of stormwater or sedimentation that would impact on the water quality would be minor considering the full implementation of the recommended controls presented on the drawings in Appendix H and proposed environmental actions/controls presented in Appendix O.
Waste	The following waste might or is anticipated to be generated during project duration: asbestos, batteries (lead-acid/nickel-cadmium), bricks/blocks, cardboard, concrete, containers of dangerous goods, general waste, including food, metals, mortar, pallets, paper, plasterboard, plastic packaging/bags, sanitary products, soils, timber, trees/plants, redundant machinery. The waste will be managed in accordance with the principles of the waste management hierarchy set out in the NSW 'Waste Avoidance and Resource Recovery Strategy 2014-21'. Further information on the waste impacts, procedures and quantity is available in the Site Waste Management Plan available in Appendix I.
Hazardous Materials	Taylor maintains Hazardous Substance and Dangerous Goods Procedures (SE-OP-01) to provide guidance on the management of hazardous substances and dangerous goods to limit the risk of spills. The procedures along with the risk assessment are presented in Appendix Q.
Heritage	**Aboriginal / Non-Aboriginal** If any suspected aboriginal object (excluding human remains) is unexpectedly encountered during the works, it will be managed in accordance with the Unexpected Finds Policy in the Aboriginal Cultural Heritage Assessment Report prepared by Curio Projects dated 21 January 2021, Section 7.2.1. The unexpected finds procedure contained in the Appendix J.2

7. Mitigation Measures

The mitigation measures outlined in Table 7.1 will be implemented to minimise the environmental impacts during the proposed demolition and construction works which are based on the documents outlined in Section 1.5.

Table 7.1: Environmental Controls

Environmental Factor	Controls
Erosion and Sedimentation	Taylor is determined to minimize the environmental impacts of sedimentation and erosion on the surrounding environment, land and stormwater drainage system. To achieve this Taylor will install extensive sedimentation controls throughout the site prior to commencing work as per drawings presented in Appendix H . **Controls include:** Remove demolished materials, rubbish and debris offsite as soon as practicable to minimise risk of run-off into adjacent areas. No chemicals, fuels or wastes will be stored within 50 m of any stormwater drainage lines. All such substances will be contained in sealed vessels of appropriate volumes and stored appropriately. All stormwater inlets are to be covered with geotextile fabric in a roll or other format to ensure that no sediment enters the stormwater system. The rolls will not only be placed directly at the inlets but should also be placed upstream from the inlets to create multiple barriers where required. Minimum weekly inspection and after rainfall greater than 10mm in a 24-hour period rain events cleared of collected sediment if required. Any silt accrued in sediment and erosion control devices will be disposed of in accordance with all other relevant codes and standards. Vehicular access will be controlled to prevent sediment being tracked to external roads. This will be done by inspection of truck wheels and cleaning. If the need arises, a shaker grid will be installed to the main access by Taylor during the construction works.
Water Quality	**Groundwater** Groundwater table not encountered during Detailed Site Investigation conducted by Alliance Geotechnical, based on the information provided by Sydney Water, the nearest groundwater bore GW072464 to the north from Site at CICE 109 Glenhaven Road Glenhaven NSW, 2156 indicates that standing water level (SWL) is to be 60 meters below ground level. Therefore, likelihood of the groundwater contamination is extremely negligible, particularly if Taylor and Taylor's Contractors ensure employees with policies, procedures and environmental risk assessments. Nevertheless, groundwater protection controls need to be implemented and maintain as per Environmental Risk Assessment presented in Appendix O and related to the job/task specific procedures and policies.

Environmental Factor	Controls
Water Quality	To improve the quality and ensure that existing and potential uses, including ecosystem maintenance, are protected Taylor: • incorporate measures and/ or operating procedures that will minimise the demand for the development on potable water supplies. • ensure that no contaminated water, including those containing sediments, leaves the site • report any hazardous materials or other pollutants spilled to or discovered in soil or groundwater to EH&S for appropriate emergency or non-emergency cleanup / response. **Surface Water** Potentially hazardous activities, including washing out of concrete delivery vehicles and washing down of construction plant, are not permitted on site except in specially constructed bays that retain high pH water. Washing out of concrete delivery vehicles offsite is only permitted at locations approved for that purpose by the appropriate authority. Drains will be labelled to reduce the likelihood of misuse.
Water Quality	Washing of paint brushes must avoid any paint wash-water entering drains or waterways. Wash-water must be removed from the site and appropriately treated and/or disposed of. The chemicals, acids or residue from any 'wet trades' such as brick cleaning must also be prevented from entering drains and waterways. All liquids and materials that cause water pollution must be stored in areas with secondary spill containment. Pumping of stormwater: If a sediment basin is required and stormwater is required to be pumped out of the site, the pump intake is to be located no more than one metre below the surface of the collected water to reduce the amount of settled silt being pumped out for further treatment. Incorporate measures and/or operating procedures to ensure that stormwater run-off from the site reflects patterns, volumes and quality that exist prior to development, as far as reasonably practicable. Drainage lines are to be naturalised as much as possible and should enhance the ecological values and recreational opportunities. Stormwater treatment: There are two treatment options for stormwater collected on site, flocculation and/or filtration.
Wastewater Management	Any wastewater generated on site which cannot be treated must be disposed of offsite in accordance with NSW EPA Waste Classification Guidelines (NSW EPA 2014). Wet cutting of concrete will be used when slurry can be contained, and industrial wet vacuums used at all times.

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Environmental Factor	Controls
Spill Prevention and Response	Ensure all staff are aware of the spill management procedures during induction. Ensure all chemicals are stored in accordance with the manufacturer's instructions and the safety data sheets (SDS). Store chemicals, fuel and lubricants suitably located and bunded areas to minimise the impact of any spillage or contamination on the site and adjoining areas. Do not locate these storage areas near stormwater drainage inlets. Position spill kits throughout site. Minor spillages must be cleaned up immediately. If any material is cross-contaminated, it is to be removed and placed into a bag or designated waste drum and disposed of appropriately. Major spillages must be notified immediately, and all efforts made to contain the spill and prevent escape into stormwater drains and waterway, provided it is safe to do so. If the spill is beyond the capacity of the site personnel to contain and clean up, specialist services must be employed. If the spill enters drains or waterways, the incident may be required to be reported to the appropriate regulatory authority (local council) as soon as practicable, in accordance with the duty to report under the POEO Act. Do not refuel or maintain plant and equipment or carry out any other activity which may result in spillage of a chemical, fuel or lubricant at any location which drains directly to stormwater system. Do not leave refuelling operations unattended and without appropriate controls. Spill kits, chemical storage locations drainage points are to be debris protected.
Air Quality and Odour Management	**Dust (demolition and construction works)** Barricade the dust emission sources areas with physical barriers erected at right angles to the prevailing wind direction. Fitting power tools with dust collection devices or water spray, where practicable. Materials that have the potential to generate dust will be removed as soon as possible unless being re-used on the site. All materials to be covered with a geotextile (or similar) material and surface dampened using water sprays if being re-used. The wet suppression of materials shouldn't result in any run-off generation To minimise the amount of time the site is left cut or exposed, the activities will be properly scheduled to avoid dust generation Hazardous materials such as asbestos-containing material, lead-based paints, SMF will be bagged and safely removed before any further works Dry sweeping will be avoided

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Environmental Factor	Controls
Air Quality and Odour Management	Grinding or sanding will be minimised to prevent dust which may contain respirable crystalline silica During moderate to high wind velocity periods, potential dust-generating activities will be stopped Breakers and crushing equipment fitted with dust filtration equipment or water sprayers to control dust emission will be used, where practicable Heights from which materials are to be dropped to be minimised as far as practicable to minimise the fugitive dust arising from unloading/ loading and water spray will be used wherever appropriate All site personnel will be fully trained to understand activities that generate dust and measures to be undertaken to reduce dust emissions **Dust (from skips)** Removed materials will be stored in the allocated skips and will be covered with geotextile (or similar) material at all the time **Dust (from transport and deliveries)** Signpost for the vehicle speed limit will be imposed on-site Vehicle corridor will be clearly identified and restricted to control vehicle access on-site, the vehicle carrying out rubble will not be overfilled and covered to prevent the escape of material and dust generation during transportation Ensure any fine powder materials/chemicals will be delivered in a covered truck and will be stored in designated areas Where required, vehicles leaving the site will be cleaned to minimize mud or dust on public roads and other sealed pavements. Removal of mud from the wheel and bodies of the plant will be done either through rumble grids, dry brushing or wheel wash using manual or automated sprayers Local exhaust ventilation will be supplied to the confined work area, as required All the vehicles used for the deliveries/transport from the site will be effectively planned to limit inefficient transport (i.e., limit vehicle movements to designated entries and exits, haulage routes and parking areas) Ensure all construction vehicles/plants comply with their relevant emission standards such as emission from trucks that are used for transportation purposes during work will be regulated in accordance with requirements prescribed in the National Environmental Protection (Diesel Vehicle Emission) Measure, 2001

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Environmental Factor	Controls
Air Quality and Odour Management	**Air emissions (paints)** Low solvent paint will be used as a priority Areas will be properly ventilated **Odour emissions (paints / chemicals / organic waste)** Odorous materials (such as paints, chemicals, sealants, silicones, caulking compounds, adhesive) will be sorted, handled, covered and stored as per the safety data sheets (SDS) requirements and applicable regulations Organic waste generated will be covered and emptied regularly through an approved waste contractor Spillages to be cleared and associated waste materials disposed of lawfully.
Noise and Vibration	**General** Where possible, position and orientate noisy plant and equipment away from sensitive receivers. Ensure all construction activities are undertaken during approved working hours Prevent vehicles and plant queuing and idling outside the site prior to the morning start time. Prevent vehicles and plant idling when not in use. **Complaints** If a noise or vibration-related complaint is received, report and investigate in accordance with the incident reporting and investigation procedure. Feedback on the resolution of a complaint should be provided to the complainant where requested. **Reversing signals** Onsite plant and equipment in long-term use to have suitable broadband movement alarms.

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Environmental Factor	Controls
Hazardous Materials	A Hazardous Substances and Dangerous Goods Procedure has been prepared for the project by Taylor and is attached in Appendix Q to provide guidance on management of hazardous substances and dangerous goods to limit the risk of spills, contamination and emergencies resulting from their storage and handling. Any hazardous material encountered during construction works will be classified in accordance with the Waste Classification Guidelines (EPA 2014) and removed from the Site to appropriate disposal facility. Transportation of asbestos waste need to be in compliance with the 'Protection of the Environment Operations (Waste) Regulation 2014, Part 7 'asbestos wastes'. The asbestos waste should be handled and transported as per Clause 79 of the Protection of the Environment Operations (Waste) Regulation 2014 which requires: Waste transporters to provide information to the EPA regarding the movement of any load in NSW of more than 10 square meters of asbestos sheeting, or 100 kilograms of asbestos waste. To fulfil these legal obligations, asbestos waste transporters must use the EPA on-line system WasteLocate. Waste producers are responsible under the legislation for ensuring that wastes are transported only after all the necessary documents and checks have been completed. Before transporting waste from the site, the following must occur: Ensure the waste has been correctly characterised. Ensure the waste transporter is legally allowed to transport the waste. Ensure the landfill facility accepting the waste is licensed to accept asbestos waste. The NSW Protection of the Environment Operations (Waste) Regulation 2014 (POEO Waste Regulation) requires Special Waste (Asbestos) to be: within a covered, and leak-proof vehicle during its transportation, and wetted down during its transportation.

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Environmental Factor	Controls
Waste Management and Resource Recovery	To achieve 85% diversion from landfill for all waste generated during the project, waste will be managed in accordance with the following waste hierarchy priorities: Waste generation is to be avoided Where avoidance is not reasonably practicable, waste generation is to be reduced Where avoiding or reducing waste is not possible, waste is to be reused, recycled, or recovered on site or off site Where waste reuse, recycling or recovery is not possible, waste will be treated and/or disposed of at a waste management facility or premise lawfully permitted to accept the materials or in accordance with a Resource Recovery Exemption or Order issued under the Protection of the Environment Operations (Waste) Regulation 2014, or to any other place that can lawfully accept such waste. All staff and subcontractors will receive site induction and ongoing toolbox talks that will detail waste and resource management measures (including the waste management hierarchy). Construction waste will be minimised by accurately calculating materials brought to the site and limiting materials packaging. All waste generated during construction will be classified in accordance with the Waste Classification Guidelines (EPA 2014). Suitably licensed waste contractors will be used for the collection and transport of all non-domestic, retail and commercial wastes for either off site processing and/or disposal to an appropriately licensed facility. Receipts for waste transfer and disposal will be checked to ensure all details are correct and retained for audit purposes. Taylor will monitor and record the volumes of waste (by weight/tonnes), the methods and locations of disposal, and submit a progress report every month, with a summary report before completion of the project. This should include the total quantity of material purchased, the quantity purchased with recycled content, the total quantity of waste generated, the total quantity recycled, the total quantity disposed of and the method and location of disposal. Waste disposal certificates and/or company certification confirming appropriate, lawful disposal of waste should also be recorded. Concrete waste will be stored with a cover on top, in a designated storage area barricaded with hoardings Washing out of concrete delivery vehicles and washing down of construction plant, will not be permitted on site except in specially constructed bays that retain high pH water.

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Environmental Factor	Controls
Unexpected Finds Policy	**Potential Contamination** All construction personnel working on the Site are to be inducted on the identified of potential unexpected finds. The induction can be undertaken at the time of general site induction and toolbox meetings. Induction must be performed by suitably qualified person as nominated by Taylor. The personnel working on the site are required to have the general competencies to identify unexpected finds of contamination in the field, and that this competency will be used in good faith during site preparation, earthworks or construction activities. It is not possible to provide an awareness induction to cover all types of possible unexpected finds. It is possible that indications of contamination not specifically covered by the induction may be encountered. In such cases it is assumed that if in doubt about a potential find the precautionary principal will be applied and unexpected finds procedure will be activated. Procedure in the event of unexpected find is presented in Appendix J.1 **Aboriginal and Non-Aboriginal Heritage** Educate the site workforce on the significance of Heritage Items, an unexpected finds protocol for Aboriginal and non-Aboriginal heritage and associated communications procedure needs to be followed as per instruction presented in Appendix J.2
Lighting pollution	Based on the information provided by Taylor and approved working hours in Development Consent Application number SSD 10472 listed in Section 4.2, external lights are not required for duration of the project. Therefore, no impact causing obtrusive effects of outdoor lighting is anticipated.

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8. Monitoring and Auditing

8.1 Inspections, Monitoring and Targets

Environmental inspection of the site is to be carried out by means of a routine monitoring programme, which will identify non-conformances and areas for improvement. A formal audit programme should also be implemented at the site, refer to Section 8.2.

Key aspects of the monitoring programme includes:

- Daily site inspections undertaken by the site manager (SM) to review and document environmental management performance including environmental mitigation strategies. SM to review site environmental performance, non-conformance and identify areas for improvement weekly.
- Weekly site inspections undertaken by the SM to review performance against the KPIs and monitoring outlined in the respective Environmental Management Sub-Plans. Records of inspection findings, recommendations for improvement and non- conformances are to be maintained.
- Environmental management issues as identified by site personnel, sub-contractors and management are to be discussed during toolbox meetings
- Identify any other activities that have, or may cause an adverse impact on the environment, or non-conformance to regulation.
- Environmental management issues identified through toolbox talks and site audits are to be directed to the SM.
- SM to provide recommendations regarding any practical measures that can be made to improve the effectiveness of environmental management.

The monitoring and inspection checklist is provided in Appendix P. All inspection, monitoring and non-conformance records are to be maintained for the purposes of audit and overall compliance monitoring for the construction phase of the project.

8.1.1 Key Monitoring Areas

The key areas for inspection and monitoring include, yet are not necessarily limited to the following:

- Visually monitor the effects of dust, odour, and emissions generated during the project.
- Visually monitor the effects of waste generated (for example, spills, housekeeping, etc.) and cleaning of work areas
- Monitor traffic impacts from the site.
- Monitor the efficiency of waste removal from the site.
- Record complaints.
- Monitor the noise levels.
- If a complaint arises, undertake monitoring if requested by regulatory authorities.
- Record and monitor the storage of hazardous substances.

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- Monitor stormwater and sediment control devices.
- Monitor mud deposition on roads and footpaths.
- Inspect the sediment and erosion control devices after more than 10mm of rain in a 24-hour period.

Objectives and targets for the project are specified in Section 5.3. Data relating to these targets will be documented daily using site diaries, reviewed by project/site managers on a monthly basis and forwarded to the HSE manager for reporting to senior management.

The KPI Monthly Report captures information on lag and lead indicators. The current indicators are:

Lag indicators:

- Number of environmental incidents;
- Number of penalty infringement notices (pins) or clean-up notices;
- Number of community complaints.

Lead Indicators:

- Number of toolbox talks (combined with WHS and environmental issues);
- Number of environmental inspections undertaken;
- Waste and recycling volumes (initially to set benchmark, then track improvement)

8.2 Auditing

Audits of the Environmental Management System will be conducted regularly to ensure that the system has been implemented correctly. Audits will also be undertaken on project sites for compliance with the requirements of the CEMP and PEMP.

The project will have Independent Environmental Audits, prepared in accordance with the Independent Audit Post Approval Requirements, which must be submitted to the Planning Secretary:

- within 12 weeks of the commencement of construction
- at intervals no greater than 26 weeks from the initial audit during the construction phase
- at any other time directed by the Planning Secretary, such as following an incident

The HSE manager is responsible for organizing project audits.

8.3 Environmental Non-Conformity, Corrective and Preventative Actions

Taylor employs a non-conformance and corrective action process to address all non-conformances across the business. Typically, environmental non-conformances are identified as a result from an audit, inspection and observations by the site manager of poor environmental practices including but not limited to incorrect waste disposal (liquid waste, poor storage of hazardous substances, oils, chemicals and damage to existing environmental controls such as sediment fencing). Non-conformances may be issued for serious breaches or repeated minor breaches. The process is defined in the Reporting Non-Conformance, Corrective and Preventative Actions Procedure QSE-OP-29.

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8.4 Reporting

A monthly report shall be prepared by an appropriately qualified consultant engaged by the Construction Manager. Reports shall contain:

- outcomes of daily monitoring and weekly site inspections.
- occurrence of any incidences and non-compliance.
- corrective actions that have taken place (including any additional environmental awareness training).

9. Review of CEMP

This CEMP is a living document and, as such, is subject to review. This CEMP must be reviewed by the Project Manager in consultation with the project team and HSE Manager whenever any major change occurs on the site that may have an impact on the environment, when the proposed environmental controls are outdated or at least biannually (every 6 months) during construction. The project team and the subcontractors will be notified of the changes made in the CEMP.

10. References

Alliance Geotechnical 2019, Stage 1 - Preliminary Site Investigation, Proposed Redevelopment, 172 Showground Road, Castle Hill NSW, Lot 102 in DP1130271

Alliance Geotechnical 2019, Stage 2 - Detailed Site Investigation, Proposed Redevelopment, 172 Showground Road, Castle Hill NSW, Lot 102 in DP1130271

Taylor 2021, Construction Methodology - Powerhouse Museum Discovery Centre, Taylor Construction Pty Ltd

TTPA 2021, Construction Traffic and Pedestrian Management Plan - Castle Hill Powerhouse Discovery Centre, Transport and Traffic Planning Associates (TTPA)

Taylor 2021a, Project Environmental Management Plan (PEMP) - Powerhouse Museum Discovery Centre, Taylor Construction Pty Ltd

Taylor 2021b, Site Waste Management Plan (SWMP) - Powerhouse Museum Discovery Centre, Taylor Construction Pty Ltd

Taylor 2019c, Reporting Non-Conformance, Corrective & Preventive Actions, QSE-OP-29, Taylor Construction Pty Ltd

Taylor 2019b, Incident Reporting and Investigation Procedure, QSE-OP-05, Taylor Construction Pty Ltd

Taylor 2019a, Hazardous Substances and Dangerous Goods Procedure, SE-OP-01, Taylor Construction Pty Ltd

www.realtimedata.waternsw.com.au

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Appendix A Site Location Plan

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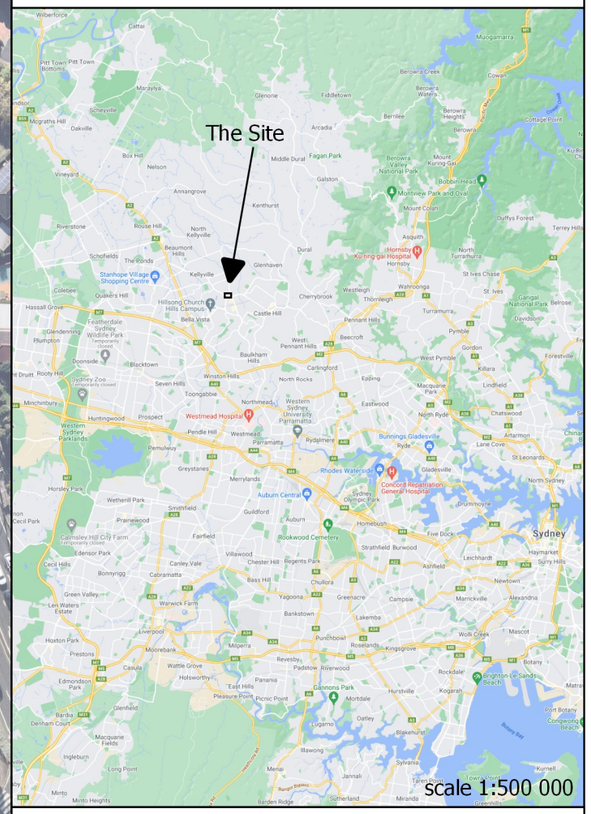
Legend

- Proposed New "Building J"
- Exisiting Site Boundary
- Tafe Site Boundary



S11774: Taylor Construction Group Pty Ltd

Appendix A: Site Location Map

scale 1: 1700

TAYLOR

HIBBS
Excellence in Risk Management

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HOMEBUSH NSW 2140

DATE: 23/07/2021
DRAWN BY: MK
PM: MK
REF: S11774-R01 - CEMP
VERSION: A

Notes:
Aerial image provided by Nearmap viewed on 05/06/2021.
Google Street map provided by Google, map data at 2021

Appendix B Stamped Plans

Sheet no. from 1 to 28

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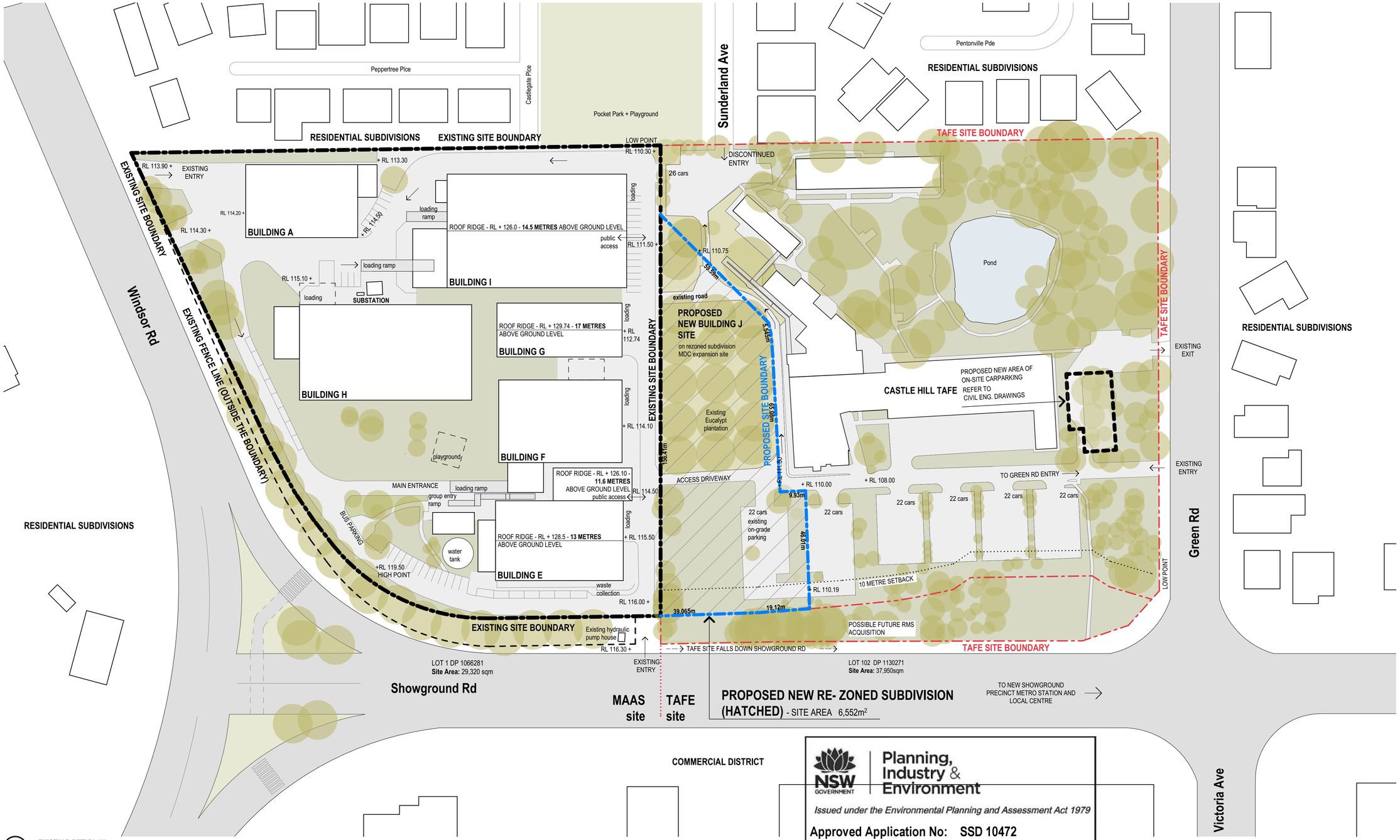

1 EXISTING SITE PLAN
1:750

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REV	DESCRIPTION	DATE
01	OPTION 3D - Preliminary Issue	07/12/18
02	OPTION 3F - Costing Issue	13/02/19
03	PRELIMINARY PLANNING APPLICATION ISSUE	08/05/19
04	PLANNING APPLICATION ISSUE	30/07/19
05	PRELIMINARY SSDA DRAWING ISSUE	15/05/2020
06	Updated for SSDA Submission	10/07/2020
07	SSDA ISSUE	07/08/2020

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Museum of Applied Arts & Sciences

PROJECT TITLE
BUILDING J
Museums Discovery Centre,
172 Showground Road
Castle Hill

SCALE CHECK 5 10

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TITLE
EXISTING SITE PLAN

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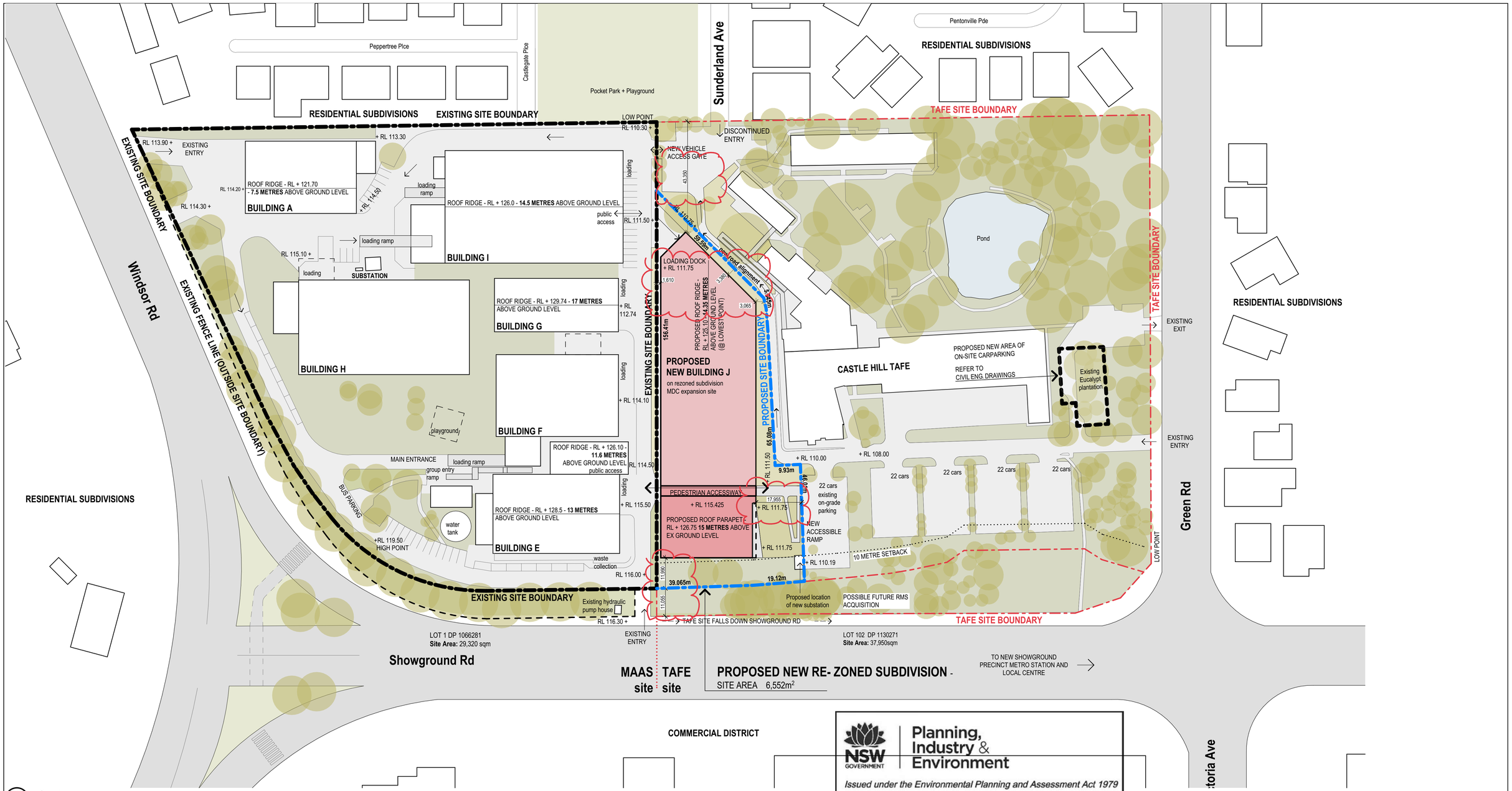

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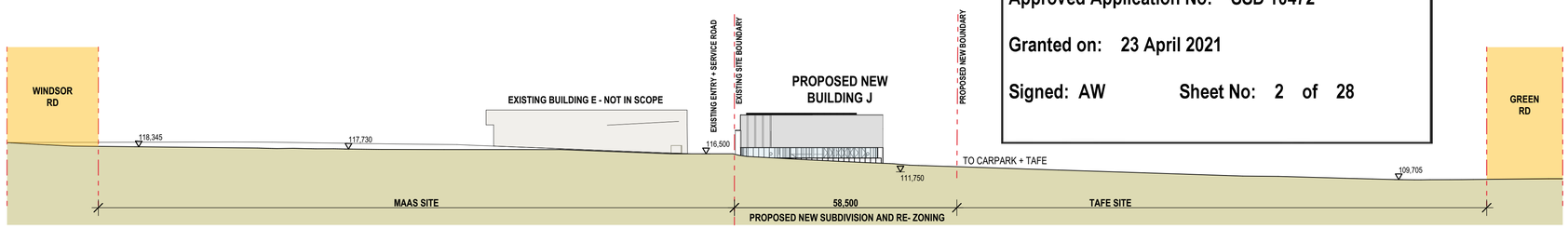

2 STREET ELEVATION
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01	OPTION 3E - Preliminary Issue	23/01/19	12	SSDA ISSUE	07/08/2020
02	OPTION 3E - Updated Site Plan	05/02/19			
03	OPTION 3E - Consultant Issue	08/02/19			
04	OPTION 3F - Costing Issue	13/02/19			
05	PRELIMINARY PLANNING APPLICATION ISSUE	08/05/19			
06	PLANNING APPLICATION ISSUE	30/07/19			
07	OPTION 05 - Issue For Information	20/02/20			
08	OPTION 06	04/05/20			
09	PRELIMINARY SSDA DRAWING ISSUE	15/05/2020			
10	Updated for SSDA Submission	10/07/2020			
11	Updated Site Plan	04/08/2020			

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TITLE
PROPOSED SITE PLAN

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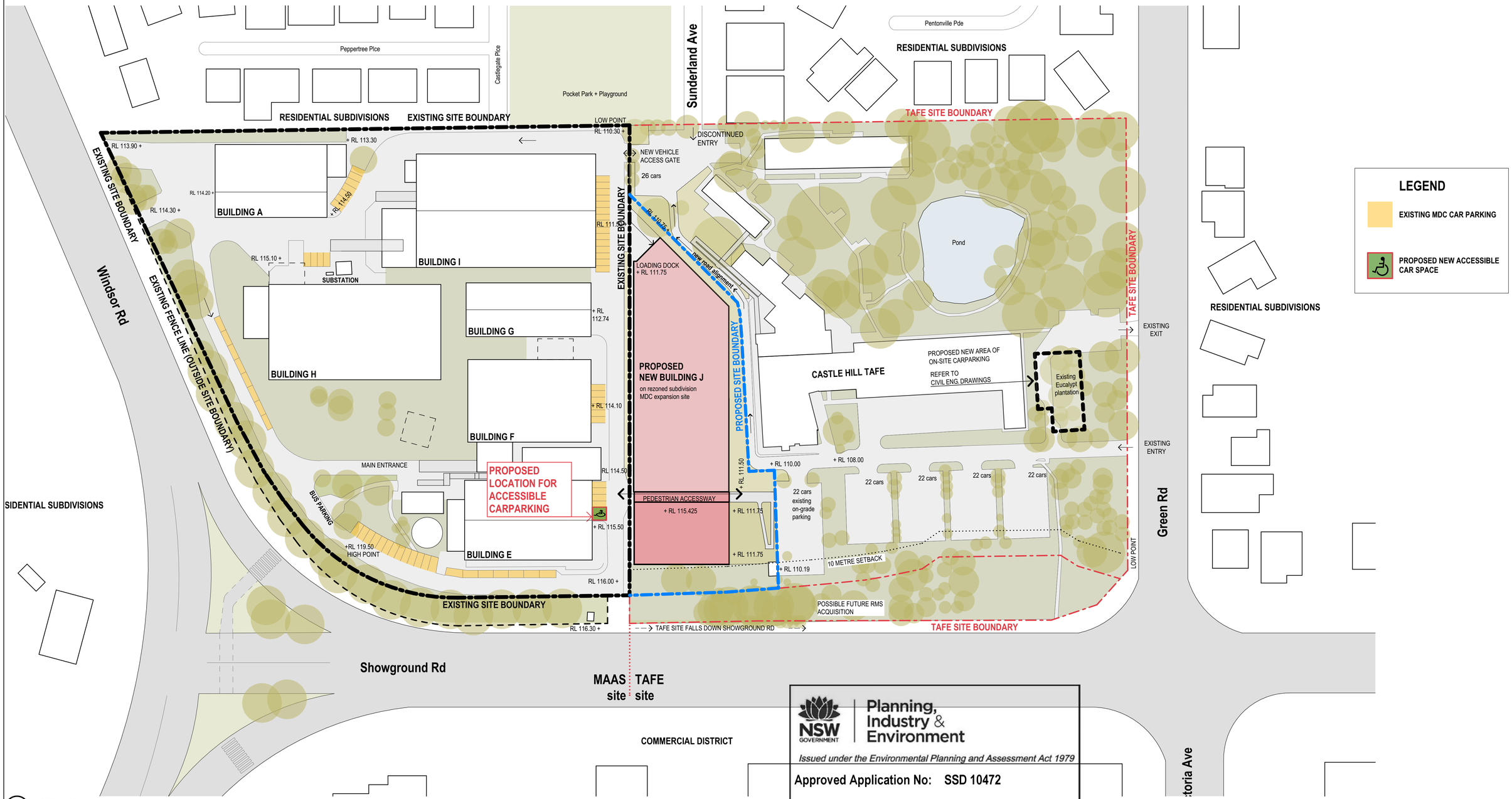

1 SITE CARPARK PLAN
1:750

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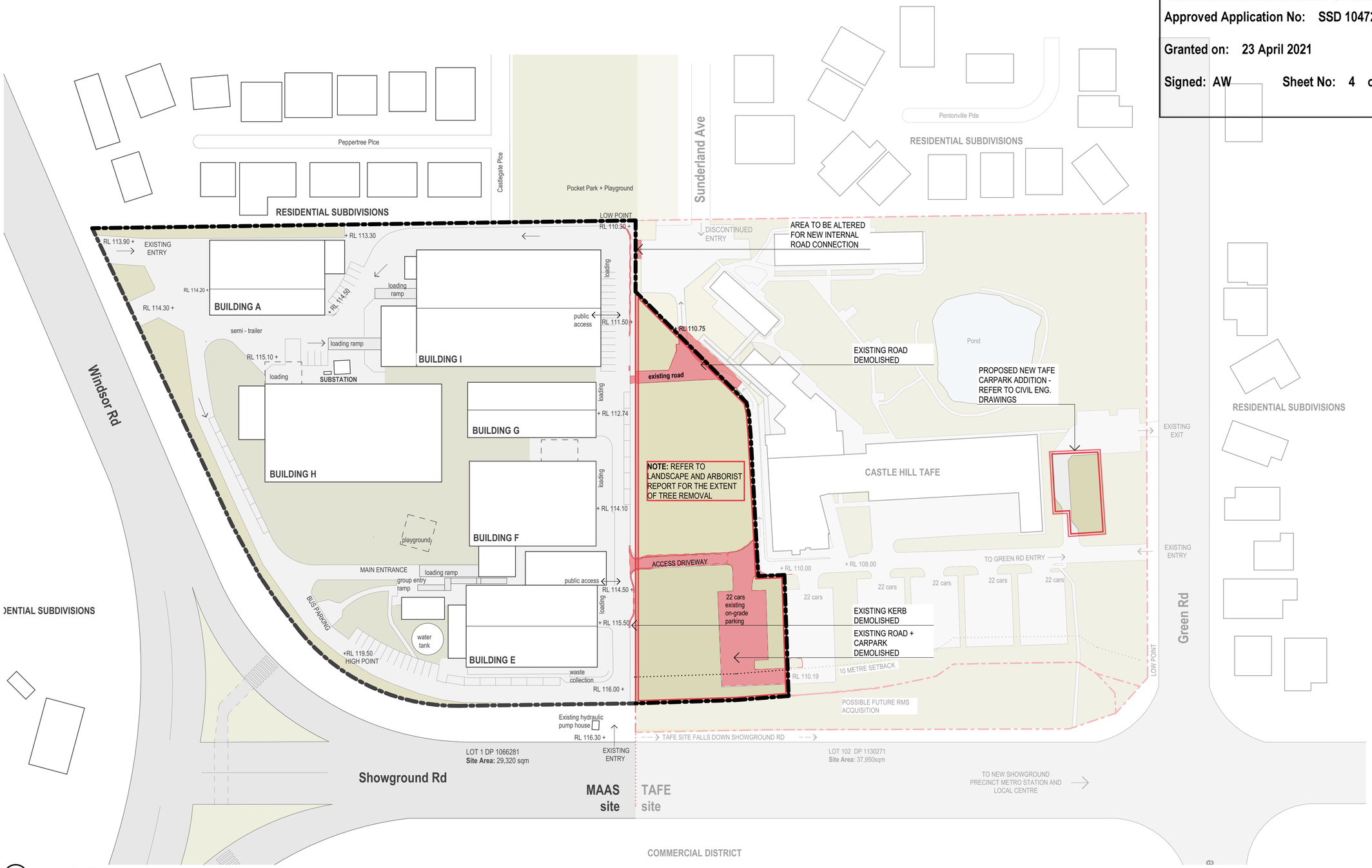

1 **SITE DEMOLITION PLAN**
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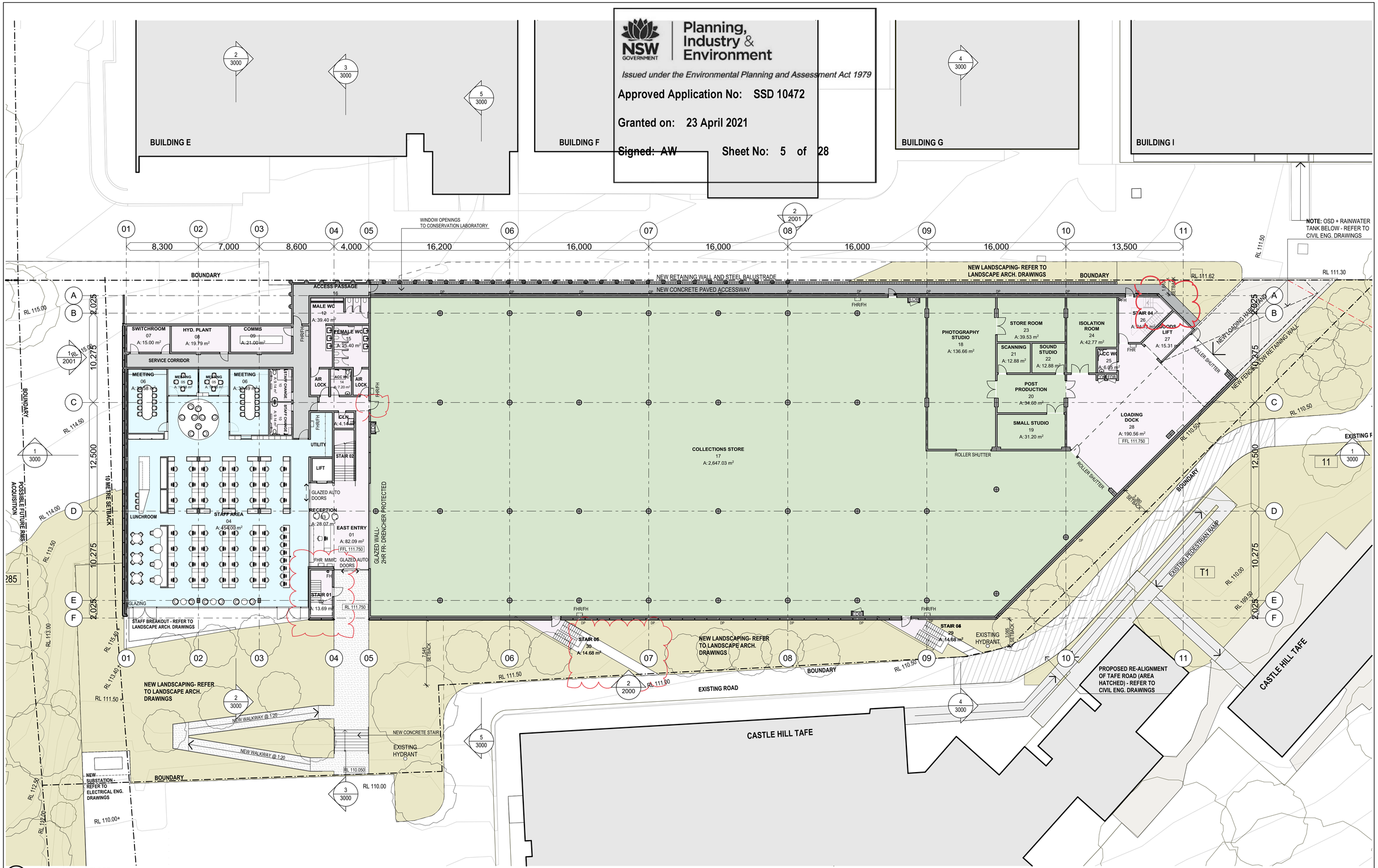

1 LOWER GROUND FLOOR
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02	OPTION 3E - Preliminary Issue	23/01/19	13	UPDATED SSDA ISSUE	17/12/2020
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05	OPTION 3F - Amended issue for consultant information	05/03/19			
06	OPTION 3G	03/04/19			
07	OPTION 05 - Issue For Information	28/01/20			
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LOWER GROUND FLOOR PLAN

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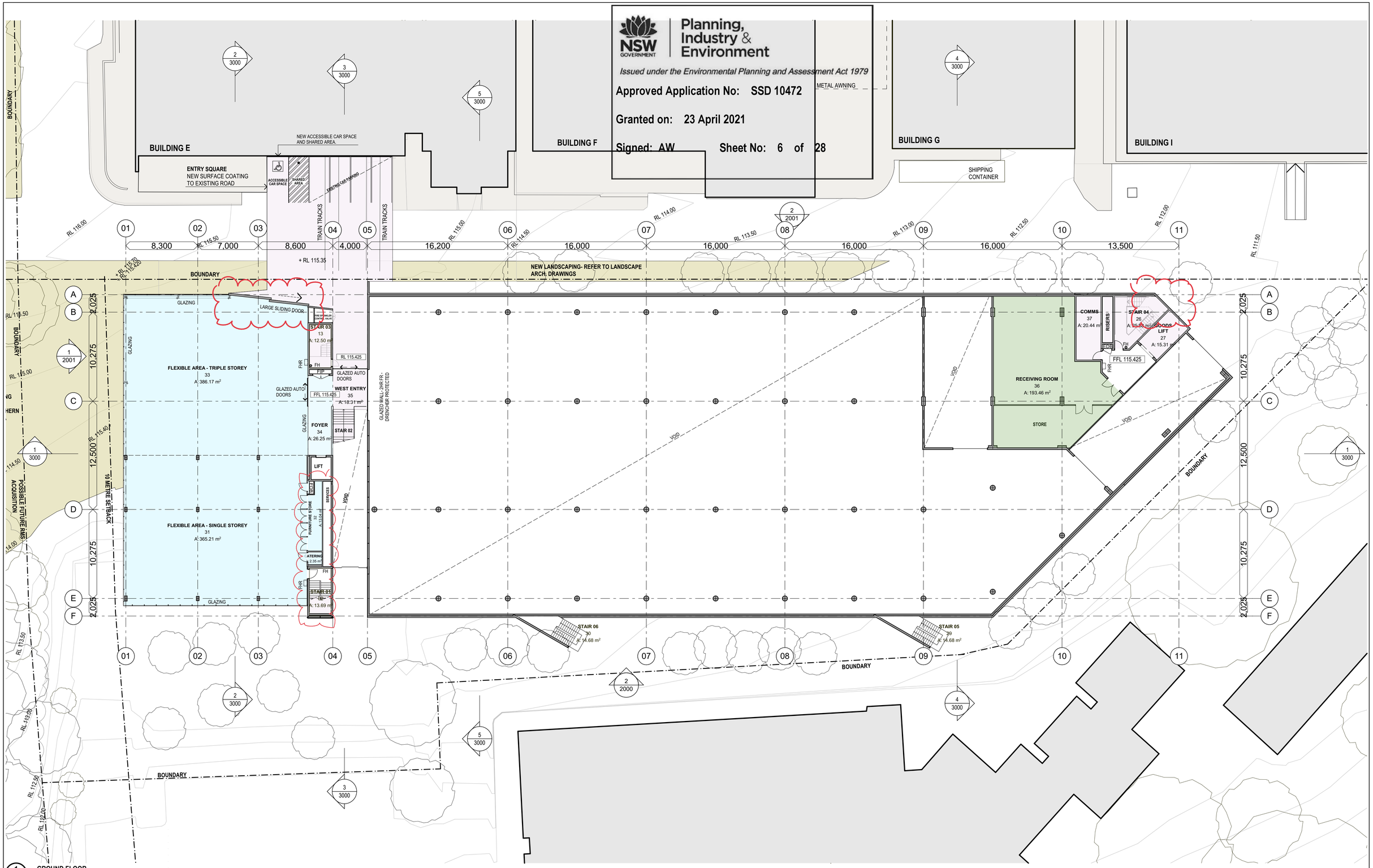

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06	OPTION 3G	03/04/19			
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11	Updated for SSDA Submission	10/07/2020			

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GROUND FLOOR PLAN

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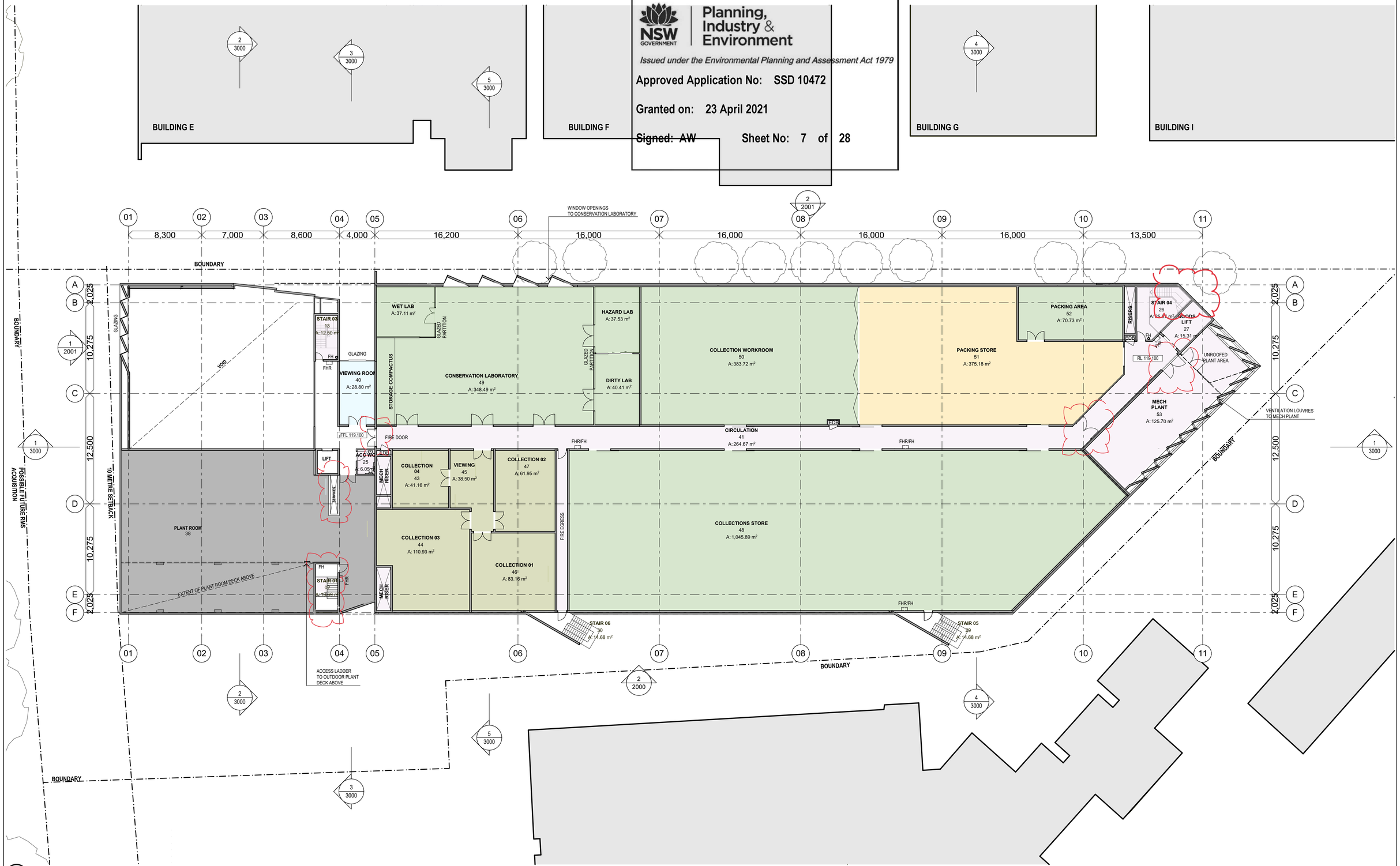

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REV	DESCRIPTION	DATE	REV	DESCRIPTION	DATE
01	OPTION 3D - Preliminary Issue	07/12/18	12	Updated Floor Cost Package	18/06/2020
02	OPTION 3E - Preliminary Issue	23/01/19	13	Updated for SSDA Submission	10/07/2020
03	OPTION 3F - Costing Issue	13/02/19	14	SSDA ISSUE	07/08/2020
04	OPTION 3F - Costing Issue Amended	15/02/19	15	UPDATED SSDA ISSUE	17/12/2020
05	OPTION 3F - Amended issue for consultant information	05/03/19			
06	OPTION 3G	03/04/19			
07	OPTION 05 - Issue For Information	28/01/20			
08	OPTION 05 - Amended Level 1 Plan	25/02/20			
09	OPTION 06	04/05/20			
10	PRELIMINARY SSDA DRAWING ISSUE	15/05/2020			
11	Amended Level 1 Plan + Section Drawings	12/06/2020			

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PROJECT TITLE
BUILDING J
Museums Discovery Centre,
172 Showground Road
Castle Hill

SCALE CHECK 5 10

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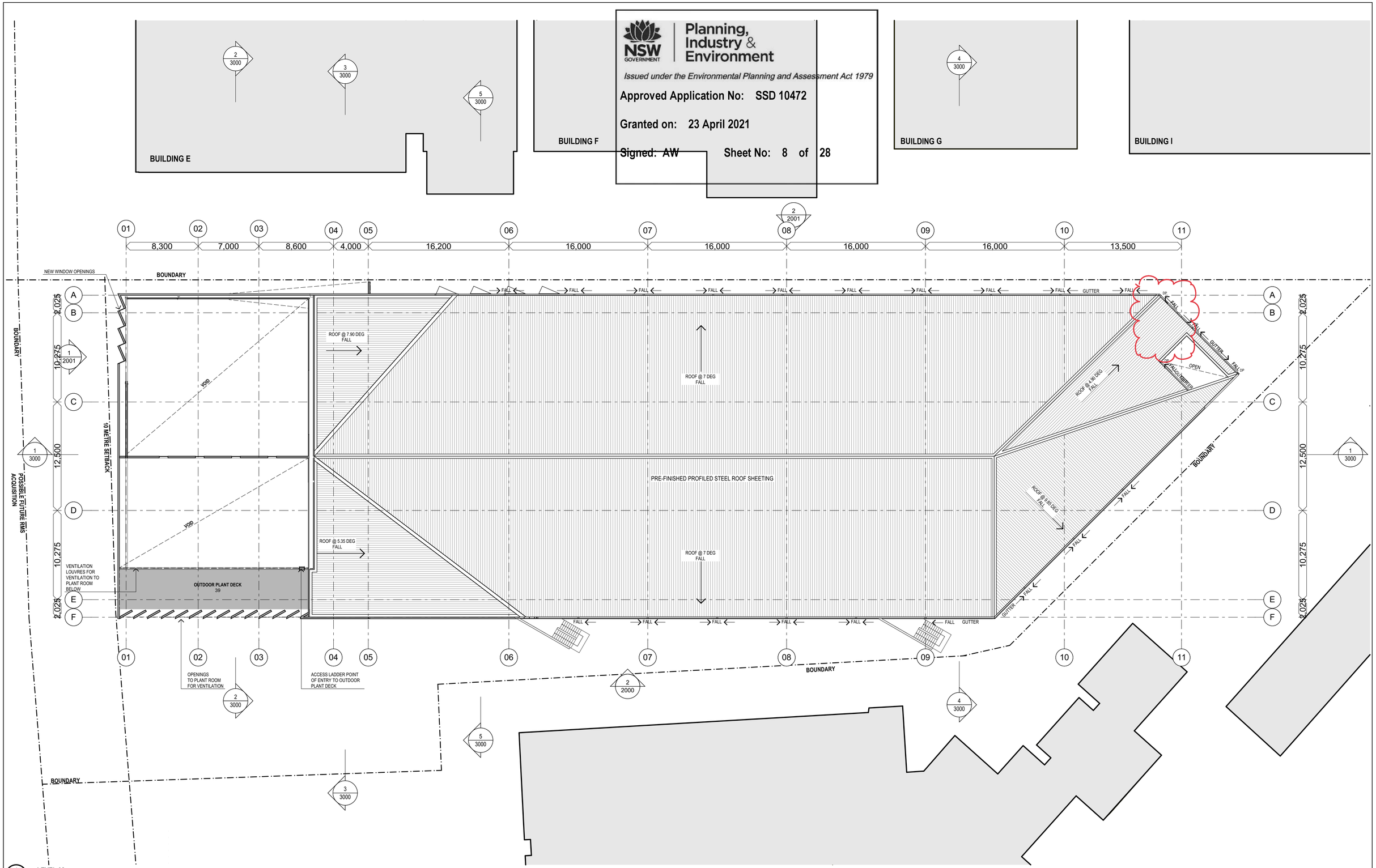
REVIEW	DIRECTOR SIGNATURE	DATE
TENDER		
CONST		

TITLE
LEVEL 01 FLOOR PLAN

DRAWN	PLOT DATE	SCALE @A1	SCALE @A3
BC / BG	19/01/2021	1:200	1:400
CHECKED	PROJECT NO.	DRAWING NO.	REV. NO
AN	18-14	A - D A - 1 4 0 2	15



1 LEVEL 02
1:200

REV	DESCRIPTION	DATE
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02	OPTION 3E - Preliminary Issue	23/01/19
03	OPTION 3F - Costing Issue	13/02/19
04	OPTION 3F - Costing Issue Amended	15/02/19
05	OPTION 3F - Amended issue for consultant information	05/03/19
06	OPTION 3G	03/04/19
07	OPTION 05 - Issue For Information	28/01/20
08	OPTION 06	04/05/20
09	PRELIMINARY SSDA DRAWING ISSUE	15/05/2020
10	Updated for SSDA Submission	10/07/2020
11	SSDA ISSUE	07/08/2020
12	UPDATED SSDA ISSUE	17/12/2020

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TITLE
LEVEL 02 FLOOR PLAN

REVIEW	DIRECTOR SIGNATURE	DATE
TENDER		
CONST		

DRAWN	PLOT DATE	SCALE @A1	SCALE @A3
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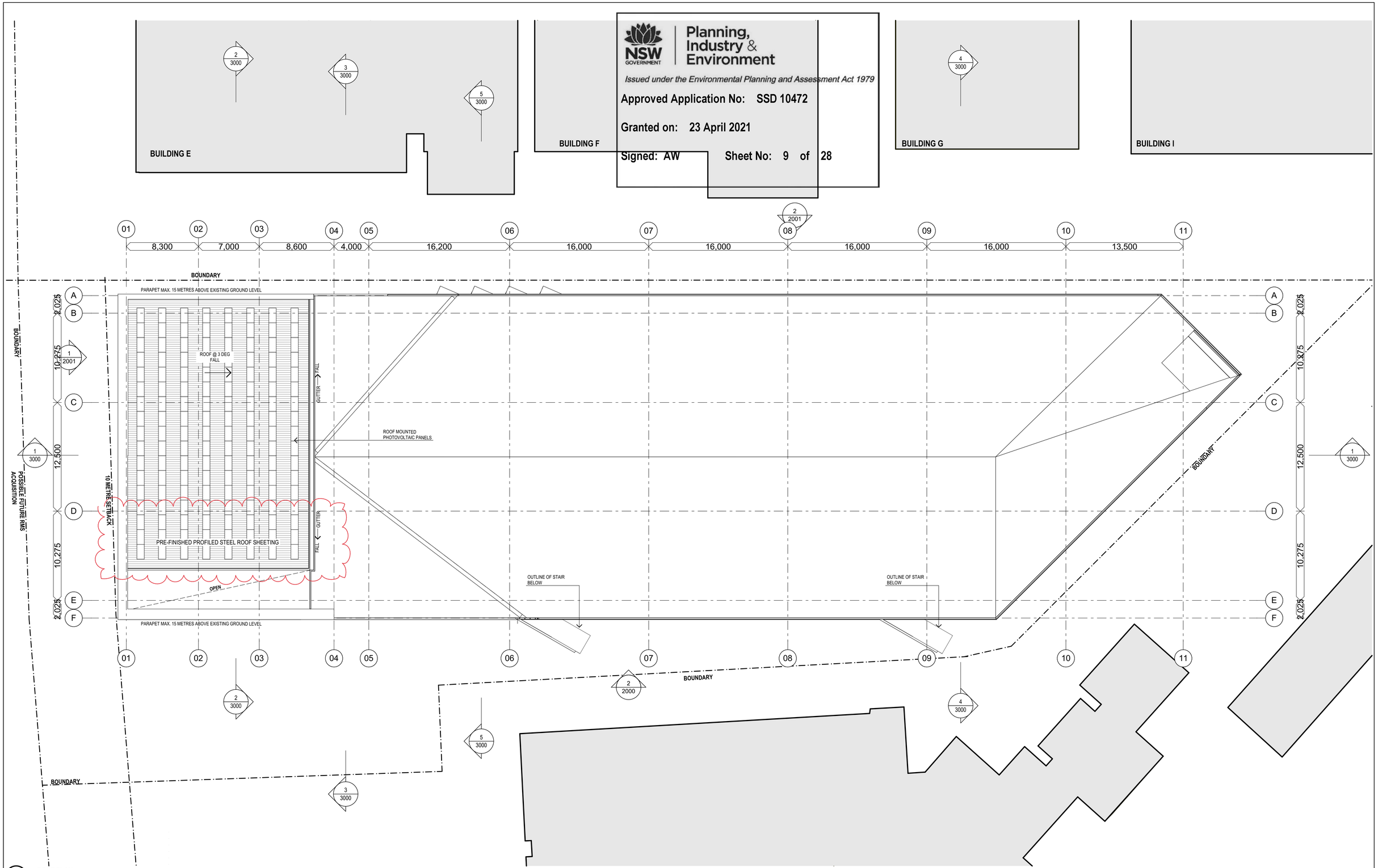
CHECKED	PROJECT NO.	DRAWING NO.	REV. NO
AN	18-14	A-DA-1403	12



1 ROOF PLAN
1:200

REV	DESCRIPTION	DATE
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02	OPTION 06	04/05/20
03	PRELIMINARY SSDA DRAWING ISSUE	15/05/2020
04	Updated for SSDA Submission	10/07/2020
05	SSDA ISSUE	07/08/2020
06	UPDATED SSDA ISSUE	17/12/2020

REV DESCRIPTION DATE

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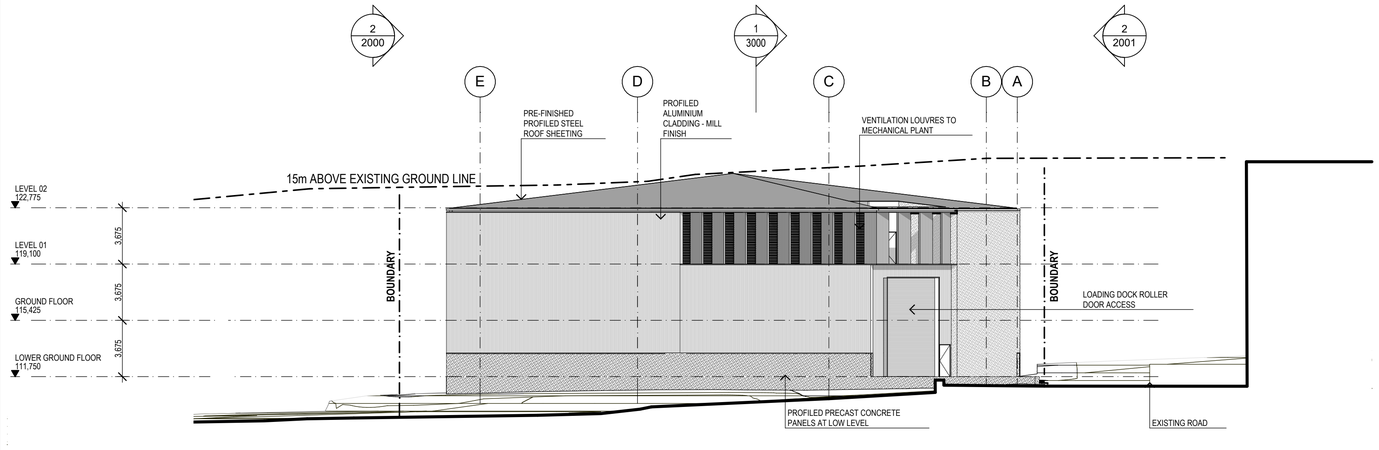
REVIEW	DIRECTOR SIGNATURE	DATE
TENDER		
CONST		

TITLE
ROOF PLAN

DRAWN	PLOT DATE	SCALE @A1	SCALE @A3
BC / BG	19/01/2021	1:200	
CHECKED	PROJECT NO.	DRAWING NO.	REV. NO
AN	18-14	A-DA-1404	06



1 NORTH ELEVATION
1:200

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Approved Application No: SSD 10472

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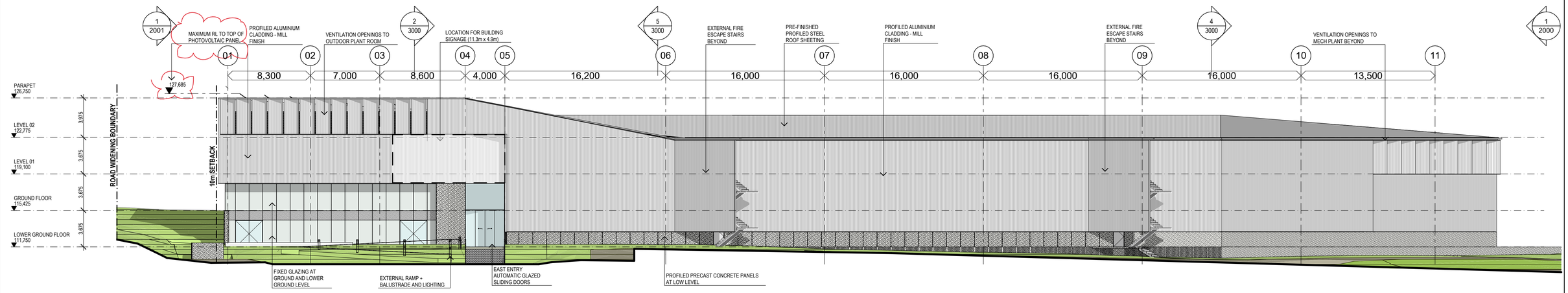

2 EAST ELEVATION
1:200

REV	DESCRIPTION	DATE
01	OPTION 3F - Costing Issue	13/02/19
02	OPTION 3F - Costing Issue Amended	15/02/19
03	OPTION 3F - Amended issue for consultant information	05/03/19
04	OPTION 3G	03/04/19
05	OPTION 05 - Issue For Information	28/01/20
06	OPTION 06	04/05/20
07	PRELIMINARY SSDA DRAWING ISSUE	15/05/2020
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09	SSDA ISSUE	07/08/2020
10	UPDATED SSDA ISSUE	17/12/2020
11	UPDATED SSDA ISSUE	25/02/2021
12	UPDATED SSDA ISSUE	09/03/2021

TITLE
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TENDER		
CONST		

TITLE
ELEVATIONS

DRAWN	PLOT DATE	SCALE @A1	SCALE @A3
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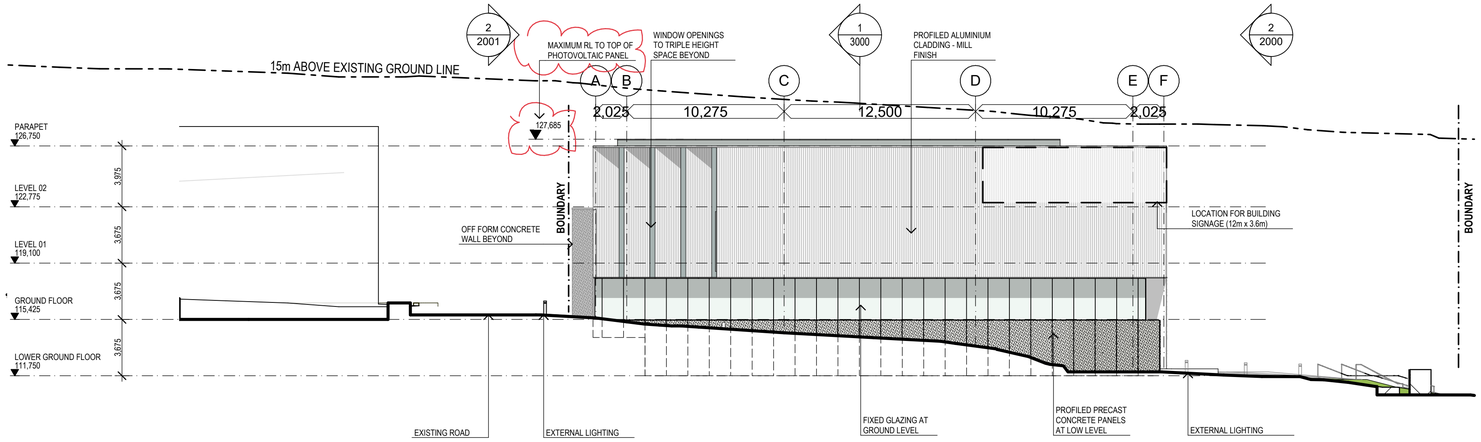

1 **SOUTH ELEVATION - SHOWGROUND ROAD**
1:200

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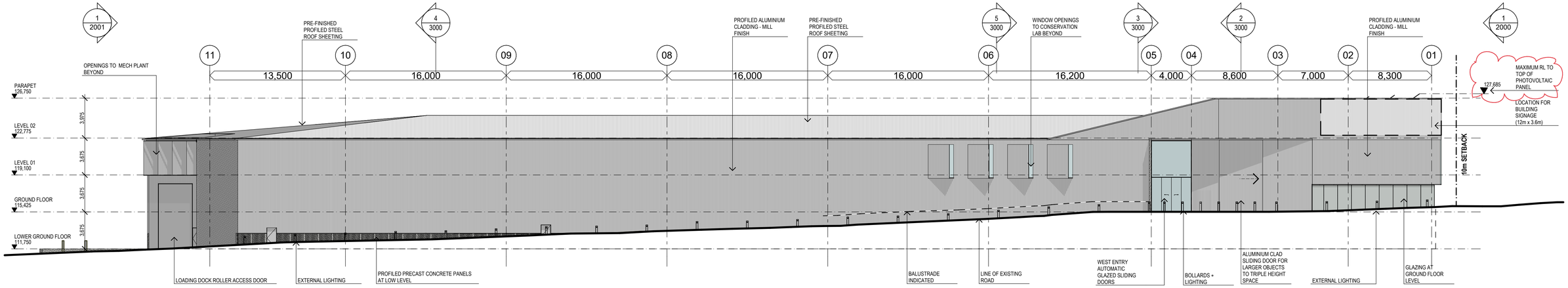

2 **WEST ELEVATION**
1:200

REV	DESCRIPTION	DATE
01	OPTION 3F - Costing Issue	13/02/19
02	OPTION 3F - Costing Issue Amended	15/02/19
03	OPTION 3F - Amended issue for consultant information	05/03/19
04	OPTION 3G	03/04/19
05	OPTION 05 - Issue For Information	28/01/20
06	OPTION 06	04/05/20
07	PRELIMINARY SSDA DRAWING ISSUE	15/05/2020
08	Updated for SSDA Submission	10/07/2020
09	SSDA ISSUE	07/08/2020
10	UPDATED SSDA ISSUE	17/12/2020
11	UPDATED SSDA ISSUE	25/02/2021
12	UPDATED SSDA ISSUE	09/03/2021

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REVIEW	DIRECTOR SIGNATURE	DATE
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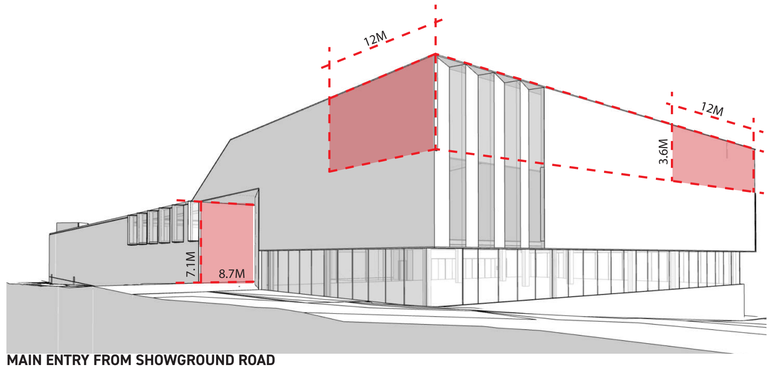
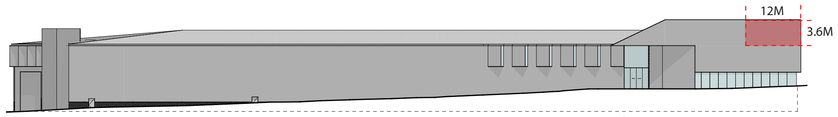
CONST		

TITLE
ELEVATIONS

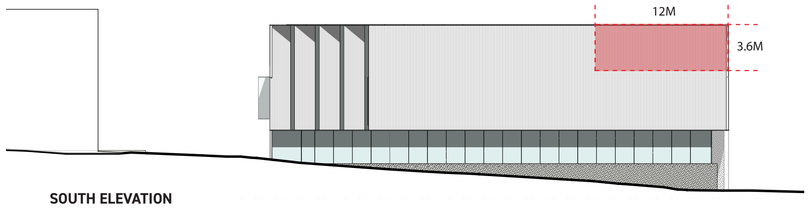
DRAWN	PLOT DATE	SCALE @A1	SCALE @A3
BC / BG	9/03/2021	1:200	
CHECKED	PROJECT NO.	DRAWING NO.	REV. NO
AN	18-14	A-DA-2001	12



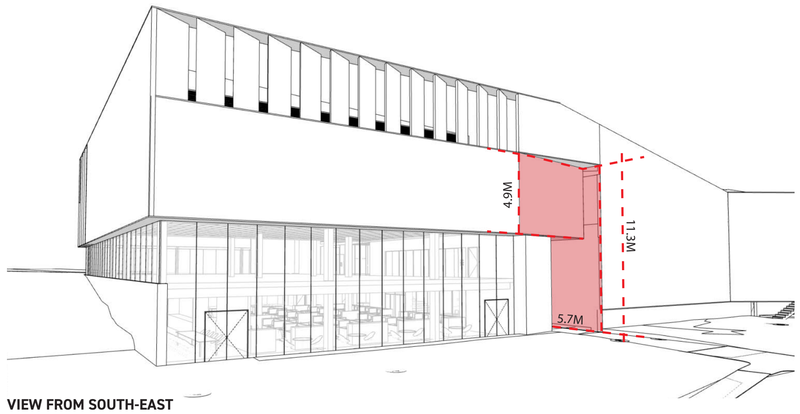
MAIN ENTRY FROM SHOWGROUND ROAD



WEST ELEVATION



SOUTH ELEVATION



VIEW FROM SOUTH-EAST

EAST ELEVATION

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Approved Application No: SSD 10472

Granted on: 23 April 2021

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REV	DESCRIPTION	DATE
01	UPDATED SSDA ISSUE	24/03/2021

REV	DESCRIPTION	DATE

TITLE
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REVIEW	DIRECTOR SIGNATURE	DATE
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CONST		

TITLE
SIGNAGE ZONES

DRAWN	PLOT DATE	SCALE @A1	SCALE @A3
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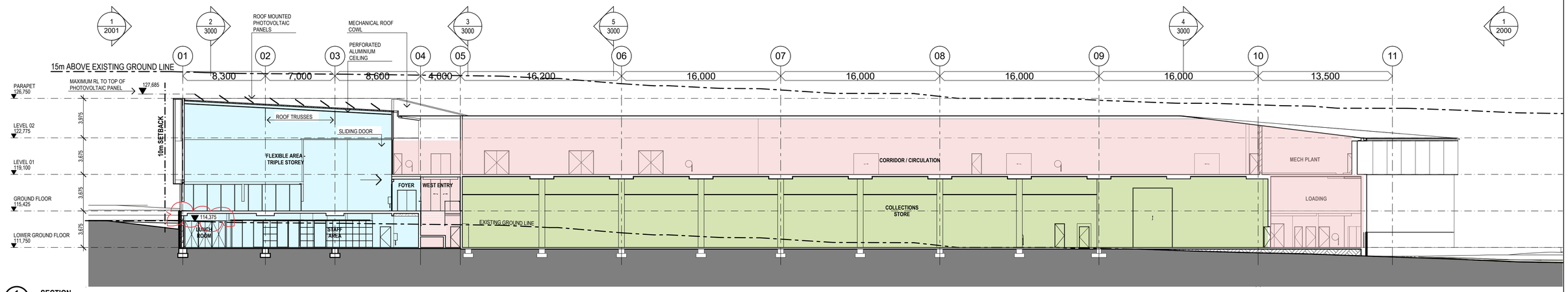

1 SECTION
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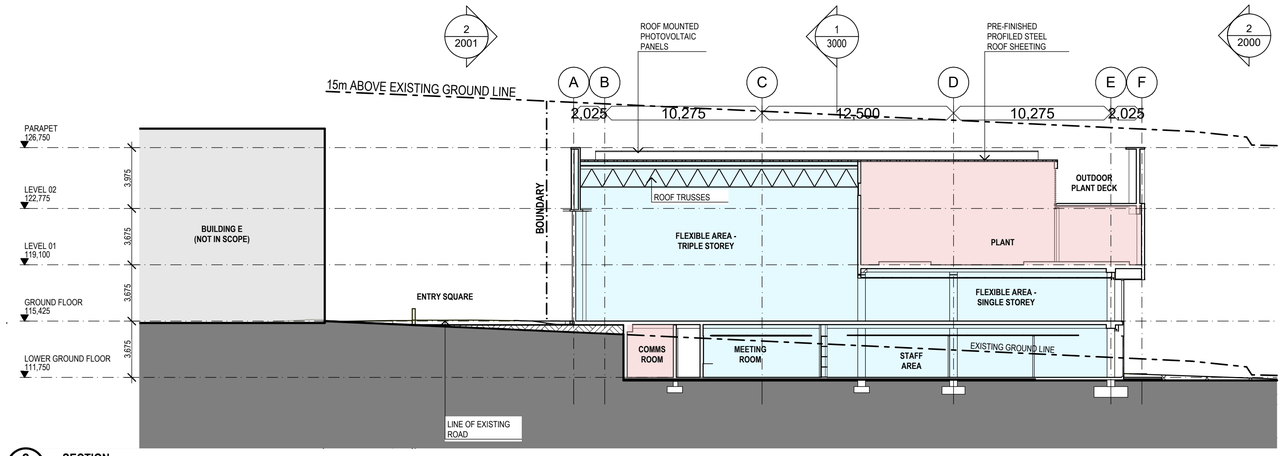

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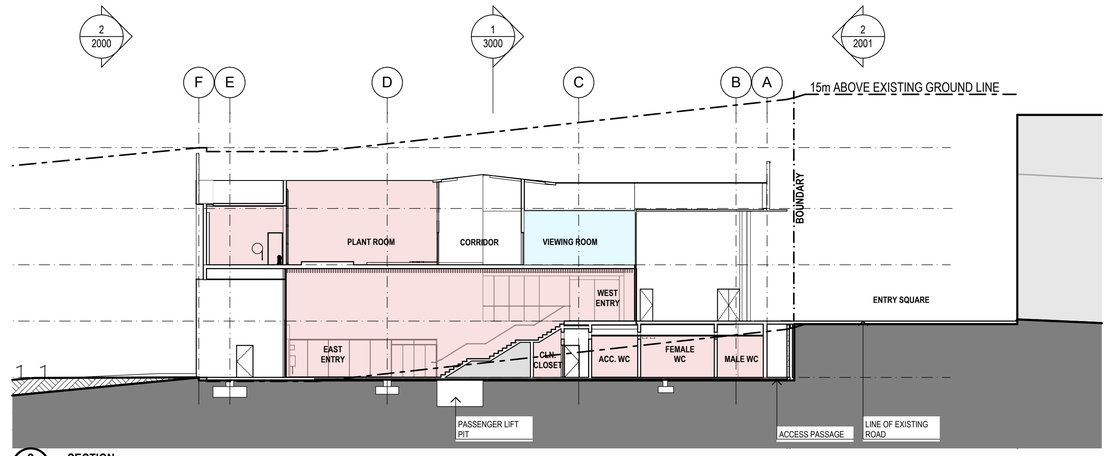

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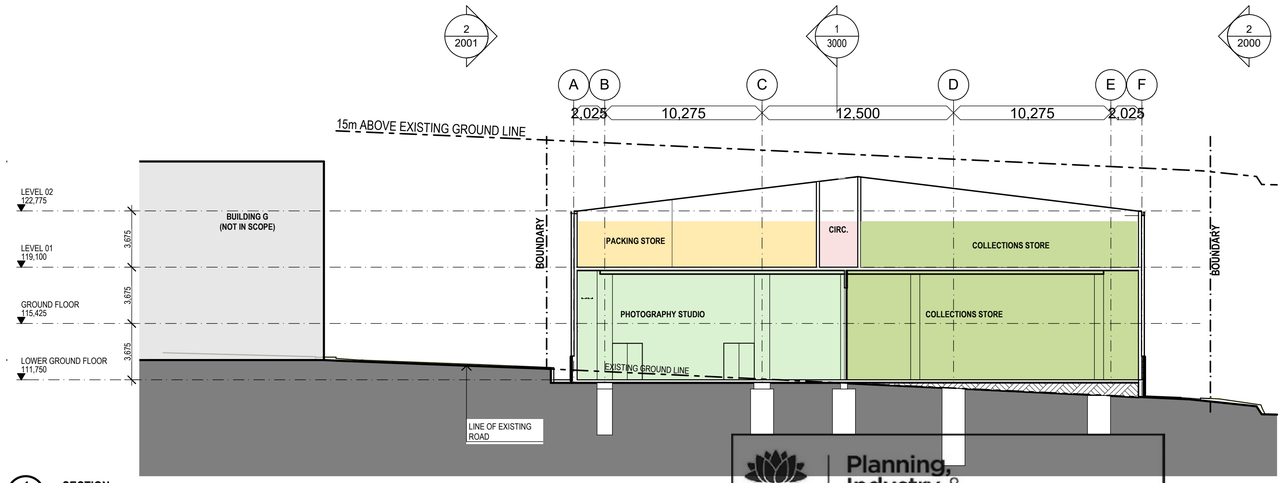
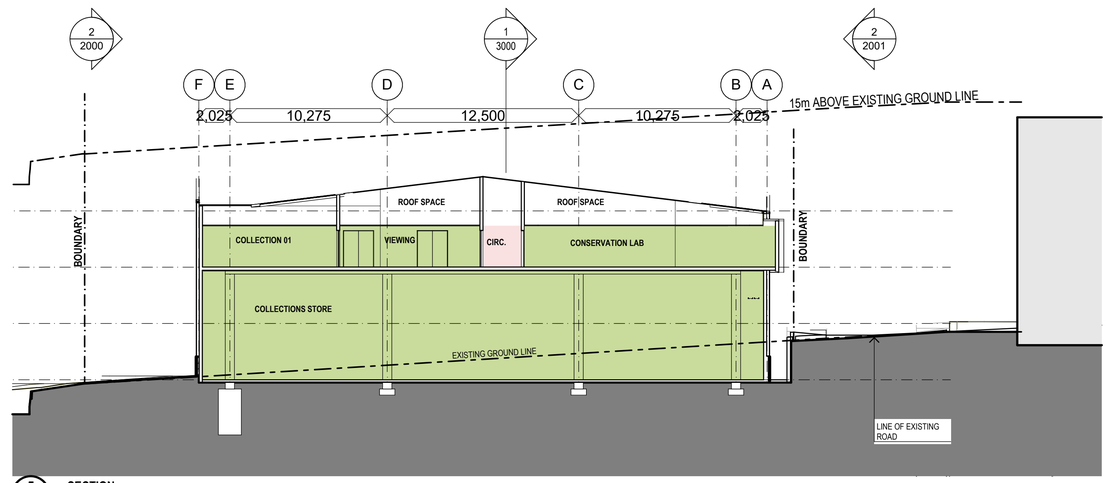


4 SECTION
1:200



5 SECTION

REV	DESCRIPTION	DATE	REV	DESCRIPTION	DATE
01	OPTION 3E - Preliminary Issue	23/01/19	12	UPDATED SSDA ISSUE	17/12/2020
02	OPTION 3F - Costing Issue	13/02/19	13	UPDATED SSDA ISSUE	26/02/2021
03	OPTION 3F - Costing Issue Amended	15/02/19	14	UPDATED SSDA ISSUE	09/03/2021
04	OPTION 3F - Amended issue for consultant information	05/03/19	15	UPDATED SSDA ISSUE	24/03/2021
05	OPTION 3G	03/04/19			
06	OPTION 05 - Issue For Information	28/01/20			
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08	PRELIMINARY SSDA DRAWING ISSUE	15/05/2020			
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11	SSDA ISSUE	07/08/2020			

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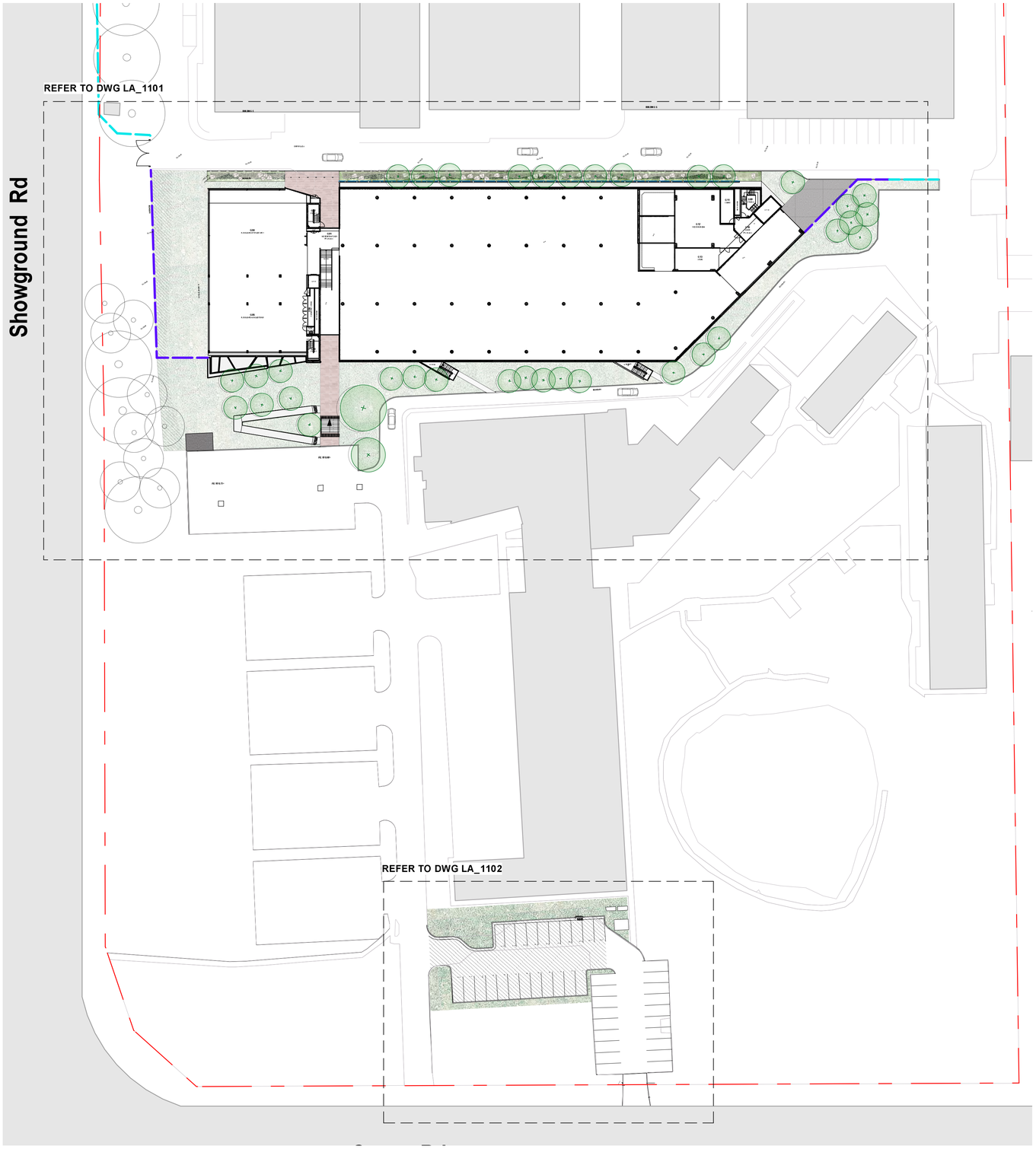
REVIEW	DIRECTOR SIGNATURE	DATE
TENDER		
CONST		

TITLE
SECTIONS

DRAWN	PLOT DATE	SCALE @A1	SCALE @A3
BC / BG	24/03/2021	1:200	
CHECKED	PROJECT NO.	DRAWING NO.	REV. NO
AN	18-14	A-DA-3000	15



DRAWING LIST

Sheet No.	Sheet Name	Sheet Size	Rev. No.	Rev. Date
LA_1100	COVER SHEET & LEGEND	A1	C	02/02/21
LA_1101	LANDSCAPE PLAN	A1	D	02/02/21
LA_1102	LANDSCAPE PLAN - TAFE CAR PARK	A1	B	05/08/20
LA_1103	TREE REMOVAL PLAN	A1	B	05/08/20
LA_1104	TREE PROTECTION ZONE PLAN	A1	A	02/02/21
LA_3000	LANDSCAPE SECTION	A1	B	05/08/20

LEGEND

BUILDING J SITE BOUNDARY

TN XXX — **TREE NUMBER** REFER TO ARBORIST REPORT FOR FURTHER INFORMATION

EXISTING TREE RETAIN AND PROTECT

EXISTING TREE - UNSURVEYED RETAIN AND PROTECT

EXISTING TREE TO BE REMOVED

TREE PROTECTION ZONE RETAIN AND PROTECT

NOTES:
PROJECT ARBORIST TO REVIEW DESIGN AND CONFIRM EXTENT OF TREE REMOVAL AND RETENTION.

REFER TO THE ARBORIST REPORT BY MACKAY TREE MANAGEMENT

SOFTWORKS

PROPOSED TREE SPECIES TO BE CONFIRMED - REFER TO PLANTING PALETTE

PROPOSED MASS PLANTING SITE WIDE

EXISTING UNDERSTOREY PLANTING TO BE PROTECTED & INTEGRATED WITH NEW PLANTING FOLLOWING TREE REMOVAL / CONSTRUCTION

PROPOSED WSUD WESTERNEDGE OF BUILDING J

HARDWORKS

CONCRETE FEATURE PATH PEDESTRIAN LINK THROUGH BUILDING J *FUTURE INTERPRETIVE ART TBC

HARDWOOD DECKING STAFF BREAKOUT SPACE

BRUSHED CONCRETE SURFACE - DARK LOADING DOCK / SUBSTATION

BRUSHED CONCRETE SURFACE - LIGHT ACCESS PATH

FIXTURES & FURNITURE

STAINLESS STEEL TACTILE INDICATORS WESTERNACCESS ROAD | STEPS

PRECAST CONCRETE STEP UNIT 300mm TREAD x 150mm RISE | CONTRASTING NOSING STRIP

STAINLESS STEEL HANDRAIL TO FUTURE DETAIL

CONCRETE SEATING EDGE TO STAFF BREAKOUT SPACE

BALUSTRADE ALONG WESTERN EDGE OF ACCESS PATH | TO ARCHITECT'S DETAIL

FIXTURES & FURNITURE (continued)

EXISTING FENCE

PROPOSED FENCE TO MATCH EXISTING ENGINEER'S SPECIFICATION

GATE

LIGHTING

LIGHTING BOLLARD

TREE UPLIGHTERS

POLE MOUNTED LIGHT

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DIAL BEFORE YOU DIG www.1100.com.au — Services shown on this drawing are approximate only. The exact location is to be confirmed on site by contractor prior to commencement of work.

These coloured drawings shall be read in digital format or colour hardcopy.

These drawings shall be read in conjunction with all relevant information (not limited to legends, schedules, specifications).

These drawings shall be read in conjunction with any Engineers, Architects or other consultant information (not limited to drawings, legends, schedules, specifications).

Check all dimensions and site conditions prior to commencement of any work or procurement or fabrication of any services, materials, fittings or equipment.

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NOTES / KEY PLAN

DATE	REV	AMENDMENTS
8/5/20	A	SSDA ISSUE
14/01/21	B	SSDA ISSUE
2/2/21	C	SSDA ISSUE

ARCHITECTS
lahznimmo architects

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Australia
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www.aspect-studios.com
sydney@aspect-studios.com
ABN 11 120 219 561

PROJECT S19107
MUSEUM DISCOVERY CENTRE | BUILDING J SSDA

CLIENT
NSW GOVERNMENT | Create NSW Arts, Screen & Culture

NORTH

SCALE A1 | SCALE A3: 1:250 1:500

DRAWN: JT | SB CHECKED: SB | JK

0 5 10 20M

Do not scale - use dimensions & callouts on drawings & schedules. Refer discrepancies to Landscape Architect for clarification.

STATUS
FOR DEVELOPMENT APPLICATION
NOT FOR CONSTRUCTION

DRAWING
COVER SHEET & LEGEND

DRAWING NO. LA_1000

REVISION C

X:\0000\005_PRODUCTION\01_Phase\01_CAD\Package Files\

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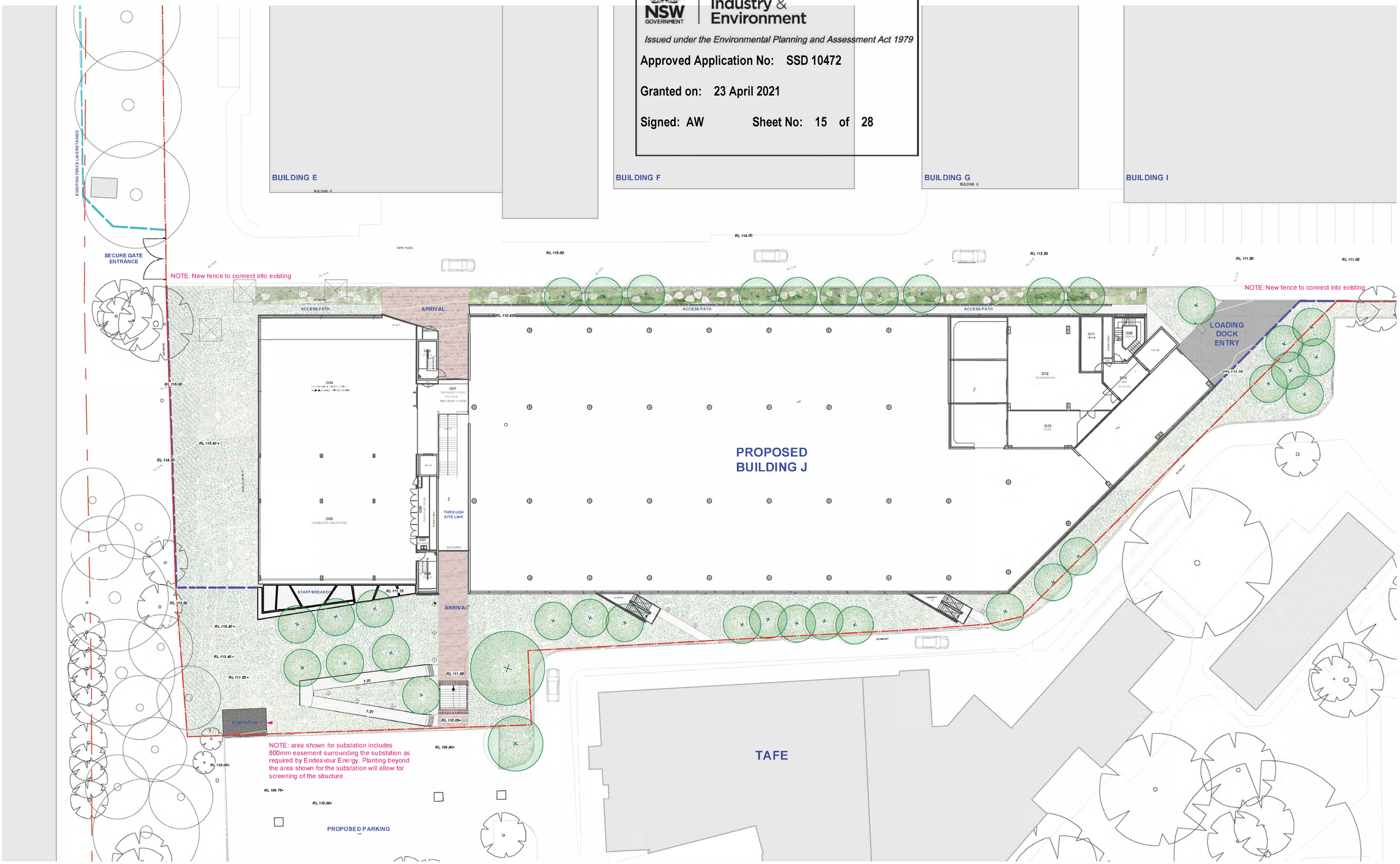

WARNING

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NOTES / KEY PLAN

DATE	REV	AMENDMENTS
7/30/20	A	DRAFT SSDA ISSUE
8/7/20	B	SSDA ISSUE
14/01/21	C	SSDA ISSUE
2/2/21	D	SSDA ISSUE

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PROJECT S19107

MUSEUM DISCOVERY CENTRE | BUILDING J SSDA

CLIENT

NSW GOVERNMENT Create NSW Arts, Screen & Culture

NORTH

SCALE A1	SCALE A3	DRAWN	CHECKED
1:250	1:500	JT	SB | LP

0 5 10 20M

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STATUS

FOR DEVELOPMENT APPLICATION

NOT FOR CONSTRUCTION

DRAWING

LANDSCAPE PLAN

DRAWING NO. LA_1101

REVISION D

X00001\05_PRODUCTION\01_Phase\01_CAD\Package Files\

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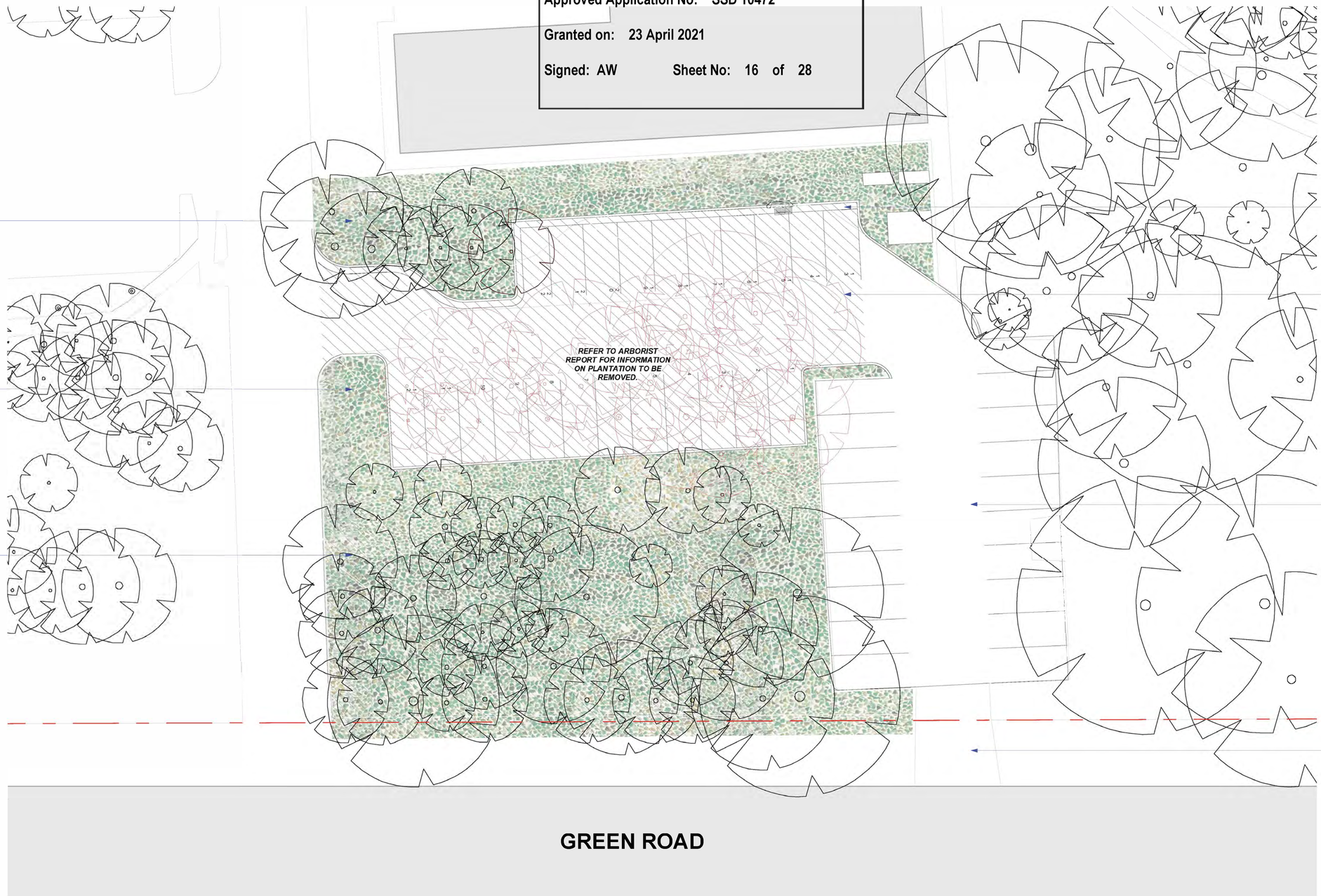
Approved Application No: SSD 10472

Granted on: 23 April 2021

Signed: AW Sheet No: 16 of 28



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8/7/20	B	SSDA ISSUE

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MUSEUM DISCOVERY CENTRE | BUILDING J SSDA

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SCALE A1	SCALE A3	DRAWN	CHECKED
1:150	1:300	JT	SB | LP

0 5 10 20M

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STATUS

FOR DEVELOPMENT APPLICATION

NOT FOR CONSTRUCTION

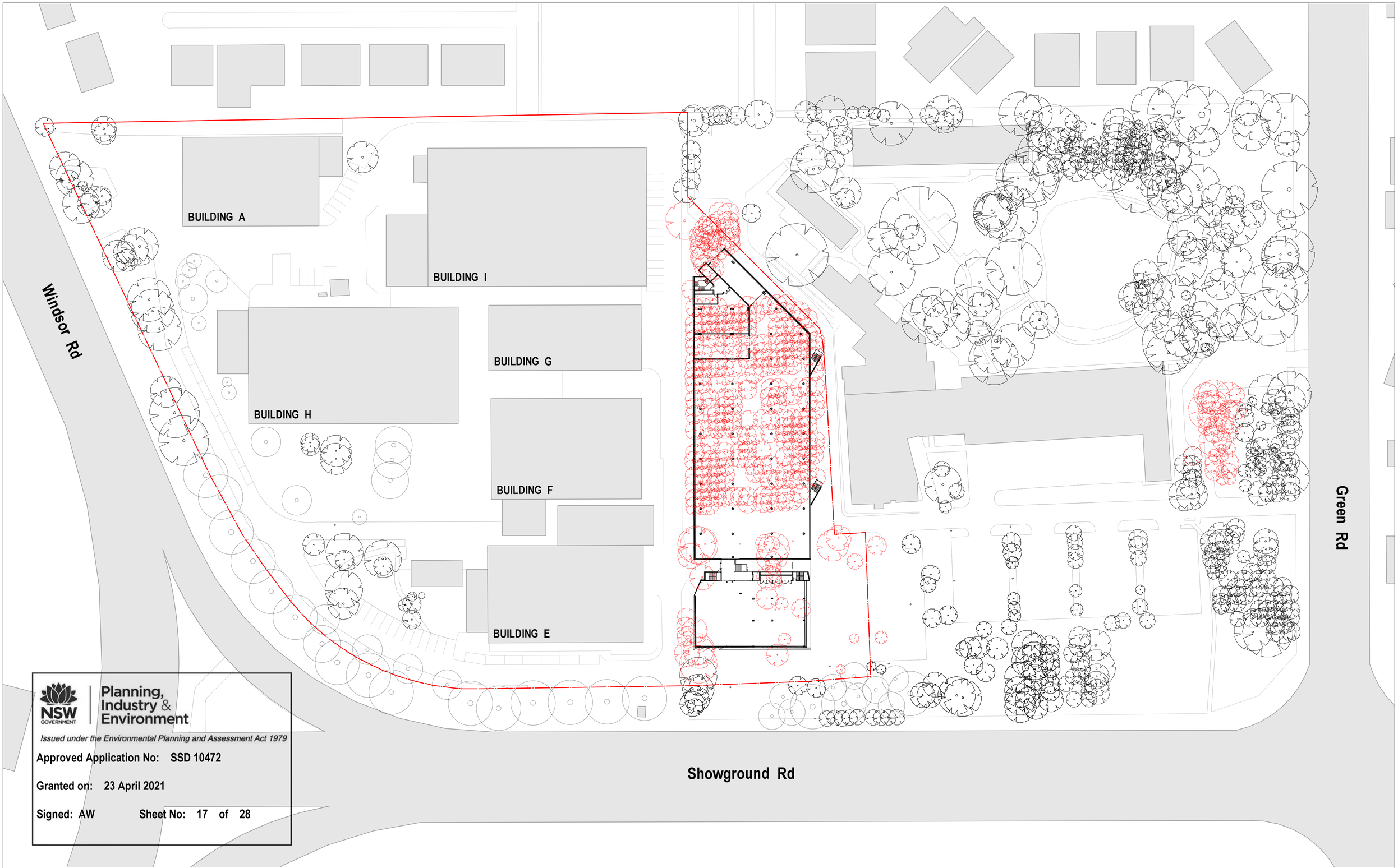
DRAWING

LANDSCAPE PLAN
TAFE CAR PARK

DRAWING NO. LA_1102

REVISION B

X0000\05_PRODUCTION\01_Phase\01_CAD\Package Files\



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Approved Application No: SSD 10472

Granted on: 23 April 2021

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NOTES / KEY PLAN

DATE	REV	AMENDMENTS
7/30/20	A	DRAFT SSDA ISSUE
8/7/20	B	SITE BOUNDARY UPDATE

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NORTH

SCALE A1 1:500 **SCALE A3** 1:1000

0 10 20 40M

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DRAWN JT **CHECKED** SB | LP

STATUS

FOR DEVELOPMENT APPLICATION

NOT FOR CONSTRUCTION

DRAWING

TREE REMOVAL PLAN

DRAWING NO. LA_1103

REVISION B

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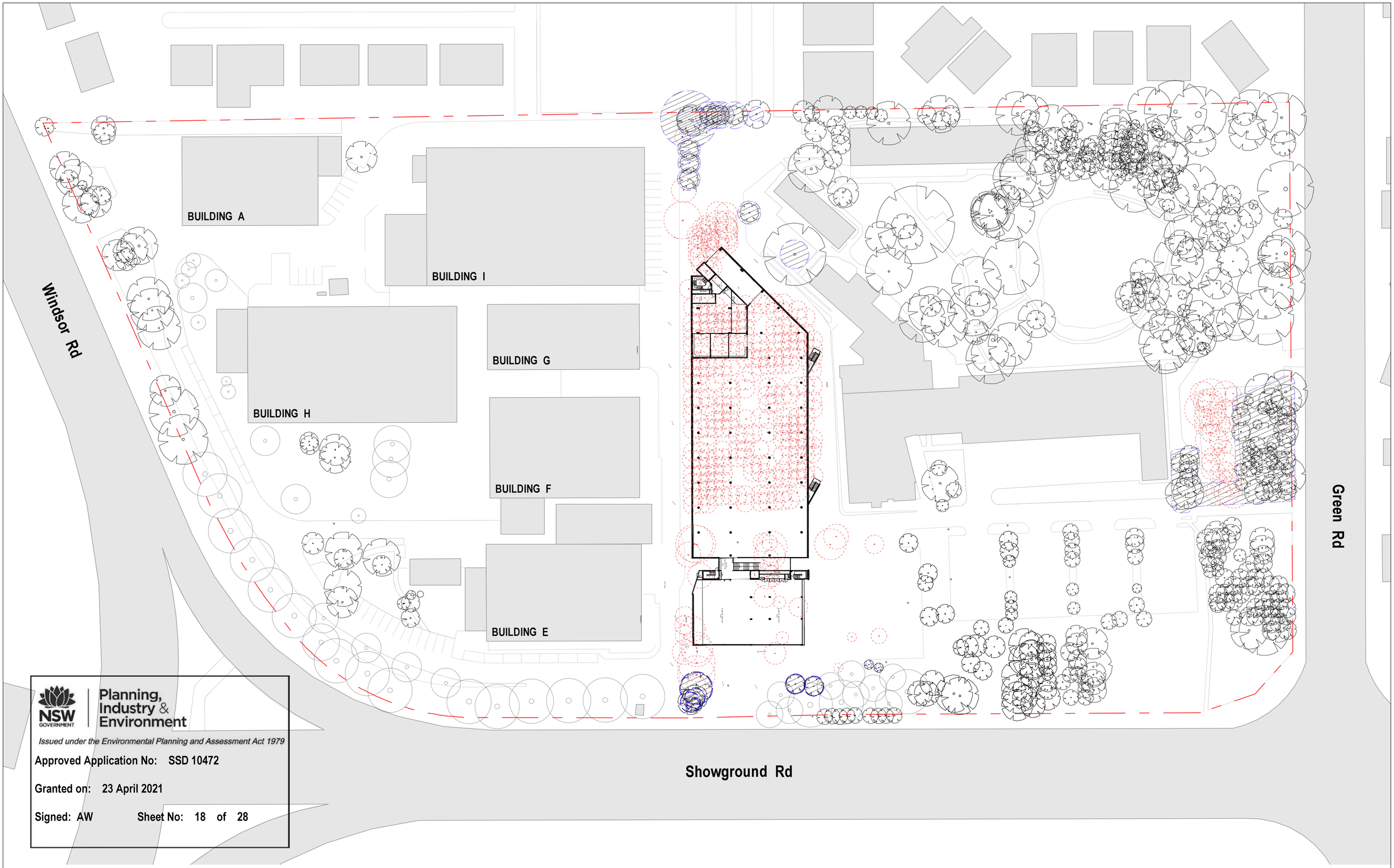

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Approved Application No: SSD 10472

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NOTES / KEY PLAN

DATE	REV	AMENDMENTS
2/2/21	A	SSDA ISSUE

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PROJECT S19107

MUSEUM DISCOVERY CENTRE | BUILDING J SSDA

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NORTH

SCALE A1 1:500 1:1000 | **SCALE A3**

0 10 20 40M

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STATUS

FOR DEVELOPMENT APPLICATION

NOT FOR CONSTRUCTION

DRAWING

TREE PROTECTION ZONE PLAN

DRAWING NO. LA_1104

REVISION A

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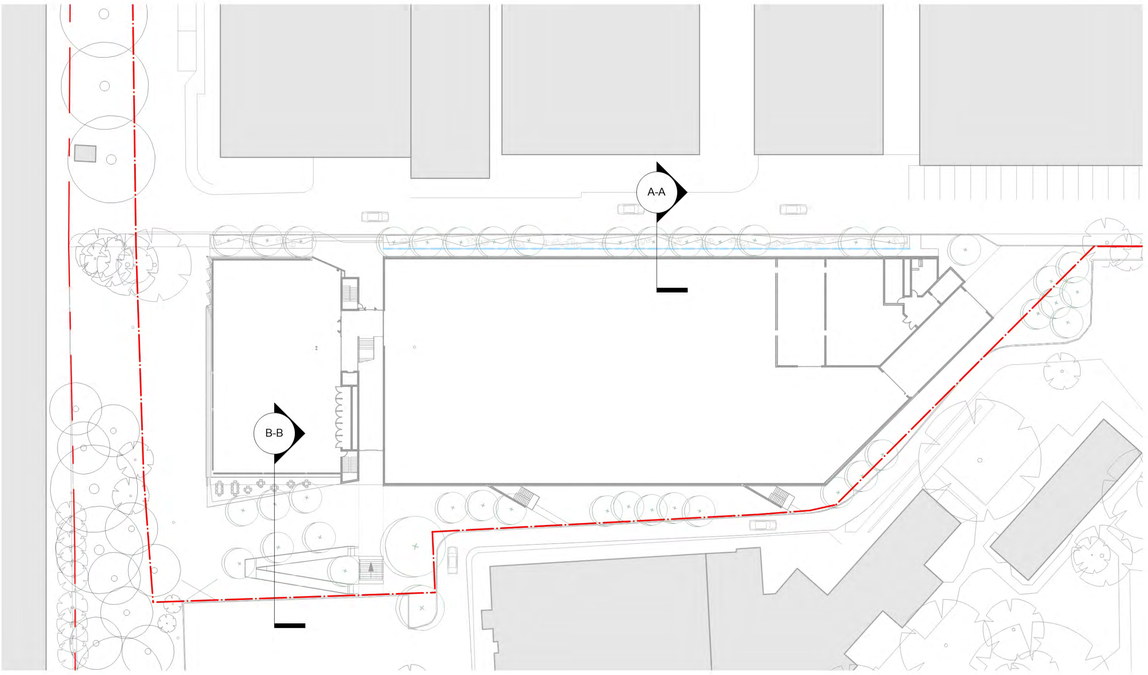

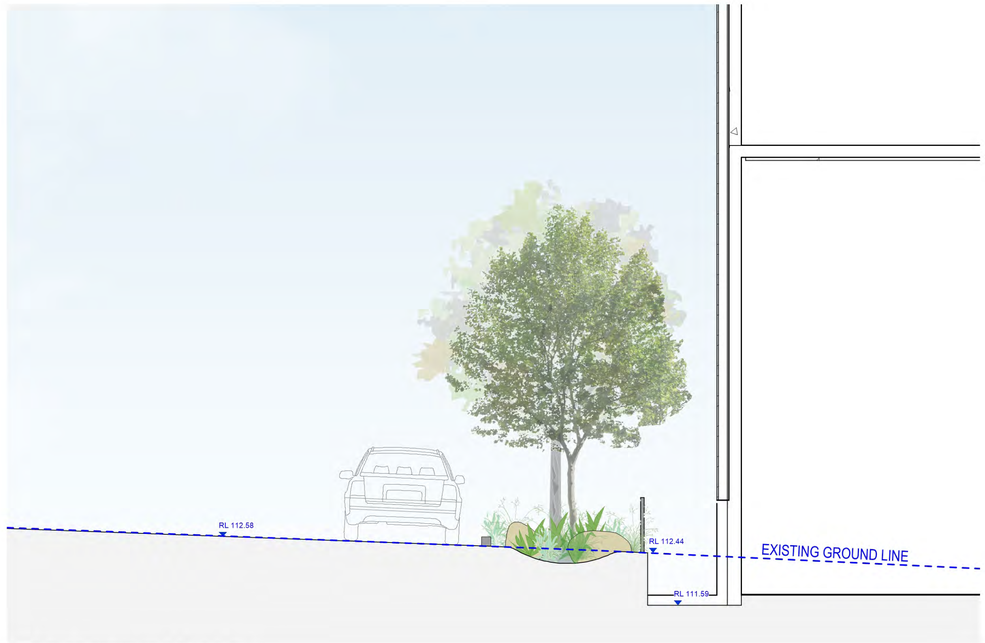

A-A MDC ACCESS ROAD | WSUD
1:50 @ A1

B-B STAFF BREAKOUT SPACE | RAMP
1:50 @ A1

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DATE	REV	AMENDMENTS
7/31/20	A	DRAFT SSDA ISSUE
8/7/20	B	SSDA ISSUE

ARCHITECTS

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PROJECT S19107
MUSEUM DISCOVERY CENTRE | BUILDING J SSDA

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NORTH

SCALE A1	SCALE A3	DRAWN	CHECKED
1:50	1:100	JT | SB	SB | JK

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STATUS
FOR DEVELOPMENT APPLICATION
NOT FOR CONSTRUCTION

DRAWING
LANDSCAPE SECTIONS

DRAWING NO. LA_3000 **REVISION** B

X00000\05_PRODUCTION\01_Phase\01_CAD\Package Files\

POWERHOUSE MUSEUM DISCOVERY CENTRE

172 SHOWGROUND RD, CASTLE HILL NSW 2154
CIVIL ENGINEERING WORKS PACKAGE

SOURCE : NEARMAP.COM.AU (©2018)

DRAWING SCHEDULE

DRG No.	DRAWING TITLE
DA1.01	COVERSHEET, DRAWING SCHEDULE AND LOCALITY PLAN
DA1.11	GENERAL ARRANGEMENT PLAN
DA2.01	CONCEPT SEDIMENT AND EROSION CONTROL PLAN
DA2.11	SEDIMENT AND EROSION CONTROL DETAILS
DA2.21	BULK EARTHWORKS PLAN
DA3.01	SITEWORKS AND STORMWATER MANAGEMENT PLAN
DA3.02	SITEWORKS AND STORMWATER MANGEMENT PLAN - SHEET 2
DA3.11	CARPARK TURNING PATHS
DA4.01	OSD DETAILS - SHEET 1
DA4.02	OSD DETAILS - SHEET 2

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Approved Application No: SSD 10472

Granted on: 23 April 2021

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REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	ISSUED FOR SSDA COORDINATION	E.F		E.F	26.06.20
2	RE - ISSUED FOR SSDA COORDINATION	J.P		E.F	24.07.20
3	ISSUED FOR SSDA	J.P		E.F	14.01.21

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SCALE 1:1250 @ A1 (0 10 20 30 40 50 60m)

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

PROJECT: POWERHOUSE MUSEUM DISCOVERY CENTRE

DRAWING TITLE: COVERSHEET, DRAWING SCHEDULE AND LOCALITY PLAN

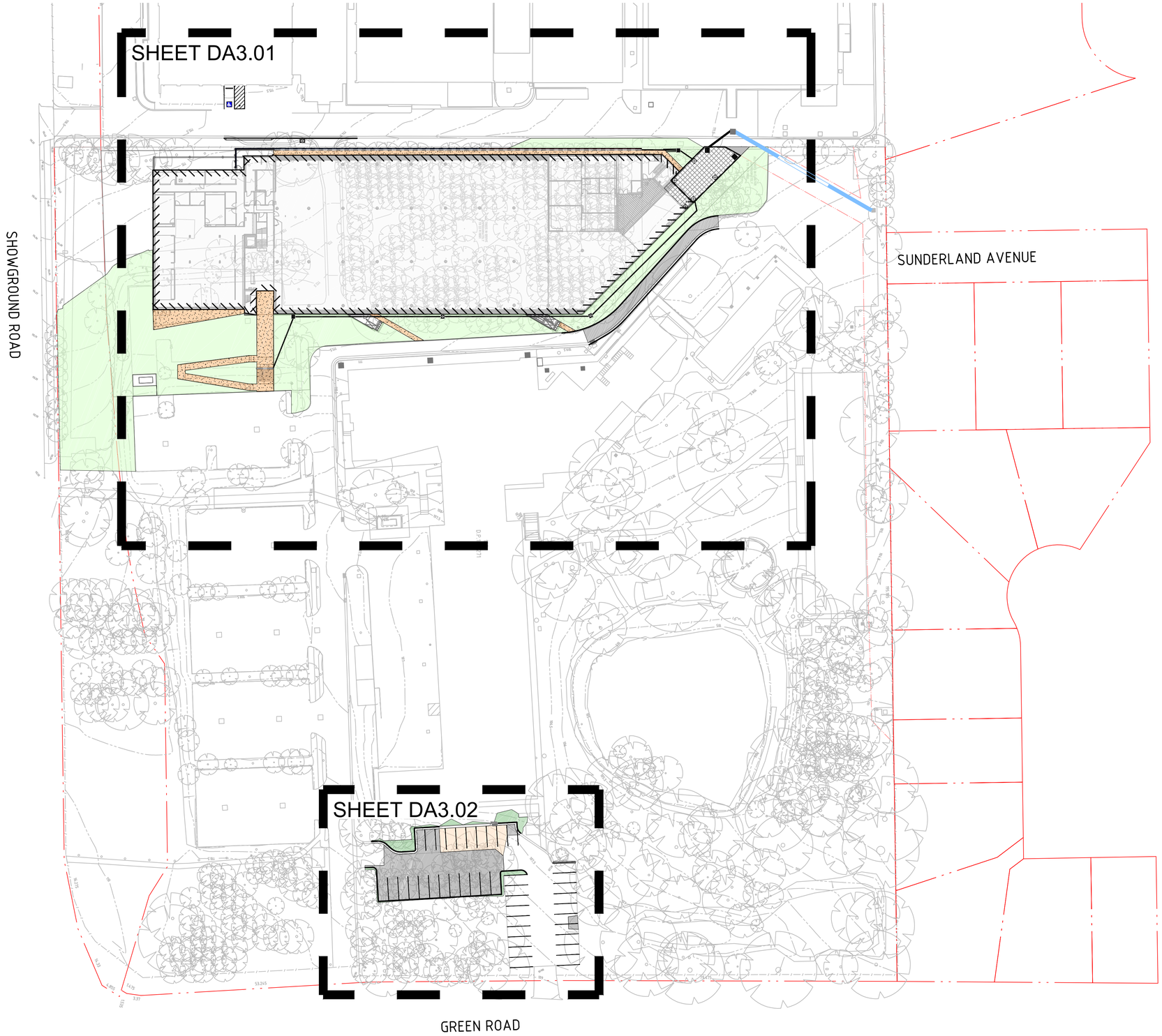
JOB NUMBER: 181569

DRAWING NUMBER: DA1.01 REVISION: 3

DRAWING SHEET SIZE = A1

DRAWN: J.PHILLIPS DESIGNED: E.FLACK JOB MANAGER: E.FLACK VERIFIER: -

Date : 14-7-21 11:51am Plotted By : jphillips Found : W:\#jobs\2018\181569 - Powerhouse Museum\D-Drawings\D-Northrop\C-CIVIL\2-CURRENT CAD FILES\SSDA\181569_DA101_COVERSHEET, DRAWING SCHEDULE AND LOCALITY PLAN.dwg



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SCALE 1:500@ A1 (0 5 10 15 20 25m)

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PROJECT: POWERHOUSE MUSEUM DISCOVERY CENTRE

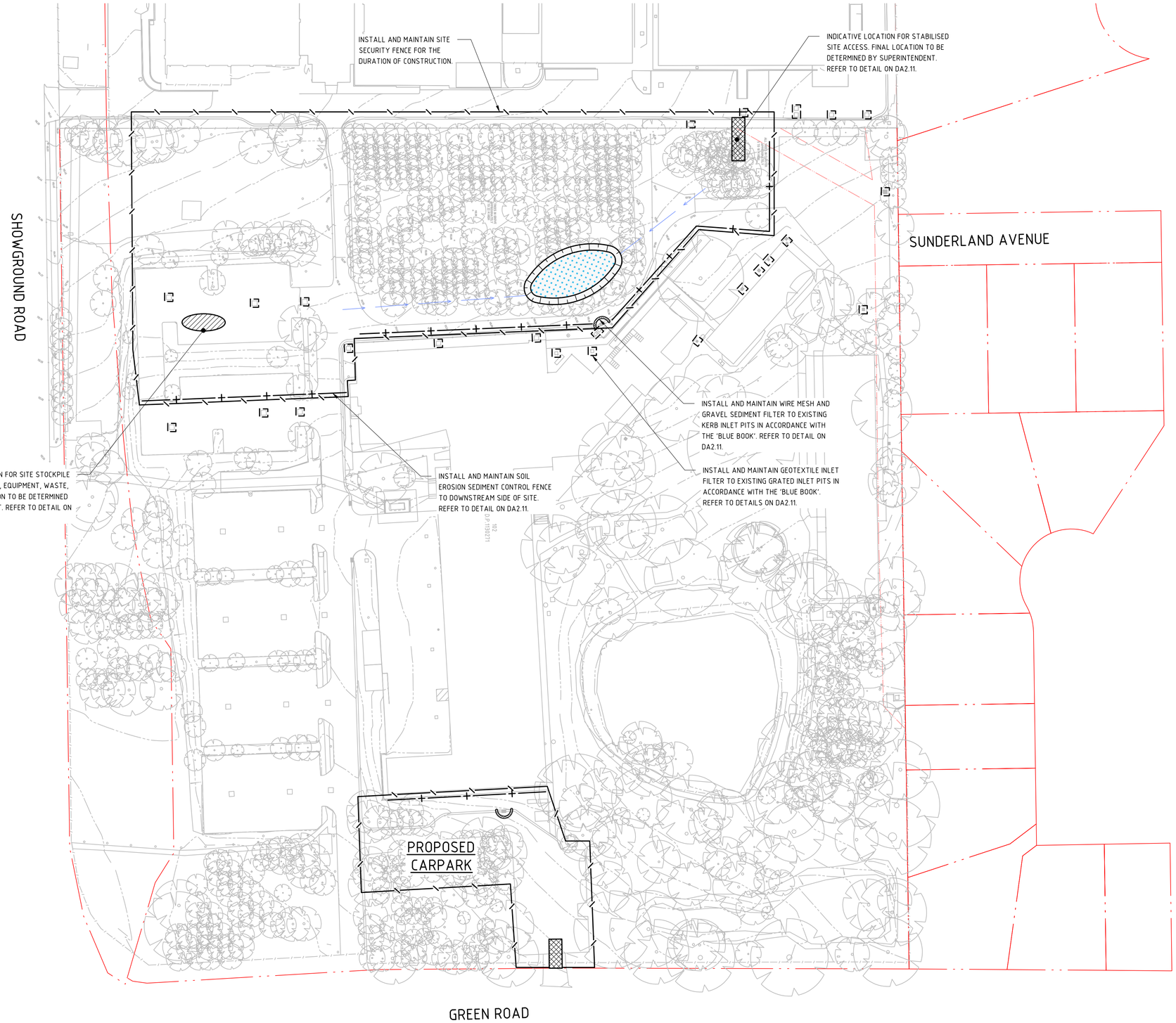
DRAWING TITLE: GENERAL ARRANGEMENT PLAN

JOB NUMBER: 181569

DRAWING NUMBER: DA1.11 REVISION: 3

DRAWING SHEET SIZE = A1

Date: 14-1-21 11:52am Plotted By: jphillips Found: W:\Mjobs\2018\181569 - Powerhouse Museum\D-Drawings\D-Northrop\C-CIVIL\2-CURRENT CAD FILES\SSDA\181569_DA111_GENERAL ARRANGEMENT PLAN.dwg



LEGEND

- PROPOSED 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

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'
6. SEDIMENT BASIN SIZING BASED ON 5 DAY, 85TH PERCENTILE DESIGN RAINFALL EVENT.

6.1. SEDIMENT BASIN CALCS

SOIL TYPE D

$V_{REQUIRED}$, V_{SB} = 14.5m³

$V_{PROVIDED}$ = 14.7m³

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PROJECT: POWERHOUSE MUSEUM DISCOVERY CENTRE

DRAWING TITLE: CONCEPT SEDIMENT AND EROSION CONTROL PLAN

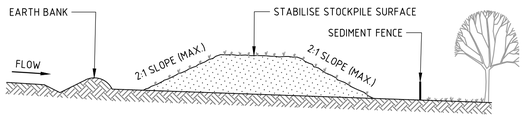
JOB NUMBER: 181569

DRAWING NUMBER: DA2.01 REVISION: 3

DRAWING SHEET SIZE = A1

DRAWN: J.PHILLIPS DESIGNED: E.FLACK JOB MANAGER: E.FLACK VERIFIER: -

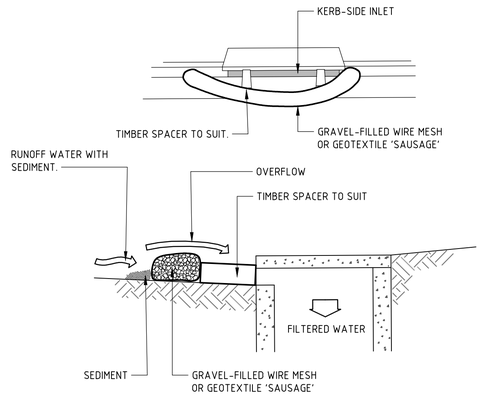
Date: 14-1-21 11:52am Plotted By: jphillips Found: W:\#jobs\2018\181569 - Powerhouse Museum\D-Drawings\D-Northrop\C-CIVIL\2-CURRENT CAD FILES\SSDA\181569_DA2.01_CONCEPT SEDIMENT AND EROSION CONTROL PLAN.dwg



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.

STOCKPILES (SD 4-1)

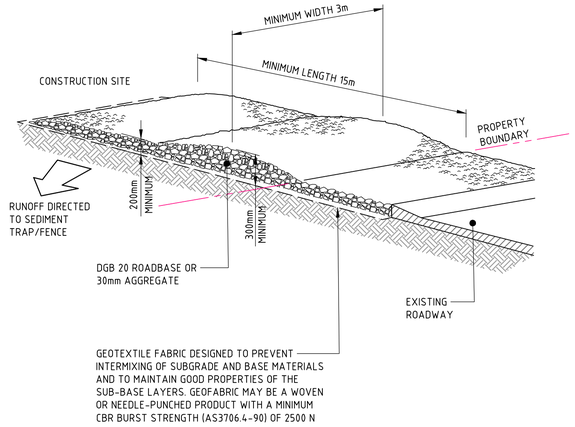


NOTE:THIS PRACTICE ONLY TO BE USED WHERE SPECIFIED IN APPROVED SWMP/ESCP.

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.

MESH AND GRAVEL INLET FILTER (SD 6-11)



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 HUMP IN THE STABILISED ACCESS TO DIVERT WATER TO THE SEDIMENT FENCE.

STABILISED SITE ACCESS (SD 6-14)

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Granted on: 23 April 2021

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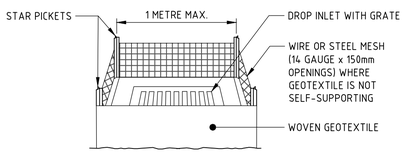
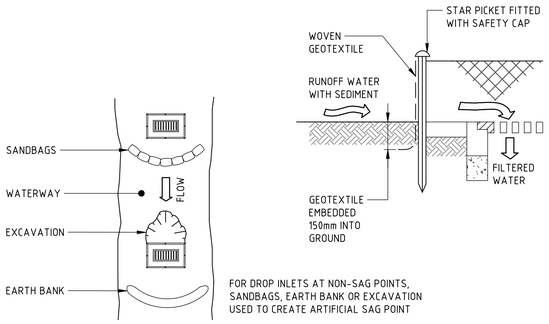


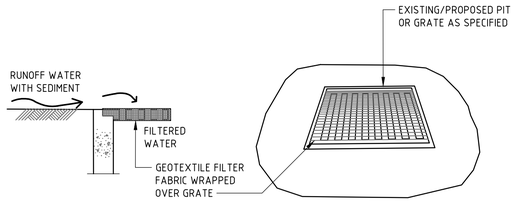


FOR DROP INLETS AT NON-SAG POINTS, SANDBAGS, EARTH BANK OR EXCAVATION USED TO CREATE ARTIFICIAL SAG POINT

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 (SD 6-12)



CONSTRUCTION NOTES

1. FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE FILTER MATERIAL.
2. GEOTEXTILE PIT FILTERS TO BE USED ON PIT LOCATED ON ROAD LANEWAY SURFACE.

GEOTEXTILE FILTER WRAP

SWMP Commentary, Detailed Calculations

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:

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

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,
	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)
Bdg J	0.64	32.2	0.47	96.8576	48	145.2864

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

Sediment_Basin_Design_Detailed_V6 1

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1	ISSUED FOR SSDA COORDINATION	E.F		E.F	26.06.20
2	RE - ISSUED FOR SSDA COORDINATION	J.P		E.F	24.07.20
3	ISSUED FOR SSDA	J.P		E.F	14.01.21

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

PROJECT: POWERHOUSE MUSEUM DISCOVERY CENTRE

DRAWING TITLE: SEDIMENT AND EROSION CONTROL DETAILS

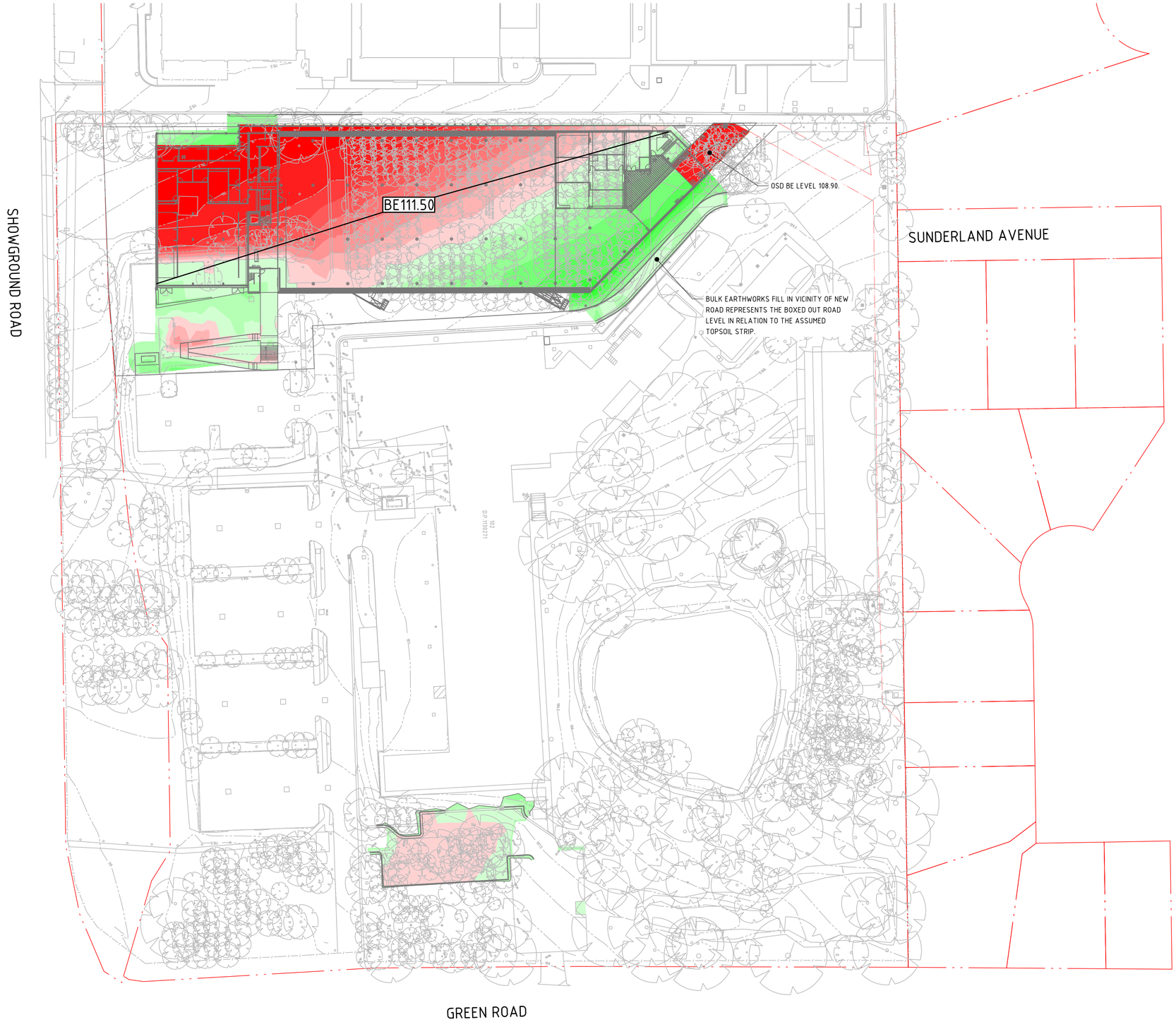
JOB NUMBER: 181569

DRAWING NUMBER: DA2.11 REVISION: 3

DRAWING SHEET SIZE = A1

DRAWN: J.PHILLIPS DESIGNED: E.FLACK JOB MANAGER: E.FLACK VERIFIER: -

Date: 14-1-21 11:52am Plotted By: jphillips Found: W:\#jobs\2018\181569 - Powerhouse Museum\D-Drawings\D-Northrop\C-CIVIL\2-CURRENT CAD FILES\SSDA\181569_DA2.11_SEDIMENT AND EROSION CONTROL DETAILS.dwg



LEGEND

BOUNDARY LINE

BEXX.XX — BULK EARTHWORKS PAD LEVEL

XXXX — CONTOURS

DEPTH OF CUT

- -3.5m TO -2.0m
- -2.0m TO -1.5m
- -1.5m TO -1.25m
- -1.25m TO -1.0m
- -1.0m TO -0.75m
- -0.75m TO -0.5m
- -0.5m TO -0.25m
- -0.25m TO -0.0m

DEPTH OF FILL

- 0.0m TO 0.25m
- 0.25m TO 0.5m
- 0.5m TO 0.75m
- 0.75m TO 1.0m
- 1.0m TO 1.25m
- 1.0m TO 1.50m

GENERAL NOTES:

1. REFER SPECIFICATIONS NOTES FOR EARTHWORKS GENERAL REQUIREMENTS.
2. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL / RELEVANT AUTHORITY SPECIFICATIONS AND DETAILS.
3. CAD FILES / DTM FILES TO BE SUPPLIED IN AUTOCAD FORMAT FOR SETOUT PURPOSES (UPON REQUEST).
4. NO ALLOWANCE HAS BEEN MADE FOR BULKING FACTORS. NOTE ALL VOLUMES DEPICTED ARE SOLID VOLUMES ONLY AND MAY NOT REFLECT DETAILED EARTHWORKS.
5. NO ALLOWANCE HAS BEEN MADE FOR DETAILED EARTHWORKS; ie SERVICE TRENCHING, DETAILED EXCAVATION, FOOTINGS, RETAINING WALLS, TEMPORARY BATTERS AND THE LIKE. CONTRACTOR IS TO ALLOW FOR REMOVAL OF ALL EXCESS MATERIAL GENERATED BY THE WORKS.
6. REFER TO STRUCTURAL ENGINEERS DRAWINGS FOR SHORING WALL DETAILS.
7. THE CONTRACTOR SHALL USE FINAL SURFACE LEVELS AND TYPICAL PAVEMENT DETAILS FOR ACTUAL EARTHWORKS LEVELS.
8. BULK EARTHWORKS ARE BASED ON THE FOLLOWING DEPTHS FROM FINISHED SURFACE LEVELS;
   - 8.1. ASPHALT PAVEMENT 330mm
   - 8.2. BUILDING SLAB 150mm (REFER STRUCTURAL DWGS)
   - 8.3. FOOTPATH PAVEMENT 200mm
   - 8.4. LANDSCAPE AREA NO ALLOWANCE HAS BEEN MADE FOR EARTHWORKS IN LANDSCAPED AREAS
9. APPROXIMATE BULK EARTHWORK VALUES AS FOLLOWS;
   - 9.1. CUT ~3610 cu.m
   - 9.2. FILL 1192 cu.m
   - 9.3. BALANCE ~2418 cu.m CUT
   - 9.4. NOTE: SITE STRIPPING VOLUMES ARE SEPARATE TO ABOVE CALCULATIONS.
   - 9.5. SITE STRIPPING VOLUME DEPTH ~2739 cu.m CUT
   - 9.6. STRIP EXISTING TOPSOIL AND FILL IN CONSULTATION WITH THE GEOTECHNICAL ENGINEER/REPORT. FOR THE PURPOSES OF EARTHWORKS CALCULATIONS A TOPSOIL STRIPPING DEPTH OF 600mm HAS BEEN ASSUMED.

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Approved Application No: SSD 10472

Granted on: 23 April 2021

Signed: AW Sheet No: 24 of 28

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1	ISSUED FOR SSDA COORDINATION	E.F		E.F	26.06.20
2	RE - ISSUED FOR SSDA COORDINATION	J.P		E.F	17.07.20
3	RE - ISSUED FOR SSDA COORDINATION	J.P		E.F	22.07.20
4	RE - ISSUED FOR SSDA COORDINATION	J.P		E.F	24.07.20
5	ISSUED FOR SSDA	J.P		E.F	14.01.21

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SCALE 1:500@ A1 — 0 5 10 15 20 25m

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PROJECT: POWERHOUSE MUSEUM DISCOVERY CENTRE

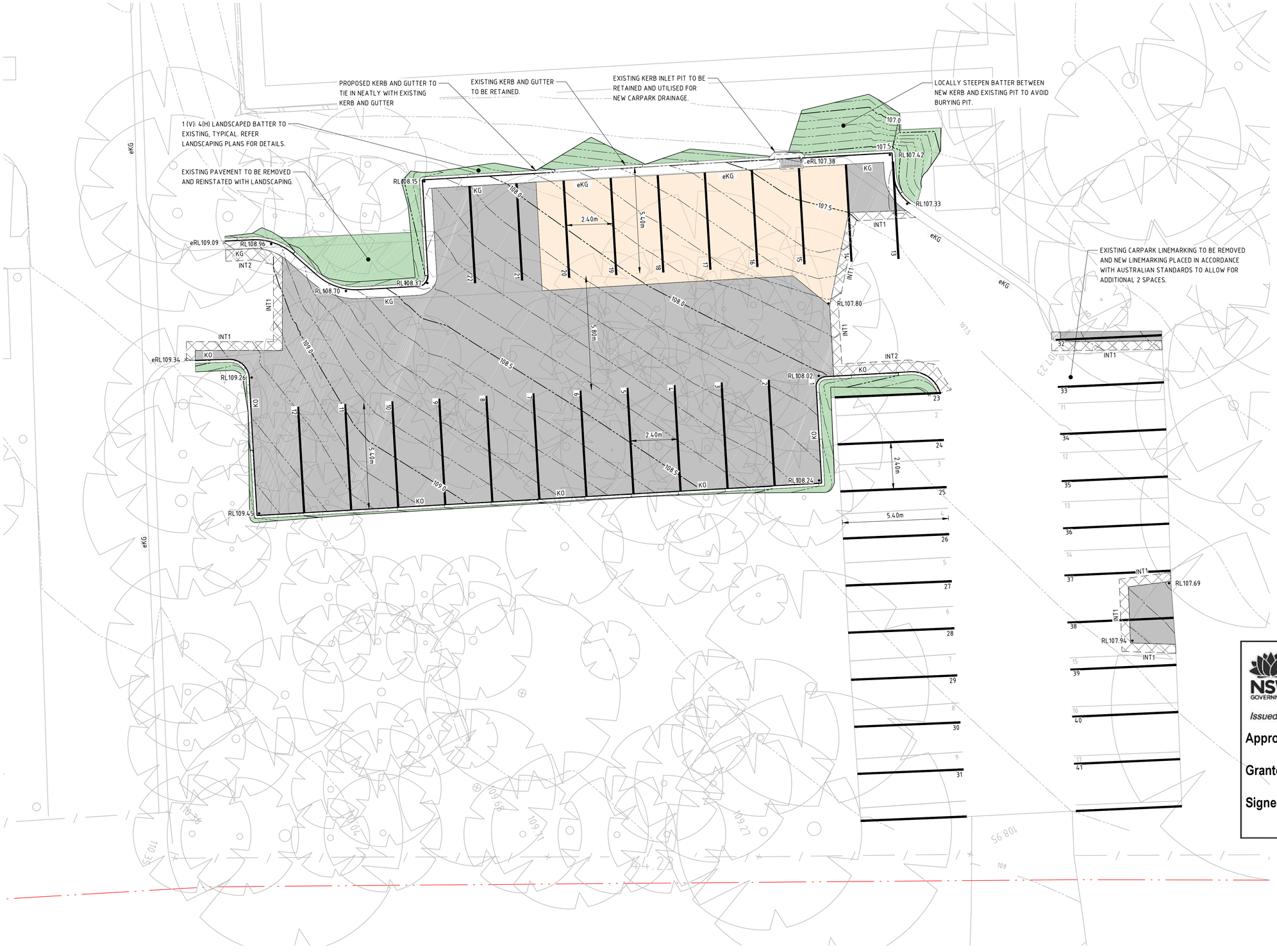
DRAWING TITLE: BULK EARTHWORKS PLAN

JOB NUMBER: 181569

DRAWING NUMBER: DA2.21 REVISION: 5

DRAWING SHEET SIZE = A1

Date : 14-1-21 11:52am Plotted By : jphillips Found : W:\#jobs\2018\181569 - Powerhouse Museum\D-Drawings\D-Northrop\C-CIVIL\2-CURRENT CAD FILES\SSDA\181569_DA2.21_BULK EARTHWORKS PLAN.dwg



LEGEND

- BOUNDARY LINE
- EXISTING CONTOURS (0.5m INTERVALS)
- PROPOSED CONTOURS (0.1m INTERVALS)
- KERB INLET PIT (EXTG)
- eKG — EXISTING KERB AND GUTTER
- KG — PROPOSED KERB AND GUTTER
- KO — PROPOSED KERB ONLY
- × eRL.XX.XX — EXISTING SPOT HEIGHT
- • RL.XX.XX — PROPOSED SPOT HEIGHT
- PAVEMENT INTERFACE
- PROPOSED ASPHALT - PAVEMENT TYPE 1
- PROPOSED MILL AND RESHEET - PAVEMENT TYPE 2
- LANDSCAPING

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Approved Application No: SSD 10472

Granted on: 23 April 2021

Signed: AW **Sheet No: 25 of 28**

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2	RE - ISSUED FOR SSDA COORDINATION	J.P		E.F	24.07.20
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PROJECT: POWERHOUSE MUSEUM DISCOVERY CENTRE

DRAWING TITLE: SITEWORKS AND STORMWATER MANGEMENT PLAN - SHEET 2

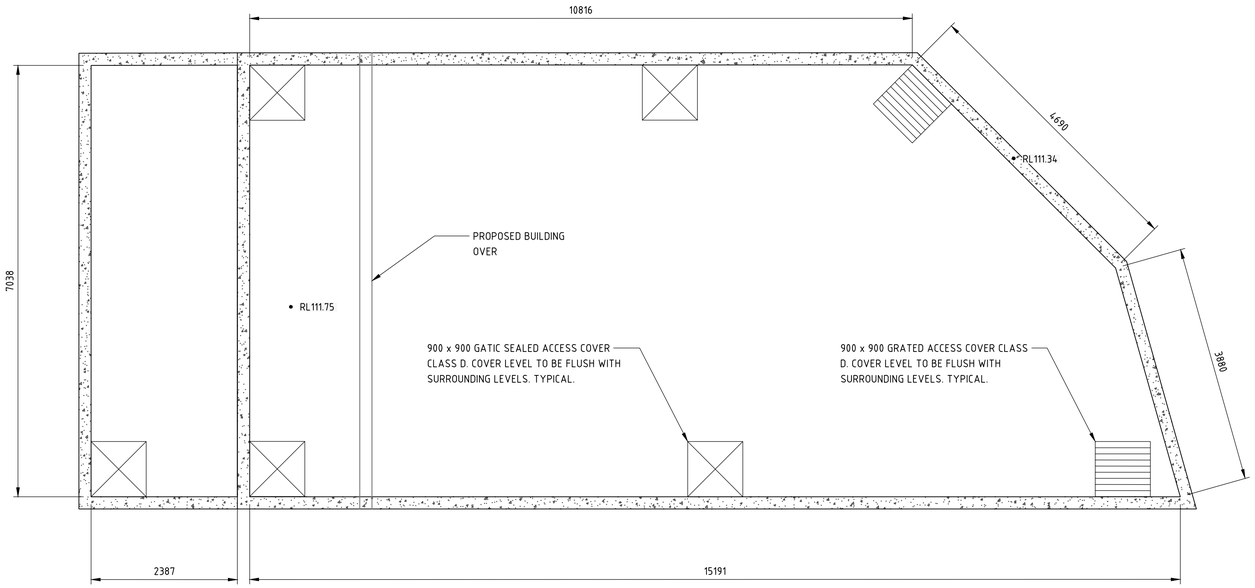
JOB NUMBER: 181569

DRAWING NUMBER: DA3.02 REVISION: 4

DRAWING SHEET SIZE = A1

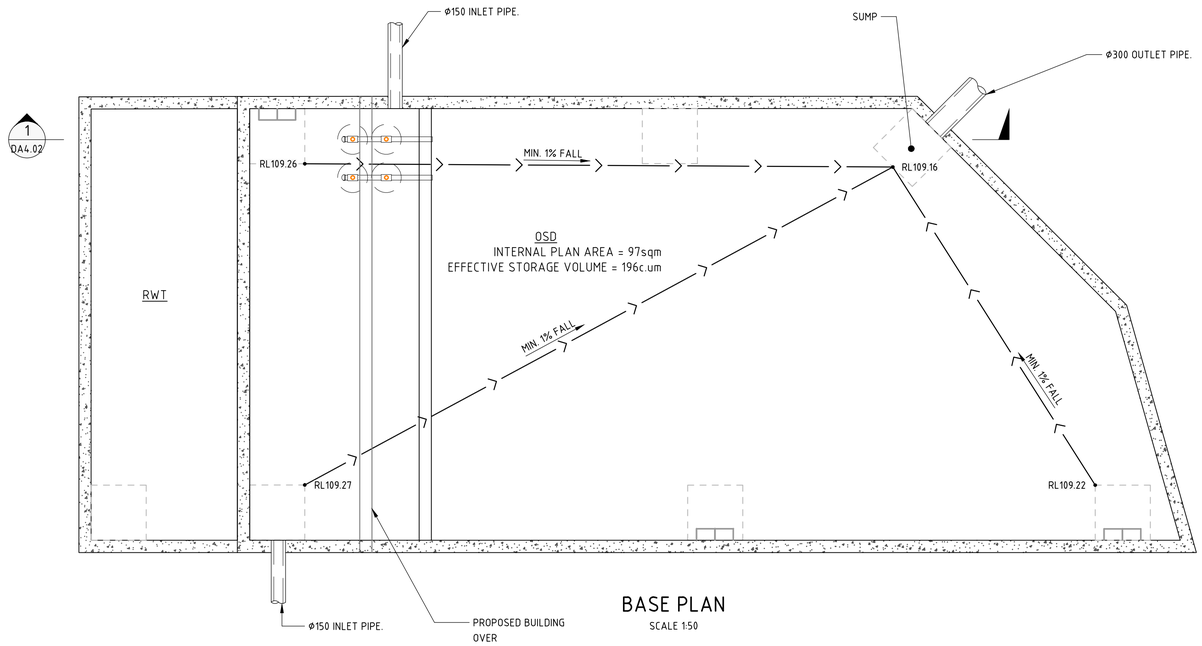
DRAWN: J.PHILLIPS DESIGNED: E.FLACK JOB MANAGER: E.FLACK VERIFIER: -

Date: 14-1-21 4:08pm Plotted By: jphillips Found: C:\Users\JPHILL~1\AppData\Local\Temp\AcPublish_25496\B569_DA3.02_SITEWORKS AND STORMWATER MANGEMENT PLAN - SHEET 2.dwg



ROOF PLAN

SCALE 1:50



BASE PLAN

SCALE 1:50

DESIGN SUMMARY

CATCHMENT CALCULATIONS:

	PRE-DEVELOPMENT	POST-DEVELOPMENT
TOTAL AREA	4781m²	4781m²
IMPERVIOUS AREA	1080m² (23%)	4781m² (100%)
PERVIOUS AREA	3701m² (77%)	0m² (0%)

ON-SITE DETENTION:

DESIGN BASIS:
- COUNCIL GUIDELINES BASED ON UPPER PARRAMATTA RIVER CATCHMENT TRUST OSD HANDBOOK

AVERAGE SITE SLOPE = 5%

HAWKESBURY CATCHMENT STORAGE RATE = 396m³/ha

THEREFORE SITE STORAGE REQUIREMENT = 190m³
ON-SITE DETENTION STORAGE PROVIDED = 196m³

HAWKESBURY CATCHMENT DISCHARGE RATE = 92L/s/ha

THEREFORE PERMITTED SITE DISCHARGE = 44L/s

ON-SITE DETENTION SUMMARY:
- BELOW GROUND BLOCK WORK TANK

ORIFICE DIAMETER ORIGINALLY CALCULATED USING THE UPRCT METHOD, THEN ASSESSED AND ADJUSTED USING DRAINS MODELLING SOFTWARE TO ACCOUNT FOR THE DOWNSTREAM TAIL WATER LEVEL (109.80), ENSURING COMPLIANCE WITH THE PSD.

TOP WATER LEVEL = 111.15
ORIFICE CENTRELINE = 109.31
ORIFICE DIAMETER = 125mm

SITE DISCHARGE CALCULATIONS:

	10 YEAR ARI	100 YEAR ARI
WITHOUT OSD	180 L/s	277 L/s
WITH OSD	30 L/s	40 L/s

WATER QUALITY:

MUSIC MODEL SUMMARY:

SOURCE NODE	CATCHMENT	AREA
URBAN	ROOF AREA 1	4380m²
URBAN	PAVED AREA 1	87m²
URBAN	PAVED AREA 2	314m²
		TOTAL 4781m²

TREATMENT NODES:

- RAINWATER RE-USE TANK
- ON-SITE DETENTION TANK
- OCEAN PROTECT 'STORMFILTER 690mm PSorb' x4
- OCEAN PROTECT 'OCEAN GUARD' x2

TREATMENT STANDARDS:

POLLUTANT	REDUCTION STANDARDS	REDUCTION ACHIEVED
GROSS POLLUTANTS	90%	100%
TOTAL SUSPENDED SOLIDS	80%	80.8%
TOTAL PHOSPHORUS	60%	67.3%
TOTAL NITROGEN	45%	51.3%

MUSIC MODEL PARAMETERS IN ACCORDANCE WITH THE NSW MUSIC MODELLING GUIDELINES REF: R.B17048.001.05 DATED AUGUST 2015.

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Approved Application No: SSD 10472

Granted on: 23 April 2021

Signed: AW Sheet No: 26 of 28

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PROJECT: POWERHOUSE MUSEUM DISCOVERY CENTRE

DRAWING TITLE: OSD DETAILS - SHEET 1

JOB NUMBER: 181569

DRAWING NUMBER: DA4.01 REVISION: 3

DRAWING SHEET SIZE = A1

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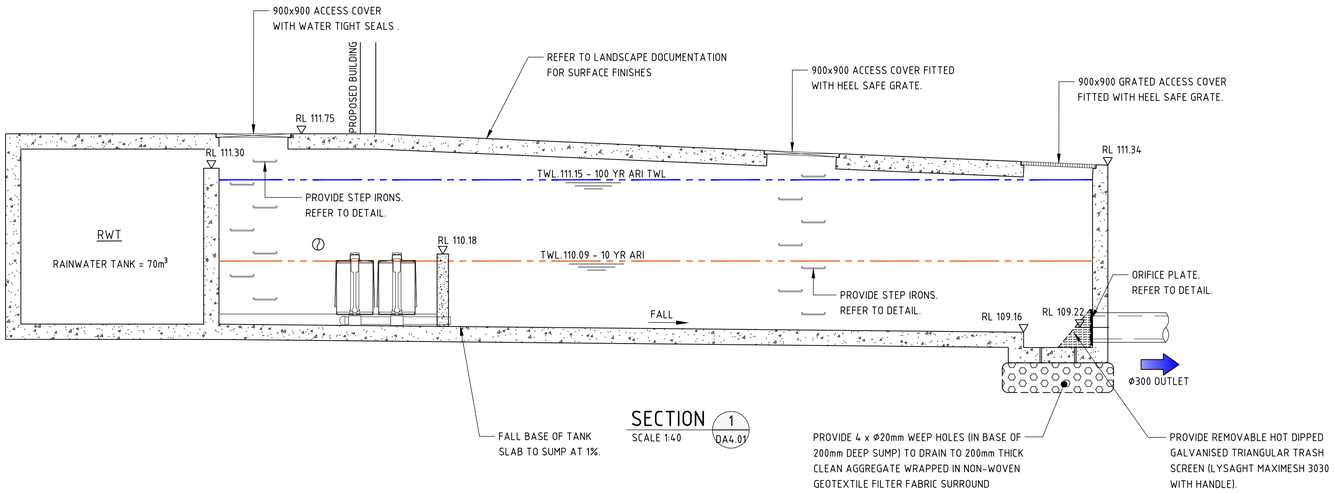

SECTION 1 DA4.01
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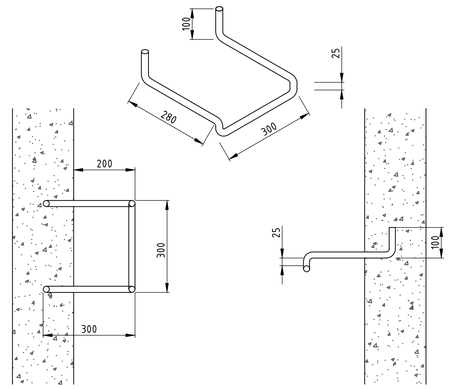
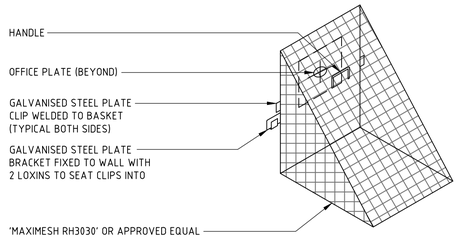
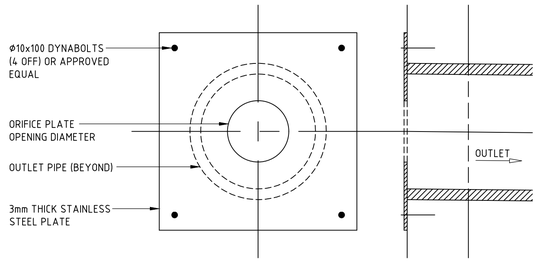


STEP IRON DETAIL

STEP IRON OF 20mm GALVANISED STEEL MADE TO SHAPE AND DIMENSIONS AS SHOWN, PLACED AT 300 CENTRES AND STAGGERED HORIZONTALLY FOR ALL PITS DEEPER THAN 1.0m. THE USE OF PROPRIETARY STEP IRONS ARE ACCEPTABLE PROVIDED THE PRODUCT IS IN ACCORDANCE WITH AUSTRALIAN STANDARDS



TRASH SCREEN DETAIL



ORIFICE PLATE DETAIL

- ORIFICE PLATE - Ø 125mm

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Granted on: 23 April 2021

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PROJECT: POWERHOUSE MUSEUM DISCOVERY CENTRE

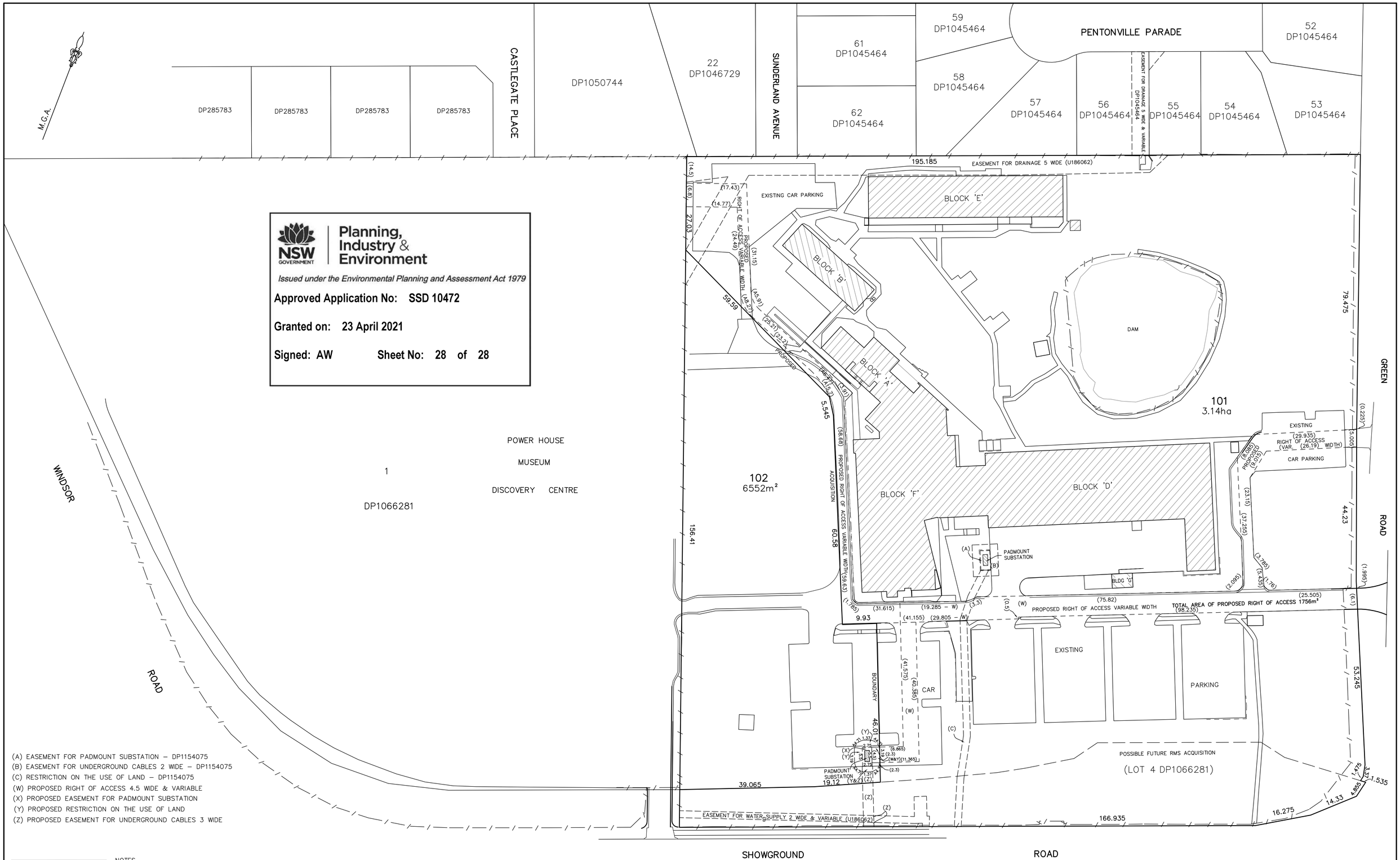
DRAWING TITLE: OSD DETAILS - SHEET 2

JOB NUMBER: 181569

DRAWING NUMBER: DA4.02 REVISION: 3

DRAWING SHEET SIZE = A1

Date: 14.-1-21 3:59pm Plotted By: jphillips Found: W:\Jobs\2018\181569 - Powerhouse Museum\D-Drawings\D-Northrop\C-CIVIL\2-CURRENT CAD FILES\SSDA\181569_DA4.02_OSD DETAILS - SHEET 2.dwg



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(A) EASEMENT FOR PADMOUNT SUBSTATION – DP1154075
(B) EASEMENT FOR UNDERGROUND CABLES 2 WIDE – DP1154075
(C) RESTRICTION ON THE USE OF LAND – DP1154075
(W) PROPOSED RIGHT OF ACCESS 4.5 WIDE & VARIABLE
(X) PROPOSED EASEMENT FOR PADMOUNT SUBSTATION
(Y) PROPOSED RESTRICTION ON THE USE OF LAND
(Z) PROPOSED EASEMENT FOR UNDERGROUND CABLES 3 WIDE

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NOTES

1. REFER TO YSCO GEOMATICS PLAN REF: 98148/14 FOR SITE DETAIL OVER TAFE SITE.
2. PROPOSED BOUNDARY DIMENSIONS AND AREAS ARE SUBJECT TO FINAL SURVEY AND REGISTRATION OF THE PLAN OF ACQUISITION AND ISSUE OF TITLE AT NSW LAND REGISTRY SERVICES.
3. BOUNDARIES INDICATED ARE ACCURATE FOR D.A. PURPOSES.

DATE	REVISIONS	BY
08/9/20	PROPOSED SUBSTATION & ASSOC. EASEMENTS ADDED.	P.Y.
21/7/20	PROPOSED RIGHT OF ACCESS REVN.	P.Y.
20/7/20	PROPOSED BOUNDARY REVISION	P.Y.

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LAND RESOURCE CONSULTANTS
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PH: (02) 94198222
Email : enquiries@yscogeomatics.com.au
Website : www.yscogeomatics.com.au
YOUDALE STRUDWICK & COMPANY PTY LTD A.C.N. 002 819 865

GEOMATIC ENGINEERING
LAND & ENGINEERING SURVEYING
PROJECT MANAGEMENT
SOIL AND WATER MANAGEMENT
ENVIRONMENTAL PLANNING & DESIGN

PLAN SHOWING PROPOSED ACQUISITION OF LAND AT CASTLE HILL TAFE COLLEGE, GREEN ROAD, CASTLE HILL, BEING LOT 102 IN DP 1130271 IN THE HILLS SHIRE L.G.A.

DRAWN:	CHECKED:	SCALE:	DATUM:	REFERENCE:
15TH JULY 2020	P.Y.	1:500 @ A1	–	98148/15C

Appendix C Contract Program Chart

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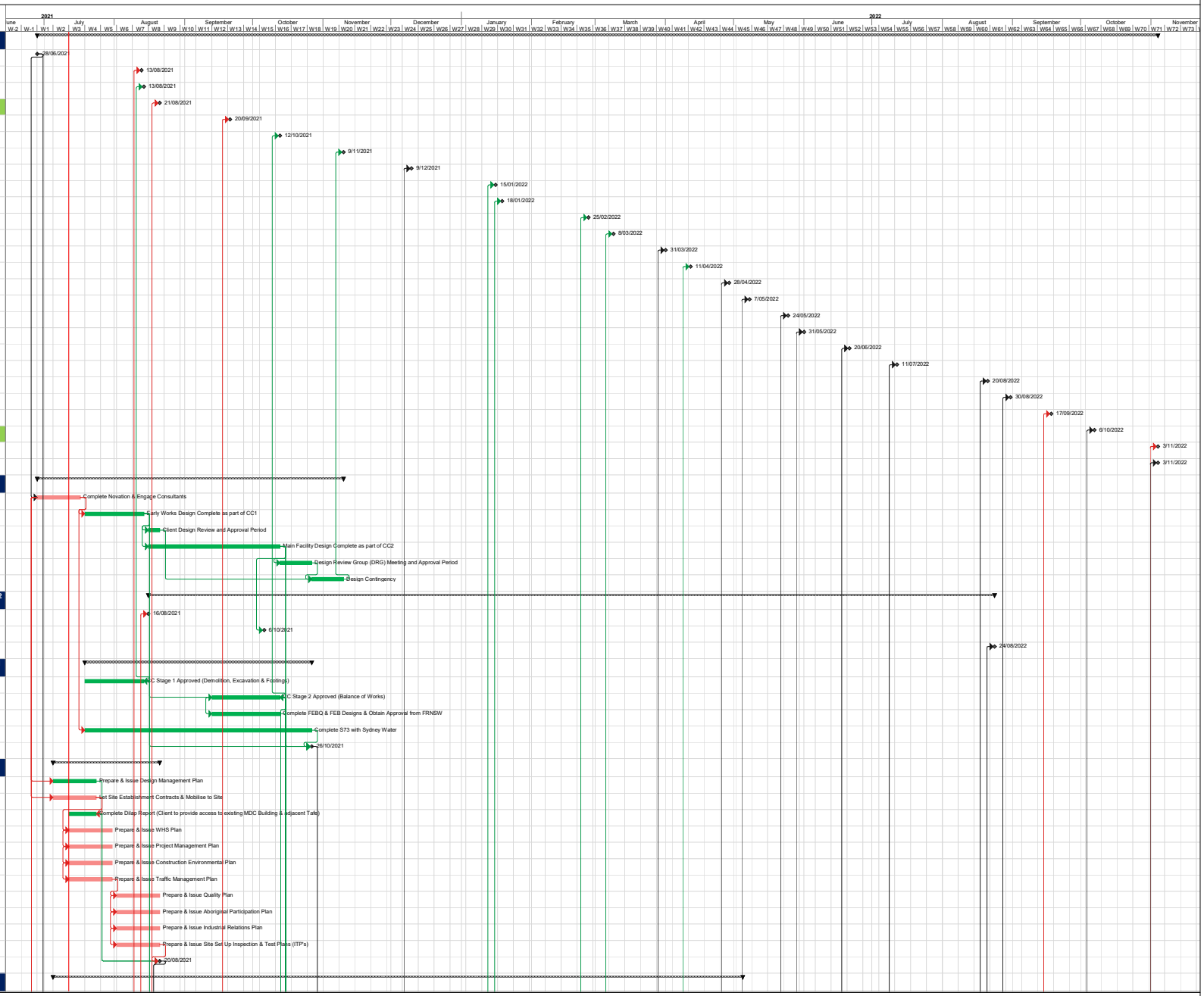
Powerhouse Museum's Discovery Centre (MDC) - Main Works Package, Construction of Building J and Associated Works

172 Showground Road, Castle Hill NSW

NSW GOVERNMENT Public Works Advisory

TAYLOR

ID	Task Name	Dur.	Start	Finish
1	**KEY DATES**			
2	Contract Awarded	0 d	Mon 28/06/21	Mon 28/06/21
3	Acccess to Site Granted by Client	0 d	Fri 13/08/21	Fri 13/08/21
4	Achieve CC1	0 d	Fri 13/08/21	Fri 13/08/21
5	Commence Works On-site / Site Possession	0 d	Sat 21/08/21	Sat 21/08/21
6	Commence Piling	0 d	Mon 20/09/21	Mon 20/09/21
7	Achieve CC2	0 d	Tue 12/10/21	Tue 12/10/21
8	Design Development Phase Complete	0 d	Tue 9/11/21	Tue 9/11/21
9	Site Bulk, Fill & Footings Complete	0 d	Thu 9/12/21	Thu 9/12/21
10	Lower Ground Slab Complete (Grid 01 to 05)	0 d	Sat 15/01/22	Sat 15/01/22
11	Ground Floor Structure Complete (Grid 05 to 11)	0 d	Tue 18/01/22	Tue 18/01/22
12	Level 1 Structure Complete (Grid 05 to 11)	0 d	Fri 25/02/22	Fri 25/02/22
13	Ground Floor Structure Complete (Grid 01 to 05)	0 d	Tue 8/03/22	Tue 8/03/22
14	Roof Structural Steel Complete (Grid 05 to 11)	0 d	Thu 31/03/22	Thu 31/03/22
15	Level 1 Structure Complete (Grid 01 to 05)	0 d	Mon 11/04/22	Mon 11/04/22
16	Lower Ground Slab Complete (Grid 05 to 11)	0 d	Thu 28/04/22	Thu 28/04/22
17	Roofing, Cladding & Façade Complete (Grid 05 to 11))	0 d	Sat 7/05/22	Sat 7/05/22
18	Roof Structural Steel Complete (Grid 01 to 05)	0 d	Tue 24/05/22	Tue 24/05/22
19	MAAS Lower Ground Floor Early Access for Fitout Works	0 d	Tue 31/05/22	Tue 31/05/22
20	MAAS Ground Floor Early Access for Fitout Works	0 d	Mon 20/06/22	Mon 20/06/22
21	Roofing, Cladding & Façade Complete (Grid 01 to 05)	0 d	Mon 11/07/22	Mon 11/07/22
22	MAAS Level 1 Early Access for Fitout Works	0 d	Sat 20/08/22	Sat 20/08/22
23	Construction Complete	0 d	Tue 30/08/22	Tue 30/08/22
24	Completion Certificate Achieved	0 d	Sat 17/09/22	Sat 17/09/22
25	Practical Completion (Net)	0 d	Thu 6/10/22	Thu 6/10/22
26	Inclement Weather Allowance	0 d	Thu 3/11/22	Thu 3/11/22
27	Project Complete (Gross)	0 d	Thu 3/11/22	Thu 3/11/22
28	**DESIGN / DOCUMENTATION**		Mon 28/06/21	Tue 9/11/21
29	Complete Novation & Engage Consultants	15 d	Mon 28/06/21	Fri 16/07/21
30	Early Works Design Complete as part of CC1	20 d	Mon 19/07/21	Fri 13/08/21
31	Client Design Review and Approval Period	5 d	Mon 16/08/21	Fri 20/08/21
32	Main Facility Design Complete as part of CC2	40 d	Mon 16/08/21	Tue 12/10/21
33	Design Review Group (DRG) Meeting and Approval Period	10 d	Wed 13/10/21	Tue 26/10/21
34	Design Contingency	10 d	Wed 27/10/21	Tue 9/11/21
35	**SAFETY IN DESIGN WORKSHOPS**		Mon 16/08/21	Wed 24/08/22
36	Pre-Site Commencement Workshop	0 d	Mon 16/08/21	Mon 16/08/21
37	95% Design Completion Workshop	0 d	Wed 6/10/21	Wed 6/10/21
38	Project Handover	0 d	Wed 24/08/22	Wed 24/08/22
39	**APPROVALS**		Mon 19/07/21	Tue 26/10/21
40	CC Stage 1 Approved (Demolition, Excavation & Footings)	20 d	Mon 19/07/21	Fri 13/08/21
41	CC Stage 2 Approved (Balance of Works)	20 d	Mon 13/09/21	Tue 12/10/21
42	Complete FEBQ & FEB Designs & Obtain Approval from FRNSW	20 d	Mon 13/09/21	Tue 12/10/21
43	Complete S73 with Sydney Water	70 d	Mon 19/07/21	Tue 26/10/21
44	All Approvals Obtained	0 d	Tue 26/10/21	Tue 26/10/21
45	**PERMITS & PLANS**		Mon 5/07/21	Fri 20/08/21
46	Prepare & Issue Design Management Plan	15 d	Mon 5/07/21	Fri 23/07/21
47	Let Site Establishment Contracts & Mobilise to Site	15 d	Mon 5/07/21	Fri 23/07/21
48	Complete Dilap Report (Client to provide access to existing MDC Building & adjacent Tafe)	10 d	Mon 12/07/21	Fri 23/07/21
49	Prepare & Issue WHS Plan	15 d	Mon 12/07/21	Fri 30/07/21
50	Prepare & Issue Project Management Plan	15 d	Mon 12/07/21	Fri 30/07/21
51	Prepare & Issue Construction Environmental Plan	15 d	Mon 12/07/21	Fri 30/07/21
52	Prepare & Issue Traffic Management Plan	15 d	Mon 12/07/21	Fri 30/07/21
53	Prepare & Issue Quality Plan	15 d	Mon 2/08/21	Fri 20/08/21
54	Prepare & Issue Aboriginal Participation Plan	15 d	Mon 2/08/21	Fri 20/08/21
55	Prepare & Issue Industrial Relations Plan	15 d	Mon 2/08/21	Fri 20/08/21
56	Prepare & Issue Site Set Up Inspection & Test Plans (ITP's)	15 d	Mon 2/08/21	Fri 20/08/21
57	Completion of Permits and Plans	0 d	Fri 20/08/21	Fri 20/08/21
58	**SUBCONTRACTOR PROCUREMENT**			



Task | Milestone | Critical | Critical Split | Progress | Baseline | Project Summary | WBS Summary | Manual Progress

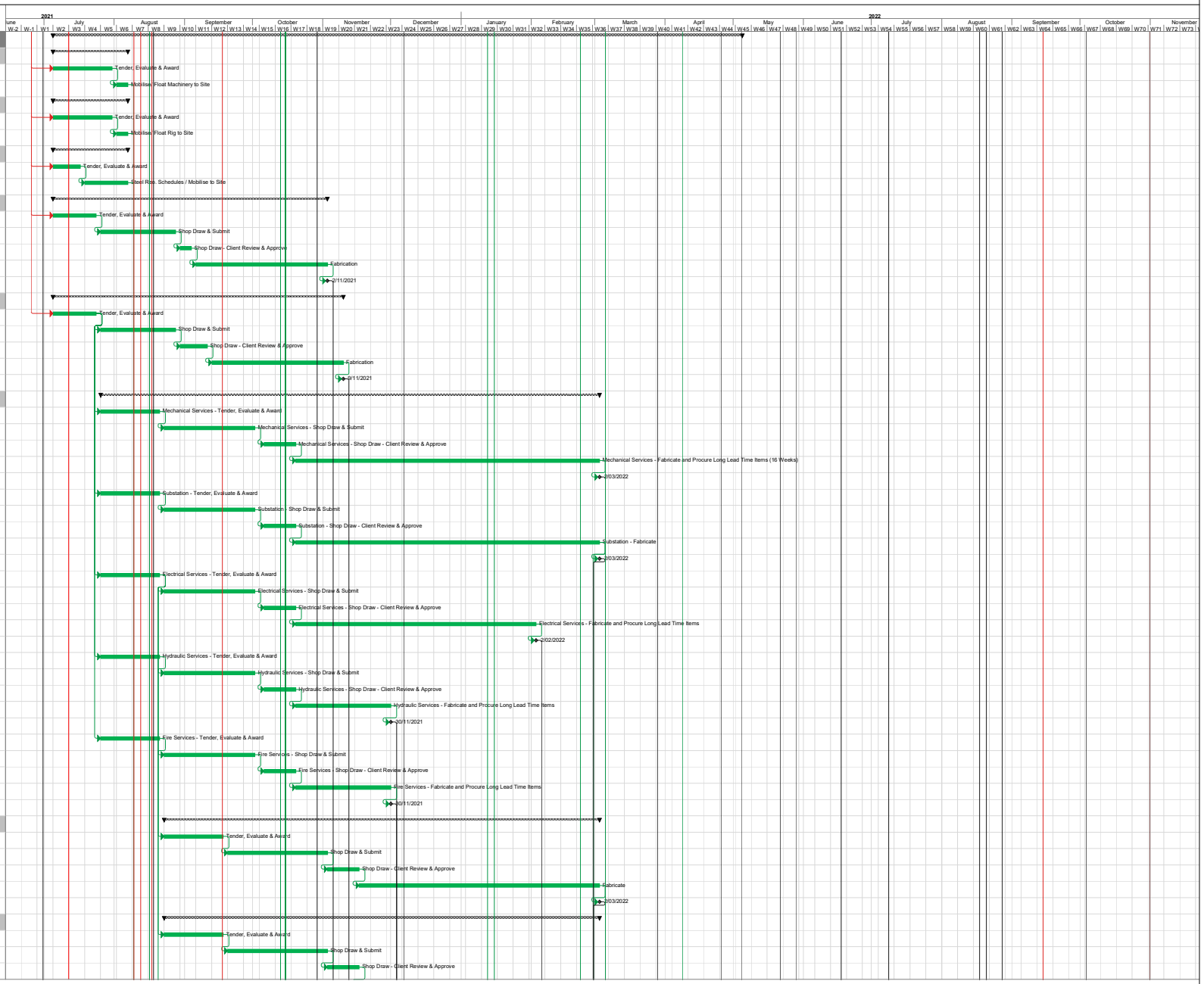
Powerhouse Museum's Discovery Centre (MDC) - Main Works Package, Construction of Building J and Associated Works

172 Showground Road, Castle Hill NSW

NSW GOVERNMENT Public Works Advisory

TAYLOR

ID	Task Name	Dur.	Start	Finish
59	KEY SUBCONTRACTOR LETTING & PROCUREMENT			
60	**BULK & DETAILED EXCAVATION**	**25 d**	**Mon 5/07/21**	**Fri 6/08/21**
61	Tender, Evaluate & Award	20 d	Mon 5/07/21	Fri 30/07/21
62	Mobilise/ Float Machinery to Site	5 d	Mon 2/08/21	Fri 6/08/21
63	**PILING**	**25 d**	**Mon 5/07/21**	**Fri 6/08/21**
64	Tender, Evaluate & Award	20 d	Mon 5/07/21	Fri 30/07/21
65	Mobilise/ Float Rig to Site	5 d	Mon 2/08/21	Fri 6/08/21
66	**FORMWORK REO & CONCRETE SUPPLY & FIX**	**25 d**	**Mon 5/07/21**	**Fri 6/08/21**
67	Tender, Evaluate & Award	10 d	Mon 5/07/21	Fri 16/07/21
68	Steel Reo. Schedules / Mobilise to Site	15 d	Mon 19/07/21	Fri 6/08/21
69	**PRECAST CONCRETE**	**85 d**	**Mon 5/07/21**	**Tue 2/11/21**
70	Tender, Evaluate & Award	15 d	Mon 5/07/21	Fri 23/07/21
71	Shop Draw & Submit	25 d	Mon 26/07/21	Fri 27/08/21
72	Shop Draw - Client Review & Approve	5 d	Mon 30/08/21	Fri 3/09/21
73	Fabrication	40 d	Mon 6/09/21	Tue 2/11/21
74	*Receipt of Birthing Certificates & Delivery to Site*	*0 d*	*Tue 2/11/21*	*Tue 2/11/21*
75	**STRUCTURAL STEEL**	**90 d**	**Mon 5/07/21**	**Tue 9/11/21**
76	Tender, Evaluate & Award	15 d	Mon 5/07/21	Fri 23/07/21
77	Shop Draw & Submit	25 d	Mon 26/07/21	Fri 27/08/21
78	Shop Draw - Client Review & Approve	10 d	Mon 30/08/21	Fri 10/09/21
79	Fabrication	40 d	Mon 13/09/21	Tue 9/11/21
80	*Structural Steel - Deliver to Site*	*0 d*	*Tue 9/11/21*	*Tue 9/11/21*
81	**SERVICES**	**140 d**	**Mon 26/07/21**	**Wed 2/03/22**
82	**Mechanical Services - Tender, Evaluate & Award**	**20 d**	**Mon 26/07/21**	**Fri 20/08/21**
83	Mechanical Services - Shop Draw & Submit	30 d	Mon 23/08/21	Fri 1/10/21
84	Mechanical Services - Shop Draw - Client Review & Approve	10 d	Wed 6/10/21	Tue 19/10/21
85	Mechanical Services - Fabricate and Procure Long Lead Time Items (16 Weeks)	80 d	Wed 20/10/21	Wed 2/03/22
86	*Mechanical Services - Deliver to Site*	*0 d*	*Wed 2/03/22*	*Wed 2/03/22*
87	**Substation - Tender, Evaluate & Award**	**20 d**	**Mon 26/07/21**	**Fri 20/08/21**
88	Substation - Shop Draw & Submit	30 d	Mon 23/08/21	Fri 1/10/21
89	Substation - Shop Draw - Client Review & Approve	10 d	Wed 6/10/21	Tue 19/10/21
90	Substation - Fabricate	80 d	Wed 20/10/21	Wed 2/03/22
91	*Substation - Deliver to Site*	*0 d*	*Wed 2/03/22*	*Wed 2/03/22*
92	**Electrical Services - Tender, Evaluate & Award**	**20 d**	**Mon 26/07/21**	**Fri 20/08/21**
93	Electrical Services - Shop Draw & Submit	30 d	Mon 23/08/21	Fri 1/10/21
94	Electrical Services - Shop Draw - Client Review & Approve	10 d	Wed 6/10/21	Tue 19/10/21
95	Electrical Services - Fabricate and Procure Long Lead Time Items	60 d	Wed 20/10/21	Wed 2/02/22
96	*Electrical Services - Deliver to Site*	*0 d*	*Wed 2/02/22*	*Wed 2/02/22*
97	**Hydraulic Services - Tender, Evaluate & Award**	**20 d**	**Mon 26/07/21**	**Fri 20/08/21**
98	Hydraulic Services - Shop Draw & Submit	30 d	Mon 23/08/21	Fri 1/10/21
99	Hydraulic Services - Shop Draw - Client Review & Approve	10 d	Wed 6/10/21	Tue 19/10/21
100	Hydraulic Services - Fabricate and Procure Long Lead Time Items	30 d	Wed 20/10/21	Tue 30/11/21
101	*Hydraulic Services - Deliver to Site*	*0 d*	*Tue 30/11/21*	*Tue 30/11/21*
102	**Fire Services - Tender, Evaluate & Award**	**20 d**	**Mon 26/07/21**	**Fri 20/08/21**
103	Fire Services - Shop Draw & Submit	30 d	Mon 23/08/21	Fri 1/10/21
104	Fire Services - Shop Draw - Client Review & Approve	10 d	Wed 6/10/21	Tue 19/10/21
105	Fire Services - Fabricate and Procure Long Lead Time Items	30 d	Wed 20/10/21	Tue 30/11/21
106	*Fire Services - Deliver to Site*	*0 d*	*Tue 30/11/21*	*Tue 30/11/21*
107	**FAÇADE & LOUVRES**	**120 d**	**Mon 23/08/21**	**Wed 2/03/22**
108	Tender, Evaluate & Award	20 d	Mon 23/08/21	Fri 17/09/21
109	Shop Draw & Submit	30 d	Mon 20/09/21	Tue 2/11/21
110	Shop Draw - Client Review & Approve	10 d	Wed 3/11/21	Tue 16/11/21
111	Fabricate	60 d	Wed 17/11/21	Wed 2/03/22
112	*Facade - Deliver to Site*	*0 d*	*Wed 2/03/22*	*Wed 2/03/22*
113	**LIFTS**	**120 d**	**Mon 23/08/21**	**Wed 2/03/22**
114	Tender, Evaluate & Award	20 d	Mon 23/08/21	Fri 17/09/21
115	Shop Draw & Submit	30 d	Mon 20/09/21	Tue 2/11/21
116	Shop Draw - Client Review & Approve	10 d	Wed 3/11/21	Tue 16/11/21



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172 Showground Road, Castle Hill NSW

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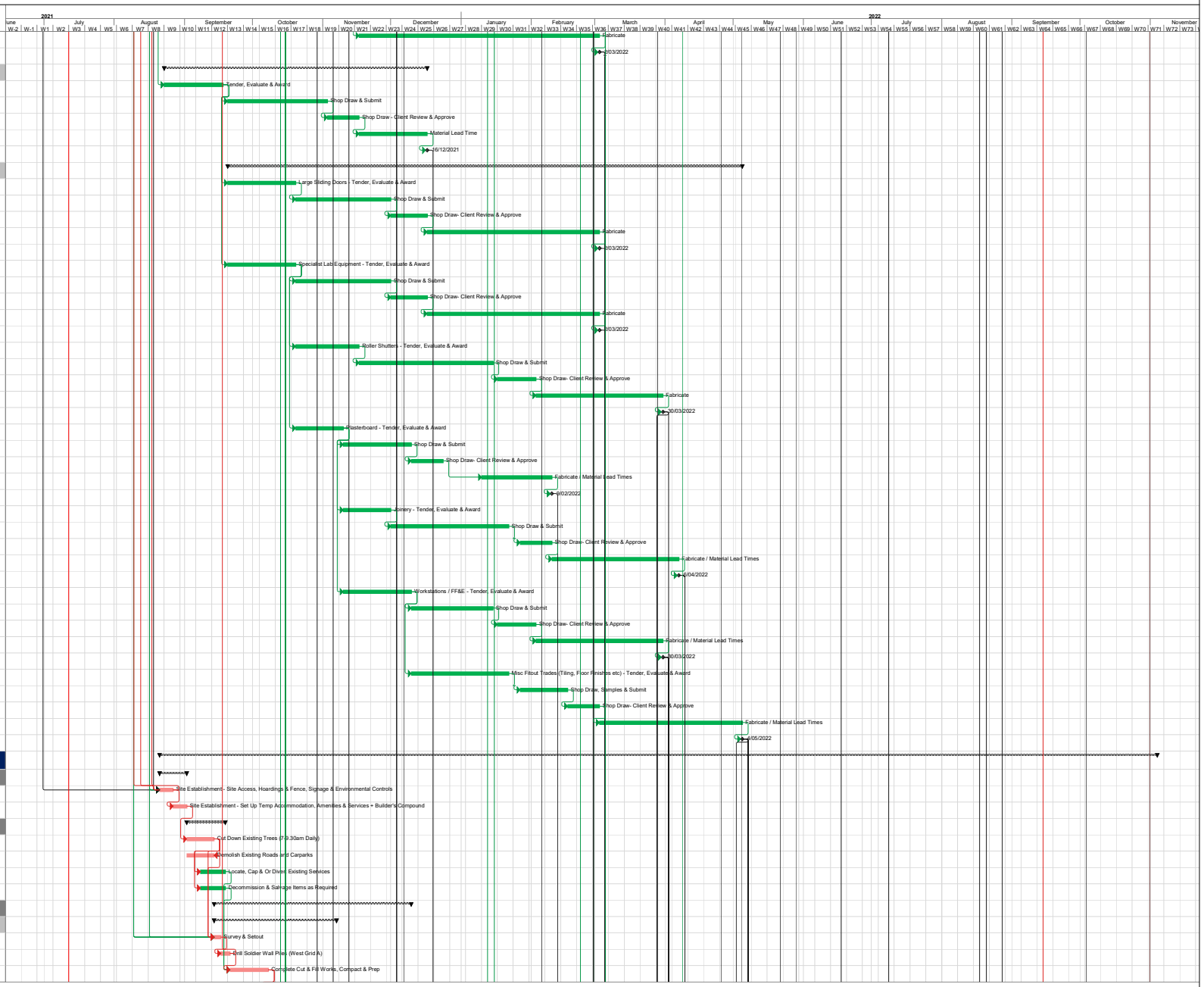
TAYLOR

ID	Task Name	Dur.	Start	Finish
117	Fabricate	60 d	Wed 17/11/21	Wed 2/03/22
118	*Lifts - Deliver to Site*	*0 d*	*Wed 2/03/22*	*Wed 2/03/22*
119	**ROOFING & CLADDING**	**80 d**	**Mon 23/08/21**	**Thu 16/12/21**
120	Tender, Evaluate & Award	20 d	Mon 23/08/21	Fri 17/09/21
121	Shop Draw & Submit	30 d	Mon 20/09/21	Tue 2/11/21
122	Shop Draw - Client Review & Approve	10 d	Wed 3/11/21	Tue 16/11/21
123	Material Lead Time	20 d	Wed 17/11/21	Thu 16/12/21
124	*Roofing & Cladding - Deliver to Site*	*0 d*	*Thu 16/12/21*	*Thu 16/12/21*
125	**MISCELLANEOUS KEY TRADES**	**140 d**	**Mon 20/09/21**	**Wed 4/05/22**
126	**Large Sliding Doors - Tender, Evaluate & Award**	**20 d**	**Mon 20/09/21**	**Tue 19/10/21**
127	Shop Draw & Submit	30 d	Wed 20/10/21	Tue 30/11/21
128	Shop Draw- Client Review & Approve	10 d	Wed 1/12/21	Thu 16/12/21
129	Fabricate	40 d	Fri 17/12/21	Wed 2/03/22
130	*Large Sliding Door - Deliver to Site*	*0 d*	*Wed 2/03/22*	*Wed 2/03/22*
131	**Specialist Lab Equipment - Tender, Evaluate & Award**	**20 d**	**Mon 20/09/21**	**Tue 19/10/21**
132	Shop Draw & Submit	30 d	Wed 20/10/21	Tue 30/11/21
133	Shop Draw- Client Review & Approve	10 d	Wed 1/12/21	Thu 16/12/21
134	Fabricate	40 d	Fri 17/12/21	Wed 2/03/22
135	*Specialist Lab Equipment - Deliver to Site*	*0 d*	*Wed 2/03/22*	*Wed 2/03/22*
136	**Roller Shutters - Tender, Evaluate & Award**	**20 d**	**Wed 20/10/21**	**Tue 16/11/21**
137	Shop Draw & Submit	30 d	Wed 17/11/21	Fri 14/01/22
138	Shop Draw- Client Review & Approve	10 d	Mon 17/01/22	Wed 2/02/22
139	Fabricate	40 d	Thu 3/02/22	Wed 30/03/22
140	*Roller Shutters - Deliver to Site*	*0 d*	*Wed 30/03/22*	*Wed 30/03/22*
141	**Plasterboard - Tender, Evaluate & Award**	**15 d**	**Wed 20/10/21**	**Tue 9/11/21**
142	Shop Draw & Submit	20 d	Wed 10/11/21	Thu 9/12/21
143	Shop Draw- Client Review & Approve	10 d	Fri 10/12/21	Thu 23/12/21
144	Fabricate / Material Lead Times	20 d	Mon 10/01/22	Wed 9/02/22
145	*Plasterboard Trade Able to Commence on Site*	*0 d*	*Wed 9/02/22*	*Wed 9/02/22*
146	**Joinery - Tender, Evaluate & Award**	**15 d**	**Wed 10/11/21**	**Tue 30/11/21**
147	Shop Draw & Submit	25 d	Wed 1/12/21	Fri 21/01/22
148	Shop Draw- Client Review & Approve	10 d	Thu 27/01/22	Wed 9/02/22
149	Fabricate / Material Lead Times	40 d	Thu 10/02/22	Wed 6/04/22
150	*Joinery Trade Able to Commence on Site*	*0 d*	*Wed 6/04/22*	*Wed 6/04/22*
151	**Workstations / FF&E - Tender, Evaluate & Award**	**20 d**	**Wed 10/11/21**	**Thu 9/12/21**
152	Shop Draw & Submit	15 d	Fri 10/12/21	Fri 14/01/22
153	Shop Draw- Client Review & Approve	10 d	Mon 17/01/22	Wed 2/02/22
154	Fabricate / Material Lead Times	40 d	Thu 3/02/22	Wed 30/03/22
155	*Workstations / FF&E Trade Able to Commence on Site*	*0 d*	*Wed 30/03/22*	*Wed 30/03/22*
156	**Misc Fitout Trades (Tiling, Floor Finishes etc) - Tender, Evaluate & Award**	**20 d**	**Fri 10/12/21**	**Fri 21/01/22**
157	Shop Draw, Samples & Submit	15 d	Thu 27/01/22	Wed 16/02/22
158	Shop Draw- Client Review & Approve	10 d	Thu 17/02/22	Wed 2/03/22
159	Fabricate / Material Lead Times	40 d	Thu 3/03/22	Wed 4/05/22
160	*Misc Fitout Trades Able to Commence on Site*	*0 d*	*Wed 4/05/22*	*Wed 4/05/22*
161	**CONSTRUCTION**	**342 d**	**Sat 21/08/21**	**Thu 3/11/22**
162	**PRELIMINARY WORKS / SITE ESTABLISHMENT**	**10 d**	**Sat 21/08/21**	**Wed 1/09/21**
163	Site Establishment - Site Access, Hoardings & Fence, Signage & Environmental Controls	5 d	Sat 21/08/21	Thu 26/08/21
164	Site Establishment - Set Up Temp Accommodation, Amenities & Services + Builder's Compound	5 d	Fri 27/08/21	Wed 1/09/21
165	**DEMOLITION & ENABLING WORKS**	**15 d**	**Thu 2/09/21**	**Sat 18/09/21**
166	Cut Down Existing Trees (7-9.30am Daily)	10 d	Thu 2/09/21	Mon 13/09/21
167	Demolish Existing Roads and Carparks	10 d	Thu 2/09/21	Mon 13/09/21
168	Locate, Cap & Or Divert Existing Services	10 d	Wed 8/09/21	Sat 18/09/21
169	Decommission & Salvage Items as Required	10 d	Wed 8/09/21	Sat 18/09/21
170	**CIVIL/PILING WORKS**	**69 d**	**Tue 14/09/21**	**Thu 9/12/21**
171	**Cut & Fill Site**	**44 d**	**Tue 14/09/21**	**Sat 6/11/21**
172	Survey & Setout	3 d	Tue 14/09/21	Thu 16/09/21
173	Drill Soldier Wall Piles (West Grid A)	3 d	Fri 17/09/21	Mon 20/09/21
174	Complete Cut & Fill Works, Compact & Prep	12 d	Tue 21/09/21	Thu 7/10/21



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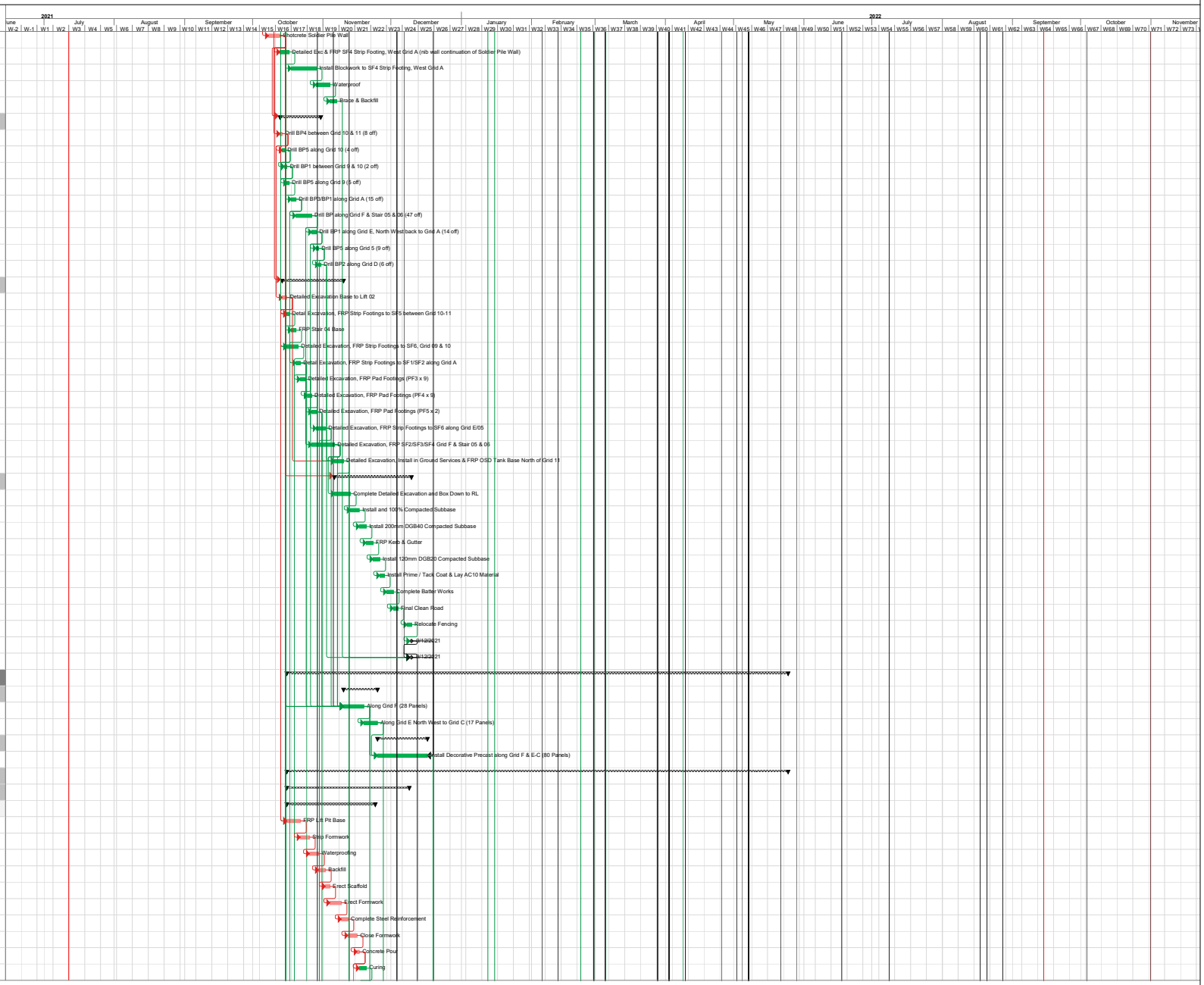
Powerhouse Museum's Discovery Centre (MDC) - Main Works Package, Construction of Building J and Associated Works

172 Showground Road, Castle Hill NSW

ID	Task Name	Dur.	Start	Finish
175	Shotcrete Soldier Pile Wall	4 d	Fri 8/10/21	Tue 12/10/21
176	Detailed Exc & FRP SF4 Strip Footing, West Grid A (nib wall continuation of Soldier Pile Wall)	4 d	Wed 13/10/21	Sat 16/10/21
177	Install Blockwork to SF4 Strip Footing, West Grid A	10 d	Mon 18/10/21	Thu 28/10/21
178	Waterproof	5 d	Fri 29/10/21	Wed 3/11/21
179	Brace & Backfill	3 d	Thu 4/11/21	Sat 6/11/21
180	**Piling & Trimming**	**16 d**	**Wed 13/10/21**	**Sat 30/10/21**
181	Drill BP4 between Grid 10 & 11 (8 off)	1 d	Wed 13/10/21	Wed 13/10/21
182	Drill BP5 along Grid 10 (4 off)	1 d	Thu 14/10/21	Thu 14/10/21
183	Drill BP1 between Grid 9 & 10 (2 off)	1 d	Fri 15/10/21	Fri 15/10/21
184	Drill BP5 along Grid 9 (5 off)	1 d	Sat 16/10/21	Sat 16/10/21
185	Drill BP3/BP1 along Grid A (15 off)	2 d	Mon 18/10/21	Tue 19/10/21
186	Drill BP along Grid F & Stair 05 & 06 (47 off)	5 d	Wed 20/10/21	Tue 26/10/21
187	Drill BP1 along Grid E, North West back to Grid A (14 off)	2 d	Wed 27/10/21	Thu 28/10/21
188	Drill BP5 along Grid 5 (9 off)	1 d	Fri 29/10/21	Fri 29/10/21
189	Drill BP2 along Grid D (6 off)	1 d	Sat 30/10/21	Sat 30/10/21
190	**Footings**	**23 d**	**Thu 14/10/21**	**Tue 9/11/21**
191	Detailed Excavation Base to Lift 02	2 d	Thu 14/10/21	Fri 15/10/21
192	Detail Excavation, FRP Strip Footings to SF5 between Grid 10-11	1 d	Sat 16/10/21	Sat 16/10/21
193	FRP Stair 04 Base	2 d	Mon 18/10/21	Tue 19/10/21
194	Detailed Excavation, FRP Strip Footings to SF6, Grid 09 & 10	4 d	Sat 16/10/21	Wed 20/10/21
195	Detail Excavation, FRP Strip Footings to SF1/SF2 along Grid A	2 d	Wed 20/10/21	Thu 21/10/21
196	Detailed Excavation, FRP Pad Footings (PF3 x 9)	2 d	Fri 22/10/21	Sat 23/10/21
197	Detailed Excavation, FRP Pad Footings (PF4 x 9)	2 d	Mon 25/10/21	Tue 26/10/21
198	Detailed Excavation, FRP Pad Footings (PF5 x 2)	2 d	Wed 27/10/21	Thu 28/10/21
199	Detailed Excavation, FRP Strip Footings to SF6 along Grid E/05	3 d	Fri 29/10/21	Mon 1/11/21
200	Detailed Excavation, FRP SF2/SF3/SF4 Grid F & Stair 05 & 06	8 d	Wed 27/10/21	Fri 5/11/21
201	Detailed Excavation, Install in Ground Services & FRP OSD Tank Base North of Grid 11	3 d	Sat 6/11/21	Tue 9/11/21
202	**Civil Works - Realigned Access Road**	**26 d**	**Sat 6/11/21**	**Thu 9/12/21**
203	Complete Detailed Excavation and Box Down to RL	6 d	Sat 6/11/21	Fri 12/11/21
204	Install and 100% Compacted Subbase	3 d	Sat 13/11/21	Tue 16/11/21
205	Install 200mm DGB40 Compacted Subbase	3 d	Wed 17/11/21	Fri 19/11/21
206	FRP Kerb & Gutter	2 d	Sat 20/11/21	Mon 22/11/21
207	Install 120mm DGB20 Compacted Subbase	3 d	Tue 23/11/21	Thu 25/11/21
208	Install Prime / Tack Coat & Lay AC10 Material	2 d	Fri 26/11/21	Sat 27/11/21
209	Complete Batter Works	3 d	Mon 29/11/21	Wed 1/12/21
210	Final Clean Road	2 d	Thu 2/12/21	Fri 3/12/21
211	Relocate Fencing	2 d	Wed 8/12/21	Thu 9/12/21
212	*Realigned Road available for Client Use*	*0 d*	*Thu 9/12/21*	*Thu 9/12/21*
213	*Civil Foundation Works Complete*	*0 d*	*Thu 9/12/21*	*Thu 9/12/21*
214	**STRUCTURE**	**163 d**	**Sat 16/10/21**	**Tue 24/05/22**
215	**Install Structural Precast**	**13 d**	**Wed 10/11/21**	**Wed 24/11/21**
216	Along Grid F (28 Panels)	8 d	Wed 10/11/21	Thu 18/11/21
217	Along Grid E North West to Grid C (17 Panels)	5 d	Fri 19/11/21	Wed 24/11/21
218	**Install Decorative Precast**	**16 d**	**Thu 25/11/21**	**Thu 16/12/21**
219	Install Decorative Precast along Grid F & E-C (80 Panels)	16 d	Thu 25/11/21	Thu 16/12/21
220	**Concrete Structure**	**163 d**	**Sat 16/10/21**	**Tue 24/05/22**
221	**Lift & Stair Shafts**	**43 d**	**Sat 16/10/21**	**Wed 8/12/21**
222	**Lift 02 (Lower Ground to Ground Floor)**	**33 d**	**Sat 16/10/21**	**Tue 23/11/21**
223	FRP Lift Pit Base	5 d	Sat 16/10/21	Thu 21/10/21
224	Strip Formwork	3 d	Fri 22/10/21	Mon 25/10/21
225	Waterproofing	4 d	Tue 26/10/21	Fri 29/10/21
226	Backfill	2 d	Sat 30/10/21	Mon 1/11/21
227	Erect Scaffold	2 d	Tue 2/11/21	Wed 3/11/21
228	Erect Formwork	4 d	Thu 4/11/21	Mon 8/11/21
229	Complete Steel Reinforcement	3 d	Tue 9/11/21	Thu 11/11/21
230	Close Formwork	3 d	Fri 12/11/21	Mon 15/11/21
231	Concrete Pour	1 d	Tue 16/11/21	Tue 16/11/21
232	Curing	3 d	Wed 17/11/21	Fri 19/11/21

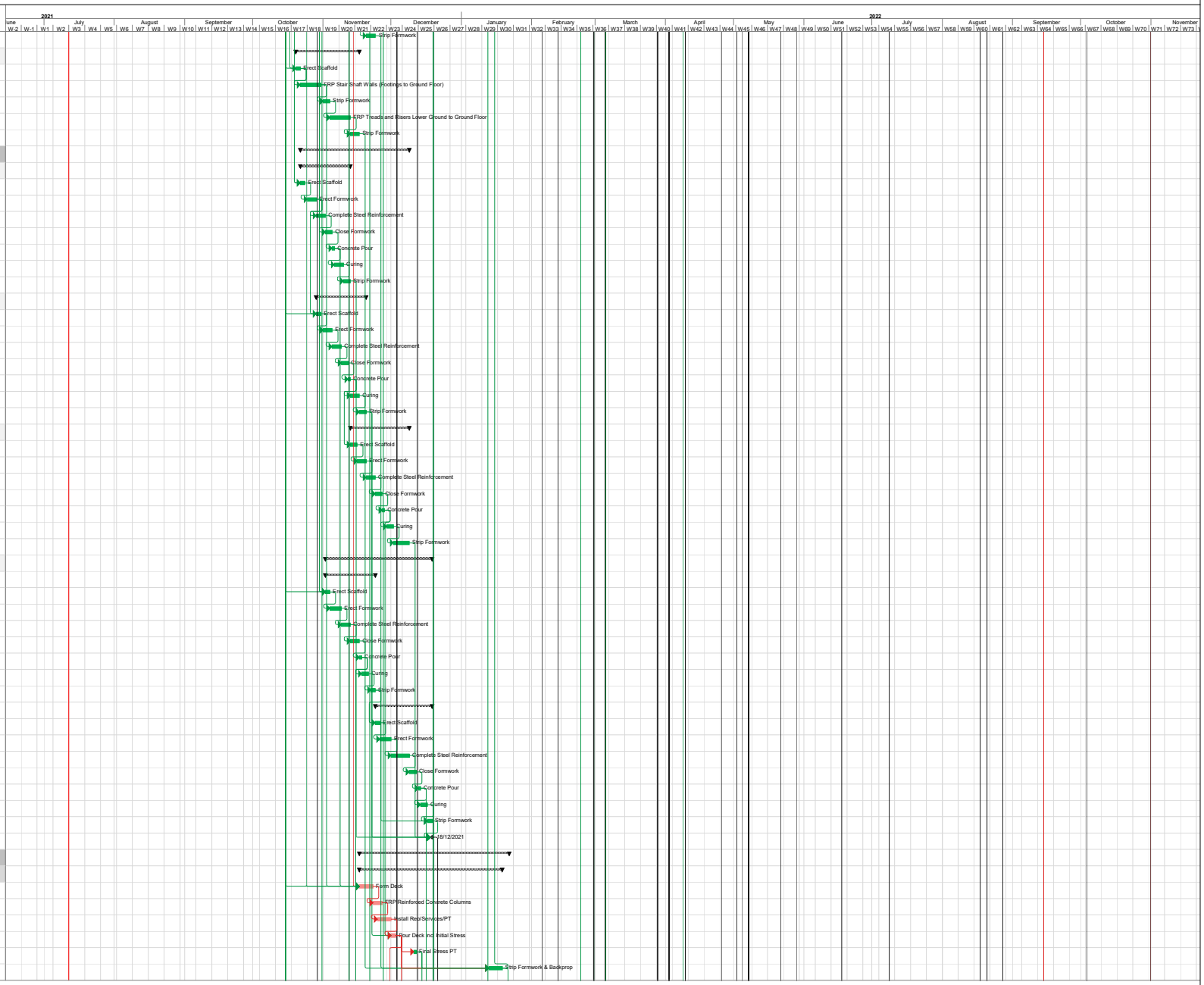


Task | Milestone | Critical | Critical Split | Progress | Baseline | Project Summary | WBS Summary | Manual Progress

Powerhouse Museum's Discovery Centre (MDC) - Main Works Package, Construction of Building J and Associated Works

172 Showground Road, Castle Hill NSW

ID	Task Name	Dur.	Start	Finish
233	Strip Formwork	3 d	Sat 20/11/21	Tue 23/11/21
234	**Stair 04 (Lower Ground to Ground Floor)**	**24 d**	**Wed 20/10/21**	**Tue 16/11/21**
235	Erect Scaffold	2 d	Wed 20/10/21	Thu 21/10/21
236	FRP Stair Shaft Walls (Footings to Ground Floor)	8 d	Fri 22/10/21	Sat 30/10/21
237	Strip Formwork	3 d	Mon 1/11/21	Wed 3/11/21
238	FRP Treads and Risers Lower Ground to Ground Floor	8 d	Thu 4/11/21	Fri 12/11/21
239	Strip Formwork	3 d	Sat 13/11/21	Tue 16/11/21
240	**CW3 Concrete Walls**	**38 d**	**Fri 22/10/21**	**Wed 8/12/21**
241	**Lower Ground to Ground Floor (Grid 10)**	**19 d**	**Fri 22/10/21**	**Fri 12/11/21**
242	Erect Scaffold	2 d	Fri 22/10/21	Sat 23/10/21
243	Erect Formwork	4 d	Mon 25/10/21	Thu 28/10/21
244	Complete Steel Reinforcement	3 d	Fri 29/10/21	Mon 1/11/21
245	Close Formwork	3 d	Tue 2/11/21	Thu 4/11/21
246	Concrete Pour	1 d	Fri 5/11/21	Fri 5/11/21
247	Curing	3 d	Sat 6/11/21	Tue 9/11/21
248	Strip Formwork	3 d	Wed 10/11/21	Fri 12/11/21
249	**Lower Ground to Ground Floor (Grid 09)**	**19 d**	**Fri 29/10/21**	**Fri 19/11/21**
250	Erect Scaffold	2 d	Fri 29/10/21	Sat 30/10/21
251	Erect Formwork	4 d	Mon 1/11/21	Thu 4/11/21
252	Complete Steel Reinforcement	3 d	Fri 5/11/21	Mon 8/11/21
253	Close Formwork	3 d	Tue 9/11/21	Thu 11/11/21
254	Concrete Pour	1 d	Fri 12/11/21	Fri 12/11/21
255	Curing	3 d	Sat 13/11/21	Tue 16/11/21
256	Strip Formwork	3 d	Wed 17/11/21	Fri 19/11/21
257	**Ground Floor to Level 01 (Grid 09)**	**19 d**	**Sat 13/11/21**	**Wed 8/12/21**
258	Erect Scaffold	2 d	Sat 13/11/21	Mon 15/11/21
259	Erect Formwork	4 d	Tue 16/11/21	Fri 19/11/21
260	Complete Steel Reinforcement	3 d	Sat 20/11/21	Tue 23/11/21
261	Close Formwork	3 d	Wed 24/11/21	Fri 26/11/21
262	Concrete Pour	1 d	Sat 27/11/21	Sat 27/11/21
263	Curing	3 d	Mon 29/11/21	Wed 1/12/21
264	Strip Formwork	3 d	Thu 2/12/21	Wed 8/12/21
265	**FRP Grid 05 Fire Wall**	**38 d**	**Tue 2/11/21**	**Sat 18/12/21**
266	**Lower Ground to Ground**	**19 d**	**Tue 2/11/21**	**Tue 23/11/21**
267	Erect Scaffold	2 d	Tue 2/11/21	Wed 3/11/21
268	Erect Formwork	4 d	Thu 4/11/21	Mon 8/11/21
269	Complete Steel Reinforcement	4 d	Tue 9/11/21	Fri 12/11/21
270	Close Formwork	3 d	Sat 13/11/21	Tue 16/11/21
271	Concrete Pour	1 d	Wed 17/11/21	Wed 17/11/21
272	Curing	3 d	Thu 18/11/21	Sat 20/11/21
273	Strip Formwork	2 d	Mon 22/11/21	Tue 23/11/21
274	**Ground to Level 01**	**19 d**	**Wed 24/11/21**	**Sat 18/12/21**
275	Erect Scaffold	2 d	Wed 24/11/21	Thu 25/11/21
276	Erect Formwork	4 d	Fri 26/11/21	Tue 30/11/21
277	Complete Steel Reinforcement	4 d	Wed 1/12/21	Wed 8/12/21
278	Close Formwork	3 d	Thu 9/12/21	Sat 11/12/21
279	Concrete Pour	1 d	Mon 13/12/21	Mon 13/12/21
280	Curing	3 d	Tue 14/12/21	Thu 16/12/21
281	Strip Formwork	2 d	Fri 17/12/21	Sat 18/12/21
282	*Formwork Stripping Complete*	*0 d*	*Sat 18/12/21*	*Sat 18/12/21*
283	**Ground Level**	**42 d**	**Wed 17/11/21**	**Fri 21/01/22**
284	**Ground Level (Grid 09 to 11)**	**39 d**	**Wed 17/11/21**	**Tue 18/01/22**
285	Form Deck	5 d	Wed 17/11/21	Mon 22/11/21
286	FRP Reinforced Concrete Columns	4 d	Tue 23/11/21	Fri 26/11/21
287	Install Reo/Services/PT	5 d	Thu 25/11/21	Tue 30/11/21
288	Pour Deck incl Initial Stress	2 d	Wed 1/12/21	Thu 2/12/21
289	Final Stress PT	1 d	Sat 11/12/21	Sat 11/12/21
290	Strip Formwork & Backprop	5 d	Thu 13/01/22	Tue 18/01/22



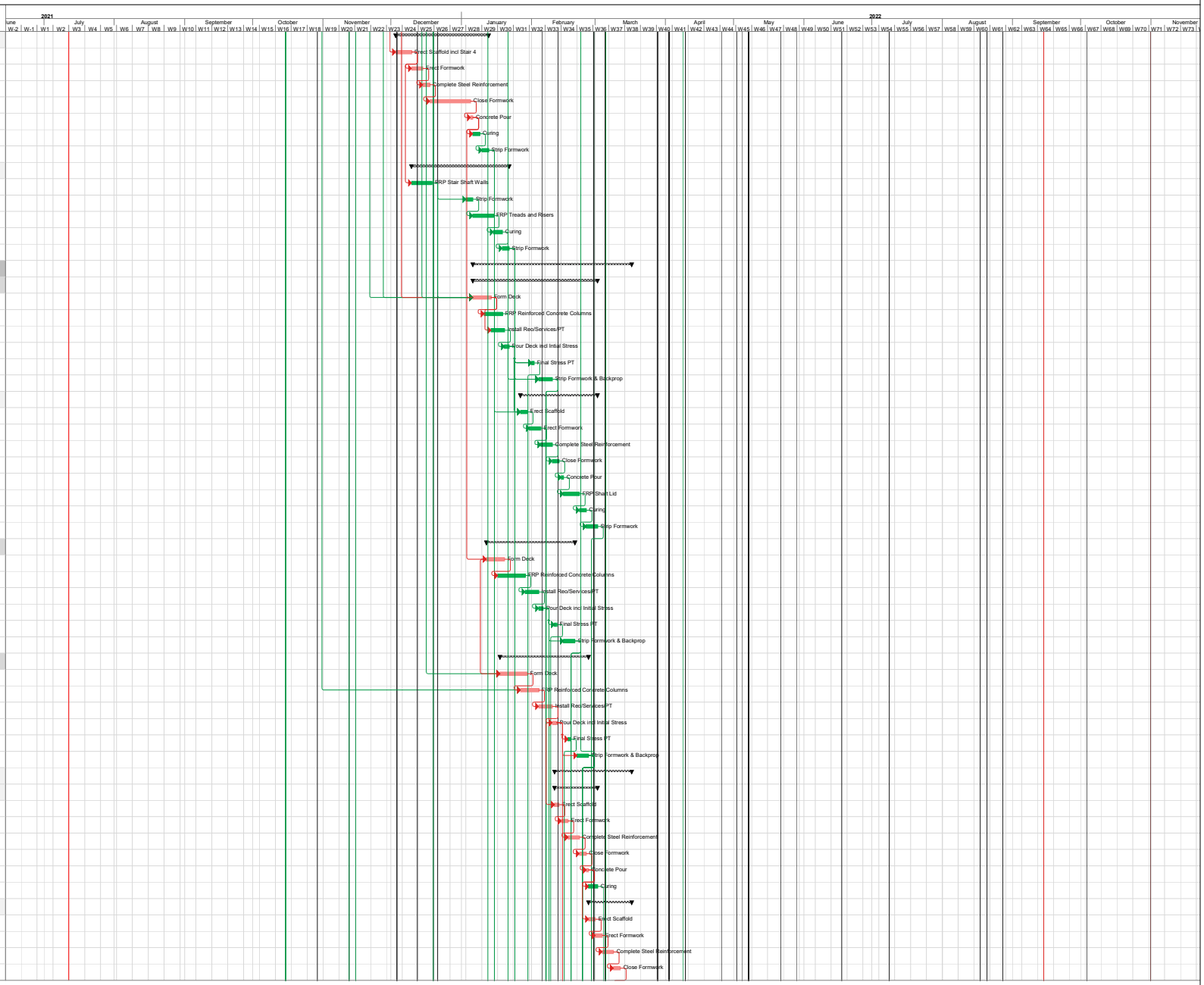
Powerhouse Museum's Discovery Centre (MDC) - Main Works Package, Construction of Building J and Associated Works

172 Showground Road, Castle Hill NSW

NSW GOVERNMENT Public Works Advisory

TAYLOR

ID	Task Name	Dur.	Start	Finish
291	**Lift 02 (Ground Floor to Level 01)**	**20 d**	**Fri 3/12/21**	**Wed 12/01/22**
292	Erect Scaffold incl Stair 4	3 d	Fri 3/12/21	Thu 9/12/21
293	Erect Formwork	4 d	Fri 10/12/21	Tue 14/12/21
294	Complete Steel Reinforcement	3 d	Wed 15/12/21	Fri 17/12/21
295	Close Formwork	3 d	Sat 18/12/21	Tue 4/01/22
296	Concrete Pour	1 d	Wed 5/01/22	Wed 5/01/22
297	Curing	3 d	Thu 6/01/22	Sat 8/01/22
298	Strip Formwork	3 d	Mon 10/01/22	Wed 12/01/22
299	**Stair 04 (Ground Floor to Level 01)**	**25 d**	**Fri 10/12/21**	**Fri 21/01/22**
300	FRP Stair Shaft Walls	8 d	Fri 10/12/21	Sat 18/12/21
301	Strip Formwork	3 d	Mon 3/01/22	Wed 5/01/22
302	FRP Treads and Risers	8 d	Thu 6/01/22	Fri 14/01/22
303	Curing	3 d	Sat 15/01/22	Tue 18/01/22
304	Strip Formwork	3 d	Wed 19/01/22	Fri 21/01/22
305	**Level 1**	**56 d**	**Thu 6/01/22**	**Wed 16/03/22**
306	**Level 1 Pour 1 (Grid 09 to 11)**	**43 d**	**Thu 6/01/22**	**Tue 1/03/22**
307	Form Deck	7 d	Thu 6/01/22	Thu 13/01/22
308	FRP Reinforced Concrete Columns	7 d	Tue 11/01/22	Tue 18/01/22
309	Install Reo/Services/PT	5 d	Fri 14/01/22	Wed 19/01/22
310	Pour Deck incl Initial Stress	2 d	Thu 20/01/22	Fri 21/01/22
311	Final Stress PT	1 d	Tue 1/02/22	Tue 1/02/22
312	Strip Formwork & Backprop	5 d	Fri 4/02/22	Wed 9/02/22
313	**Lift 02 (Level 01 to Level 02)**	**29 d**	**Thu 27/01/22**	**Tue 1/03/22**
314	Erect Scaffold	3 d	Thu 27/01/22	Sat 29/01/22
315	Erect Formwork	5 d	Mon 31/01/22	Fri 4/02/22
316	Complete Steel Reinforcement	4 d	Sat 5/02/22	Wed 9/02/22
317	Close Formwork	3 d	Thu 10/02/22	Sat 12/02/22
318	Concrete Pour	1 d	Mon 14/02/22	Mon 14/02/22
319	FRP Shaft Lid	6 d	Tue 15/02/22	Mon 21/02/22
320	Curing	3 d	Tue 22/02/22	Thu 24/02/22
321	Strip Formwork	4 d	Fri 25/02/22	Tue 1/03/22
322	**Level 1 Pour 2 (Grid 07 to 09)**	**30 d**	**Wed 12/01/22**	**Sat 19/02/22**
323	Form Deck	7 d	Wed 12/01/22	Wed 19/01/22
324	FRP Reinforced Concrete Columns	7 d	Mon 17/01/22	Fri 28/01/22
325	Install Reo/Services/PT	5 d	Sat 29/01/22	Thu 3/02/22
326	Pour Deck incl Initial Stress	2 d	Fri 4/02/22	Sat 5/02/22
327	Final Stress PT	1 d	Fri 11/02/22	Fri 11/02/22
328	Strip Formwork & Backprop	5 d	Tue 15/02/22	Sat 19/02/22
329	**Level 1 Pour 3 (Grid 05 to 07)**	**30 d**	**Tue 18/01/22**	**Fri 25/02/22**
330	Form Deck	7 d	Tue 18/01/22	Sat 29/01/22
331	FRP Reinforced Concrete Columns	7 d	Thu 27/01/22	Thu 3/02/22
332	Install Reo/Services/PT	5 d	Fri 4/02/22	Wed 9/02/22
333	Pour Deck incl Initial Stress	2 d	Thu 10/02/22	Fri 11/02/22
334	Final Stress PT	1 d	Thu 17/02/22	Thu 17/02/22
335	Strip Formwork & Backprop	5 d	Mon 21/02/22	Fri 25/02/22
336	**FRP Grid 05 Fire Wall**	**29 d**	**Fri 11/02/22**	**Wed 16/03/22**
337	**Level 01 to Level 02**	**16 d**	**Fri 11/02/22**	**Tue 1/03/22**
338	Erect Scaffold	2 d	Fri 11/02/22	Sat 12/02/22
339	Erect Formwork	3 d	Mon 14/02/22	Wed 16/02/22
340	Complete Steel Reinforcement	4 d	Thu 17/02/22	Mon 21/02/22
341	Close Formwork	3 d	Tue 22/02/22	Thu 24/02/22
342	Concrete Pour	1 d	Fri 25/02/22	Fri 25/02/22
343	Curing	3 d	Sat 26/02/22	Tue 1/03/22
344	**Level 02 to Roof**	**16 d**	**Sat 26/02/22**	**Wed 16/03/22**
345	Erect Scaffold	2 d	Sat 26/02/22	Mon 28/02/22
346	Erect Formwork	3 d	Tue 1/03/22	Thu 3/03/22
347	Complete Steel Reinforcement	4 d	Fri 4/03/22	Tue 8/03/22
348	Close Formwork	3 d	Wed 9/03/22	Fri 11/03/22

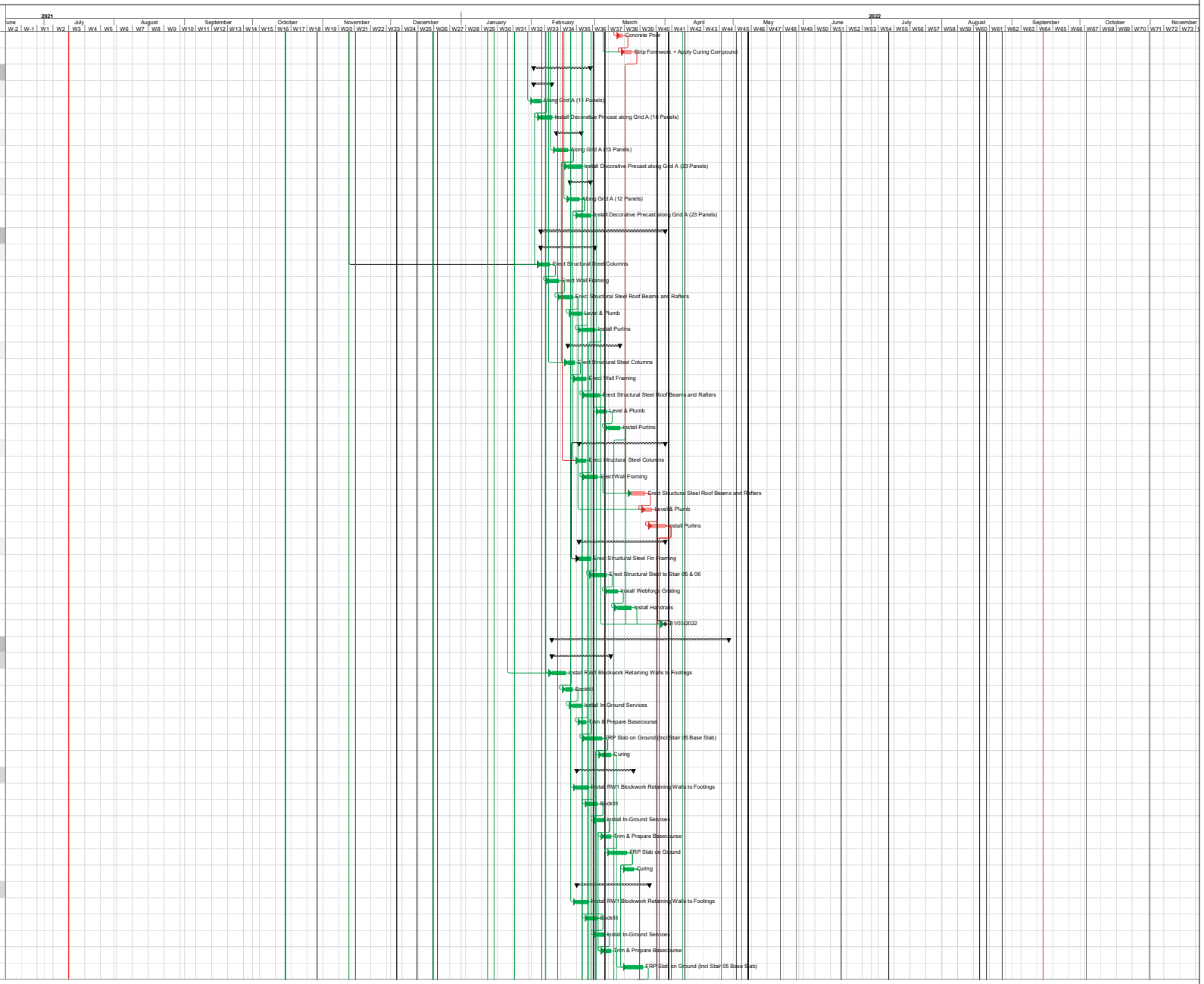


Task | Milestone | Critical | Critical Split | Progress | Baseline | Project Summary | WBS Summary | Manual Progress

Powerhouse Museum's Discovery Centre (MDC) - Main Works Package, Construction of Building J and Associated Works

172 Showground Road, Castle Hill NSW

ID	Task Name	Dur.	Start	Finish
349	Concrete Pour	1 d	Sat 12/03/22	Sat 12/03/22
350	Strip Formwork + Apply Curing Compound	3 d	Mon 14/03/22	Wed 16/03/22
351	**Precast**	**22 d**	**Wed 2/02/22**	**Sat 26/02/22**
352	**Precast (Grid 09-11)**	**7 d**	**Wed 2/02/22**	**Wed 9/02/22**
353	Along Grid A (11 Panels)	3 d	Wed 2/02/22	Fri 4/02/22
354	Install Decorative Precast along Grid A (18 Panels)	4 d	Sat 5/02/22	Wed 9/02/22
355	**Precast (Grid 07-09)**	**9 d**	**Sat 12/02/22**	**Tue 22/02/22**
356	Along Grid A (13 Panels)	4 d	Sat 12/02/22	Wed 16/02/22
357	Install Decorative Precast along Grid A (23 Panels)	5 d	Thu 17/02/22	Tue 22/02/22
358	**Precast (Grid 05-07)**	**8 d**	**Fri 18/02/22**	**Sat 26/02/22**
359	Along Grid A (12 Panels)	3 d	Fri 18/02/22	Mon 21/02/22
360	Install Decorative Precast along Grid A (23 Panels)	5 d	Tue 22/02/22	Sat 26/02/22
361	**Roof Structure**	**47 d**	**Sat 5/02/22**	**Thu 31/03/22**
362	**Structural Steel (Grid 09-11)**	**20 d**	**Sat 5/02/22**	**Mon 28/02/22**
363	Erect Structural Steel Columns	3 d	Sat 5/02/22	Tue 8/02/22
364	Erect Wall Framing	4 d	Wed 9/02/22	Sat 12/02/22
365	Erect Structural Steel Roof Beams and Rafters	5 d	Mon 14/02/22	Fri 18/02/22
366	Level & Plumb	3 d	Sat 19/02/22	Tue 22/02/22
367	Install Purlins	5 d	Wed 23/02/22	Mon 28/02/22
368	**Structural Steel (Grid 07-09)**	**20 d**	**Thu 17/02/22**	**Fri 11/03/22**
369	Erect Structural Steel Columns	3 d	Thu 17/02/22	Sat 19/02/22
370	Erect Wall Framing	4 d	Mon 21/02/22	Thu 24/02/22
371	Erect Structural Steel Roof Beams and Rafters	5 d	Fri 25/02/22	Wed 2/03/22
372	Level & Plumb	3 d	Thu 3/03/22	Sat 5/03/22
373	Install Purlins	5 d	Mon 7/03/22	Fri 11/03/22
374	**Structural Steel (Grid 05-07)**	**33 d**	**Tue 22/02/22**	**Thu 31/03/22**
375	Erect Structural Steel Columns	3 d	Tue 22/02/22	Thu 24/02/22
376	Erect Wall Framing	4 d	Fri 25/02/22	Tue 1/03/22
377	Erect Structural Steel Roof Beams and Rafters	5 d	Thu 17/03/22	Tue 22/03/22
378	Level & Plumb	3 d	Wed 23/03/22	Fri 25/03/22
379	Install Purlins	5 d	Sat 26/03/22	Thu 31/03/22
380	**Miscellaneous Structural Steel**	**33 d**	**Tue 22/02/22**	**Thu 31/03/22**
381	Erect Structural Steel Fin Framing	5 d	Tue 22/02/22	Sat 26/02/22
382	Erect Structural Steel to Stair 05 & 06	6 d	Mon 28/02/22	Sat 5/03/22
383	Install Webforge Grating	4 d	Mon 7/03/22	Thu 10/03/22
384	Install Handrails	5 d	Fri 11/03/22	Wed 16/03/22
385	*Structural Steel Complete*	*0 d*	*Thu 31/03/22*	*Thu 31/03/22*
386	**Lower Ground Slab**	**60 d**	**Thu 10/02/22**	**Thu 28/04/22**
387	**Lower Ground Slab - Pour 1**	**22 d**	**Thu 10/02/22**	**Mon 7/03/22**
388	Install RW1 Blockwork Retaining Walls to Footings	5 d	Thu 10/02/22	Tue 15/02/22
389	Backfill	3 d	Wed 16/02/22	Fri 18/02/22
390	Install In-Ground Services	3 d	Sat 19/02/22	Tue 22/02/22
391	Trim & Prepare Basecourse	2 d	Wed 23/02/22	Thu 24/02/22
392	FRP Slab on Ground (Incl Stair 05 Base Slab)	6 d	Fri 25/02/22	Thu 3/03/22
393	Curing	3 d	Fri 4/03/22	Mon 7/03/22
394	**Lower Ground Slab - Pour 2**	**22 d**	**Mon 21/02/22**	**Thu 17/03/22**
395	Install RW1 Blockwork Retaining Walls to Footings	5 d	Mon 21/02/22	Fri 25/02/22
396	Backfill	3 d	Sat 26/02/22	Tue 1/03/22
397	Install In-Ground Services	3 d	Wed 2/03/22	Fri 4/03/22
398	Trim & Prepare Basecourse	2 d	Sat 5/03/22	Mon 7/03/22
399	FRP Slab on Ground	6 d	Tue 8/03/22	Mon 14/03/22
400	Curing	3 d	Tue 15/03/22	Thu 17/03/22
401	**Lower Ground Slab - Pour 3**	**28 d**	**Mon 21/02/22**	**Thu 24/03/22**
402	Install RW1 Blockwork Retaining Walls to Footings	5 d	Mon 21/02/22	Fri 25/02/22
403	Backfill	3 d	Sat 26/02/22	Tue 1/03/22
404	Install In-Ground Services	3 d	Wed 2/03/22	Fri 4/03/22
405	Trim & Prepare Basecourse	2 d	Sat 5/03/22	Mon 7/03/22
406	FRP Slab on Ground (Incl Stair 05 Base Slab)	6 d	Tue 15/03/22	Mon 21/03/22

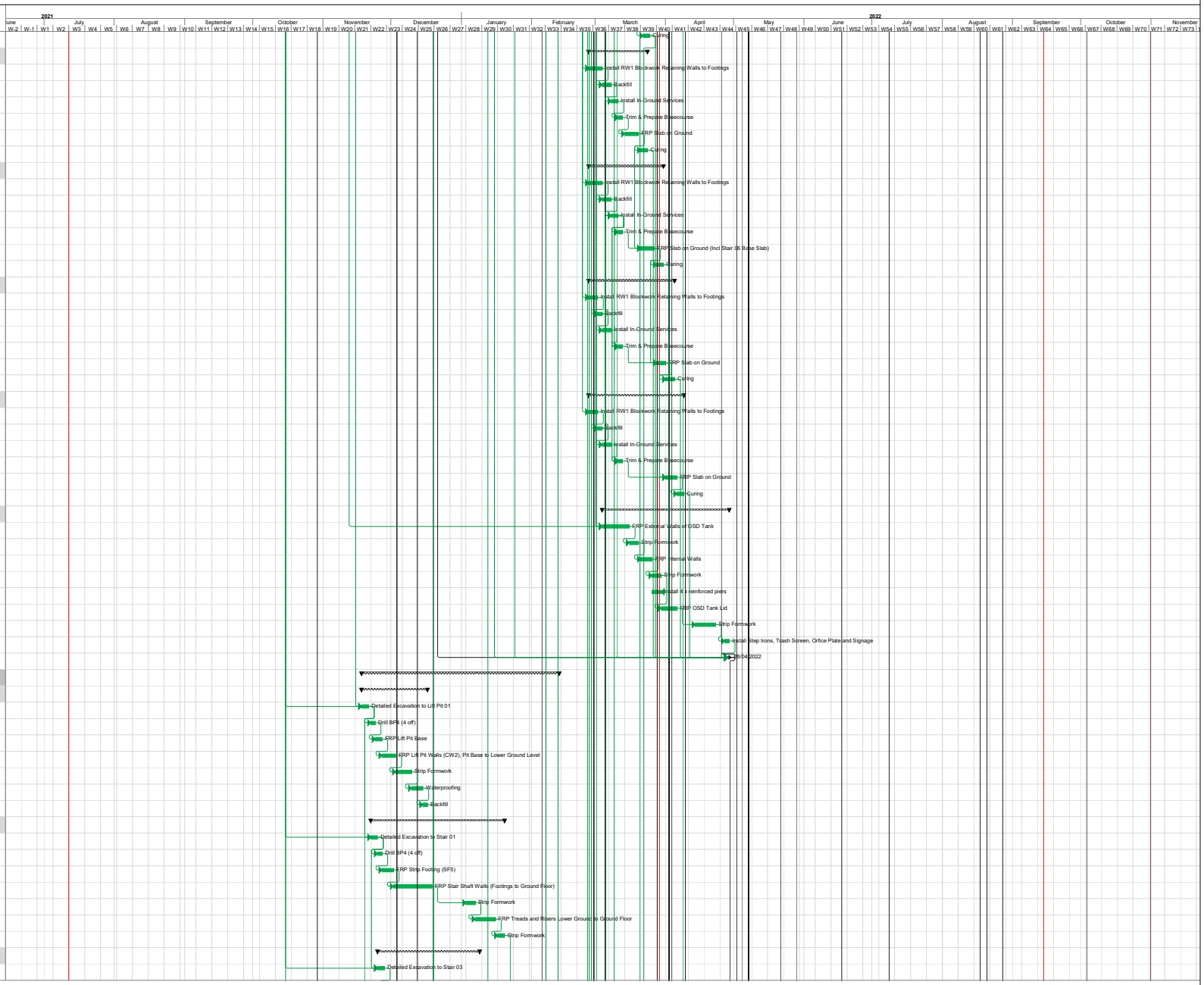


Task | Milestone | Critical | Critical Split | Progress | Baseline | Project Summary | WBS Summary | Manual Progress

Powerhouse Museum's Discovery Centre (MDC) - Main Works Package, Construction of Building J and Associated Works

172 Showground Road, Castle Hill NSW

ID	Task Name	Dur.	Start	Finish
407	Curing	3 d	Tue 22/03/22	Thu 24/03/22
408	**Lower Ground Slab - Pour 4**	**22 d**	**Sat 26/02/22**	**Wed 23/03/22**
409	Install RW1 Blockwork Retaining Walls to Footings	5 d	Sat 26/02/22	Thu 3/03/22
410	Backfill	3 d	Fri 4/03/22	Mon 7/03/22
411	Install In-Ground Services	3 d	Tue 8/03/22	Thu 10/03/22
412	Trim & Prepare Basecourse	2 d	Fri 11/03/22	Sat 12/03/22
413	FRP Slab on Ground	6 d	Mon 14/03/22	Sat 19/03/22
414	Curing	3 d	Mon 21/03/22	Wed 23/03/22
415	**Lower Ground Slab - Pour 5**	**28 d**	**Sat 26/02/22**	**Wed 30/03/22**
416	Install RW1 Blockwork Retaining Walls to Footings	5 d	Sat 26/02/22	Thu 3/03/22
417	Backfill	3 d	Fri 4/03/22	Mon 7/03/22
418	Install In-Ground Services	3 d	Tue 8/03/22	Thu 10/03/22
419	Trim & Prepare Basecourse	2 d	Fri 11/03/22	Sat 12/03/22
420	FRP Slab on Ground (Incl Stair 06 Base Slab)	6 d	Mon 21/03/22	Sat 26/03/22
421	Curing	3 d	Mon 28/03/22	Wed 30/03/22
422	**Lower Ground Slab - Pour 6**	**32 d**	**Sat 26/02/22**	**Mon 4/04/22**
423	Install RW1 Blockwork Retaining Walls to Footings	3 d	Sat 26/02/22	Tue 1/03/22
424	Backfill	2 d	Wed 2/03/22	Thu 3/03/22
425	Install In-Ground Services	3 d	Fri 4/03/22	Mon 7/03/22
426	Trim & Prepare Basecourse	2 d	Fri 11/03/22	Sat 12/03/22
427	FRP Slab on Ground	4 d	Mon 28/03/22	Thu 31/03/22
428	Curing	3 d	Fri 1/04/22	Mon 4/04/22
429	**Lower Ground Slab - Pour 7**	**36 d**	**Sat 26/02/22**	**Fri 8/04/22**
430	Install RW1 Blockwork Retaining Walls to Footings	3 d	Sat 26/02/22	Tue 1/03/22
431	Backfill	2 d	Wed 2/03/22	Thu 3/03/22
432	Install In-Ground Services	3 d	Fri 4/03/22	Mon 7/03/22
433	Trim & Prepare Basecourse	2 d	Fri 11/03/22	Sat 12/03/22
434	FRP Slab on Ground	4 d	Fri 1/04/22	Tue 5/04/22
435	Curing	3 d	Wed 6/04/22	Fri 8/04/22
436	**Construct OSD & RW Tank**	**41 d**	**Fri 4/03/22**	**Thu 28/04/22**
437	FRP External Walls of OSD Tank	10 d	Fri 4/03/22	Tue 15/03/22
438	Strip Formwork	4 d	Wed 16/03/22	Sat 19/03/22
439	FRP Internal Walls	5 d	Mon 21/03/22	Fri 25/03/22
440	Strip Formwork	3 d	Sat 26/03/22	Tue 29/03/22
441	Install 4 x reinforced piers	3 d	Sat 26/03/22	Tue 29/03/22
442	FRP OSD Tank Lid	6 d	Wed 30/03/22	Tue 5/04/22
443	Strip Formwork	4 d	Thu 14/04/22	Fri 22/04/22
444	Install Step Irons, Trash Screen, Orfice Plate and Signage	2 d	Wed 27/04/22	Thu 28/04/22
445	*Lower Ground Slab Works Complete*	*0 d*	*Thu 28/04/22*	*Thu 28/04/22*
446	**Lower Ground Slab (Grid 01 to 05)**	**56 d**	**Thu 18/11/21**	**Sat 12/02/22**
447	**Lift Pit 01**	**22 d**	**Thu 18/11/21**	**Thu 16/12/21**
448	Detailed Excavation to Lift Pit 01	3 d	Thu 18/11/21	Sat 20/11/21
449	Drill BP4 (4 off)	2 d	Mon 22/11/21	Tue 23/11/21
450	FRP Lift Pit Base	3 d	Wed 24/11/21	Fri 26/11/21
451	FRP Lift Pit Walls (CW2), Pit Base to Lower Ground Level	5 d	Sat 27/11/21	Thu 2/12/21
452	Strip Formwork	3 d	Fri 3/12/21	Thu 9/12/21
453	Waterproofing	4 d	Fri 10/12/21	Tue 14/12/21
454	Backfill	2 d	Wed 15/12/21	Thu 16/12/21
455	**Stair 01**	**36 d**	**Mon 22/11/21**	**Wed 19/01/22**
456	Detailed Excavation to Stair 01	3 d	Mon 22/11/21	Wed 24/11/21
457	Drill BP4 (4 off)	2 d	Thu 25/11/21	Fri 26/11/21
458	FRP Strip Footing (SF5)	4 d	Sat 27/11/21	Wed 1/12/21
459	FRP Stair Shaft Walls (Footings to Ground Floor)	12 d	Thu 2/12/21	Sat 18/12/21
460	Strip Formwork	4 d	Mon 3/01/22	Thu 6/01/22
461	FRP Treads and Risers Lower Ground to Ground Floor	8 d	Fri 7/01/22	Sat 15/01/22
462	Strip Formwork	3 d	Mon 17/01/22	Wed 19/01/22
463	**Stair 03 Shaft**	**24 d**	**Thu 25/11/21**	**Sat 8/01/22**
464	Detailed Excavation to Stair 03	3 d	Thu 25/11/21	Sat 27/11/21

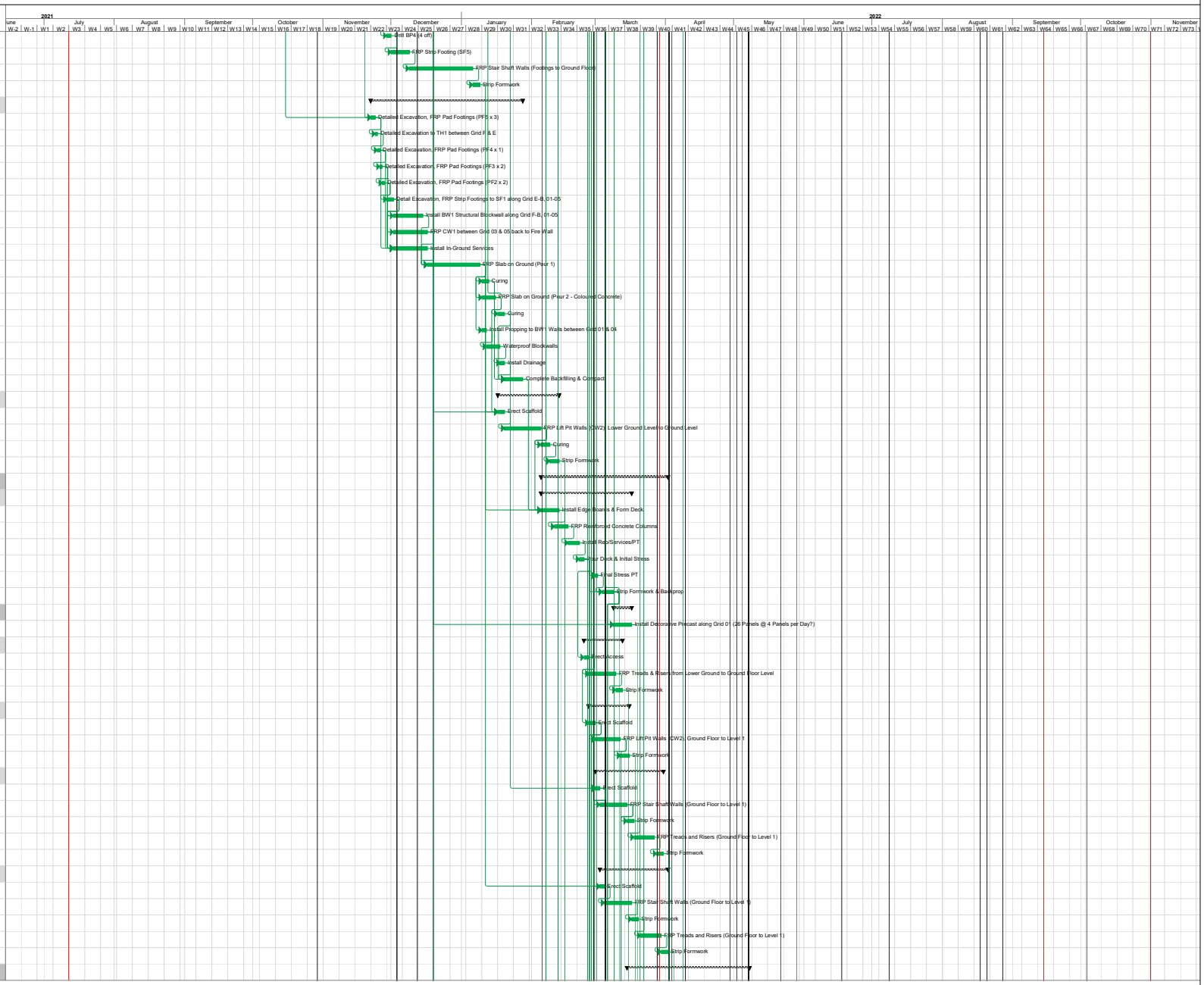


Task | Milestone | Critical | Critical Split | Progress | Baseline | Project Summary | WBS Summary | Manual Progress

Powerhouse Museum's Discovery Centre (MDC) - Main Works Package, Construction of Building J and Associated Works

172 Showground Road, Castle Hill NSW

ID	Task Name	Dur.	Start	Finish
465	Drill BP4 (4 off)	2 d	Mon 29/11/21	Tue 30/11/21
466	FRP Strip Footing (SF5)	4 d	Wed 1/12/21	Wed 8/12/21
467	FRP Stair Shaft Walls (Footings to Ground Floor)	12 d	Thu 9/12/21	Wed 5/01/22
468	Strip Formwork	3 d	Thu 6/01/22	Sat 8/01/22
469	**Slab on Ground (Grid 01 to 05)**	**39 d**	**Mon 22/11/21**	**Thu 27/01/22**
470	Detailed Excavation, FRP Pad Footings (PF5 x 3)	2 d	Mon 22/11/21	Tue 23/11/21
471	Detailed Excavation to TH1 between Grid F & E	1 d	Wed 24/11/21	Wed 24/11/21
472	Detailed Excavation, FRP Pad Footings (PF4 x 1)	1 d	Thu 25/11/21	Thu 25/11/21
473	Detailed Excavation, FRP Pad Footings (PF3 x 2)	1 d	Fri 26/11/21	Fri 26/11/21
474	Detailed Excavation, FRP Pad Footings (PF2 x 2)	1 d	Sat 27/11/21	Sat 27/11/21
475	Detail Excavation, FRP Strip Footings to SF1 along Grid E-B, 01-05	3 d	Mon 29/11/21	Wed 1/12/21
476	Install BW1 Structural Blockwall along Grid F-B, 01-05	8 d	Thu 2/12/21	Tue 14/12/21
477	FRP CW1 between Grid 03 & 05 back to Fire Wall	10 d	Thu 2/12/21	Thu 16/12/21
478	Install In-Ground Services	10 d	Thu 2/12/21	Thu 16/12/21
479	FRP Slab on Ground (Pour 1)	8 d	Fri 17/12/21	Sat 8/01/22
480	Curing	3 d	Mon 10/01/22	Wed 12/01/22
481	FRP Slab on Ground (Pour 2 - Coloured Concrete)	6 d	Mon 10/01/22	Sat 15/01/22
482	Curing	3 d	Mon 17/01/22	Wed 19/01/22
483	Install Propping to BW1 Walls between Grid 01 & 04	2 d	Mon 10/01/22	Tue 11/01/22
484	Waterproof Blockwalls	5 d	Wed 12/01/22	Mon 17/01/22
485	Install Drainage	2 d	Tue 18/01/22	Wed 19/01/22
486	Complete Backfilling & Compact	3 d	Thu 20/01/22	Thu 27/01/22
487	**Lift 01**	**20 d**	**Mon 17/01/22**	**Sat 12/02/22**
488	Erect Scaffold	3 d	Mon 17/01/22	Wed 19/01/22
489	FRP Lift Pit Walls (CW2), Lower Ground Level to Ground Level	10 d	Thu 20/01/22	Fri 4/02/22
490	Curing	3 d	Sat 5/02/22	Tue 8/02/22
491	Strip Formwork	4 d	Wed 9/02/22	Sat 12/02/22
492	**Ground Floor (Grid 01 to 05)**	**48 d**	**Sat 5/02/22**	**Fri 1/04/22**
493	**Suspended Slab**	**34 d**	**Sat 5/02/22**	**Wed 16/03/22**
494	Install Edge Boards & Form Deck	7 d	Sat 5/02/22	Sat 12/02/22
495	FRP Reinforced Concrete Columns	5 d	Fri 11/02/22	Wed 16/02/22
496	Install Reo/Services/PT	4 d	Thu 17/02/22	Mon 21/02/22
497	Pour Deck & Initial Stress	2 d	Tue 22/02/22	Wed 23/02/22
498	Final Stress PT	1 d	Tue 1/03/22	Tue 1/03/22
499	Strip Formwork & Backprop	4 d	Fri 4/03/22	Tue 8/03/22
500	**Install Decorative Precast**	**7 d**	**Wed 9/03/22**	**Wed 16/03/22**
501	Install Decorative Precast along Grid 01 (26 Panels @ 4 Panels per Day?)	7 d	Wed 9/03/22	Wed 16/03/22
502	**Stair 02**	**15 d**	**Thu 24/02/22**	**Sat 12/03/22**
503	Erect Access	2 d	Thu 24/02/22	Fri 25/02/22
504	FRP Treads & Risers from Lower Ground to Ground Floor Level	10 d	Sat 26/02/22	Wed 9/03/22
505	Strip Formwork	3 d	Thu 10/03/22	Sat 12/03/22
506	**Lift 01**	**15 d**	**Sat 26/02/22**	**Tue 15/03/22**
507	Erect Scaffold	2 d	Sat 26/02/22	Mon 28/02/22
508	FRP Lift Pit Walls (CW2), Ground Floor to Level 1	10 d	Tue 1/03/22	Fri 11/03/22
509	Strip Formwork	3 d	Sat 12/03/22	Tue 15/03/22
510	**Stair 01**	**26 d**	**Tue 1/03/22**	**Wed 30/03/22**
511	Erect Scaffold	2 d	Tue 1/03/22	Wed 2/03/22
512	FRP Stair Shaft Walls (Ground Floor to Level 1)	10 d	Thu 3/03/22	Mon 14/03/22
513	Strip Formwork	3 d	Tue 15/03/22	Thu 17/03/22
514	FRP Treads and Risers (Ground Floor to Level 1)	8 d	Fri 18/03/22	Sat 26/03/22
515	Strip Formwork	3 d	Mon 28/03/22	Wed 30/03/22
516	**Stair 03**	**26 d**	**Thu 3/03/22**	**Fri 1/04/22**
517	Erect Scaffold	2 d	Thu 3/03/22	Fri 4/03/22
518	FRP Stair Shaft Walls (Ground Floor to Level 1)	10 d	Sat 5/03/22	Wed 16/03/22
519	Strip Formwork	3 d	Thu 17/03/22	Sat 19/03/22
520	FRP Treads and Risers (Ground Floor to Level 1)	8 d	Mon 21/03/22	Tue 29/03/22
521	Strip Formwork	3 d	Wed 30/03/22	Fri 1/04/22
522	**Level 01 (Grid 01 to 05)**	**40 d**	**Tue 15/03/22**	**Sat 7/05/22**



Task | Milestone | Critical | Critical Split | Progress | Baseline | Project Summary | WBS Summary | Manual Progress

Powerhouse Museum's Discovery Centre (MDC) - Main Works Package, Construction of Building J and Associated Works

172 Showground Road, Castle Hill NSW

NSW GOVERNMENT Public Works Advisory

TAYLOR

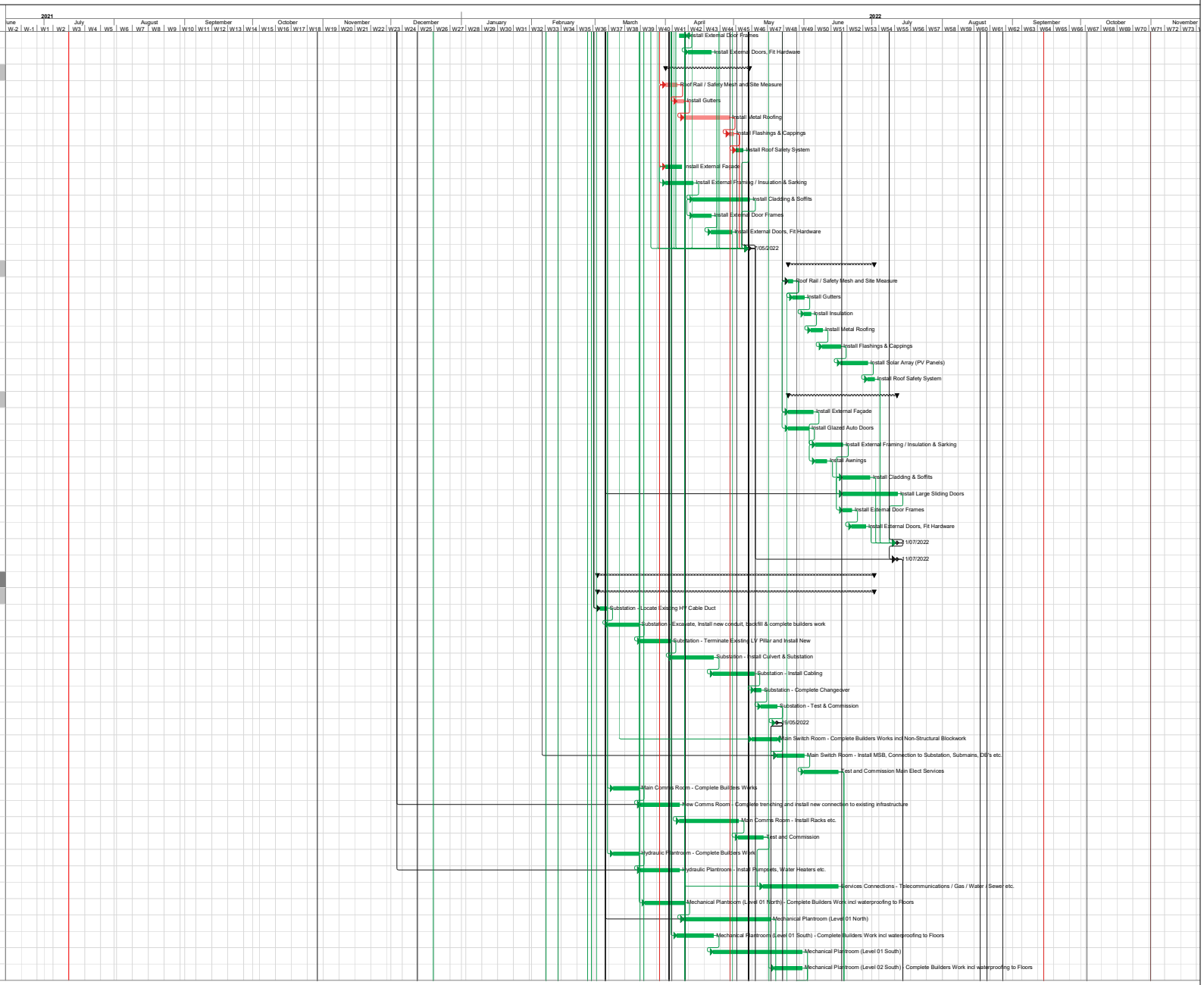
ID	Task Name	Dur.	Start	Finish
523	**Suspended Slab**	**24 d**	**Tue 15/03/22**	**Mon 11/04/22**
524	Form Deck	5 d	Tue 15/03/22	Sat 19/03/22
525	FRP Reinforced Concrete Columns	5 d	Fri 18/03/22	Wed 23/03/22
526	Install Reo/Services/PT	4 d	Thu 24/03/22	Mon 28/03/22
527	Pour Deck incl Initial Stress	2 d	Tue 29/03/22	Wed 30/03/22
528	Final Stress PT	1 d	Tue 5/04/22	Tue 5/04/22
529	Strip Formwork & Backprop	3 d	Fri 8/04/22	Mon 11/04/22
530	**Lift 01**	**21 d**	**Thu 31/03/22**	**Mon 2/05/22**
531	Erect Scaffold	2 d	Thu 31/03/22	Fri 1/04/22
532	FRP Lift Pit Walls (CW2), Level 01 to Level 02	10 d	Sat 2/04/22	Wed 13/04/22
533	FRP Lift Shaft Lid	5 d	Thu 14/04/22	Wed 27/04/22
534	Strip Formwork	4 d	Thu 28/04/22	Mon 2/05/22
535	**Stair 01**	**21 d**	**Sat 2/04/22**	**Wed 4/05/22**
536	Erect Scaffold	2 d	Sat 2/04/22	Mon 4/04/22
537	FRP Stair Shaft Walls (Level 01 to Level 02)	10 d	Tue 5/04/22	Wed 20/04/22
538	FRP Shaft Lid	5 d	Thu 21/04/22	Fri 29/04/22
539	Strip Formwork	4 d	Sat 30/04/22	Wed 4/05/22
540	**Stair 03**	**22 d**	**Tue 5/04/22**	**Sat 7/05/22**
541	Erect Scaffold	3 d	Tue 5/04/22	Thu 7/04/22
542	FRP Stair Shaft Walls (Level 01 to Level 02)	10 d	Fri 8/04/22	Wed 27/04/22
543	FRP Shaft Lid	5 d	Thu 28/04/22	Tue 3/05/22
544	Strip Formwork	4 d	Wed 4/05/22	Sat 7/05/22
545	**Level 02 (Grid 01 to 04)**	**21 d**	**Sat 30/04/22**	**Tue 24/05/22**
546	**Suspended Slab**	**21 d**	**Sat 30/04/22**	**Tue 24/05/22**
547	Form Deck	3 d	Sat 30/04/22	Tue 3/05/22
548	FRP Reinforced Concrete Columns	3 d	Wed 4/05/22	Fri 6/05/22
549	Install Reo/Services	3 d	Sat 7/05/22	Tue 10/05/22
550	Pour Deck incl Initial Stress	2 d	Wed 11/05/22	Thu 12/05/22
551	Final Stress PT	1 d	Wed 18/05/22	Wed 18/05/22
552	Strip Formwork & Backprop	3 d	Sat 21/05/22	Tue 24/05/22
553	**Roof & Wall Structure (Grid 01 to 05)**	**21 d**	**Sat 30/04/22**	**Tue 24/05/22**
554	**Structural Steel**	**21 d**	**Sat 30/04/22**	**Tue 24/05/22**
555	Erect Structural Steel Columns	4 d	Sat 30/04/22	Wed 4/05/22
556	Erect Wall Framing	5 d	Thu 5/05/22	Tue 10/05/22
557	Erect Structural Steel Roof Beams and Rafters	7 d	Wed 11/05/22	Wed 18/05/22
558	Install Purlins	5 d	Thu 19/05/22	Tue 24/05/22
559	*Structural Complete*	*0 d*	*Tue 24/05/22*	*Tue 24/05/22*
560	**ROOF, CLADDING & FAÇADE**	**104 d**	**Tue 1/03/22**	**Mon 11/07/22**
561	**Grid 09 to 11**	**41 d**	**Tue 1/03/22**	**Thu 21/04/22**
562	Roof Rail / Safety Mesh and Site Measure	4 d	Tue 1/03/22	Fri 4/03/22
563	Install Gutters	3 d	Sat 5/03/22	Tue 8/03/22
564	Install Metal Roofing	10 d	Wed 9/03/22	Sat 19/03/22
565	Install Flashings & Cappings	2 d	Mon 21/03/22	Tue 22/03/22
566	Install Roof Safety System	3 d	Wed 23/03/22	Fri 25/03/22
567	Install External Louvres	10 d	Thu 3/03/22	Mon 14/03/22
568	Install External Framing / Insulation & Sarking	10 d	Thu 3/03/22	Mon 14/03/22
569	Install Cladding & Soffits	15 d	Tue 15/03/22	Thu 31/03/22
570	Install Roller Shuters	15 d	Thu 31/03/22	Thu 21/04/22
571	Install External Door Frames	3 d	Thu 24/03/22	Sat 26/03/22
572	Install External Doors, Fit Hardware	5 d	Mon 28/03/22	Fri 1/04/22
573	**Grid 07 to 09**	**30 d**	**Sat 12/03/22**	**Wed 20/04/22**
574	Roof Rail / Safety Mesh and Site Measure	4 d	Sat 12/03/22	Wed 16/03/22
575	Install Gutters	3 d	Thu 17/03/22	Sat 19/03/22
576	Install Metal Roofing	10 d	Mon 21/03/22	Thu 31/03/22
577	Install Flashings & Cappings	2 d	Fri 1/04/22	Sat 2/04/22
578	Install Roof Safety System	3 d	Mon 4/04/22	Wed 6/04/22
579	Install External Framing / Insulation & Sarking	10 d	Sat 12/03/22	Wed 23/03/22
580	Install Cladding	15 d	Thu 24/03/22	Sat 9/04/22

Task | Milestone | Critical | Critical Split | Progress | Baseline | Project Summary | WBS Summary | Manual Progress

Powerhouse Museum's Discovery Centre (MDC) - Main Works Package, Construction of Building J and Associated Works

172 Showground Road, Castle Hill NSW

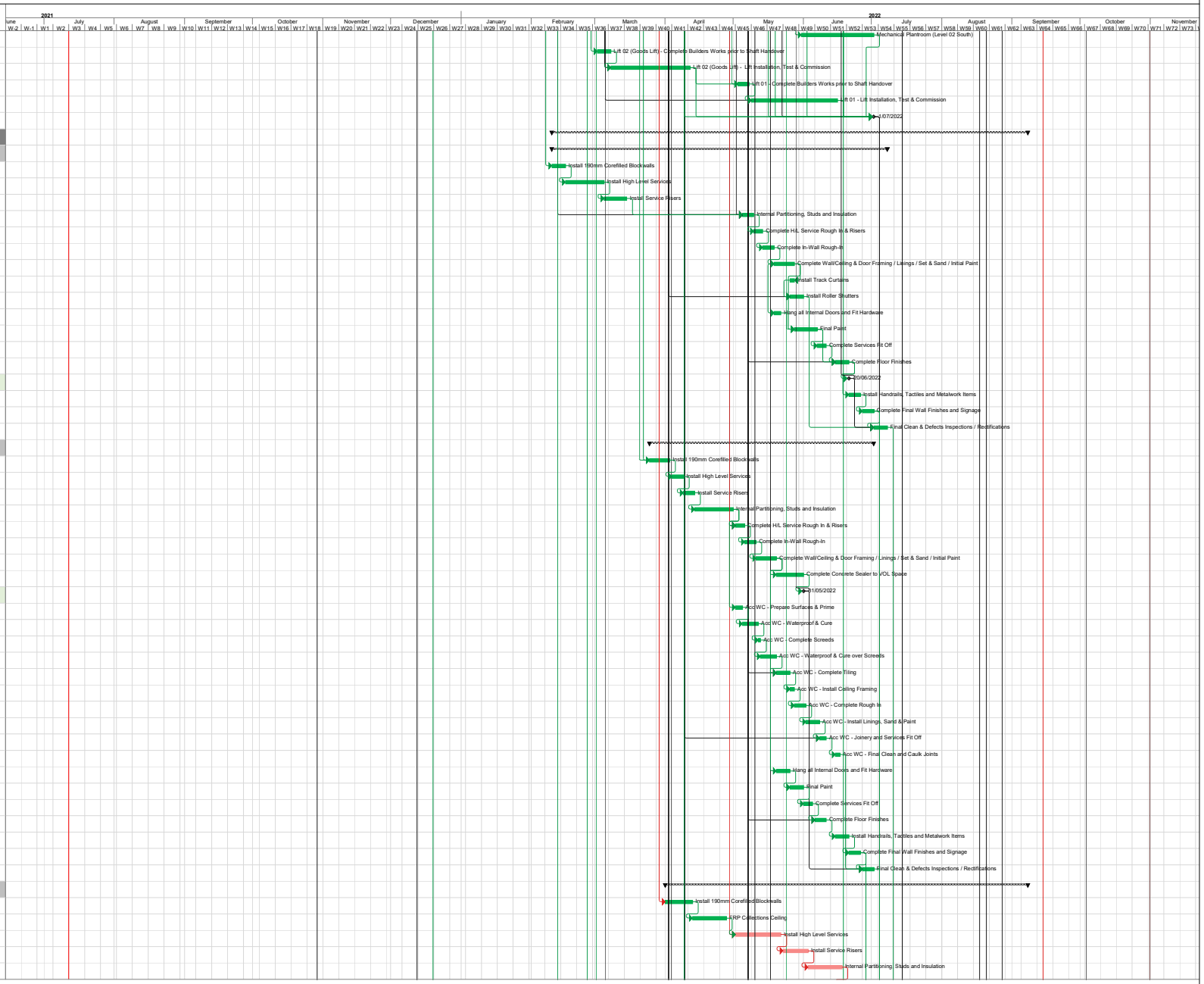
ID	Task Name	Dur.	Start	Finish
581	Install External Door Frames	3 d	Thu 7/04/22	Sat 9/04/22
582	Install External Doors, Fit Hardware	5 d	Mon 11/04/22	Wed 20/04/22
583	**Grid 05 to 07**	**25 d**	**Fri 1/04/22**	**Sat 7/05/22**
584	Roof Rail / Safety Mesh and Site Measure	4 d	Fri 1/04/22	Tue 5/04/22
585	Install Gutters	3 d	Wed 6/04/22	Fri 8/04/22
586	Install Metal Roofing	10 d	Sat 9/04/22	Thu 28/04/22
587	Install Flashings & Cappings	2 d	Fri 29/04/22	Sat 30/04/22
588	Install Roof Safety System	3 d	Mon 2/05/22	Wed 4/05/22
589	Install External Façade	6 d	Fri 1/04/22	Thu 7/04/22
590	Install External Framing / Insulation & Sarking	10 d	Fri 1/04/22	Tue 12/04/22
591	Install Cladding & Soffits	15 d	Wed 13/04/22	Sat 7/05/22
592	Install External Door Frames	3 d	Wed 13/04/22	Wed 20/04/22
593	Install External Doors, Fit Hardware	5 d	Thu 21/04/22	Fri 29/04/22
594	*Grid 05-11 Mainly Watertight*	*0 d*	*Sat 7/05/22*	*Sat 7/05/22*
595	**Roofing (Grid 01 to 05)**	**30 d**	**Wed 25/05/22**	**Fri 1/07/22**
596	Roof Rail / Safety Mesh and Site Measure	2 d	Wed 25/05/22	Thu 26/05/22
597	Install Gutters	4 d	Fri 27/05/22	Tue 31/05/22
598	Install Insulation	3 d	Wed 1/06/22	Fri 3/06/22
599	Install Metal Roofing	4 d	Sat 4/06/22	Wed 8/06/22
600	Install Flashings & Cappings	4 d	Thu 9/06/22	Thu 16/06/22
601	Install Solar Array (PV Panels)	10 d	Fri 17/06/22	Tue 28/06/22
602	Install Roof Safety System	3 d	Wed 29/06/22	Fri 1/07/22
603	**Façade & Cladding (Grid 01 to 05)**	**38 d**	**Wed 25/05/22**	**Mon 11/07/22**
604	Install External Façade	10 d	Wed 25/05/22	Sat 4/06/22
605	Install Glazed Auto Doors	8 d	Wed 25/05/22	Thu 2/06/22
606	Install External Framing / Insulation & Sarking	8 d	Mon 6/06/22	Fri 17/06/22
607	Install Awnings	5 d	Mon 6/06/22	Fri 10/06/22
608	Install Cladding & Soffits	10 d	Sat 18/06/22	Wed 29/06/22
609	Install Large Sliding Doors	20 d	Sat 18/06/22	Mon 11/07/22
610	Install External Door Frames	3 d	Sat 18/06/22	Tue 21/06/22
611	Install External Doors, Fit Hardware	5 d	Wed 22/06/22	Mon 27/06/22
612	*Grid 01 to 05 Mainly Watertight*	*0 d*	*Mon 11/07/22*	*Mon 11/07/22*
613	*Roof and Cladding Works Complete*	*0 d*	*Mon 11/07/22*	*Mon 11/07/22*
614	**SERVICES**	**95 d**	**Wed 2/03/22**	**Fri 1/07/22**
615	**Essential Services**	**95 d**	**Wed 2/03/22**	**Fri 1/07/22**
616	Substation - Locate Existing HV Cable Duct	3 d	Thu 3/03/22	Sat 5/03/22
617	Substation - Excavate, Install new conduit, backfill & complete builders work	12 d	Mon 7/03/22	Sat 19/03/22
618	Substation - Terminate Existing LV Pillar and Install New	12 d	Mon 21/03/22	Sat 2/04/22
619	Substation - Install Culvert & Substation	12 d	Mon 4/04/22	Thu 21/04/22
620	Substation - Install Cabling	12 d	Fri 22/04/22	Mon 9/05/22
621	Substation - Complete Changeover	3 d	Tue 10/05/22	Thu 12/05/22
622	Substation - Test & Commission	6 d	Fri 13/05/22	Thu 19/05/22
623	*Substation Works Complete*	*0 d*	*Thu 19/05/22*	*Thu 19/05/22*
624	Main Switch Room - Complete Builders Works incl Non-Structural Blockwork	10 d	Mon 9/05/22	Thu 19/05/22
625	Main Switch Room - Install MSB, Connection to Substation, Submains, DB's etc.	10 d	Fri 20/05/22	Tue 31/05/22
626	Test and Commission Main Elect Services	10 d	Wed 1/06/22	Wed 15/06/22
627	Main Comms Room - Complete Builders Works	10 d	Wed 9/03/22	Sat 19/03/22
628	New Comms Room - Complete trenching and install new connection to existing infrastructure	15 d	Mon 21/03/22	Wed 6/04/22
629	Main Comms Room - Install Racks etc.	15 d	Thu 7/04/22	Mon 2/05/22
630	Test and Commission	10 d	Tue 3/05/22	Fri 13/05/22
631	Hydraulic Plantroom - Complete Builders Work	10 d	Wed 9/03/22	Sat 19/03/22
632	Hydraulic Plantroom - Install Pumpsets, Water Heaters etc.	15 d	Mon 21/03/22	Wed 6/04/22
633	Services Connections - Telecommunications / Gas / Water / Sewer etc.	25 d	Sat 14/05/22	Wed 15/06/22
634	Mechanical Plantroom (Level 01 North) - Complete Builders Work incl waterproofing to Floors	15 d	Wed 23/03/22	Fri 8/04/22
635	Mechanical Plantroom (Level 01 North)	25 d	Sat 9/04/22	Mon 16/05/22
636	Mechanical Plantroom (Level 01 South) - Complete Builders Work incl waterproofing to Floors	10 d	Wed 6/04/22	Thu 21/04/22
637	Mechanical Plantroom (Level 01 South)	30 d	Fri 22/04/22	Mon 30/05/22
638	Mechanical Plantroom (Level 02 South) - Complete Builders Work incl waterproofing to Floors	10 d	Thu 19/05/22	Mon 30/05/22



Powerhouse Museum's Discovery Centre (MDC) - Main Works Package, Construction of Building J and Associated Works

172 Showground Road, Castle Hill NSW

ID	Task Name	Dur.	Start	Finish
639	Mechanical Plantroom (Level 02 South)	25 d	Tue 31/05/22	Fri 1/07/22
640	Lift 02 (Goods Lift) - Complete Builders Works prior to Shaft Handover	5 d	Wed 2/03/22	Mon 7/03/22
641	Lift 02 (Goods Lift) - Lift Installation, Test & Commission	30 d	Tue 8/03/22	Mon 11/04/22
642	Lift 01 - Complete Builders Works prior to Shaft Handover	5 d	Tue 3/05/22	Sat 7/05/22
643	Lift 01 - Lift Installation, Test & Commission	30 d	Mon 9/05/22	Wed 15/06/22
644	*Completion of Provison for Main Project Services*	*0 d*	*Fri 1/07/22*	*Fri 1/07/22*
645	**FITOUT**	**170 d**	**Thu 10/02/22**	**Wed 7/09/22**
646	**Ground Floor, VLO / Receiving Room / Store (Grid 05 to 11)**	**117 d**	**Thu 10/02/22**	**Thu 7/07/22**
647	Install 190mm Corefilled Blockwalls	5 d	Thu 10/02/22	Tue 15/02/22
648	Install High Level Services	15 d	Wed 16/02/22	Fri 4/03/22
649	Install Service Risers	8 d	Sat 5/03/22	Mon 14/03/22
650	Internal Partitioning, Studs and Insulation	4 d	Thu 5/05/22	Mon 9/05/22
651	Complete H/L Service Rough In & Risers	4 d	Tue 10/05/22	Fri 13/05/22
652	Complete In-Wall Rough-In	4 d	Sat 14/05/22	Wed 18/05/22
653	Complete Wall/Ceiling & Door Framing / Linings / Set & Sand / Initial Paint	8 d	Thu 19/05/22	Fri 27/05/22
654	Install Track Curtains	2 d	Thu 26/05/22	Fri 27/05/22
655	Install Roller Shutters	5 d	Thu 26/05/22	Tue 31/05/22
656	Hang all Internal Doors and Fit Hardware	3 d	Thu 19/05/22	Sat 21/05/22
657	Final Paint	8 d	Sat 28/05/22	Mon 6/06/22
658	Complete Services Fit Off	4 d	Tue 7/06/22	Fri 10/06/22
659	Complete Floor Finishes	5 d	Wed 15/06/22	Mon 20/06/22
660	*Early Access to MAAS*	*0 d*	*Mon 20/06/22*	*Mon 20/06/22*
661	Install Handrails, Tactiles and Metalwork Items	5 d	Tue 21/06/22	Sat 25/06/22
662	Complete Final Wall Finishes and Signage	5 d	Mon 27/06/22	Fri 1/07/22
663	Final Clean & Defects Inspections / Rectifications	5 d	Sat 2/07/22	Thu 7/07/22
664	**Lower Ground Floor, VLO Space (Grid 05 to 11)**	**75 d**	**Fri 25/03/22**	**Fri 1/07/22**
665	Install 190mm Corefilled Blockwalls	8 d	Fri 25/03/22	Sat 2/04/22
666	Install High Level Services	5 d	Mon 4/04/22	Fri 8/04/22
667	Install Service Risers	4 d	Sat 9/04/22	Wed 13/04/22
668	Internal Partitioning, Studs and Insulation	8 d	Thu 14/04/22	Sat 30/04/22
669	Complete H/L Service Rough In & Risers	4 d	Mon 2/05/22	Thu 5/05/22
670	Complete In-Wall Rough-In	4 d	Fri 6/05/22	Tue 10/05/22
671	Complete Wall/Ceiling & Door Framing / Linings / Set & Sand / Initial Paint	8 d	Wed 11/05/22	Thu 19/05/22
672	Complete Concrete Sealer to VOL Space	10 d	Fri 20/05/22	Tue 31/05/22
673	*Early Access to MAAS*	*0 d*	*Tue 31/05/22*	*Tue 31/05/22*
674	Acc WC - Prepare Surfaces & Prime	3 d	Mon 2/05/22	Wed 4/05/22
675	Acc WC - Waterproof & Cure	6 d	Thu 5/05/22	Wed 11/05/22
676	Acc WC - Complete Screeds	1 d	Thu 12/05/22	Thu 12/05/22
677	Acc WC - Waterproof & Cure over Screeds	6 d	Fri 13/05/22	Thu 19/05/22
678	Acc WC - Complete Tiling	5 d	Fri 20/05/22	Wed 25/05/22
679	Acc WC - Install Ceiling Framing	2 d	Thu 26/05/22	Fri 27/05/22
680	Acc WC - Complete Rough In	4 d	Sat 28/05/22	Wed 1/06/22
681	Acc WC - Install Linings, Sand & Paint	5 d	Thu 2/06/22	Tue 7/06/22
682	Acc WC - Joinery and Services Fit Off	3 d	Wed 8/06/22	Fri 10/06/22
683	Acc WC - Final Clean and Caulk Joints	2 d	Wed 15/06/22	Thu 16/06/22
684	Hang all Internal Doors and Fit Hardware	5 d	Fri 20/05/22	Wed 25/05/22
685	Final Paint	5 d	Thu 26/05/22	Tue 31/05/22
686	Complete Services Fit Off	4 d	Wed 1/06/22	Sat 4/06/22
687	Complete Floor Finishes	5 d	Mon 6/06/22	Fri 10/06/22
688	Install Handrails, Tactiles and Metalwork Items	5 d	Wed 15/06/22	Mon 20/06/22
689	Complete Final Wall Finishes and Signage	5 d	Tue 21/06/22	Sat 25/06/22
690	Final Clean & Defects Inspections / Rectifications	5 d	Mon 27/06/22	Fri 1/07/22
691	**Level 01, Small Objects, Labs and Collection Spaces (Grid 05 to 11)**	**127 d**	**Fri 1/04/22**	**Wed 7/09/22**
692	Install 190mm Corefilled Blockwalls	10 d	Fri 1/04/22	Tue 12/04/22
693	FRP Collections Ceiling	6 d	Wed 13/04/22	Wed 27/04/22
694	Install High Level Services	18 d	Mon 2/05/22	Sat 21/05/22
695	Install Service Risers	10 d	Mon 23/05/22	Thu 2/06/22
696	Internal Partitioning, Studs and Insulation	10 d	Fri 3/06/22	Fri 17/06/22



Task | Milestone | Critical | Critical Split | Progress | Baseline | Project Summary | WBS Summary | Manual Progress

Powerhouse Museum's Discovery Centre (MDC) - Main Works Package, Construction of Building J and Associated Works

172 Showground Road, Castle Hill NSW

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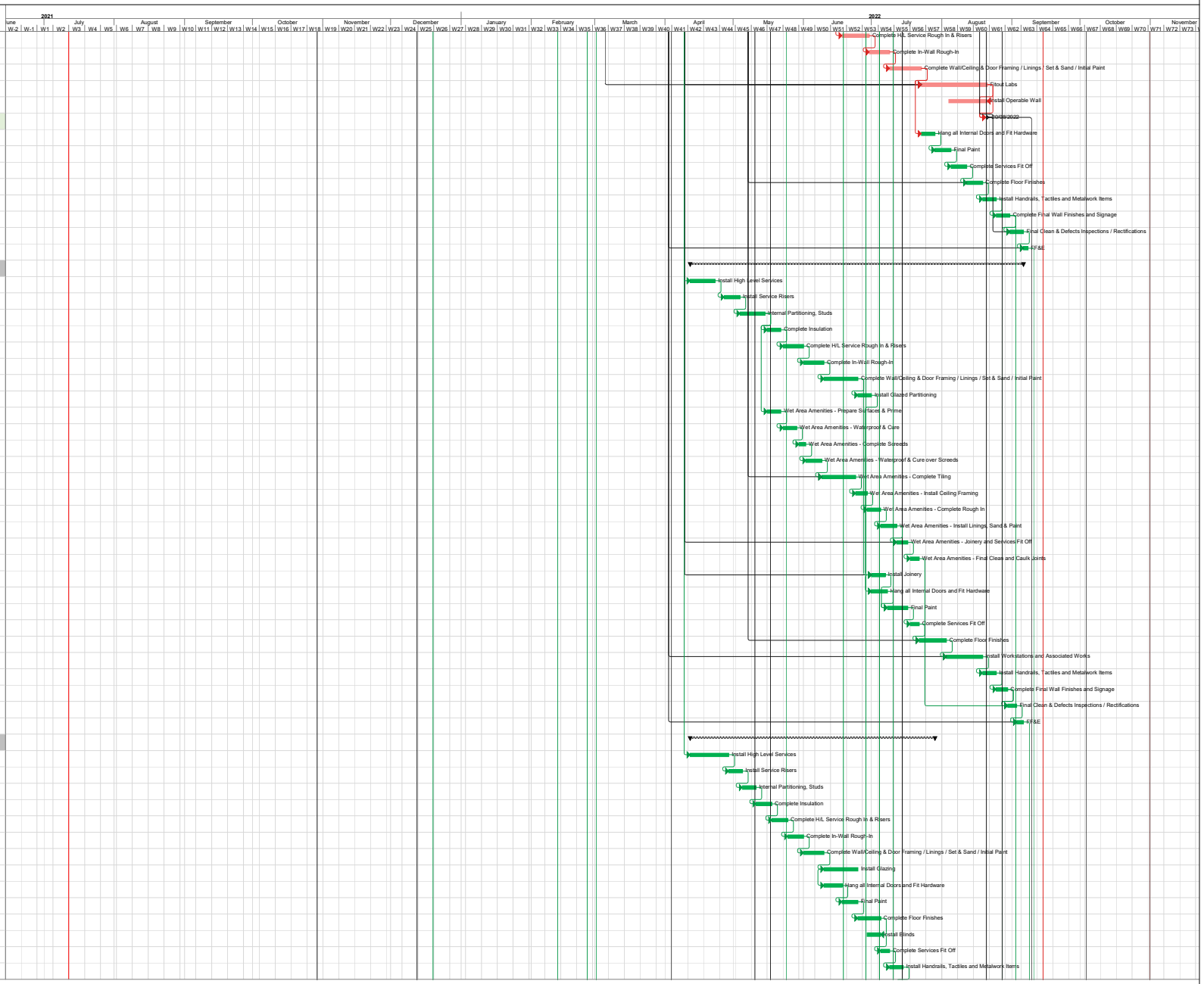
ID	Task Name	Dur.	Start	Finish
697	Complete H/L Service Rough In & Risers	10 d	Sat 18/06/22	Wed 29/06/22
698	Complete In-Wall Rough-In	8 d	Thu 30/06/22	Fri 8/07/22
699	Complete Wall/Ceiling & Door Framing / Linings / Set & Sand / Initial Paint	12 d	Sat 9/07/22	Fri 22/07/22
700	Fitout Labs	25 d	Sat 23/07/22	Sat 20/08/22
701	Install Operable Wall	15 d	Thu 4/08/22	Sat 20/08/22
702	*Early Access to MAAS*	*0 d*	*Sat 20/08/22*	*Sat 20/08/22*
703	Hang all Internal Doors and Fit Hardware	5 d	Sat 23/07/22	Thu 28/07/22
704	Final Paint	6 d	Fri 29/07/22	Thu 4/08/22
705	Complete Services Fit Off	6 d	Fri 5/08/22	Thu 11/08/22
706	Complete Floor Finishes	6 d	Fri 12/08/22	Thu 18/08/22
707	Install Handrails, Tactiles and Metalwork Items	5 d	Fri 19/08/22	Wed 24/08/22
708	Complete Final Wall Finishes and Signage	5 d	Thu 25/08/22	Tue 30/08/22
709	Final Clean & Defects Inspections / Rectifications	5 d	Wed 31/08/22	Mon 5/09/22
710	FF&E	2 d	Tue 6/09/22	Wed 7/09/22
711	**Lower Ground Floor, Entry & Staff Workstations (Grid 01 to 05)**	**116 d**	**Tue 12/04/22**	**Mon 5/09/22**
712	Install High Level Services	6 d	Tue 12/04/22	Fri 22/04/22
713	Install Service Risers	6 d	Wed 27/04/22	Tue 3/05/22
714	Internal Partitioning, Studs	10 d	Wed 4/05/22	Sat 14/05/22
715	Complete Insulation	6 d	Mon 16/05/22	Sat 21/05/22
716	Complete H/L Service Rough In & Risers	8 d	Mon 23/05/22	Tue 31/05/22
717	Complete In-Wall Rough-In	8 d	Wed 1/06/22	Thu 9/06/22
718	Complete Wall/Ceiling & Door Framing / Linings / Set & Sand / Initial Paint	10 d	Fri 10/06/22	Fri 24/06/22
719	Install Glazed Partitioning	5 d	Sat 25/06/22	Thu 30/06/22
720	Wet Area Amenities - Prepare Surfaces & Prime	6 d	Mon 16/05/22	Sat 21/05/22
721	Wet Area Amenities - Waterproof & Cure	6 d	Mon 23/05/22	Sat 28/05/22
722	Wet Area Amenities - Complete Screeds	3 d	Mon 30/05/22	Wed 1/06/22
723	Wet Area Amenities - Waterproof & Cure over Screeds	6 d	Thu 2/06/22	Wed 8/06/22
724	Wet Area Amenities - Complete Tiling	10 d	Thu 9/06/22	Thu 23/06/22
725	Wet Area Amenities - Install Ceiling Framing	4 d	Fri 24/06/22	Tue 28/06/22
726	Wet Area Amenities - Complete Rough In	5 d	Wed 29/06/22	Mon 4/07/22
727	Wet Area Amenities - Install Linings, Sand & Paint	6 d	Tue 5/07/22	Mon 11/07/22
728	Wet Area Amenities - Joinery and Services Fit Off	5 d	Tue 12/07/22	Sat 16/07/22
729	Wet Area Amenities - Final Clean and Caulk Joints	4 d	Mon 18/07/22	Thu 21/07/22
730	Install Joinery	5 d	Fri 1/07/22	Wed 6/07/22
731	Hang all Internal Doors and Fit Hardware	6 d	Fri 1/07/22	Thu 7/07/22
732	Final Paint	8 d	Fri 8/07/22	Sat 16/07/22
733	Complete Services Fit Off	4 d	Mon 18/07/22	Thu 21/07/22
734	Complete Floor Finishes	10 d	Fri 22/07/22	Tue 2/08/22
735	Install Workstations and Associated Works	12 d	Wed 3/08/22	Thu 18/08/22
736	Install Handrails, Tactiles and Metalwork Items	5 d	Fri 19/08/22	Wed 24/08/22
737	Complete Final Wall Finishes and Signage	4 d	Thu 25/08/22	Mon 29/08/22
738	Final Clean & Defects Inspections / Rectifications	4 d	Tue 30/08/22	Fri 2/09/22
739	FF&E	2 d	Sat 3/09/22	Mon 5/09/22
740	**Ground Floor, Flexible Area & Entries (Grid 01 to 05)**	**83 d**	**Tue 12/04/22**	**Thu 28/07/22**
741	Install High Level Services	8 d	Tue 12/04/22	Thu 28/04/22
742	Install Service Risers	5 d	Fri 29/04/22	Wed 4/05/22
743	Internal Partitioning, Studs	5 d	Thu 5/05/22	Tue 10/05/22
744	Complete Insulation	6 d	Wed 11/05/22	Tue 17/05/22
745	Complete H/L Service Rough In & Risers	6 d	Wed 18/05/22	Tue 24/05/22
746	Complete In-Wall Rough-In	6 d	Wed 25/05/22	Tue 31/05/22
747	Complete Wall/Ceiling & Door Framing / Linings / Set & Sand / Initial Paint	8 d	Wed 1/06/22	Thu 9/06/22
748	Install Glazing	10 d	Fri 10/06/22	Fri 24/06/22
749	Hang all Internal Doors and Fit Hardware	4 d	Fri 10/06/22	Fri 17/06/22
750	Final Paint	6 d	Sat 18/06/22	Fri 24/06/22
751	Complete Floor Finishes	8 d	Sat 25/06/22	Mon 4/07/22
752	Install Blinds	5 d	Wed 29/06/22	Mon 4/07/22
753	Complete Services Fit Off	4 d	Tue 5/07/22	Fri 8/07/22
754	Install Handrails, Tactiles and Metalwork Items	5 d	Sat 9/07/22	Thu 14/07/22



Task | Milestone | Critical | Critical Split | Progress | Baseline | Project Summary | WBS Summary | Manual Progress

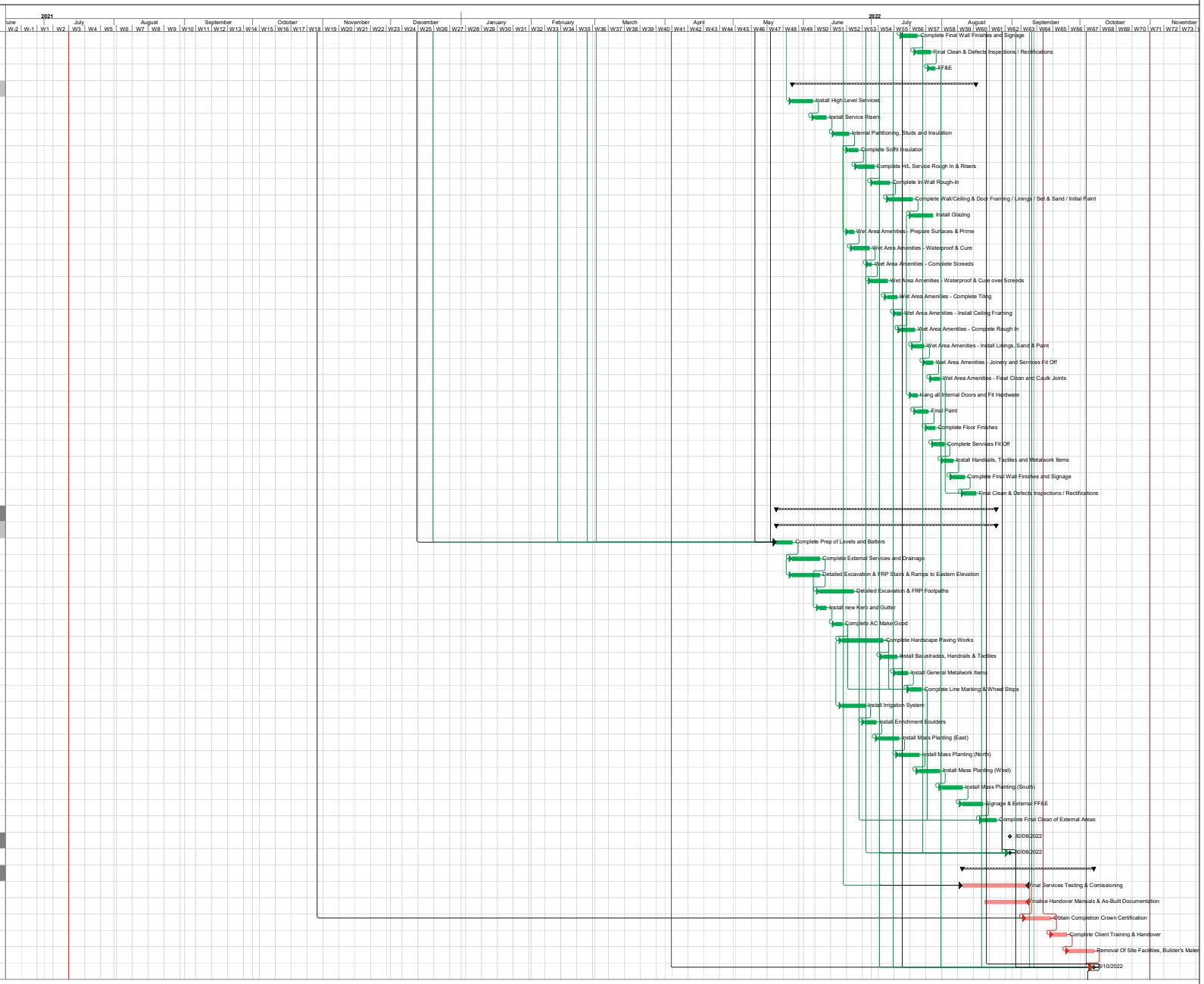
Powerhouse Museum's Discovery Centre (MDC) - Main Works Package, Construction of Building J and Associated Works

172 Showground Road, Castle Hill NSW

NSW GOVERNMENT Public Works Advisory

TAYLOR

ID	Task Name	Dur.	Start	Finish
755	Complete Final Wall Finishes and Signage	5 d	Fri 15/07/22	Wed 20/07/22
756	Final Clean & Defects Inspections / Rectifications	5 d	Thu 21/07/22	Tue 26/07/22
757	FF&E	2 d	Wed 27/07/22	Thu 28/07/22
758	**Level 01, 105 Plantroom & Viewing Room Space (Grid 01 to 05)**	**66 d**	**Fri 27/05/22**	**Mon 15/08/22**
759	Install High Level Services	8 d	Fri 27/05/22	Sat 4/06/22
760	Install Service Risers	5 d	Mon 6/06/22	Fri 10/06/22
761	Internal Partitioning, Studs and Insulation	5 d	Wed 15/06/22	Mon 20/06/22
762	Complete Soffit Insulation	4 d	Tue 21/06/22	Fri 24/06/22
763	Complete H/L Service Rough In & Risers	6 d	Sat 25/06/22	Fri 1/07/22
764	Complete In-Wall Rough-In	6 d	Sat 2/07/22	Fri 8/07/22
765	Complete Wall/Ceiling & Door Framing / Linings / Set & Sand / Initial Paint	8 d	Sat 9/07/22	Mon 18/07/22
766	Install Glazing	8 d	Tue 19/07/22	Wed 27/07/22
767	Wet Area Amenities - Prepare Surfaces & Prime	2 d	Tue 21/06/22	Wed 22/06/22
768	Wet Area Amenities - Waterproof & Cure	6 d	Thu 23/06/22	Wed 29/06/22
769	Wet Area Amenities - Complete Screeds	1 d	Thu 30/06/22	Thu 30/06/22
770	Wet Area Amenities - Waterproof & Cure over Screeds	6 d	Fri 1/07/22	Thu 7/07/22
771	Wet Area Amenities - Complete Tiling	3 d	Fri 8/07/22	Mon 11/07/22
772	Wet Area Amenities - Install Ceiling Framing	2 d	Tue 12/07/22	Wed 13/07/22
773	Wet Area Amenities - Complete Rough In	5 d	Thu 14/07/22	Tue 19/07/22
774	Wet Area Amenities - Install Linings, Sand & Paint	4 d	Wed 20/07/22	Sat 23/07/22
775	Wet Area Amenities - Joinery and Services Fit Off	3 d	Mon 25/07/22	Wed 27/07/22
776	Wet Area Amenities - Final Clean and Caulk Joints	3 d	Thu 28/07/22	Sat 30/07/22
777	Hang all Internal Doors and Fit Hardware	2 d	Tue 19/07/22	Wed 20/07/22
778	Final Paint	4 d	Thu 21/07/22	Mon 25/07/22
779	Complete Floor Finishes	3 d	Tue 26/07/22	Thu 28/07/22
780	Complete Services Fit Off	3 d	Fri 29/07/22	Mon 1/08/22
781	Install Handrails, Tactiles and Metalwork Items	4 d	Tue 2/08/22	Fri 5/08/22
782	Complete Final Wall Finishes and Signage	4 d	Sat 6/08/22	Wed 10/08/22
783	Final Clean & Defects Inspections / Rectifications	4 d	Thu 11/08/22	Mon 15/08/22
784	**EXTERNAL WORKS**	**80 d**	**Fri 20/05/22**	**Wed 24/08/22**
785	**Hard & Soft Landscaping**	**80 d**	**Fri 20/05/22**	**Wed 24/08/22**
786	Complete Prep of Levels and Batters	6 d	Fri 20/05/22	Thu 26/05/22
787	Complete External Services and Drainage	10 d	Fri 27/05/22	Tue 7/06/22
788	Detailed Excavation & FRP Stairs & Ramps to Eastern Elevation	10 d	Fri 27/05/22	Tue 7/06/22
789	Detailed Excavation & FRP Footpaths	10 d	Wed 8/06/22	Wed 22/06/22
790	Install new Kerb and Gutter	3 d	Wed 8/06/22	Fri 10/06/22
791	Complete AC Make Good	3 d	Wed 15/06/22	Fri 17/06/22
792	Complete Hardscape Paving Works	15 d	Sat 18/06/22	Tue 5/07/22
793	Install Balustrades, Handrails & Tactiles	5 d	Wed 6/07/22	Mon 11/07/22
794	Install General Metalwork Items	5 d	Tue 12/07/22	Sat 16/07/22
795	Complete Line Marking & Wheel Stops	5 d	Mon 18/07/22	Fri 22/07/22
796	Install Irrigation System	8 d	Sat 18/06/22	Mon 27/06/22
797	Install Enrichment Boulders	5 d	Tue 28/06/22	Sat 2/07/22
798	Install Mass Planting (East)	8 d	Mon 4/07/22	Tue 12/07/22
799	Install Mass Planting (North)	8 d	Wed 13/07/22	Thu 21/07/22
800	Install Mass Planting (West)	8 d	Fri 22/07/22	Sat 30/07/22
801	Install Mass Planting (South)	8 d	Mon 1/08/22	Tue 9/08/22
802	Signage & External FF&E	8 d	Wed 10/08/22	Thu 18/08/22
803	Complete Final Clean of External Areas	5 d	Fri 19/08/22	Wed 24/08/22
804	**COMPLETION TASKS**	**0 d**	**Tue 30/08/22**	**Tue 30/08/22**
805	*Construction Works Complete*	*0 d*	*Tue 30/08/22*	*Tue 30/08/22*
806	**FINAL TESTING & COMMISSIONING / HANDOVER**	**47 d**	**Wed 10/08/22**	**Thu 6/10/22**
807	Final Services Testing & Comissioning	24 d	Wed 10/08/22	Tue 6/09/22
808	Finalise Handover Manuals & As-Built Documentation	15 d	Sat 20/08/22	Tue 6/09/22
809	Obtain Completion Crown Certification	10 d	Wed 7/09/22	Sat 17/09/22
810	Complete Client Training & Handover	6 d	Mon 19/09/22	Sat 24/09/22
811	Removal Of Site Facilities, Builder's Materials & Demobilisation	7 d	Mon 26/09/22	Thu 6/10/22
812	*Target Project Completion (Net)*	*0 d*	*Thu 6/10/22*	*Thu 6/10/22*

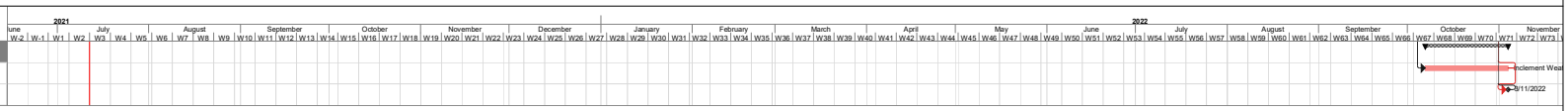


Task | Milestone | Critical | Critical Split | Progress | Baseline | Project Summary | WBS Summary | Manual Progress

Powerhouse Museum's Discovery Centre (MDC) - Main Works Package, Construction of Building J and Associated Works

172 Showground Road, Castle Hill NSW

ID	Task Name	Dur.	Start	Finish
813	DELAY CONTINGENCY	24 d	Fri 7/10/22	Thu 3/11/22
814	Inclement Weather Contingency (Provisional Allowance)	24 d	Fri 7/10/22	Thu 3/11/22
815	*Project Completion (Gross)*	*0 d*	*Thu 3/11/22*	*Thu 3/11/22*



Task | Milestone | Critical | Critical Split | Progress | Baseline | Project Summary | WBS Summary | Manual Progress

Appendix D Construction Traffic and Pedestrian Management Sub-Plan

Hibbs & Associates Pty Ltd © 2021

ttpa TRANSPORT AND TRAFFIC PLANNING ASSOCIATES
Established 1994

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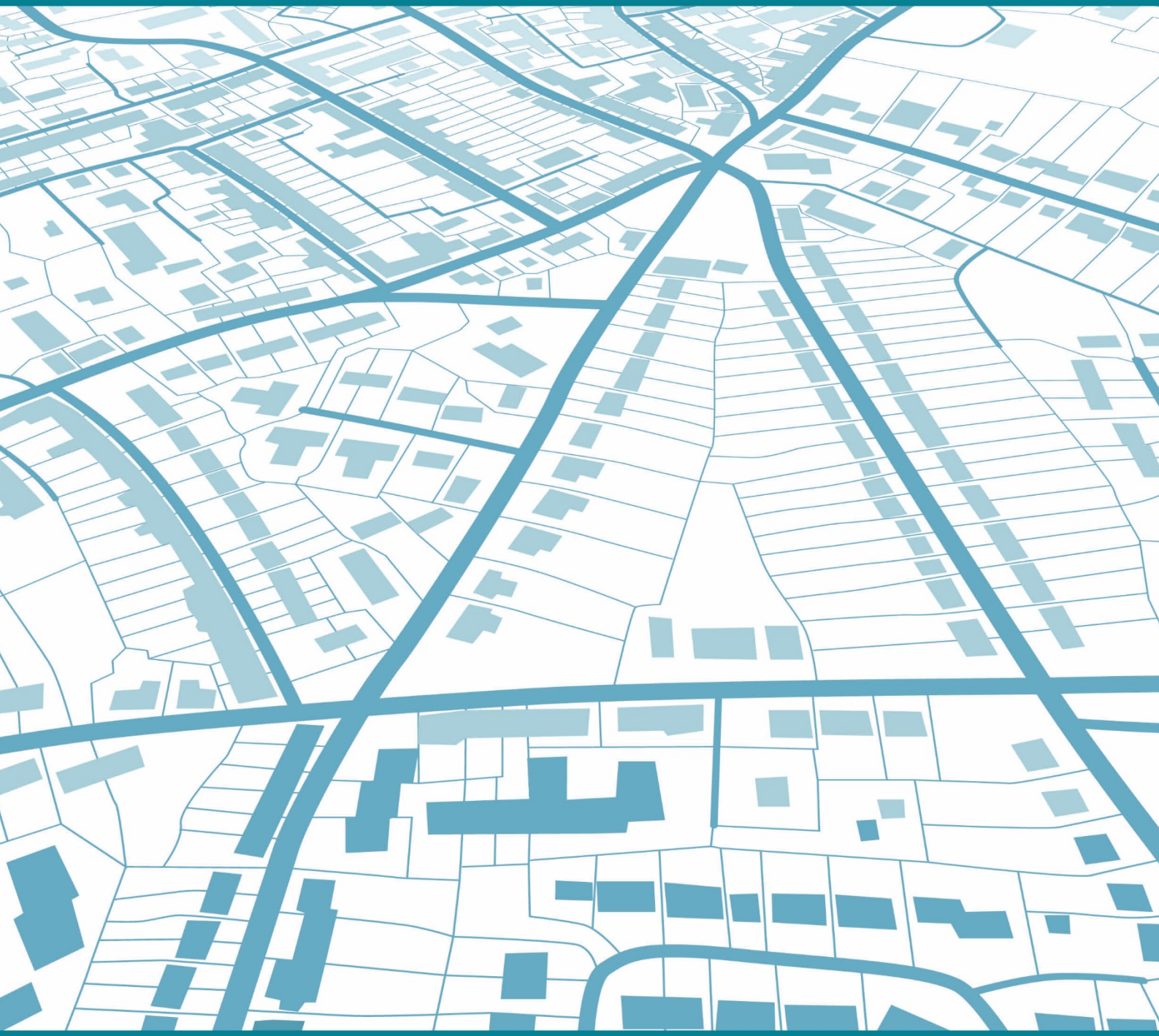

Castle Hill Powerhouse Museum Discovery Centre
2 Green Road and 172 Showground Road, Castle Hill
Construction Traffic and Pedestrian Management Sub-Plan

Date: July 2021
Issue: C
Ref: 004CE/2021

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Appendix B Public Transport Provisions
Appendix C Turning Path Assessments
Appendix D Traffic Control Plans

1.0 Introduction

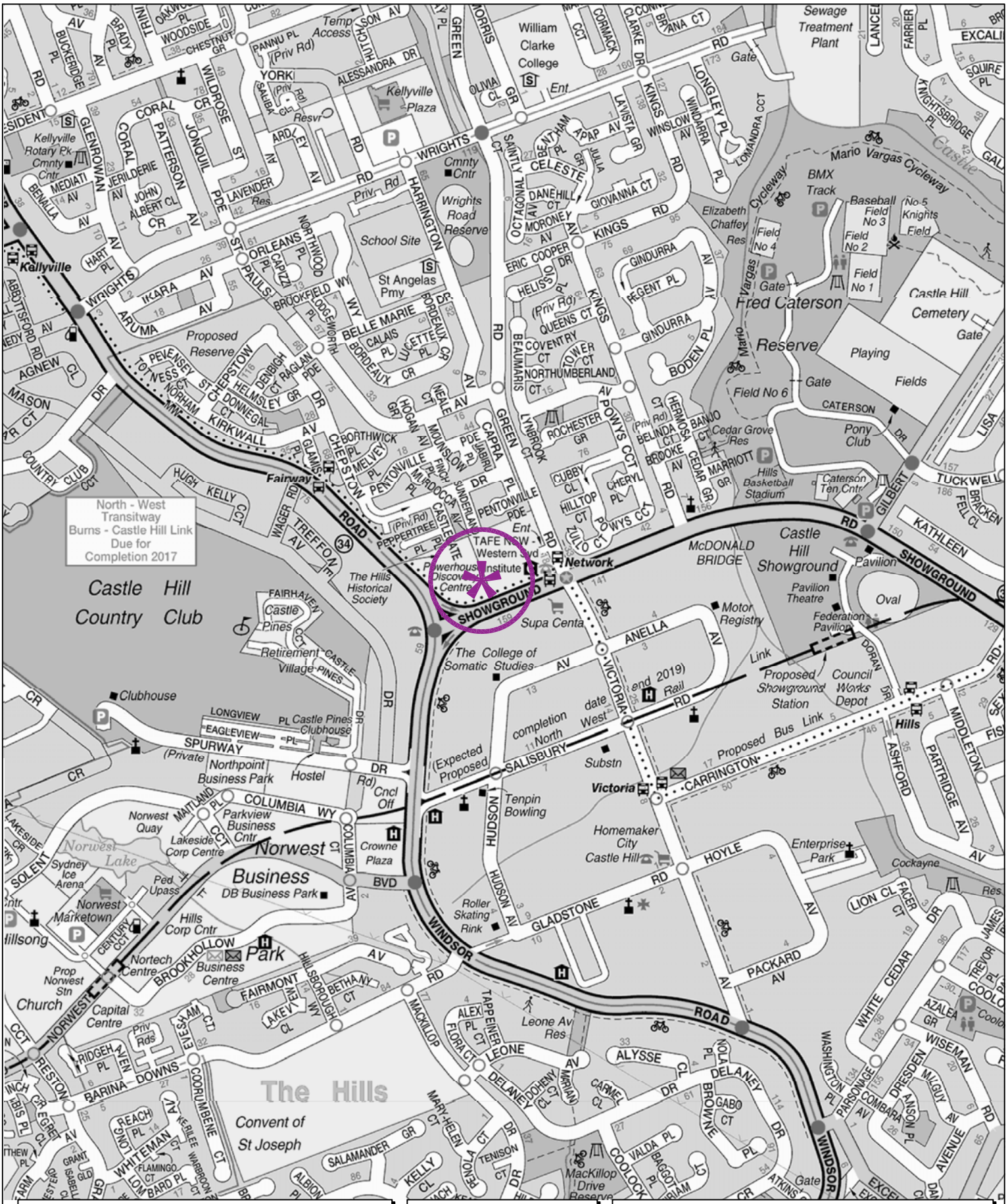
This report has been prepared to accompany a State Significant Development Application (SSDA 10472) to the Department of Planning, Industry and Environment (DPIE) for the proposed expansion of the Museums Discovery Centre (MDC) (Figure 1).

This report has been prepared in satisfaction of Consent Condition no. B28 for submission of a Construction Traffic and Pedestrian Management Sub-Plan (CTPMSP) as part of the Construction Certificate documentation as follows:

CONSTRUCTION TRAFFIC AND PEDESTRIAN MANAGEMENT SUB-PLAN

B28. 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. The CTPMSP shall be prepared in consultation with TfNSW (Sydney Coordination Office) and shall specify, but not be limited to, the following:

(a) a description of the development;
(b) location of any proposed work zone(s);
(c) location of any crane(s);
(d) haulage routes;
(e) a detailed plan identifying all construction vehicle access arrangements;
(f) estimated number of construction vehicle movements, including measures to reduce the number of movements during the AM and PM peak periods;
(g) construction program;
(h) proposed construction hours;
(i) any potential impacts to general traffic, cyclists, pedestrians and buses within the vicinity of the site from the construction of the development; and
(j) proposed mitigation measures. Should any impacts be identified, the duration of the impacts and measures proposed to mitigate any associated general traffic, public transport, pedestrian and cyclist impacts should be clearly identified and included in the CTPMSP.



LOCATION

FIG 1

This CTPMSP has been prepared by an engineer who holds the Roads and Maritime Services Prepare a Work Zone Traffic Management Plan accreditation, detailed as follows:

Chenlong You
Certificate No: 0052080417
Expiry Date: 16/07/2022

The CTPMSP has also been reviewed and checked by a suitably qualified and experienced civil (traffic) engineer, Meg Kong, with 14 years of professional experience. Meg has completed CTPMSPs for more than 300 sites in Sydney, including the Hills Shire Council area.

The CTPMSP will be issued to TfNSW (Sydney Coordination Office) for review and approval.

2.0 Approved Development

2.1 Site, Context, and Existing Use

The site (Figure 2) is located at 2 Green Road, Castle Hill (Lot 102 in DP 1130271), within The Hills Shire Council Local Government Area (LGA). The site forms a roughly square shape and covers an area of some 3.8ha. The site has a primary frontage to Green Road of 183m and a secondary frontage to Showground Road of 186m.

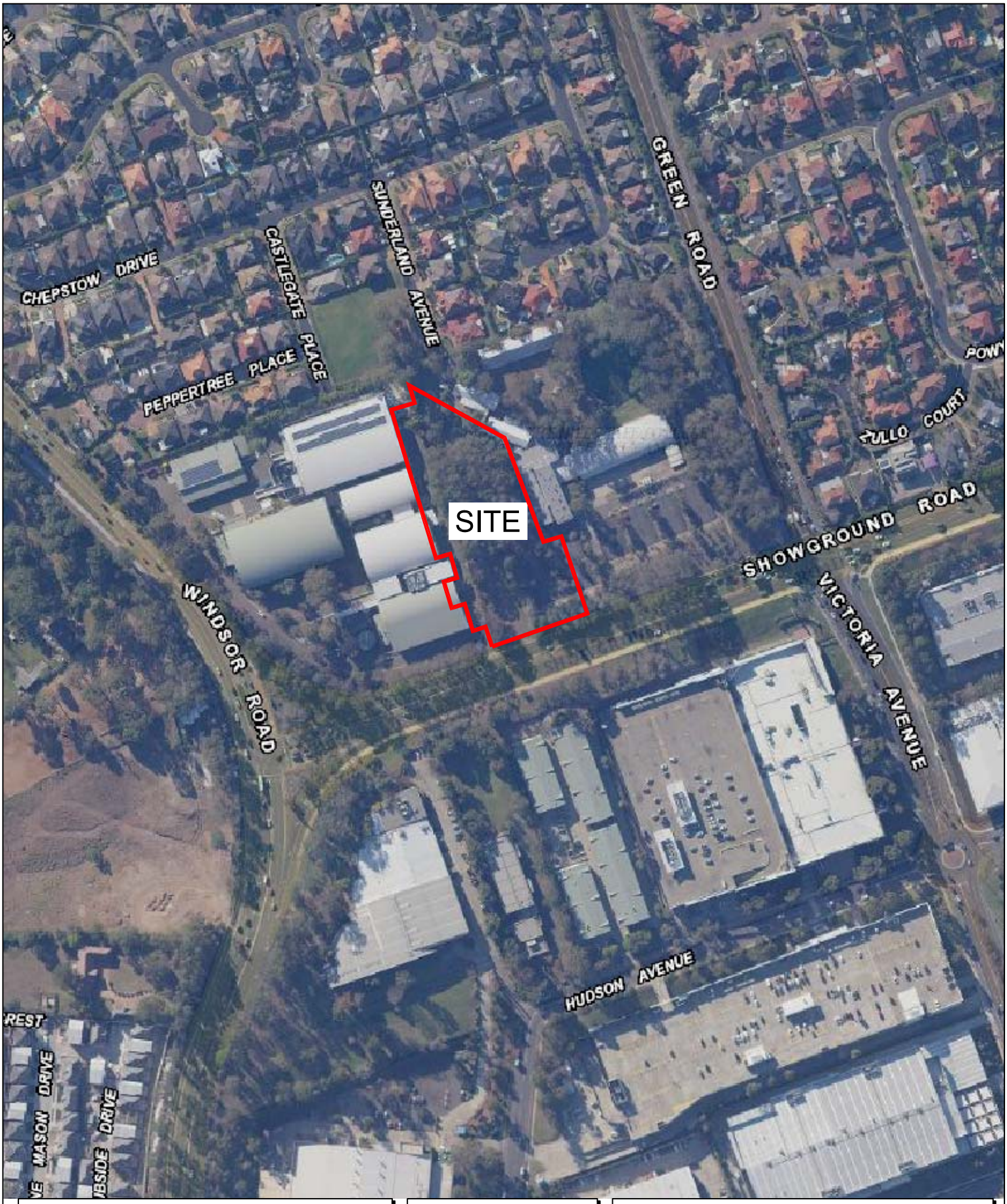
The current surrounding land uses comprise:

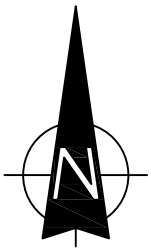
- Castle Hill RSL Club to the east
- Castle Hill Showground to the east
- St. Angeles Primary School to the north
- Hill Showground Metro Station to the southeast
- Castle Hill Country Club to the west
- the residential properties extending to the north
- the Castle Hill Trading Zone to the south

2.2 Approved Development

It is proposed to undertake the MDC expansion as a single-stage comprising of:

- termination/relocation and installation of site services and infrastructure
- removal of 337 trees
- earthworks
- demolition of the existing car park and vehicle accessway along the eastern and north-eastern parts of the site
- construction of a new at-grade car park on the eastern side of the TAFE site accommodating 24 car parking spaces to be removed from the Building J site (it is noted that the construction of the on-grade carpark is not part of Taylor scope and will be completed by others).


CHEPSTOW DRIVE
CASTLEGATE PLACE
SUNDERLAND AVENUE
GREEN ROAD
PEPPERTREE PLACE
TULLO COURT
SITE
SHOWGROUND ROAD
WINDSOR ROAD
VICTORIA AVENUE
HUDSON AVENUE
MASON DRIVE
DRIVE


N

SITE

FIG 2

- construction of a new Building J, which will cater for the following uses
    - Storage for the Powerhouse collection and archives (both collected archives and institutional archives).
    - Flexible spaces for education and public programs, workshops, talks, exhibitions and events.
    - Suites of conservation laboratories and collection workspaces.
    - Photography, digitisation and collection documentation facilities.
    - Workspace for staff, researchers, industry partners and other collaborators. This will include amenities, meeting and storage rooms, collection research and study areas, as well as other ancillary facilities.
    - Components of the image and research library.
    - Object and exhibition preparation, packing, quarantine and holding areas.

- Construction of new vehicle accessways to maintain connectivity to the MDC and TAFE sites.
- Subdivision of the proposed Building J site from the TAFE site, including the creation of right-of-carriageway easement to facilitate access over the newly realigned accessway by TAFE vehicles and consolidation to form a single lot with the existing MDC site.

Details of the approved development scheme are provided on the architectural plans prepared by Aspect Studios, reproduced in Appendix A.

3.0 Existing and Future Road Network and Traffic Conditions

3.1 Existing Road Network

The existing road network (Figure 3) serving the site comprises:

- *Old Windsor Road* – a major arterial route linking Windsor Road to the north Cumberland Highway to the south. The road generally runs in a north-south direction and has 2 lanes of traffic in each direction.

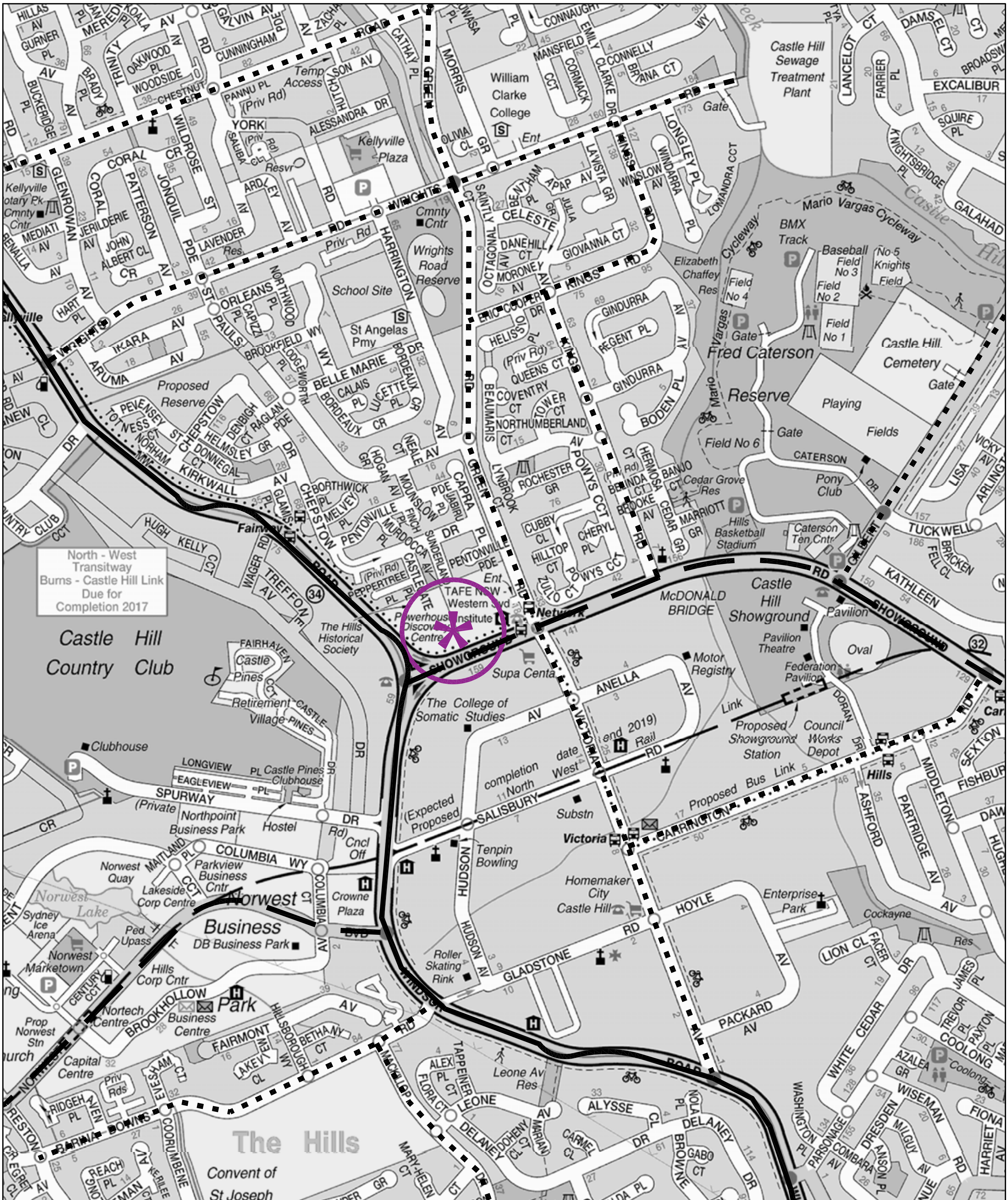
- *M7 Motorway* – an arterial route linking the M5 South-West with the M4 and the Hills M2. In the vicinity of the site, the M7 generally runs in a northwest-southeast direction and has 2 lanes of traffic in each direction.

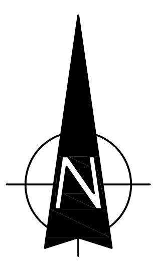
- *Showground Road – a State Road and* arterial route linking Windsor Road to the west and Old Northern Road to the east. The road generally runs in an east-west direction and has 2 lanes of traffic in each direction.

- *Windsor Road – a State Road and* arterial route linking between Old Windsor Road in Kellyville and Church Street in Parramatta. The road generally runs in a north-south direction and has 2 lanes of traffic in each direction.

- *Green Road – a Regional Road and* major collector road linking Samantha Riley Drive/Glenhaven Road to the north and Showground Road/Victoria Avenue to the south. The road generally runs in a north-south direction and has 2 lanes of traffic in each direction.

- *Victoria Avenue* – a Regional Road and collector road linking Showground Road/Green Road to the north and Windsor Road to the south. Victoria Avenue runs through Castle Hill Trading Zone and generally runs in a north-south direction with 2 lanes of traffic in each direction.





Legend

- ARTERIAL
- SUB-ARTERIAL
- COLLECTOR

Road Network

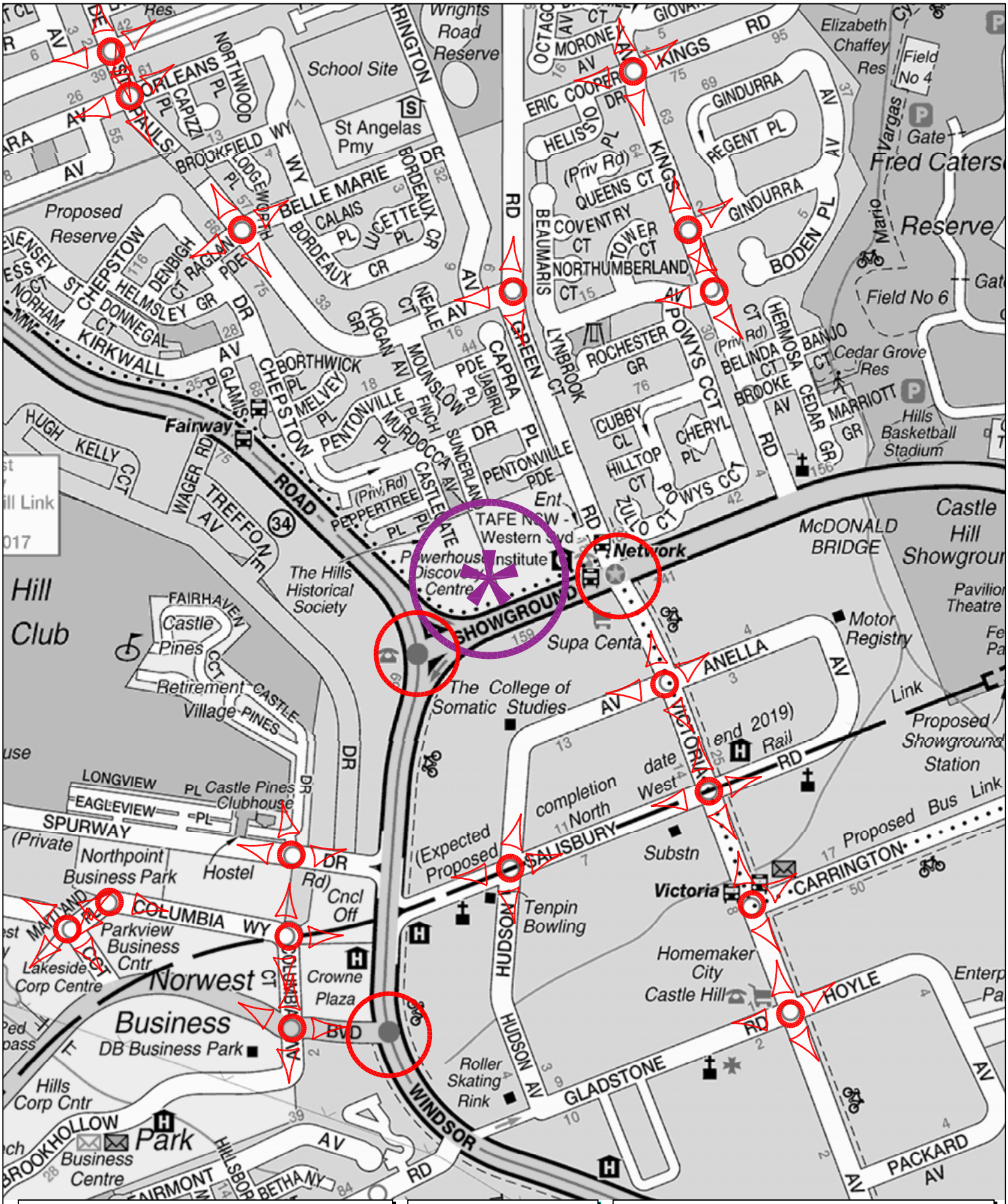
Fig 3

- *Norwest Boulevard* – a collector road linking between the M7 motorway and Old Windsor Road to the east and Winsor Road to the east. The road generally runs in an east-west direction and has 2 lanes of traffic in each direction.

3.2 Traffic Controls

The existing traffic controls in the vicinity of the site (Figure 4) include:

- the traffic control signals along:
    - Showground Road at the intersections with Windsor Road, Green Road/Victoria Avenue, Gilbert Road, De Clambe Drive, Carrington Road, Rowallan Avenue and Cecil Avenue
    - Windsor Road at the intersections with Norwest Boulevard, Victoria Avenue and Memorial Avenue
- the roundabouts along:
    - Victoria Avenue/Green Road at the intersections with Hoyle Avenue/Gladstone Road, Carrington Road, Salisbury Road, Hudson Avenue/Anella Avenue and St Pauls Avenue
- Norwest Boulevard at the intersections with Brookhollow Avenue/Columbia Court and Solent Circuit/Reston Grange
- the 60kmph speed restriction on Showground Road, Windsor Road (in the vicinity of the site) and Green Road
- the 50kmph speed restriction on Victoria Avenue
- and on-street parking is not permitted on both side of Falcon Street
- the marked zebra crossing on the slip lanes of the Showground Road/Windsor Road intersection



LEGEND

- TRAFFIC SIGNAL CONTROL
- ROUNDABOUT

N

TRAFFIC CONTROLS

FIG 4

- the marked zebra crossing on the slip lanes of the Showground Road/Green Road intersection
- the marked bike lane along the eastern and western sides of Green Road

3.3 Parking Controls

- the Clearway between 6:00 am - 7:00 pm (Monday to Friday) and 8:00 am - 8:00 pm (Saturday, Sunday and public holidays), No Parking at other times restrictions along both sides of Showground Road in the vicinity of the site.
- the NO STOPPING restrictions along both sides of Green Road
- the bus zone along the Green Road site boundary

3.4 Traffic Conditions

JMT Consulting carried out a Traffic Impact Assessment (TIA) for the site in the DA, in which it was found that an additional 133 trips would be generated from the new development. It was concluded that this volume of traffic would be negligible in the context of the existing traffic flows along Windsor Road and Showground Road. The summarised outcome of the traffic modelling by JMT Consulting:

Peak Hour	Intersection	Existing Performance		
		AVD (sec)	DOS	LOS
AM peak hour	Showground Road / Windsor Road	24	0.81	C
	Showground Road / Victoria Avenue / Green Road	60	0.91	E
PM peak hour	Showground Road / Windsor Road	28	0.68	C
	Showground Road / Victoria Avenue / Green Road	62	0.95	E

AVD – Average vehicle delay DOS – Degree of Saturation LOS – Level of Service

Source: JMT Consulting, 2020

The traffic modelling indicates the nearby intersections currently operate at level of service E or better during the assessed peak hours.

3.5 Transport Services

Public Bus

The site is currently serviced by bus stops along Green Road, Showground Road and Windsor Road. These services offer excellent connectivity to key centres such as Parramatta and Epping through express bus services and connections to trains via Sydney Metro and Sydney Trains.

These stops are serviced by the following routes:

- 601 - Rouse Hill Station to Parramatta via Hills Showground
- 626 - Kellyville Station to Pennant Hills via Cherrybrook
- 633 - Rouse Hill to Pennant Hills via Kellyville & Castle Hill
- 651 - Rouse Hill Station to Epping via Castle Hill
- 715 - Rouse Hill Station to Seven Hills via Kellyville & Norwest
- 632 - Rouse Hill Station to Pennant Hills via Norwest & Castle Hill
- 660 - Castlewood to Parramatta
- 662 - Castle Hill to Parramatta via Bella Vista & North West Twy

Sydney Train

The closest CityRail station to the site is the Seven Hills Railway Station which are within 6.5km from/to the site. The Station is serviced by the T1 North Shore, Northern and Western, T2 Inner West & Leppington, T5 Cumberland, Blue Mountains and Western Lines. Services along the T1 line operate every 10 minutes and T2 line operate every 14 minutes. Services on the T5 Line and the Blue Mountains Line operate every 30 minutes.

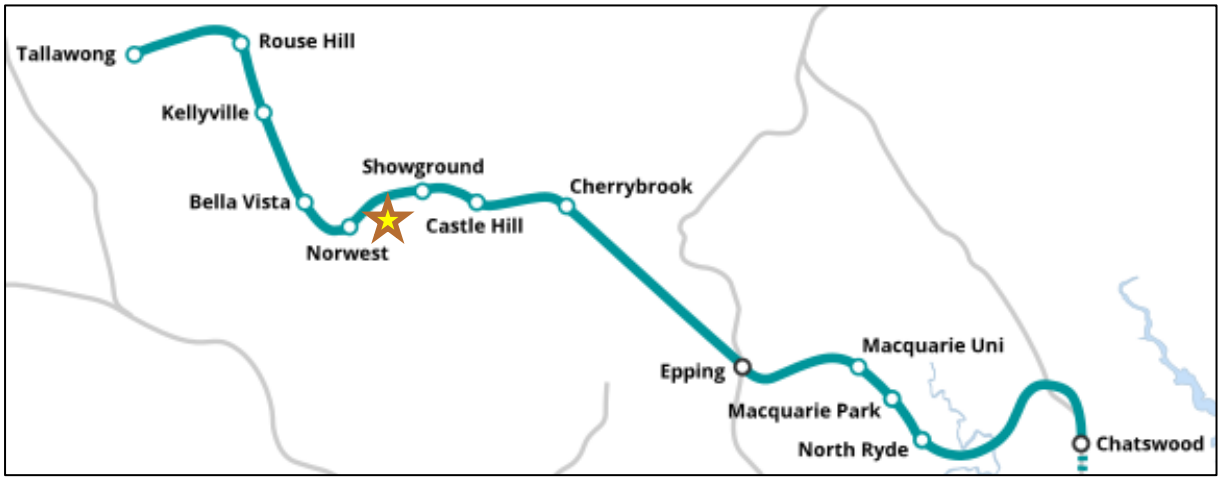
Sydney Metro

The closest railway station to the site is the Hills Showground Metro Station, which is 1km southeast and within a 6-minute bus ride of the site.

The Sydney Metro North West provides a rail connection from the existing Chatswood Interchange through to Tallawong Railway Station. As part of this connection, the train line passes through the Hills Showground Metro Station, which provides train every four minutes during the weekday AM and PM peak periods.

The station is serviced by the Tallawong Line service, providing connections to major transport interchanges, including Epping, Macquarie University and Chatswood.

The station locations and rail alignment of the Sydney Metro are shown below.



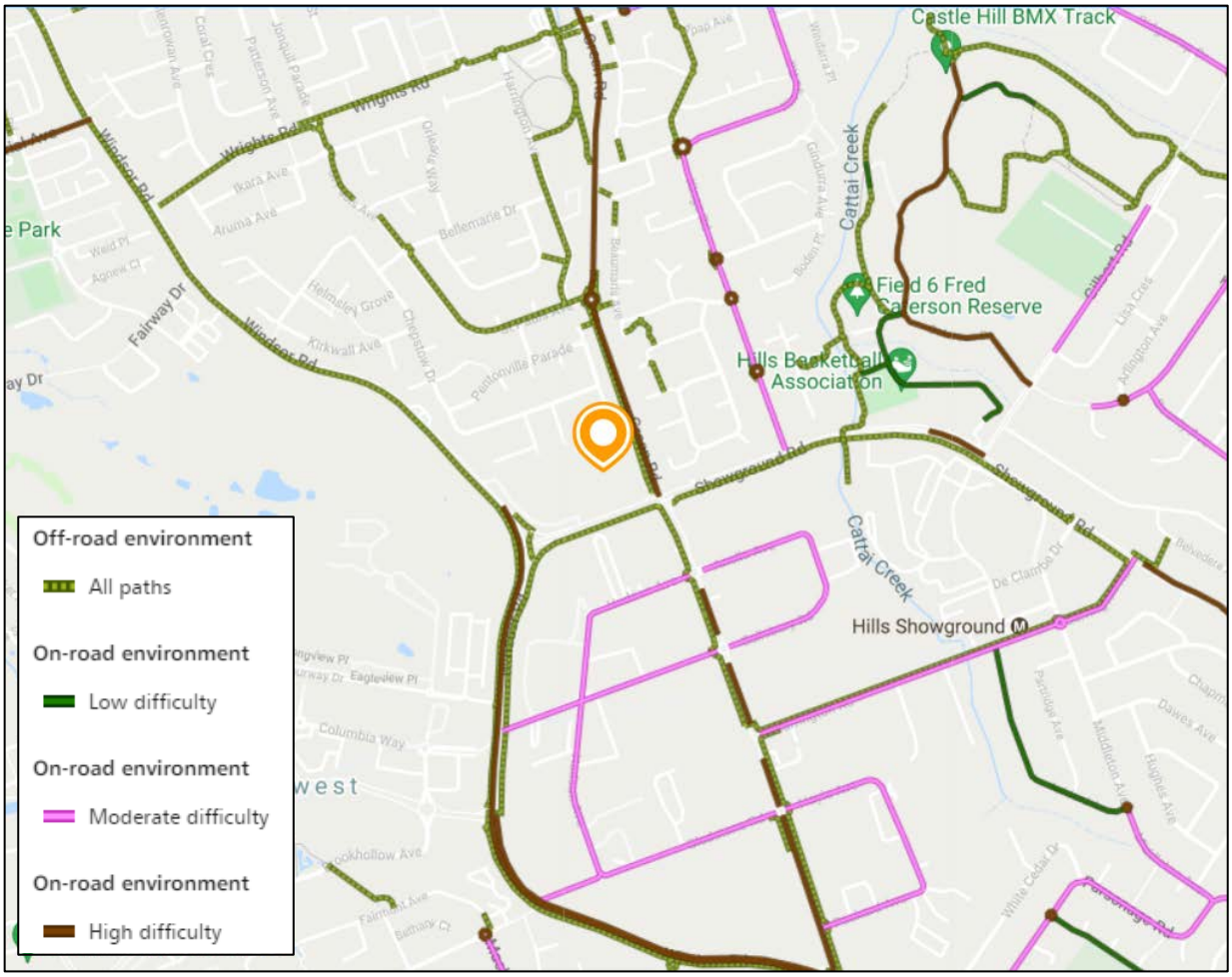
Details of the existing transport services are provided in Appendix B.

3.6 Walking and Cycling Facilities

Footpaths are provided on both sides of most of the surrounding local road network including Windsor Road and Showground Road. Pedestrians are afforded formal pedestrian crossings at the traffic lights along Showground Road intersecting Windsor Road and Green Road/Victoria Avenue.

A shared walking/cycling footpath is located on the southern side of Showground Road which leads to the Hills Showground Metro Station.

The bicycle network surrounding the site is shown in the figure below.

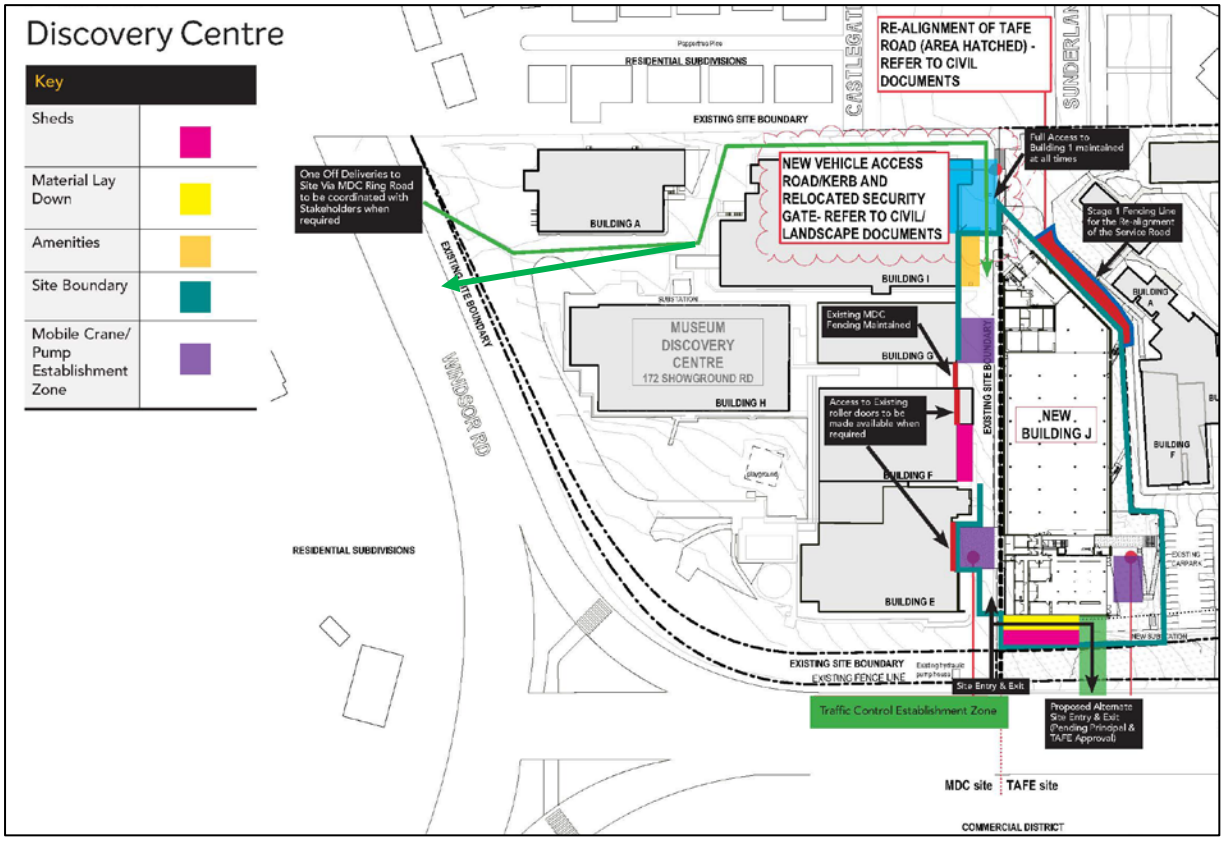


Source: RMS Cycleway Finder

4.0 Proposed Construction Scheme

4.1 Construction Program

The project is to be carried out over the course of 17 months with completion by end of 2022. The construction site plan prepared by Taylor Construction (Taylor) is shown in the following figure.



The site plans indicate:

- site boundary
- sheds, amenities, and material laydown area
- mobile crane/pump standing area and establishment zone
- vehicle accesses:
    - 1 ingress/egress via the existing main access driveway (no. 1) along Showground Road

  - 1 alternative ingress/egress via a new driveway along Showground Road (subject to principal and TAFE approval)
  - 1 ingress/egress via the existing access driveway along Windsor Road
- Stage 1 fencing line for the re-alignment of the service road

4.2 Construction Workers

It is anticipated that there will be a maximum of 81 workers on-site during the construction stage. The number of workers throughout the construction stages are detailed in the following table.

Construction Phase	Company	Management and Supervisor	Tradesmen and other general labour	Visitors	Number of workers each day	Estimate of total workers each day
Excavation & Piling	Taylor	3		1	4	8
	Subcontractors	1	3		4	
	Consultants			1	1	
Structure	Taylor	6		1	7	67
	Subcontractors	8	50		58	
	Consultants				2	
Finishes	Taylor	8		1	9	81
	Subcontractors	10	60		70	
	Consultants				2	

4.3 Construction Hours

The approved hours of construction activity (including the delivery of plant, equipment and any materials to and from the site) will be:

7.00 am – 5.00 pm	Monday to Friday
8.00 am – 1.00 pm	Saturday
No work	Sunday and public holidays

Should any works be required to take place within public roads (in the vicinity of the site), outside these hours, they may be undertaken:

(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
(c) where the works are inaudible at the nearest sensitive receivers; or

Notification of the above construction activities will be provided to affected residents prior to the commencement of the activities or as soon as is practical afterwards.

The approved hours for rock breaking, rock hammering, sheet piling, pile driving and similar activities are restricted will be:

9.00 am – 12.00 pm,	Monday to Friday
2.00 pm – 5.00 pm,	
9.00 am – 12.00 pm	Saturday
No work	Sunday and public holidays

The principal contractor shall ensure that all sub-contractors are aware of the permitted hours of operation and shall ensure that all vehicle activity occurs strictly within the hours stipulated by the Conditions of Consent.

4.4 Vehicle Site Access

Vehicle access to the construction site is proposed via the existing combined (ingress/egress) 7m wide main MDC access crossover along Showground Road.

A one-off access will be required via the existing driveway on Windsor Road. The largest vehicle that will use this access point will be a 19m semi.

Vehicles up to 18.1m truck and dog trailers will enter and exit the site via the main driveway on Showground Road, in a forward direction.

The one-off 19m semi access will enter the site via an existing driveway along Windsor Road and exit the site via the main driveway on Showground Road, and vice versa, entering via Showground Road and exiting via Windsor Road, all in a forward direction.

19 semis accessing (either forward in or reverse in) the site via Showground Road will enter the site under the management of accredited traffic controllers on Showground Road.

On departure, the semi will exit onto Windsor Road and Showground Road in a forward direction.

An alternative site access along Showground Road to the construction site is proposed via a combined (ingress/egress) 8m wide temporary crossover on the Showground Road frontage. This access is subject to the principal and TAFE approval. The temporary crossovers will have 2m wings on either side. A footpath crossing (driveway) application will be submitted to the Council. Approval will be sought from Council prior to the construction of the temporary laybacks and crossovers.

The largest vehicle using the alternative access will be a 12.5m heavy rigid vehicles.

Swept path analysis was completed for 12.5m heavy rigid vehicles, 18.1m truck and dog trailers and 19m semis expected to access the site, provided in Appendix C of this report. All vehicles will be restricted to left in and left out movements only.

To minimise conflict with the construction related vehicles, a traffic controller will be in place at the site access gate and internal road to manage construction and the general MDC traffic.

4.5 On-Street Works Zone

No on-street construction works zone are proposed as part of the construction works, all construction activities will occur wholly within the site.

4.6 Cranage and Materials Handling

Mobile cranes will be utilised within the site for materials handling. Materials will be loaded/unloaded between the on-site loading area using forklifts or trolleys (for light materials). On-site plant, materials handling/storage areas, spoil bin and laydown areas, worker sheds and amenities will be located on-site.

5.0 Construction Traffic Management Planning

5.1 Construction Vehicles

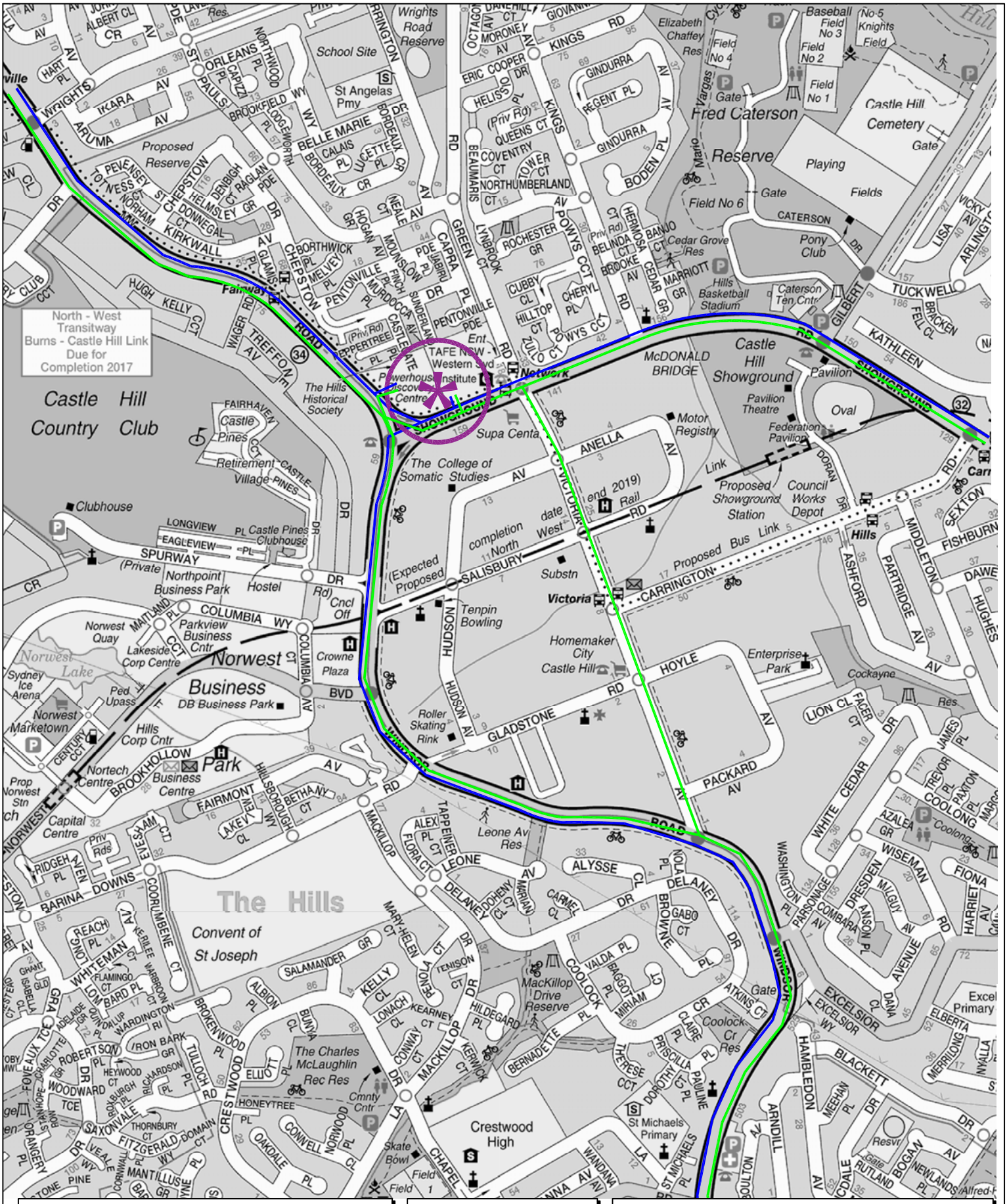
It is anticipated that the construction works will involve the following heavy vehicle types:

Articulated vehicles	19m
Truck and Dog Trailer	18.1m
Heavy rigid vehicles (HRV)	12.5m
Medium rigid vehicles (HRV)	8.8m
Small rigid vehicles (SRV)	6.4m
Bin trucks	10.2m
Mobile cranes	12.5m
Concrete trucks	8m
Single bogie	10.5m
Concrete pump truck	8.8m
Small utility vehicle/Van	5.2m
Glass lifter (façade installation)	4.3m

5.2 Construction Traffic Haulage Route

Generally, construction vehicles will have origins and destinations from a wide variety of locations throughout Sydney. However, all construction vehicles will be restricted to the State and Regional Road network.

Dedicated construction vehicle routes have been developed with the aim to provide the shortest distances to/from the arterial road network while minimising the impact of construction traffic on streets within the vicinity of the site. As such, the dedicated construction vehicle routes will use Showground Road, Victoria Avenue, Windsor Road with access to/from the M2 and Old Windsor Road, as indicated in Figure 5.



LEGEND

ARRIVAL

DEPARTURE

N

TRUCK ROUTES

FIG 5

Truck drivers will be advised of the designated truck routes to/ from the site. No queuing or marshalling of trucks will be permitted on public roads in the vicinity of the site.

Accredited traffic controllers/on-site personnel will ensure they are in radio contact with truck drivers thus ensuring each vehicle's arrival is anticipated and planned. Such a process will be important in managing truck activity to ensure access to the construction site is available at all times and to remove any such likelihood of construction vehicles queuing and waiting along Windsor Road and Showground Road to enter the site causing delays on surrounding roads. In addition, with only up to 15 truck visitations a day, it is very unlikely 2 trucks will arrive concurrently.

5.3 Other General Requirements for Trucks

All vehicles transporting loose materials will be required to ensure the entire load is covered using a tarpaulin or similar impervious material. The vehicle driver will need to take all precautions to prevent any excess dust or dirt particles from depositing onto the roadway during travel to and from the site. Truck shaker grids and wheel wash stations shall be positioned at all entry/exit points. The respective trades will be inducted by the head contractor into the above procedures and will monitor all trucks entering and exiting the site to ensure the procedures are met.

The contractor will be required to monitor the roadways leading to and from the site on a daily basis and take all necessary steps to rectify any adversely impacted road deposits caused by site vehicles. The roads will also be cleaned on a regular basis to minimise dirt particles depositing externally from the site. Such cleaning will occur in the evenings outside of the peak traffic period.

Vehicles traveling to, from and within the site shall not create unreasonable or unnecessary noise or vibration to minimise interference to adjoining building operations. No tracked vehicles will be permitted or required on any paved roads. Public roads and access points will not be obstructed by any materials, vehicles, refuse skips or the like under any circumstances. All deliveries and works will be

carried out within the site at the designated works zones/on-site loading areas. If there is a requirement to operate any material handling machinery on public access roads, the contractor will be required to seek separate Council/Police/RMS/Sydney Buses approval prior to the event.

5.4 Pedestrian Access

Access to the site is provided via security-controlled gates. All personnel entering the site will be required to undertake an induction program.

Pedestrian activities are currently removed from the construction area by the erected temporary chain wire fences.

One mobile trained on-site personnel (with retractable gate) will be present at the site accesses to manage pedestrian movements and assist with vehicle's ingress and egress. Only one vehicle at a time will enter or exit the site at these accesses. Therefore, the provision of one personnel is considered appropriate to manage/monitor the construction and pedestrian traffic.

5.5 Occupational Health and Safety

Any workers required to undertake works or traffic control within the public domain should be suitably trained and covered by adequate and appropriate insurances. All traffic control personnel will be required to hold RMS accreditation in accordance with Section 8 of Traffic Control at Worksites.

5.6 Emergency Vehicle Access

Access to the site and neighbouring sites by emergency vehicles would not be affected by the site, which is within the bounds of the construction site.

Emergency protocols on the site would indicate a requirement for the traffic controller and on-site personnel to assist with emergency access from Showground Road. All truck movements to the site and the incident point would be suspended and cleared.

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

The 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.

Thus, there would be no adverse impacts on the provision of existing emergency vehicle access to the site or other neighbouring properties as a result of the proposed construction activities.

5.7 Workers' Site Induction

All workers and sub-contractors employed on the site will be required to undertake a formal 'site induction' process prior to the undertaking of any task, and all the inductions will be performed specifically to each trade according to Workplace Health and Safety requirements.

During the conduct of this program, workers will be advised that parking will be provided on-site. All vehicles associated with the construction activities and site staff should be parked wholly within the site.

Timetables for all bus routes servicing the site will also be provided for the perusal of workers at various locations within the site (e.g., meal rooms).

5.8 Traffic Control Plan

The Traffic Control Plan (TCP) presents the principles of traffic management, with the detailed information for work site operations is contained in the Roads and Maritime Services Traffic Control at Work Sites Technical Manual Version 6.0 dated 14 September 2020. The control of traffic at work sites must be undertaken with reference to Workcover requirements and Taylor's Workplace Health and Safety Manuals. The TCP prepared by a Certified Traffic Controller (under RMS regulations) in accordance with Australian Standards 1742.3 are provided in Appendix D.

5.9 Contact Details

The contact details for the day-to-day activities on the site will be:

Steve Ziaziaris
Senior Project Manager
Taylor Construction
0413 182 641

6.0 Construction Traffic Impact Assessment

6.1 Impact on General Traffic

As articulated in the preceding section, the construction works will involve a variety of construction vehicles ranging between a semi-trailer (which is subject to a separate permit) and a normal utility vehicle. The envisaged construction traffic movements vary from time to time, depending on a range of factors, including:

- Processes
- Weather
- Time of day

Peak vehicle volumes would be in the order of 15 vehicles (30 movements) per day, which would occur outside of peak traffic periods when possible - AM (7.00 am-9.00 am) and PM (4.00 pm to 6 pm) to minimise traffic (bus and traffic flow) impacts and associated road network delays.

Construction truck drivers will be reminded that there should be no idling on and the use of and Windsor Road and Showground Road as marshalling areas.

With the above measures, it is not expected that this level of traffic movement would create any adverse road safety and network efficiency impacts on the surrounding road network and general traffic, cyclists and pedestrians and bus services.

It should be noted that the traffic generated by the construction activities will not be higher than those generated by the proposed Building J, as shown in the following figure.

Peak Hour	Intersection	Existing Performance			Future Performance with Building J		
		AVD (sec)	DOS	LOS	AVD (sec)	DOS	LOS
AM peak hour	Showground Road / Windsor Road	24	0.81	C	25	0.81	C
	Showground Road / Victoria Avenue / Green Road	60	0.91	E	60	0.93	E
PM peak hour	Showground Road / Windsor Road	28	0.68	C	28	0.68	C
	Showground Road / Victoria Avenue / Green Road	62	0.95	E	63	0.96	E

AVD – Average vehicle delay DOS – Degree of Saturation LOS – Level of Service

Source: JMT Consulting, 2020

6.2 Impact on Public Transport Services

As indicated in Figure 5, the heavy vehicle haulage routes will largely be limited on arterial and sub-arterial roads, which are designed to accommodate heavy vehicle movements. As such, the impacts on public transport services will be minimal on the approach/departure routes.

Access to/from the bus zones by buses on Showground Road and Green Road will be maintained at all times.

6.3 Impact on Pedestrians and Cyclists

During construction, pedestrian movements Windsor Road and pedestrian/cyclist movements along Showground Road will be maintained at all times.

Temporary chain wire fences would be erected around the perimeter of the site. On-site personnel and traffic controllers would be present during construction hours to manage construction vehicle entry and exit and pedestrian movements at the site access, noting that pedestrian/cyclist priority would be given. Outside of construction

hours, gates would be installed to prevent pedestrians from entering the construction site.

Notwithstanding, all construction-related traffic movements within the site will occur under the supervision of on-site personnel and traffic controllers, with trucks escorted between the access gate and the road.

To minimise disruption to pedestrian and cyclist movements, it is advised that truck movements are managed, wherever possible, to occur outside of peak commuting periods.

6.4 Impact on On-Street Parking

As a works zone is not required, there will be no loss of on-street parking.

Up to 15 on-site car parking spaces will be provided within the site. See details in the Construction Worker Transportation Strategy Report.

While there are on-street spaces available in the surrounding local residential streets to accommodate the workers should they choose to drive to/from the site, all workers will be encouraged to use public transport to access the site given the site's proximity to high-frequency public transport services or to carpool wherever possible to access the site.

The following measures will be incorporated to encourage more sustainable travel use:

- Provide an access pack to all workers and regular visitors including the transport access guide (TAG) and information on sustainable travel facilities including estimates of time taken to the bus stops, metro stations and other local destinations. This will be incorporated into the site induction program.
- Provide public transport information boards at the site office and meal rooms to make workers and regular visitors more aware of the alternative transport options

available. These will include all bus routes servicing the site and each corridor on the CityRail/Sydney Metro network.

- Provide a tool drop-off and storage facility within the site. This would allow tradespeople to drop off and store their tools and machinery, allowing them to use public transport to travel to/ from the site on a daily basis.

Workers will be directed to not use the remaining off-street carpark within the MDC compounds. Taylor would take appropriate action if informed of this activity occurring.

This will be incorporated into the site induction program.

6.5 Traffic Movements in Adjoining Council Areas

No adverse effects are expected from the movement of heavy vehicles through adjacent council areas.

6.6 Consultation, Communication and Liaison

The management strategies were established firstly by identifying the relevant stakeholders and future coordination/liaison requirements with the following:

- MDC
- TAFE
- The Hills Shire Council
- TfNSW
- Surrounding residential tenants/owners

Following consultation with the stakeholders, construction-related traffic issues would be:

- monitored
- mitigated via the Community Consultation Strategy and regular meetings with key stakeholders held throughout the project.

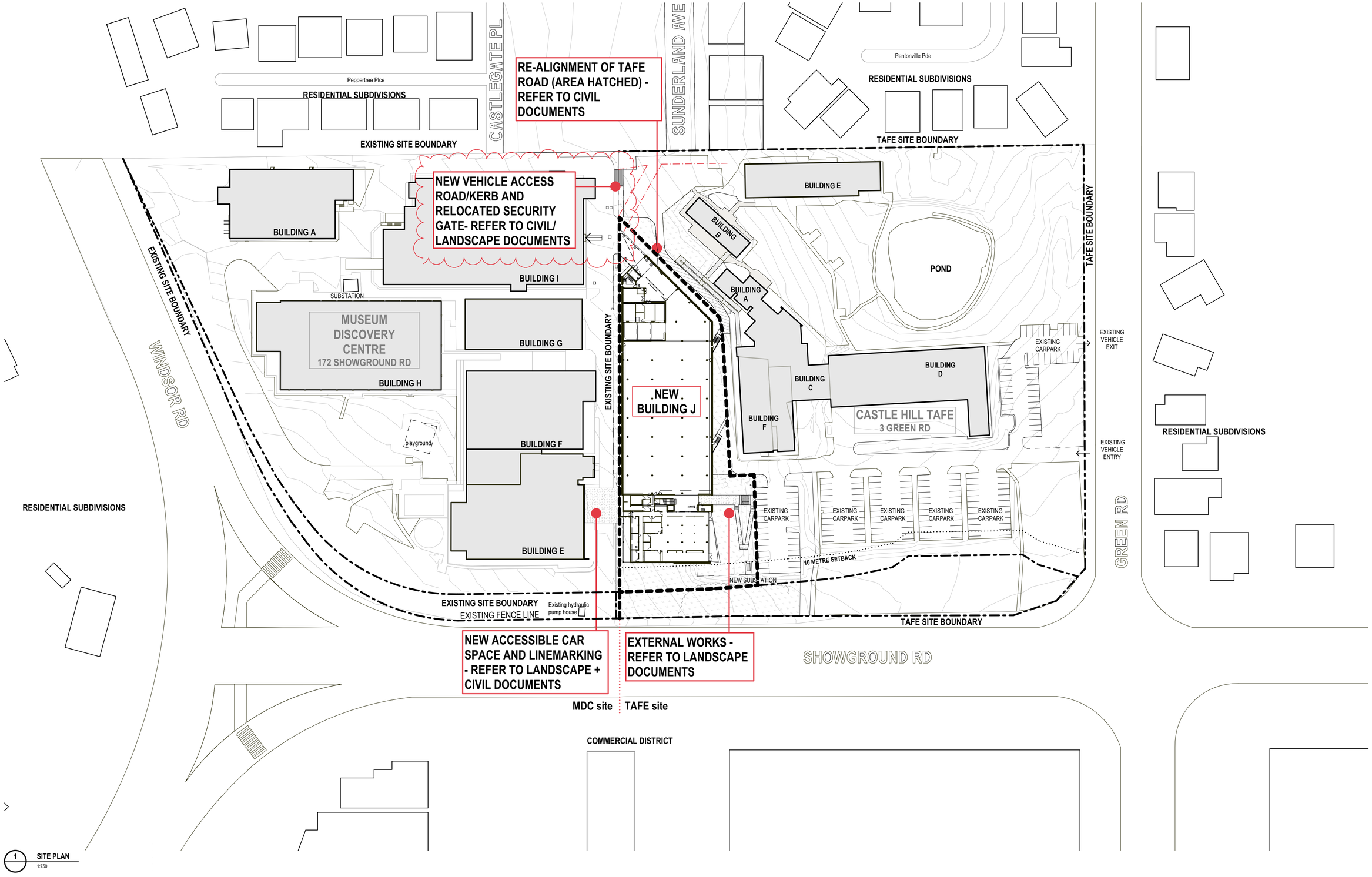
Taylor would also maintain regular contact with all stakeholders to communicate upcoming works and potential impacts.

6.7 Site Inspections and Record-Keeping

The construction work will be monitored to ensure that it proceeds as set out in the Construction Management Plan provided by Taylor. A daily inspection before the start of the construction activity should ensure that conditions accord with those stipulated in the plan and there are no potential hazards. Any possible adverse impacts will be recorded and dealt with if they arise.

Appendix A

Approved Architectural Plans



1 SITE PLAN
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NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE
01	50% TENDER ISSUE	30/10/2020
02	70% TENDER ISSUE	30/11/2020
03	ISSUED FOR TENDER	17/02/2021

REV	DESCRIPTION	DATE

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PROJECT SPONSOR
NSW GOVERNMENT Create NSW Arts, Screen & Culture

DELIVERY AGENCY
NSW GOVERNMENT Public Works Advisory

Museum of Applied Arts & Sciences

PROJECT TITLE
BUILDING J
Museums Discovery Centre,
172 Showground Road
Castle Hill

SCALE CHECK 5 10

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REVIEW	DIRECTOR SIGNATURE	DATE
TENDER		
CONST		

DISCIPLINE ARCHITECTURE
TITLE
SITE PLAN

DRAWN	PLOT DATE	SCALE @A1
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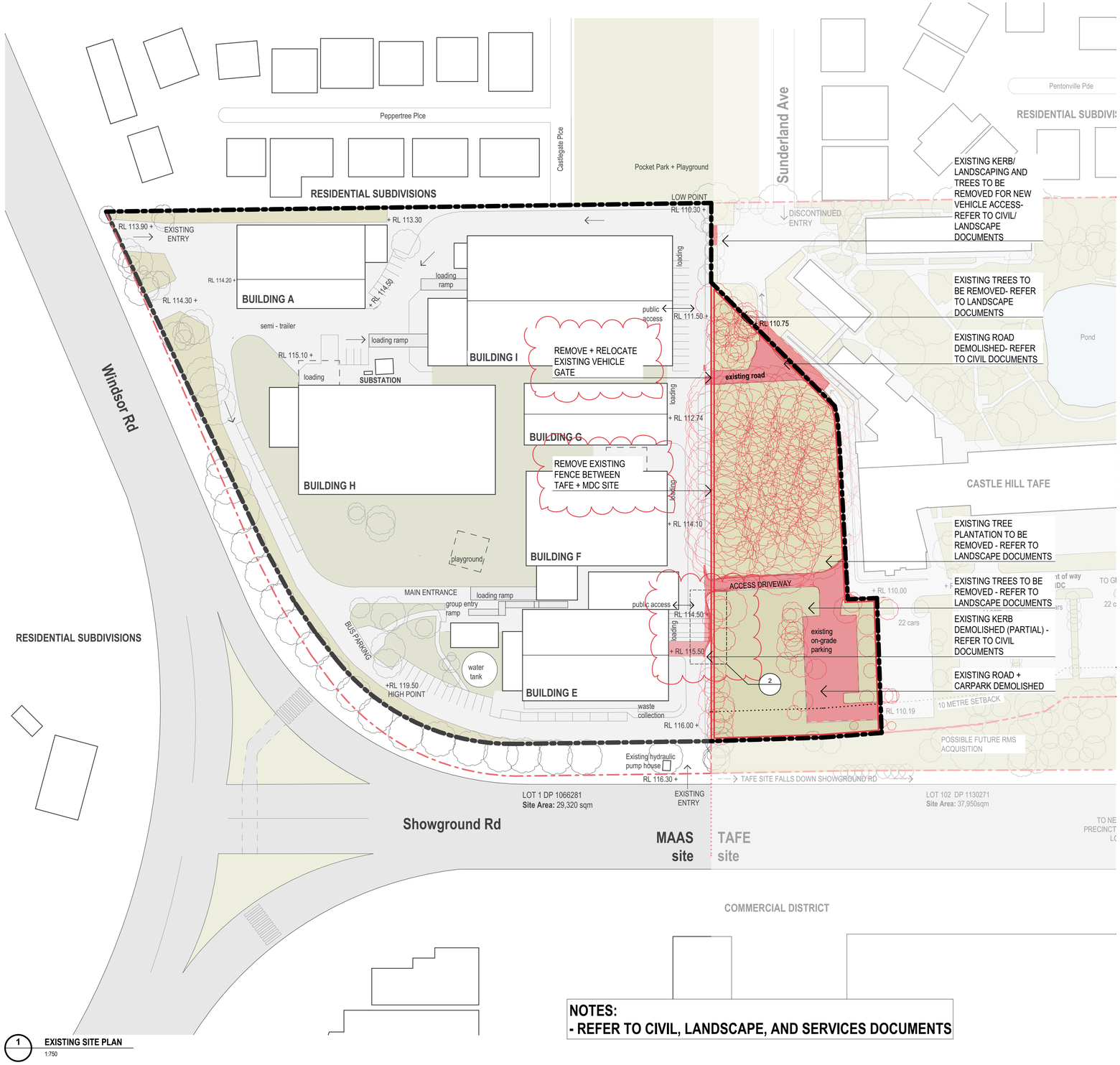
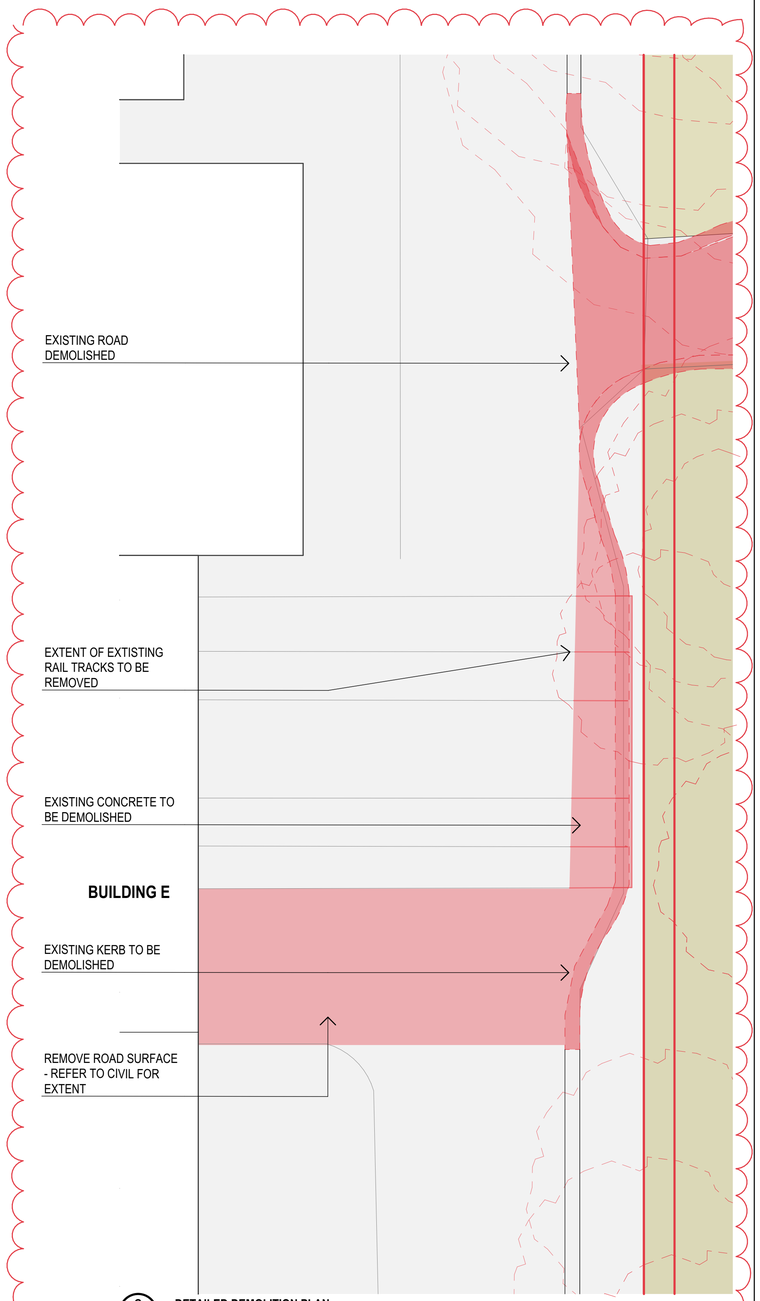
CHECKED	PROJECT NO.	DRAWING NO. / REV. NO
BC	18-14	J-WD-A1100 / 03



1 EXISTING SITE PLAN
1:750

NOTES:
- REFER TO CIVIL, LANDSCAPE, AND SERVICES DOCUMENTS



2 DETAILED DEMOLITION PLAN
1:100

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE
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02	50% TENDER ISSUE	30/10/2020
03	70% TENDER ISSUE	30/11/2020
04	ISSUED FOR TENDER	17/02/2021

REV	DESCRIPTION	DATE

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REVIEW	DIRECTOR SIGNATURE	DATE
TENDER		
CONST		

DISCIPLINE **ARCHITECTURE**
TITLE
SITE DEMOLITION PLAN

DRAWN	PLOT DATE	SCALE @A1
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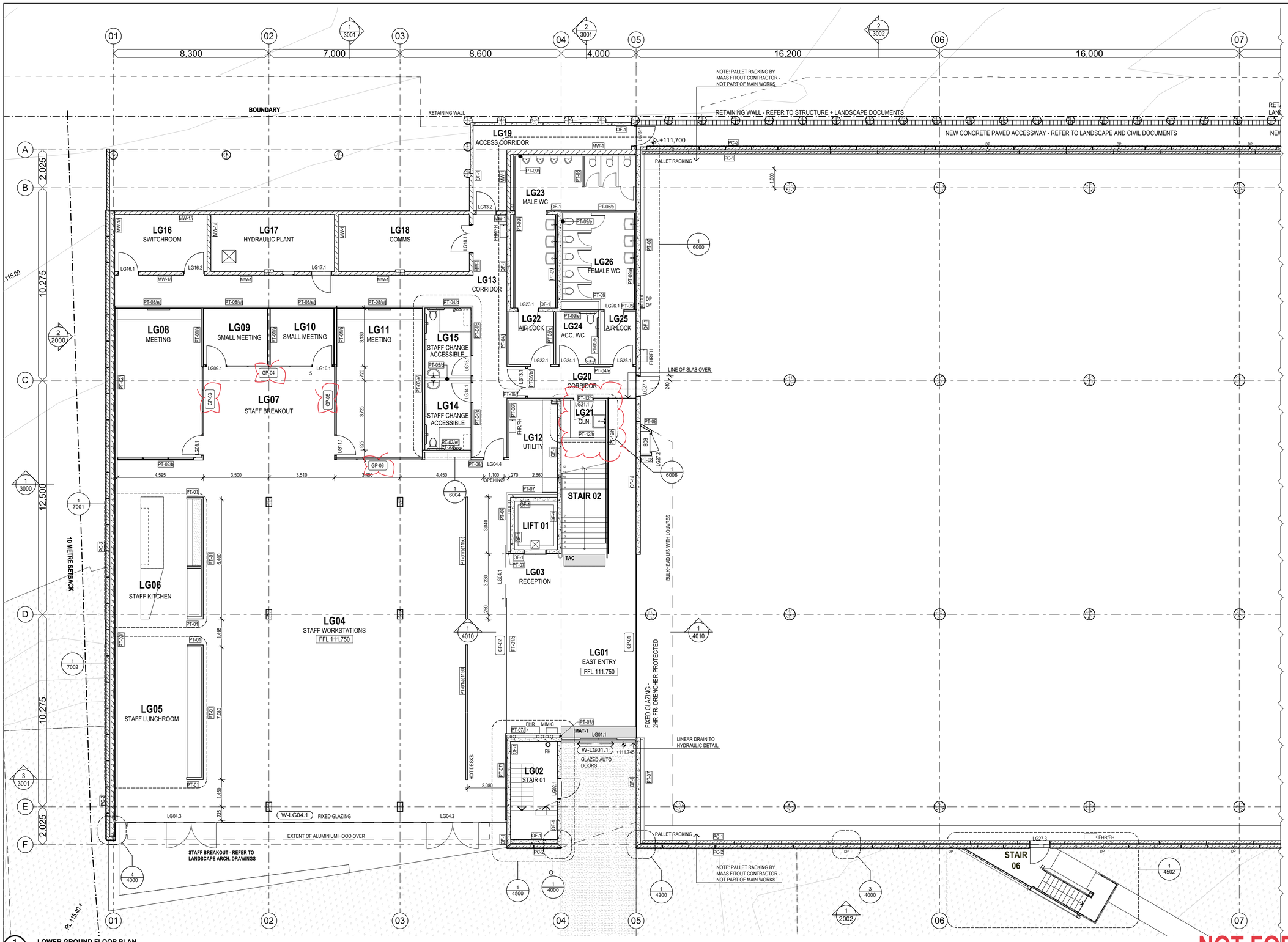
BC	18-14	J-WD-A1200 / 04



1 LOWER GROUND FLOOR PLAN
1:100

FOR CONTINUATION REFER TO DRAWING J-WD-A1401

PARTITION CODE LEGEND

READING PARTITION CODES

Example Code: P-1/a — 'P-1' Partition wall number as described in the list below; 'a' Wall characteristic - Part height wall

PARTITION WALLS	CODE	BUILD-UP DESCRIPTION
PARTITION WALLS	PT-01	13mm plasterboard / 92mm steel studs / 13mm plasterboard
	PT-02	13mm plasterboard / 92mm steel studs
	PT-03	13mm plasterboard / 92mm steel studs / 13mm moisture resistant pb
	PT-04	13mm impact resistant pb / 92mm steel studs / 13mm moisture resistant pb
	PT-05	13mm moisture resistant pb / 92mm steel studs / 13mm moisture resistant pb
	PT-06	13mm impact resistant pb / 92mm steel studs / 13mm impact resistant pb
	PT-07	13mm impact resistant pb / 92mm steel studs
	PT-08	13mm impact resistant pb / 92mm steel studs / 13mm plasterboard
	PT-09	13mm moisture resistant pb / 92mm steel studs
	PT-10	13mm impact resistant pb / 40mm furring channel / masonry or structural wall
	PT-11	13mm impact resistant pb / 40mm furring channel / 92mm steel studs
	PT-12	16mm fire-rated pb / 92mm steel stud / 16mm fire-rated pb
	PT-13	8mm Set FC lining / 92mm Steel Stud / Cladding or open riser
	PT-14	13mm moisture resistant pb / 40mm furring channel
	PT-15	13mm Soundchek pb / 52mm steel studs / 50mm glasswool insulation / 20mm gap / 50mm glasswool insulation / 52mm steel studs / 13mm Soundchek pb
MASONRY WALLS	MW-1	Core-filled 190mm Concrete Block Walls
CONCRETE WALLS	OF-1	200mm Off-Form Concrete Walls
	OF-2	300mm Off-Form Concrete Walls
	PC-1	150mm Precast Concrete Panels / 75mm Cavity
	PC-2	150mm Corrugated Precast Concrete Panels
METAL CLADDING	MC-1	Mill Finish Corrugated Aluminium Wall Cladding - Refer to Finishes Schedule
ADDITIONAL WALL PROPERTIES	/a	Part height wall
	/b	Wall over (not visible on plan)
	/c	Wall under (not visible on plan)
	/d	Rw 40 rated acoustic wall
	/e	Rw 45 rated acoustic wall
	/f	Rw 50 rated acoustic wall
	/g	Rw 55 rated acoustic wall
	/h	1hr Fire-Rated wall
	/i	2hr Fire-Rated wall
	/j	Thermal Insulation (R1.4 Total)
NOTE:	all	Partition to extend to underside of roof sheeting or concrete structure above

NOTES
1. Refer to internal wall elevations, joinery package and specifications for further details
2. Refer to finishes drawing and schedule for applied finishes to walls
3. Stud spacing and nogging requirements to suit spans and wall loadings (including built-in joinery, fixtures and fittings).
4. Secondary steel posts and framing within stud walls to be provided where required to brace walls and form openings (eg. for doors, windows, services penetrations)
5. Unless otherwise noted, continue full partition build-up (including insulation) to underside of roof sheeting or structure above.
6. Insulation to extend for full height of partition wall

ROOF CODE LEGEND

ALUMINIUM HOOD	SS-1	Proprietary powdercoated aluminium sun shade - Refer to Specifications
METAL SHEETING	RS-1	Pre-finished profiled steel roof sheeting - Refer to Specifications
MEMBRANE	MB-1	New roof membrane on concrete roof of lift shaft - Refer to Specifications

GENERAL CODE LEGEND

	DP/OP	Down pipes/Overflow pipes - Refer to Hydraulic
	EDB	Electrical Distribution Board - Refer to Electrical
	FH/FHR	Fire Hose/Fire Hose Reel - Refer to Hydraulic
	SC	Structural steel columns - Refer to Structural
	X##.#	Door number - Refer to Door Schedule
	W-##	Window number - Refer to Window Schedule
	GP-##	Glazed Partitions - Refer Glazed Partition Details

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE
01	PRELIMINARY ISSUE	
02	PROGRESS ISSUE	25/09/2020
03	40% TENDER ISSUE	16/10/2020
04	50% TENDER ISSUE	30/10/2020
05	70% TENDER ISSUE	30/11/2020
06	UPDATED 70% TENDER ISSUE DRAWINGS	11/12/2020
07	ISSUE FOR TENDER	15/12/2020
08	ISSUED FOR TENDER	17/02/2021

STRUCTURAL / CIVIL / SERVICES CONSULTANTS: NORTHROP

LANDSCAPE: ASPECT Studios

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PROJECT SPONSOR: NSW GOVERNMENT Create NSW Arts, Screen & Culture

DELIVERY AGENCY: NSW GOVERNMENT Public Works Advisory

Museum of Applied Arts & Sciences

PROJECT TITLE: BUILDING J Museums Discovery Centre, 172 Showground Road Castle Hill

SCALE CHECK 5 10

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REVIEW	DIRECTOR SIGNATURE	DATE
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DISCIPLINE: ARCHITECTURE

TITLE: LOWER GROUND FLOOR PLAN 01 OF 02

DRAWN	PLOT DATE	SCALE @A1
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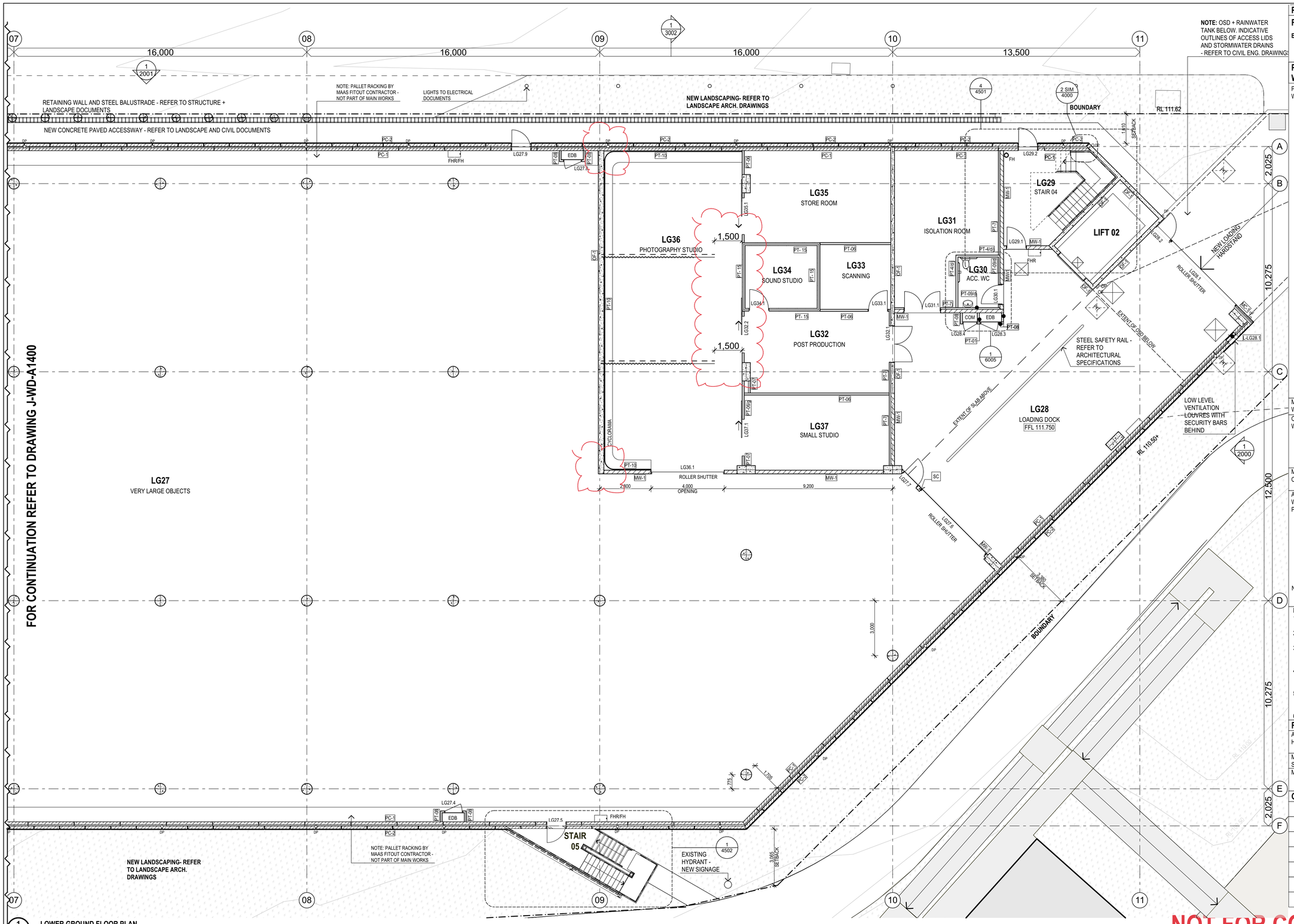
CHECKED	PROJECT NO.	DRAWING NO. / REV. NO
BC	18-14	J-WD-A1400 / 08



1 LOWER GROUND FLOOR PLAN
1:100

PARTITION CODE LEGEND

READING PARTITION CODES

Example Code: P-1/a
- 'P-1' Partition wall number as described in the list below
- '/a' Wall characteristic - Part height wall

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	PT-03	13mm plasterboard / 92mm steel studs / 13mm moisture resistant pb
	PT-04	13mm impact resistant pb / 92mm steel studs / 13mm moisture resistant pb
	PT-05	13mm moisture resistant pb / 92mm steel studs / 13mm moisture resistant pb
	PT-06	13mm impact resistant pb / 92mm steel studs / 13mm impact resistant pb
	PT-07	13mm impact resistant pb / 92mm steel studs
	PT-08	13mm impact resistant pb / 92mm steel studs / 13mm plasterboard
	PT-09	13mm moisture resistant pb / 92mm steel studs
	PT-10	13mm impact resistant pb / 40mm furring channel / masonry or structural wall
	PT-11	13mm impact resistant pb / 40mm furring channel / 92mm steel studs
	PT-12	16mm fire-rated pb / 92mm steel stud / 16mm fire-rated pb
	PT-13	8mm Set FC lining / 92mm Steel Stud / Cladding or open riser
	PT-14	13mm moisture resistant pb / 40mm furring channel
	PT-15	13mm Soundchek pb / 52mm steel studs / 50mm glasswool insulation / 20mm gap / 50mm glasswool insulation / 52mm steel studs / 13mm Soundchek pb
MASONRY WALLS	MW-1	Core-filled 190mm Concrete Block Walls
CONCRETE WALLS	OF-1	200mm Off-Form Concrete Walls
	OF-2	300mm Off-Form Concrete Walls
	PC-1	150mm Precast Concrete Panels / 75mm Cavity
	PC-2	150mm Corrugated Precast Concrete Panels
METAL CLADDING	MC-1	Mill Finish Corrugated Aluminium Wall Cladding - Refer to Finishes Schedule
ADDITIONAL WALL PROPERTIES	/a	Part height wall
	/b	Wall over (not visible on plan)
	/c	Wall under (not visible on plan)
	/d	Rw 40 rated acoustic wall
	/e	Rw 45 rated acoustic wall
	/f	Rw 50 rated acoustic wall
	/g	Rw 55 rated acoustic wall
	/h	1hr Fire-Rated wall
	/i	2hr Fire-Rated wall
	/j	Thermal Insulation (R1.4 Total)
NOTE:	all	Partition to extend to underside of roof sheeting or concrete structure above

NOTES
1. Refer to internal wall elevations, joinery package and specifications for further details
2. Refer to finishes drawing and schedule for applied finishes to walls
3. Stud spacing and nogging requirements to suit spans and wall loadings (including built-in joinery, fixtures and fittings).
4. Secondary steel posts and framing within stud walls to be provided where required to brace walls and form openings (eg. for doors, windows, services penetrations)
5. Unless otherwise noted, continue full partition build-up (including insulation) to underside of roof sheeting or structure above.
6. Insulation to extend for full height of partition wall

ROOF CODE LEGEND

ALUMINIUM HOOD	SS-1	Proprietary powdercoated aluminium sun shade - Refer to Specifications
METAL SHEETING	RS-1	Pre-finished profiled steel roof sheeting - Refer to Specifications
MEMBRANE	MB-1	New roof membrane on concrete roof of lift shaft - Refer to Specifications

GENERAL CODE LEGEND

	DP/OP	Down pipes/Overflow pipes - Refer to Hydraulic
	EDB	Electrical Distribution Board - Refer to Electrical
	FH/FHR	Fire Hose/Fire Hose Reel - Refer to Hydraulic
	SC	Structural steel columns - Refer to Structural
	X##.#	Door number - Refer to Door Schedule
	W-##	Window number - Refer to Window Schedule
	GP-##	Glazed Partitions - Refer Glazed Partition Details

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE
01	PRELIMINARY ISSUE	
02	PROGRESS ISSUE	25/09/2020
03	40% TENDER ISSUE	16/10/2020
04	50% TENDER ISSUE	30/10/2020
05	70% TENDER ISSUE	30/11/2020
06	ISSUE FOR TENDER	15/12/2020
07	BCA UPDATES	20/01/2021
08	ISSUED FOR TENDER	17/02/2021

STRUCTURAL / CIVIL / SERVICES CONSULTANTS
NORTHROP

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PROJECT SPONSOR
NSW GOVERNMENT Create NSW Arts, Screen & Culture

DELIVERY AGENCY
NSW GOVERNMENT Public Works Advisory

Museum of Applied Arts & Sciences

PROJECT TITLE
BUILDING J
Museums Discovery Centre,
172 Showground Road
Castle Hill

SCALE CHECK 5 10

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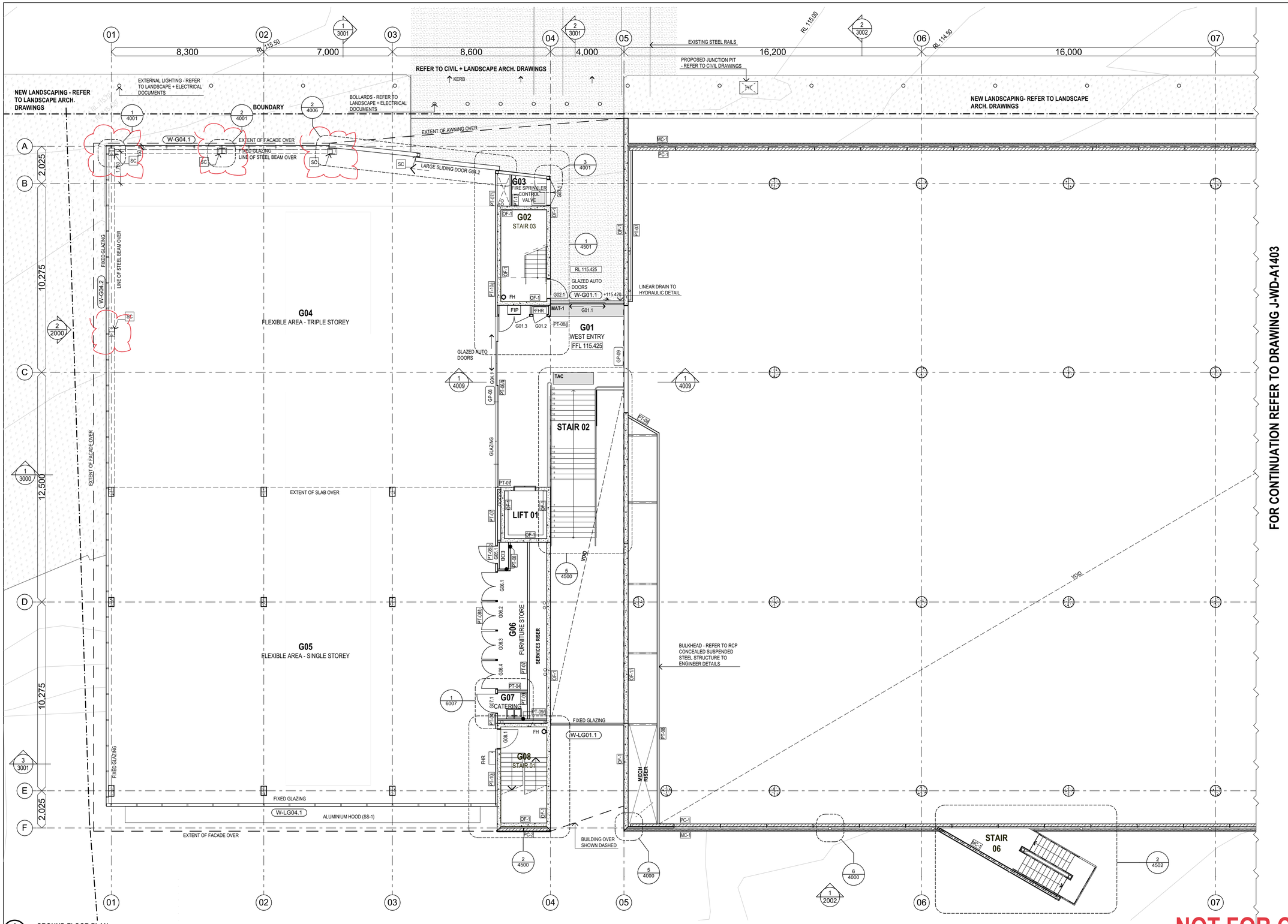
REVIEW	DIRECTOR SIGNATURE	DATE
TENDER		
CONST		

DISCIPLINE ARCHITECTURE

TITLE
LOWER GROUND FLOOR PLAN 02 OF 02

DRAWN	PLOT DATE	SCALE @A1
BG	18/02/2021	1:100
CHECKED	PROJECT NO.	DRAWING NO. / REV. NO
BC	18-14	J-WD-A1401 / 08



1 GROUND FLOOR PLAN
1:100

FOR CONTINUATION REFER TO DRAWING J-WD-A1403

PARTITION CODE LEGEND

READING PARTITION CODES

Example Code: P-1/a

'P-1' Partition wall number as described in the list below

'/a' Wall characteristic - Part height wall

PARTITION WALLS	CODE	BUILD-UP DESCRIPTION
PARTITION WALLS	PT-01	13mm plasterboard / 92mm steel studs / 13mm plasterboard
	PT-02	13mm plasterboard / 92mm steel studs
	PT-03	13mm plasterboard / 92mm steel studs / 13mm moisture resistant pb
	PT-04	13mm impact resistant pb / 92mm steel studs / 13mm moisture resistant pb
	PT-05	13mm moisture resistant pb / 92mm steel studs / 13mm moisture resistant pb
	PT-06	13mm impact resistant pb / 92mm steel studs / 13mm impact resistant pb
	PT-07	13mm impact resistant pb / 92mm steel studs
	PT-08	13mm impact resistant pb / 92mm steel studs / 13mm plasterboard
	PT-09	13mm moisture resistant pb / 92mm steel studs
	PT-10	13mm impact resistant pb / 40mm furring channel / masonry or structural wall
	PT-11	13mm impact resistant pb / 40mm furring channel / 92mm steel studs
	PT-12	16mm fire-rated pb / 92mm steel stud / 16mm fire-rated pb
	PT-13	8mm Set FC lining / 92mm Steel Stud / Cladding or open riser
	PT-14	13mm moisture resistant pb / 40mm furring channel
	PT-15	13mm Soundchek pb / 52mm steel studs / 50mm glasswool insulation / 20mm gap / 50mm glasswool insulation / 52mm steel studs / 13mm Soundchek pb
MASONRY WALLS	MW-1	Core-filled 190mm Concrete Block Walls
CONCRETE WALLS	OF-1	200mm Off-Form Concrete Walls
	OF-2	300mm Off-Form Concrete Walls
	PC-1	150mm Precast Concrete Panels / 75mm Cavity
	PC-2	150mm Corrugated Precast Concrete Panels
METAL CLADDING	MC-1	Mill Finish Corrugated Aluminium Wall Cladding - Refer to Finishes Schedule
ADDITIONAL WALL PROPERTIES	/a	Part height wall
	/b	Wall over (not visible on plan)
	/c	Wall under (not visible on plan)
	/d	Rw 40 rated acoustic wall
	/e	Rw 45 rated acoustic wall
	/f	Rw 50 rated acoustic wall
	/g	Rw 55 rated acoustic wall
	/h	1hr Fire-Rated wall
	/i	2hr Fire-Rated wall
	/j	Thermal Insulation (R1.4 Total)
NOTE:	all	Partition to extend to underside of roof sheeting or concrete structure above

NOTES

1. Refer to internal wall elevations, joinery package and specifications for further details
2. Refer to finishes drawing and schedule for applied finishes to walls
3. Stud spacing and nogging requirements to suit spans and wall loadings (including built-in joinery, fixtures and fittings).
4. Secondary steel posts and framing within stud walls to be provided where required to brace walls and form openings (eg. for doors, windows, services penetrations)
5. Unless otherwise noted, continue full partition build-up (including insulation) to underside of roof sheeting or structure above.
6. Insulation to extend for full height of partition wall

ROOF CODE LEGEND

ALUMINIUM HOOD	SS-1	Proprietary powdercoated aluminium sun shade - Refer to Specifications
METAL SHEETING	RS-1	Pre-finished profiled steel roof sheeting - Refer to Specifications
MEMBRANE	MB-1	New roof membrane on concrete roof of lift shaft - Refer to Specifications

GENERAL CODE LEGEND

	DP/OP	Down pipes/Overflow pipes - Refer to Hydraulic
	EDB	Electrical Distribution Board - Refer to Electrical
	FH/FHR	Fire Hose/Fire Hose Reel - Refer to Hydraulic
	SC	Structural steel columns - Refer to Structural
	X##.#	Door number - Refer to Door Schedule
	W-##	Window number - Refer to Window Schedule
	GP-##	Glazed Partitions - Refer Glazed Partition Details

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE
01	PRELIMINARY ISSUE	
02	PROGRESS ISSUE	25/09/2020
03	40% TENDER ISSUE	16/10/2020
04	50% TENDER ISSUE	30/10/2020
05	70% TENDER ISSUE	30/11/2020
06	ISSUE FOR TENDER	15/12/2020
07	ISSUED FOR TENDER	17/02/2021

STRUCTURAL / CIVIL / SERVICES CONSULTANTS: NORTHROP

LANDSCAPE: ASPECT Studios

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PROJECT SPONSOR: NSW GOVERNMENT Create NSW Arts, Screen & Culture

DELIVERY AGENCY: NSW GOVERNMENT Public Works Advisory

Museum of Applied Arts & Sciences

PROJECT TITLE

BUILDING J
Museums Discovery Centre,
172 Showground Road
Castle Hill

SCALE CHECK 5 10

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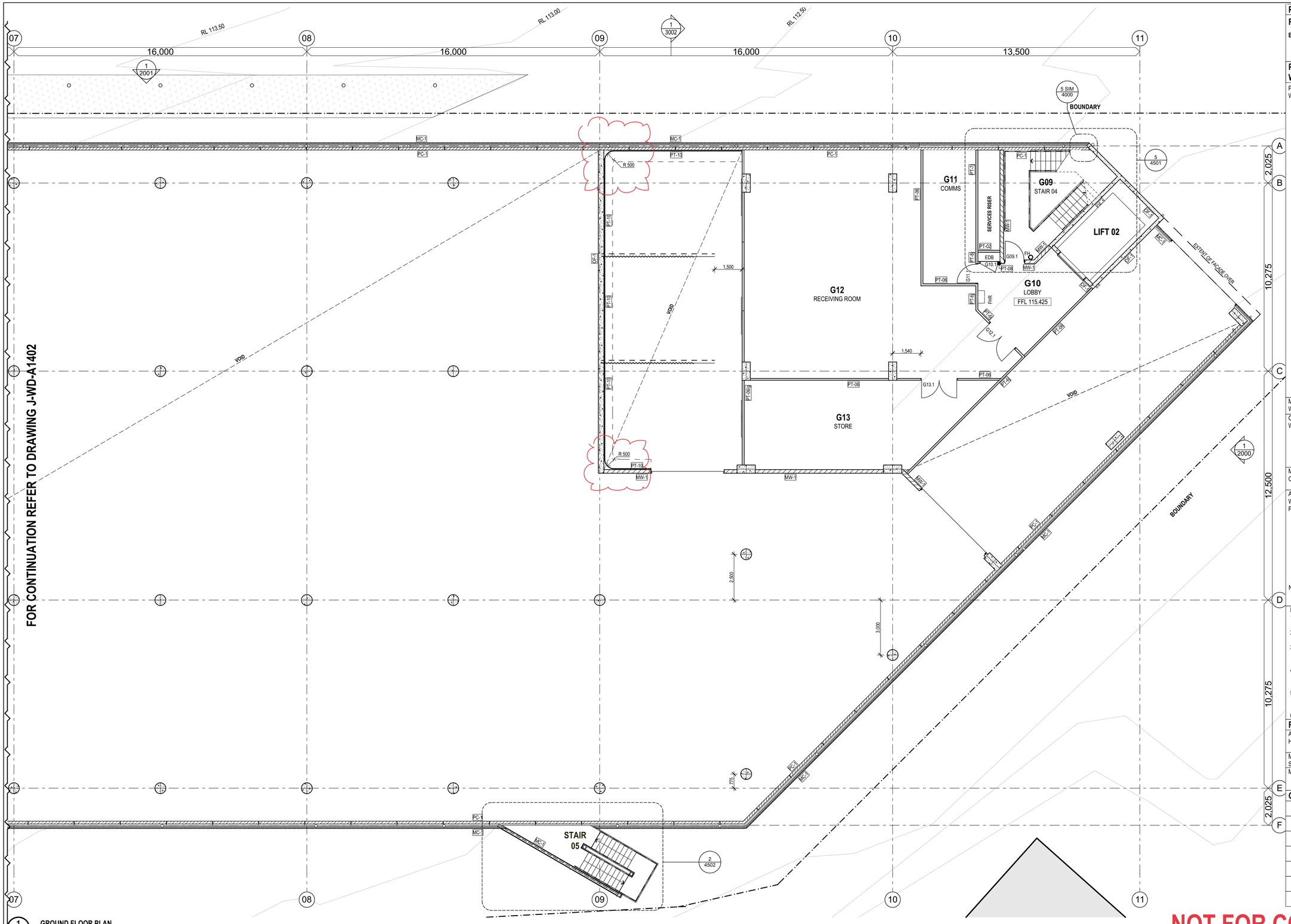
REVIEW	DIRECTOR SIGNATURE	DATE
TENDER		
CONST		

DISCIPLINE: ARCHITECTURE

TITLE: **GROUND FLOOR PLAN 01 OF 02**

DRAWN	PLOT DATE	SCALE @A1
BG	18/02/2021	1:100
CHECKED	PROJECT NO.	DRAWING NO. / REV. NO
BC	18-14	J-WD-A1402 / 07



1 GROUND FLOOR PLAN
1:100

PARTITION CODE LEGEND

READING PARTITION CODES

Example Code: P-1/a — 'P-1' Partition wall number as described in the list below; '/a' Wall characteristic - Part height wall

PARTITION WALLS	CODE	BUILD-UP DESCRIPTION
PARTITION WALLS	PT-01	13mm plasterboard / 92mm steel studs / 13mm plasterboard
	PT-02	13mm plasterboard / 92mm steel studs
	PT-03	13mm plasterboard / 92mm steel studs / 13mm moisture resistant pb
	PT-04	13mm impact resistant pb / 92mm steel studs / 13mm moisture resistant pb
	PT-05	13mm moisture resistant pb / 92mm steel studs / 13mm moisture resistant pb
	PT-06	13mm impact resistant pb / 92mm steel studs / 13mm impact resistant pb
	PT-07	13mm impact resistant pb / 92mm steel studs
	PT-08	13mm impact resistant pb / 92mm steel studs / 13mm plasterboard
	PT-09	13mm moisture resistant pb / 92mm steel studs
	PT-10	13mm impact resistant pb / 40mm furring channel / masonry or structural wall
	PT-11	13mm impact resistant pb / 40mm furring channel / 92mm steel studs
	PT-12	16mm fire-rated pb / 92mm steel stud / 16mm fire-rated pb
	PT-13	8mm Set FC lining / 92mm Steel Stud / Cladding or open riser
	PT-14	13mm moisture resistant pb / 40mm furring channel
	PT-15	13mm Soundchek pb / 52mm steel studs / 50mm glasswool insulation / 20mm gap / 50mm glasswool insulation / 52mm steel studs / 13mm Soundchek pb
MASONRY WALLS	MW-1	Core-filled 190mm Concrete Block Walls
CONCRETE WALLS	OF-1	200mm Off-Form Concrete Walls
	OF-2	300mm Off-Form Concrete Walls
	PC-1	150mm Precast Concrete Panels / 75mm Cavity
	PC-2	150mm Corrugated Precast Concrete Panels
METAL CLADDING	MC-1	Mill Finish Corrugated Aluminium Wall Cladding - Refer to Finishes Schedule
ADDITIONAL WALL PROPERTIES	/a	Part height wall
	/b	Wall over (not visible on plan)
	/c	Wall under (not visible on plan)
	/d	Rw 40 rated acoustic wall
	/e	Rw 45 rated acoustic wall
	/f	Rw 50 rated acoustic wall
	/g	Rw 55 rated acoustic wall
	/h	1hr Fire-Rated wall
	/i	2hr Fire-Rated wall
	/j	Thermal Insulation (R1.4 Total)
NOTE:	all	Partition to extend to underside of roof sheeting or concrete structure above

NOTES
1. Refer to internal wall elevations, joinery package and specifications for further details
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3. Stud spacing and nogging requirements to suit spans and wall loadings (including built-in joinery, fixtures and fittings).
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5. Unless otherwise noted, continue full partition build-up (including insulation) to underside of roof sheeting or structure above.
6. Insulation to extend for full height of partition wall

ROOF CODE LEGEND

ALUMINIUM HOOD	SS-1	Proprietary powdercoated aluminium sun shade - Refer to Specifications
METAL SHEETING	RS-1	Pre-finished profiled steel roof sheeting - Refer to Specifications
MEMBRANE	MB-1	New roof membrane on concrete roof of lift shaft - Refer to Specifications

GENERAL CODE LEGEND

	DP/OP	Down pipes/Overflow pipes - Refer to Hydraulic
	EDB	Electrical Distribution Board - Refer to Electrical
	FH/FHR	Fire Hose/Fire Hose Reel - Refer to Hydraulic
	SC	Structural steel columns - Refer to Structural
	X##.#	Door number - Refer to Door Schedule
	W-##	Window number - Refer to Window Schedule
	GP-##	Glazed Partitions - Refer Glazed Partition Details

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE
01	PRELIMINARY ISSUE	
02	PROGRESS ISSUE	25/09/2020
03	40% TENDER ISSUE	16/10/2020
04	50% TENDER ISSUE	30/10/2020
05	70% TENDER ISSUE	30/11/2020
06	ISSUE FOR TENDER	15/12/2020
07	ISSUED FOR TENDER	17/02/2021

REV	DESCRIPTION	DATE

STRUCTURAL / CIVIL / SERVICES CONSULTANTS
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PROJECT SPONSOR
NSW GOVERNMENT Create NSW Arts, Screen & Culture

DELIVERY AGENCY
NSW GOVERNMENT Public Works Advisory

Museum of Applied Arts & Sciences

PROJECT TITLE
BUILDING J
Museums Discovery Centre,
172 Showground Road
Castle Hill

SCALE CHECK 5 10

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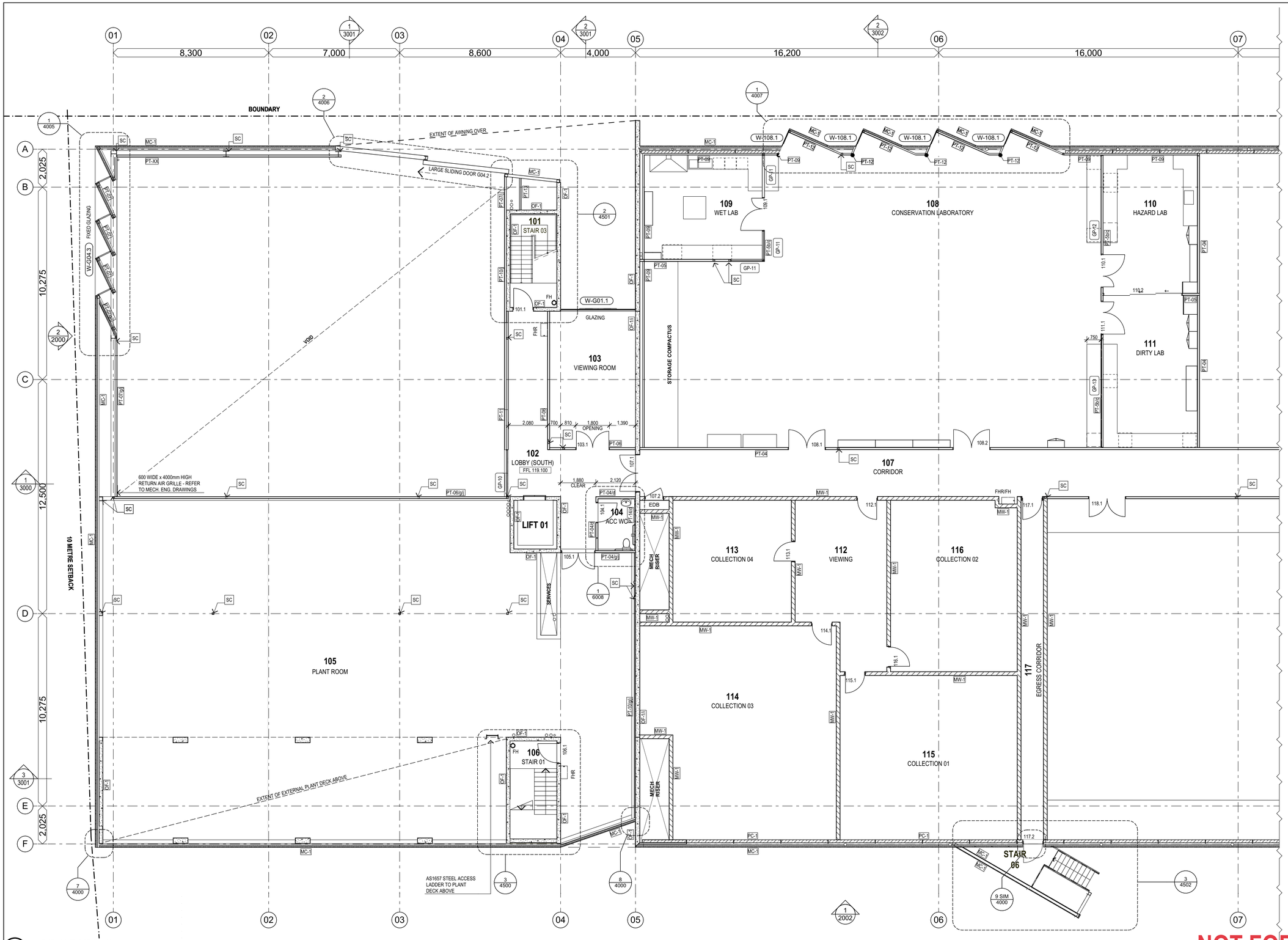
REVIEW	DIRECTOR SIGNATURE	DATE
TENDER		
CONST		

DISCIPLINE ARCHITECTURE

TITLE **GROUND FLOOR PLAN 02 OF 02**

DRAWN	PLOT DATE	SCALE @A1
BG	18/02/2021	1:100
CHECKED	PROJECT NO.	DRAWING NO. / REV. NO
BC	18-14	J-WD-A1403 / 07



1 LEVEL 01 FLOOR PLAN
1:100

FOR CONTINUATION REFER TO DRAWING J-WD-A1405

PARTITION CODE LEGEND

READING PARTITION CODES

Example Code: P-1/a

'P-1' Partition wall number as described in the list below

'/a' Wall characteristic - Part height wall

PARTITION WALLS	CODE	BUILD-UP DESCRIPTION
PARTITION WALLS	PT-01	13mm plasterboard / 92mm steel studs / 13mm plasterboard
	PT-02	13mm plasterboard / 92mm steel studs
	PT-03	13mm plasterboard / 92mm steel studs / 13mm moisture resistant pb
	PT-04	13mm impact resistant pb / 92mm steel studs / 13mm moisture resistant pb
	PT-05	13mm moisture resistant pb / 92mm steel studs / 13mm moisture resistant pb
	PT-06	13mm impact resistant pb / 92mm steel studs / 13mm impact resistant pb
	PT-07	13mm impact resistant pb / 92mm steel studs
	PT-08	13mm impact resistant pb / 92mm steel studs / 13mm plasterboard
	PT-09	13mm moisture resistant pb / 92mm steel studs
	PT-10	13mm impact resistant pb / 40mm furring channel / masonry or structural wall
	PT-11	13mm impact resistant pb / 40mm furring channel / 92mm steel studs
	PT-12	16mm fire-rated pb / 92mm steel stud / 16mm fire-rated pb
	PT-13	8mm Set FC lining / 92mm Steel Stud / Cladding or open riser
	PT-14	13mm moisture resistant pb / 40mm furring channel
	PT-15	13mm Soundchek pb / 52mm steel studs / 50mm glasswool insulation / 20mm gap / 50mm glasswool insulation / 52mm steel studs / 13mm Soundchek pb
MASONRY WALLS	MW-1	Core-filled 190mm Concrete Block Walls
CONCRETE WALLS	OF-1	200mm Off-Form Concrete Walls
	OF-2	300mm Off-Form Concrete Walls
	PC-1	150mm Precast Concrete Panels / 75mm Cavity
	PC-2	150mm Corrugated Precast Concrete Panels
METAL CLADDING	MC-1	Mill Finish Corrugated Aluminium Wall Cladding - Refer to Finishes Schedule
ADDITIONAL WALL PROPERTIES	/a	Part height wall
	/b	Wall over (not visible on plan)
	/c	Wall under (not visible on plan)
	/d	Rw 40 rated acoustic wall
	/e	Rw 45 rated acoustic wall
	/f	Rw 50 rated acoustic wall
	/g	Rw 55 rated acoustic wall
	/h	1hr Fire-Rated wall
	/i	2hr Fire-Rated wall
	/j	Thermal Insulation (R1.4 Total)
NOTE:	all	Partition to extend to underside of roof sheeting or concrete structure above

NOTES

1. Refer to internal wall elevations, joinery package and specifications for further details
2. Refer to finishes drawing and schedule for applied finishes to walls
3. Stud spacing and nogging requirements to suit spans and wall loadings (including built-in joinery, fixtures and fittings).
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5. Unless otherwise noted, continue full partition build-up (including insulation) to underside of roof sheeting or structure above.
6. Insulation to extend for full height of partition wall

ROOF CODE LEGEND

ALUMINIUM HOOD	SS-1	Proprietary powdercoated aluminium sun shade - Refer to Specifications
METAL SHEETING	RS-1	Pre-finished profiled steel roof sheeting - Refer to Specifications
MEMBRANE	MB-1	New roof membrane on concrete roof of lift shaft - Refer to Specifications

GENERAL CODE LEGEND

	DP/OP	Down pipes/Overflow pipes - Refer to Hydraulic
	EDB	Electrical Distribution Board - Refer to Electrical
	FH/FHR	Fire Hose/Fire Hose Reel - Refer to Hydraulic
	SC	Structural steel columns - Refer to Structural
	X##.#	Door number - Refer to Door Schedule
	W-##	Window number - Refer to Window Schedule
	GP-##	Glazed Partitions - Refer Glazed Partition Details

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE
01	PRELIMINARY ISSUE	
02	PROGRESS ISSUE	25/09/2020
03	40% TENDER ISSUE	16/10/2020
04	50% TENDER ISSUE	30/10/2020
05	70% TENDER ISSUE	30/11/2020
06	UPDATED 70% TENDER ISSUE DRAWINGS	11/12/2020
07	ISSUE FOR TENDER	15/12/2020
08	ISSUED FOR TENDER	17/02/2021

STRUCTURAL / CIVIL / SERVICES CONSULTANTS: NORTHROP

LANDSCAPE: ASPECT Studios

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DELIVERY AGENCY: NSW GOVERNMENT Public Works Advisory

Museum of Applied Arts & Sciences

PROJECT TITLE

BUILDING J
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172 Showground Road
Castle Hill

SCALE CHECK 5 10

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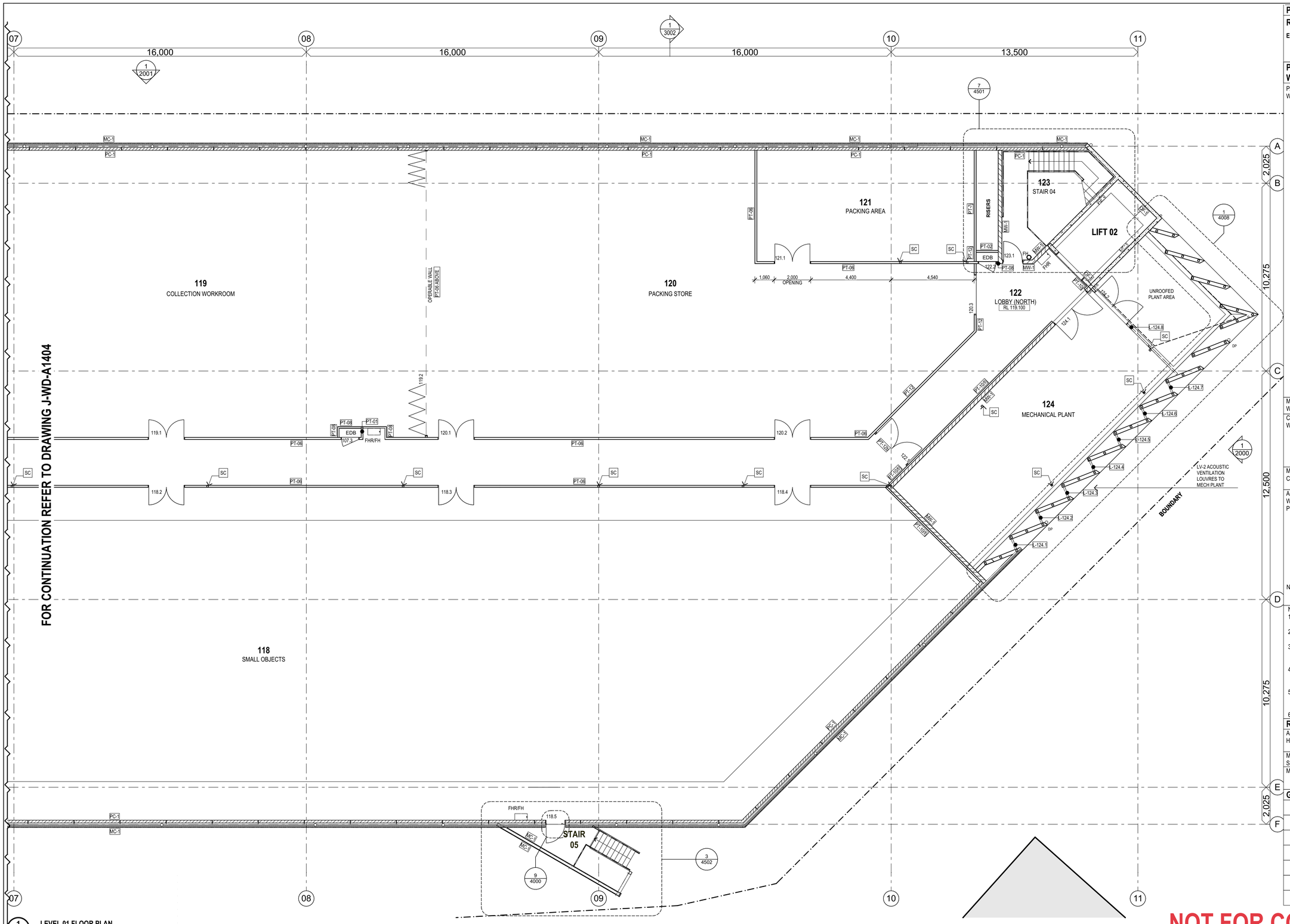
www.lahznimmo.com

REVIEW	DIRECTOR SIGNATURE	DATE
TENDER		
CONST		

DISCIPLINE: ARCHITECTURE

TITLE: **LEVEL 01 FLOOR PLAN 01 OF 02**

DRAWN	PLOT DATE	SCALE @A1
BG	18/02/2021	1:100
CHECKED	PROJECT NO.	DRAWING NO. / REV. NO
BC	18-14	J-WD-A1404 / 08



1 LEVEL 01 FLOOR PLAN
1:100

PARTITION CODE LEGEND

READING PARTITION CODES

Example Code: P-1/a — **'P-1'** Partition wall number as described in the list below; **'/a'** Wall characteristic - Part height wall

PARTITION WALLS	CODE	BUILD-UP DESCRIPTION
PARTITION WALLS	PT-01	13mm plasterboard / 92mm steel studs / 13mm plasterboard
	PT-02	13mm plasterboard / 92mm steel studs
	PT-03	13mm plasterboard / 92mm steel studs / 13mm moisture resistant pb
	PT-04	13mm impact resistant pb / 92mm steel studs / 13mm moisture resistant pb
	PT-05	13mm moisture resistant pb / 92mm steel studs / 13mm moisture resistant pb
	PT-06	13mm impact resistant pb / 92mm steel studs / 13mm impact resistant pb
	PT-07	13mm impact resistant pb / 92mm steel studs
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	PT-09	13mm moisture resistant pb / 92mm steel studs
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	PT-11	13mm impact resistant pb / 40mm furring channel / 92mm steel studs
	PT-12	16mm fire-rated pb / 92mm steel stud / 16mm fire-rated pb
	PT-13	8mm Set FC lining / 92mm Steel Stud / Cladding or open riser
	PT-14	13mm moisture resistant pb / 40mm furring channel
	PT-15	13mm Soundchek pb / 52mm steel studs / 50mm glasswool insulation / 20mm gap / 50mm glasswool insulation / 52mm steel studs / 13mm Soundchek pb
MASONRY WALLS	MW-1	Core-filled 190mm Concrete Block Walls
CONCRETE WALLS	OF-1	200mm Off-Form Concrete Walls
	OF-2	300mm Off-Form Concrete Walls
	PC-1	150mm Precast Concrete Panels / 75mm Cavity
	PC-2	150mm Corrugated Precast Concrete Panels
METAL CLADDING	MC-1	Mill Finish Corrugated Aluminium Wall Cladding - Refer to Finishes Schedule
ADDITIONAL WALL PROPERTIES	/a	Part height wall
	/b	Wall over (not visible on plan)
	/c	Wall under (not visible on plan)
	/d	Rw 40 rated acoustic wall
	/e	Rw 45 rated acoustic wall
	/f	Rw 50 rated acoustic wall
	/g	Rw 55 rated acoustic wall
	/h	1hr Fire-Rated wall
	/i	2hr Fire-Rated wall
	/j	Thermal Insulation (R1.4 Total)
NOTE:	all	Partition to extend to underside of roof sheeting or concrete structure above

NOTES
1. Refer to internal wall elevations, joinery package and specifications for further details
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5. Unless otherwise noted, continue full partition build-up (including insulation) to underside of roof sheeting or structure above.
6. Insulation to extend for full height of partition wall

ROOF CODE LEGEND

ALUMINIUM HOOD	SS-1	Proprietary powdercoated aluminium sun shade - Refer to Specifications
METAL SHEETING	RS-1	Pre-finished profiled steel roof sheeting - Refer to Specifications
MEMBRANE	MB-1	New roof membrane on concrete roof of lift shaft - Refer to Specifications

GENERAL CODE LEGEND

	DP/OP	Down pipes/Overflow pipes - Refer to Hydraulic
	EDB	Electrical Distribution Board - Refer to Electrical
	FH/FHR	Fire Hose/Fire Hose Reel - Refer to Hydraulic
	SC	Structural steel columns - Refer to Structural
	X##.#	Door number - Refer to Door Schedule
	W-##	Window number - Refer to Window Schedule
	GP-##	Glazed Partitions - Refer Glazed Partition Details

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE
01	PRELIMINARY ISSUE	
02	PROGRESS ISSUE	25/09/2020
03	40% TENDER ISSUE	16/10/2020
04	50% TENDER ISSUE	30/10/2020
05	70% TENDER ISSUE	30/11/2020
06	UPDATED 70% TENDER ISSUE DRAWINGS	11/12/2020
07	ISSUE FOR TENDER	15/12/2020
08	ISSUED FOR TENDER	17/02/2021

REV	DESCRIPTION	DATE

STRUCTURAL / CIVIL / SERVICES CONSULTANTS: NORTHROP

LANDSCAPE: ASPECT Studios

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PROJECT SPONSOR: NSW GOVERNMENT Create NSW Arts, Screen & Culture

DELIVERY AGENCY: NSW GOVERNMENT Public Works Advisory

Museum of Applied Arts & Sciences

PROJECT TITLE
BUILDING J
Museums Discovery Centre,
172 Showground Road
Castle Hill

SCALE CHECK 5 10

lahznimmo architects
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www.lahznimmo.com

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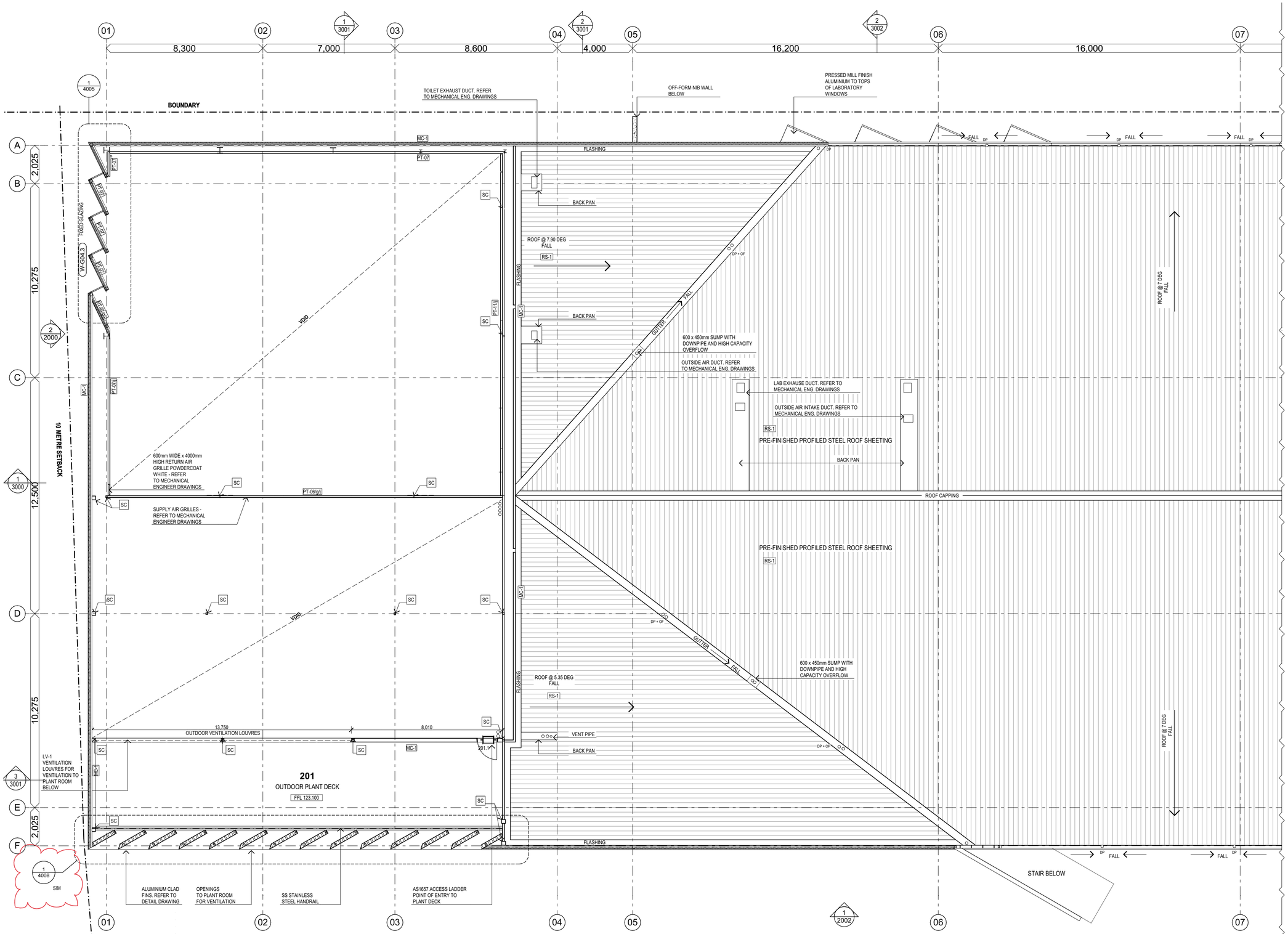
TENDER		
CONST		

DISCIPLINE: ARCHITECTURE

TITLE: **LEVEL 01 FLOOR PLAN 02 OF 02**

DRAWN	PLOT DATE	SCALE @A1
BG	18/02/2021	1:100
CHECKED	PROJECT NO.	DRAWING NO. / REV. NO
BC	18-14	J-WD-A1405 / 08



1 LEVEL 02 / LOWER ROOF PLAN
1:100

FOR CONTINUATION REFER TO DRAWING J-WD-A1407

PARTITION CODE LEGEND

READING PARTITION CODES

Example Code: P-1/a — **'P-1'** Partition wall number as described in the list below; **'/a'** Wall characteristic - Part height wall

PARTITION WALLS	CODE	BUILD-UP DESCRIPTION
PARTITION WALLS	PT-01	13mm plasterboard / 92mm steel studs / 13mm plasterboard
	PT-02	13mm plasterboard / 92mm steel studs
	PT-03	13mm plasterboard / 92mm steel studs / 13mm moisture resistant pb
	PT-04	13mm impact resistant pb / 92mm steel studs / 13mm moisture resistant pb
	PT-05	13mm moisture resistant pb / 92mm steel studs / 13mm moisture resistant pb
	PT-06	13mm impact resistant pb / 92mm steel studs / 13mm impact resistant pb
	PT-07	13mm impact resistant pb / 92mm steel studs
	PT-08	13mm impact resistant pb / 92mm steel studs / 13mm plasterboard
	PT-09	13mm moisture resistant pb / 92mm steel studs
	PT-10	13mm impact resistant pb / 40mm furring channel / masonry or structural wall
	PT-11	13mm impact resistant pb / 40mm furring channel / 92mm steel studs
	PT-12	16mm fire-rated pb / 92mm steel stud / 16mm fire-rated pb
	PT-13	8mm Set FC lining / 92mm Steel Stud / Cladding or open riser
	PT-14	13mm moisture resistant pb / 40mm furring channel
	PT-15	13mm Soundchek pb / 52mm steel studs / 50mm glasswool insulation / 20mm gap / 50mm glasswool insulation / 52mm steel studs / 13mm Soundchek pb
MASONRY WALLS	MW-1	Core-filled 190mm Concrete Block Walls
CONCRETE WALLS	OF-1	200mm Off-Form Concrete Walls
	OF-2	300mm Off-Form Concrete Walls
	PC-1	150mm Precast Concrete Panels / 75mm Cavity
	PC-2	150mm Corrugated Precast Concrete Panels
METAL CLADDING	MC-1	Mill Finish Corrugated Aluminium Wall Cladding - Refer to Finishes Schedule
ADDITIONAL WALL PROPERTIES	/a	Part height wall
	/b	Wall over (not visible on plan)
	/c	Wall under (not visible on plan)
	/d	Rw 40 rated acoustic wall
	/e	Rw 45 rated acoustic wall
	/f	Rw 50 rated acoustic wall
	/g	Rw 55 rated acoustic wall
	/h	1hr Fire-Rated wall
	/i	2hr Fire-Rated wall
	/j	Thermal Insulation (R1.4 Total)
NOTE:	all	Partition to extend to underside of roof sheeting or concrete structure above

NOTES
1. Refer to internal wall elevations, joinery package and specifications for further details
2. Refer to finishes drawing and schedule for applied finishes to walls
3. Stud spacing and nogging requirements to suit spans and wall loadings (including built-in joinery, fixtures and fittings).
4. Secondary steel posts and framing within stud walls to be provided where required to brace walls and form openings (eg. for doors, windows, services penetrations)
5. Unless otherwise noted, continue full partition build-up (including insulation) to underside of roof sheeting or structure above.
6. Insulation to extend for full height of partition wall

ROOF CODE LEGEND

ALUMINIUM HOOD	SS-1	Proprietary powdercoated aluminium sun shade - Refer to Specifications
METAL SHEETING	RS-1	Pre-finished profiled steel roof sheeting - Refer to Specifications
MEMBRANE	MB-1	New roof membrane on concrete roof of lift shaft - Refer to Specifications

GENERAL CODE LEGEND

	DP/OP	Down pipes/Overflow pipes - Refer to Hydraulic
	EDB	Electrical Distribution Board - Refer to Electrical
	FH/FHR	Fire Hose/Fire Hose Reel - Refer to Hydraulic
	SC	Structural steel columns - Refer to Structural
	X##.#	Door number - Refer to Door Schedule
	W-##	Window number - Refer to Window Schedule
	GP-##	Glazed Partitions - Refer Glazed Partition Details

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE
01	PRELIMINARY ISSUE	
02	PROGRESS ISSUE	25/09/2020
03	40% TENDER ISSUE	16/10/2020
04	50% TENDER ISSUE	30/10/2020
05	70% TENDER ISSUE	30/11/2020
06	UPDATED 70% TENDER ISSUE DRAWINGS	11/12/2020
07	ISSUE FOR TENDER	15/12/2020
08	ISSUED FOR TENDER	17/02/2021
09	UPDATED FOR TENDER	15/03/2021

STRUCTURAL / CIVIL / SERVICES CONSULTANTS: NORTHROP

LANDSCAPE: ASPECT Studios

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DELIVERY AGENCY: NSW GOVERNMENT Public Works Advisory

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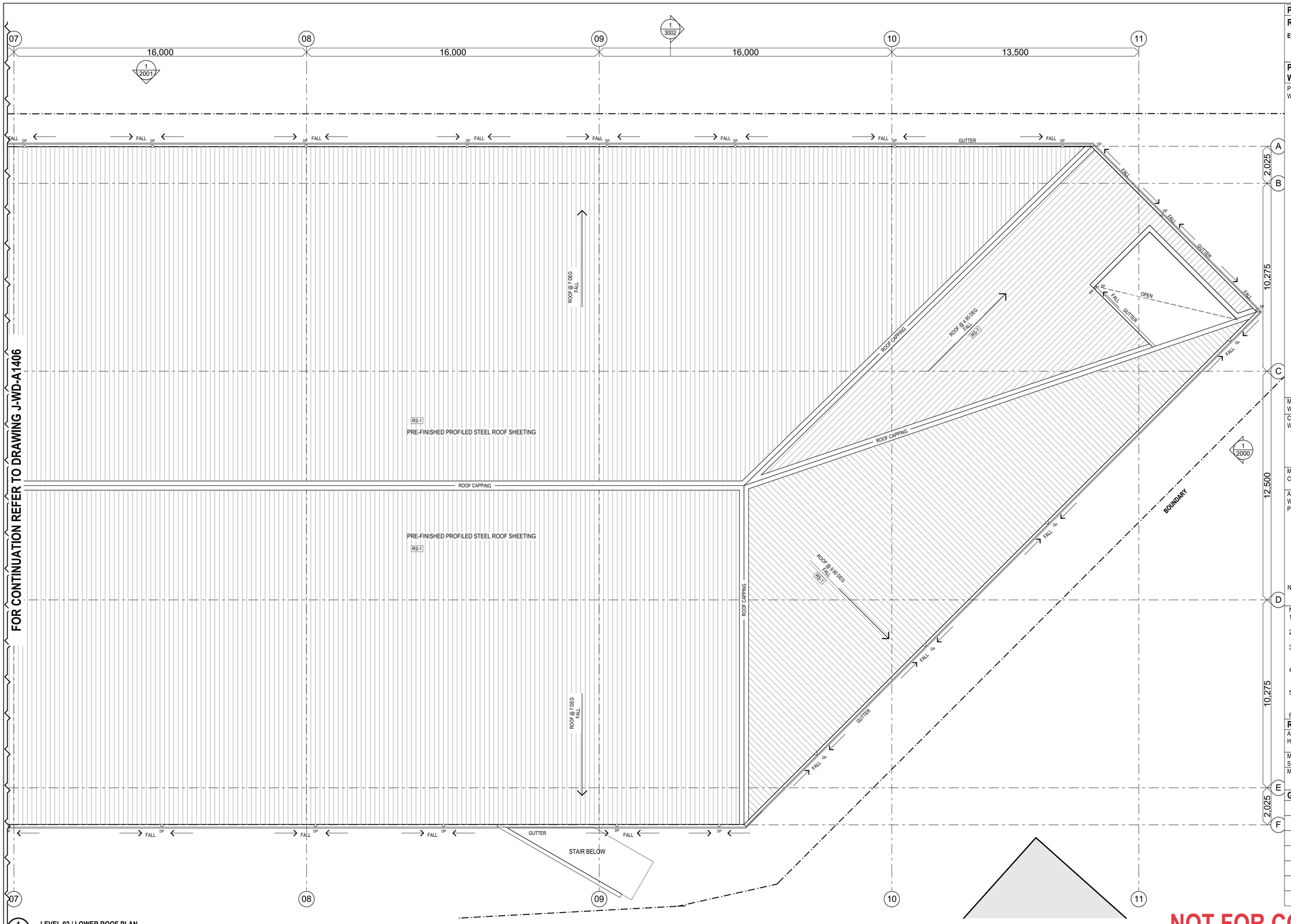
REVIEW	DIRECTOR SIGNATURE	DATE
TENDER		
CONST		

DISCIPLINE: ARCHITECTURE

TITLE: **LEVEL 02 / LOWER ROOF PLAN 01 OF 02**

DRAWN	PLOT DATE	SCALE @A1
BG	15/03/2021	1:100
CHECKED	PROJECT NO.	DRAWING NO. / REV. NO
BC	18-14	J-WD-A1406 / 09



1 LEVEL 02 / LOWER ROOF PLAN
1:100

PARTITION CODE LEGEND

READING PARTITION CODES

Example Code: P-1/a

- **'P-1'** Partition wall number as described in the list below
- **'/a'** Wall characteristic - Part height wall

PARTITION WALLS	CODE	BUILD-UP DESCRIPTION
PARTITION WALLS	PT-01	13mm plasterboard / 92mm steel studs / 13mm plasterboard
	PT-02	13mm plasterboard / 92mm steel studs
	PT-03	13mm plasterboard / 92mm steel studs / 13mm moisture resistant pb
	PT-04	13mm impact resistant pb / 92mm steel studs / 13mm moisture resistant pb
	PT-05	13mm moisture resistant pb / 92mm steel studs / 13mm moisture resistant pb
	PT-06	13mm impact resistant pb / 92mm steel studs / 13mm impact resistant pb
	PT-07	13mm impact resistant pb / 92mm steel studs
	PT-08	13mm impact resistant pb / 92mm steel studs / 13mm plasterboard
	PT-09	13mm moisture resistant pb / 92mm steel studs
	PT-10	13mm impact resistant pb / 40mm furring channel / masonry or structural wall
	PT-11	13mm impact resistant pb / 40mm furring channel / 92mm steel studs
	PT-12	16mm fire-rated pb / 92mm steel stud / 16mm fire-rated pb
	PT-13	8mm Set FC lining / 92mm Steel Stud / Cladding or open riser
	PT-14	13mm moisture resistant pb / 40mm furring channel
	PT-15	13mm Soundchek pb / 52mm steel studs / 50mm glasswool insulation / 20mm gap / 50mm glasswool insulation / 52mm steel studs / 13mm Soundchek pb
MASONRY WALLS	MW-1	Core-filled 190mm Concrete Block Walls
CONCRETE WALLS	OF-1	200mm Off-Form Concrete Walls
	OF-2	300mm Off-Form Concrete Walls
	PC-1	150mm Precast Concrete Panels / 75mm Cavity
	PC-2	150mm Corrugated Precast Concrete Panels
METAL CLADDING	MC-1	Mill Finish Corrugated Aluminium Wall Cladding - Refer to Finishes Schedule
ADDITIONAL WALL PROPERTIES	/a	Part height wall
	/b	Wall over (not visible on plan)
	/c	Wall under (not visible on plan)
	/d	Rw 40 rated acoustic wall
	/e	Rw 45 rated acoustic wall
	/f	Rw 50 rated acoustic wall
	/g	Rw 55 rated acoustic wall
	/h	1hr Fire-Rated wall
	/i	2hr Fire-Rated wall
	/j	Thermal Insulation (R1.4 Total)
NOTE:	all	Partition to extend to underside of roof sheeting or concrete structure above

NOTES
1. Refer to internal wall elevations, joinery package and specifications for further details
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5. Unless otherwise noted, continue full partition build-up (including insulation) to underside of roof sheeting or structure above.
6. Insulation to extend for full height of partition wall

ROOF CODE LEGEND

ALUMINIUM HOOD	SS-1	Proprietary powdercoated aluminium sun shade - Refer to Specifications
METAL SHEETING	RS-1	Pre-finished profiled steel roof sheeting - Refer to Specifications
MEMBRANE	MB-1	New roof membrane on concrete roof of lift shaft - Refer to Specifications

GENERAL CODE LEGEND

	DP/OP	Down pipes/Overflow pipes - Refer to Hydraulic
	EDB	Electrical Distribution Board - Refer to Electrical
	FH/FHR	Fire Hose/Fire Hose Reel - Refer to Hydraulic
	SC	Structural steel columns - Refer to Structural
	X##.#	Door number - Refer to Door Schedule
	W-##	Window number - Refer to Window Schedule
	GP-##	Glazed Partitions - Refer Glazed Partition Details

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE
01	PRELIMINARY ISSUE	
02	PROGRESS ISSUE	25/09/2020
03	40% TENDER ISSUE	16/10/2020
04	50% TENDER ISSUE	30/10/2020
05	70% TENDER ISSUE	30/11/2020
06	ISSUE FOR TENDER	15/12/2020
07	ISSUED FOR TENDER	17/02/2021

REV	DESCRIPTION	DATE

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DELIVERY AGENCY
NSW GOVERNMENT Public Works Advisory

Museum of Applied Arts & Sciences

PROJECT TITLE
BUILDING J
Museums Discovery Centre,
172 Showground Road
Castle Hill

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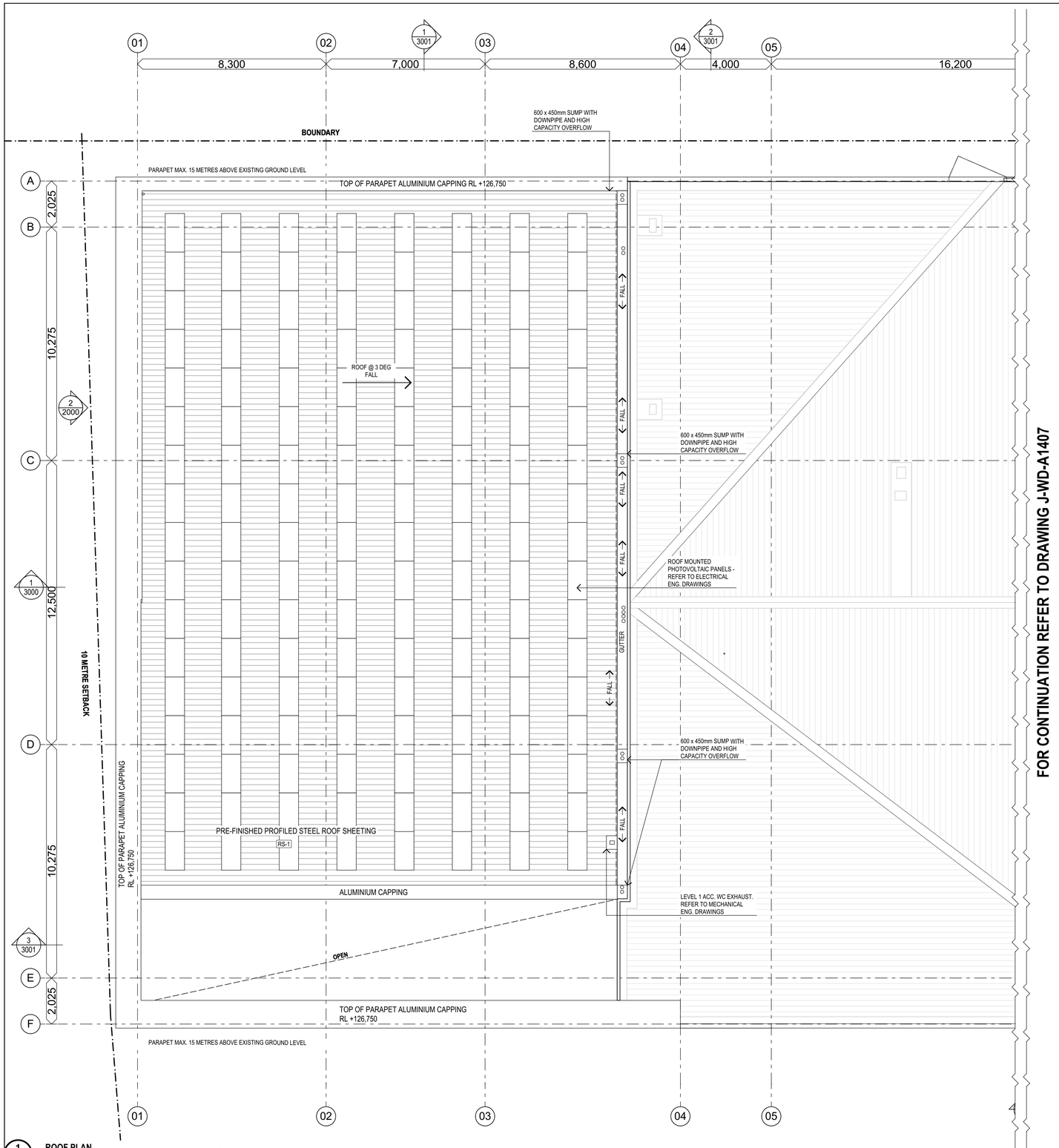
DISCIPLINE **ARCHITECTURE**
TITLE
LOWER ROOF PLAN 02 OF 02

DRAWN	PLOT DATE	SCALE @A1
BG	18/02/2021	1:100
CHECKED	PROJECT NO.	DRAWING NO. / REV. NO
BC	18-14	J-WD-A1407 / 07



FOR CONTINUATION REFER TO DRAWING J-WD-A1407

1 **ROOF PLAN**
1:100

PARTITION CODE LEGEND

READING PARTITION CODES

Example Code: P-1/a — **'P-1'** Partition wall number as described in the list below; **'/a'** Wall characteristic - Part height wall

PARTITION WALLS	CODE	BUILD-UP DESCRIPTION
PARTITION WALLS	PT-01	13mm plasterboard / 92mm steel studs / 13mm plasterboard
	PT-02	13mm plasterboard / 92mm steel studs
	PT-03	13mm plasterboard / 92mm steel studs / 13mm moisture resistant pb
	PT-04	13mm impact resistant pb / 92mm steel studs / 13mm moisture resistant pb
	PT-05	13mm moisture resistant pb / 92mm steel studs / 13mm moisture resistant pb
	PT-06	13mm impact resistant pb / 92mm steel studs / 13mm impact resistant pb
	PT-07	13mm impact resistant pb / 92mm steel studs
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	PT-13	8mm Set FC lining / 92mm Steel Stud / Cladding or open riser
	PT-14	13mm moisture resistant pb / 40mm furring channel
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MASONRY WALLS	MW-1	Core-filled 190mm Concrete Block Walls
CONCRETE WALLS	OF-1	200mm Off-Form Concrete Walls
	OF-2	300mm Off-Form Concrete Walls
	PC-1	150mm Precast Concrete Panels / 75mm Cavity
	PC-2	150mm Corrugated Precast Concrete Panels
METAL CLADDING	MC-1	Mill Finish Corrugated Aluminium Wall Cladding - Refer to Finishes Schedule
ADDITIONAL WALL PROPERTIES	/a	Part height wall
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	/c	Wall under (not visible on plan)
	/d	Rw 40 rated acoustic wall
	/e	Rw 45 rated acoustic wall
	/f	Rw 50 rated acoustic wall
	/g	Rw 55 rated acoustic wall
	/h	1hr Fire-Rated wall
	/i	2hr Fire-Rated wall
	/j	Thermal Insulation (R1.4 Total)
NOTE:	all	Partition to extend to underside of roof sheeting or concrete structure above

NOTES
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6. Insulation to extend for full height of partition wall

ROOF CODE LEGEND

ALUMINIUM HOOD	SS-1	Proprietary powdercoated aluminium sun shade - Refer to Specifications
METAL SHEETING	RS-1	Pre-finished profiled steel roof sheeting - Refer to Specifications
MEMBRANE	MB-1	New roof membrane on concrete roof of lift shaft - Refer to Specifications

GENERAL CODE LEGEND

	DP/OP	Down pipes/Overflow pipes - Refer to Hydraulic
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	SC	Structural steel columns - Refer to Structural
	X##.#	Door number - Refer to Door Schedule
	W-##	Window number - Refer to Window Schedule
	GP-##	Glazed Partitions - Refer Glazed Partition Details

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE
01	PRELIMINARY ISSUE	
02	PROGRESS ISSUE	25/09/2020
03	40% TENDER ISSUE	16/10/2020
04	50% TENDER ISSUE	30/10/2020
05	70% TENDER ISSUE	30/11/2020
06	ISSUE FOR TENDER	15/12/2020
07	ISSUED FOR TENDER	17/02/2021

REV	DESCRIPTION	DATE

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DELIVERY AGENCY
NSW GOVERNMENT Public Works Advisory

Museum of Applied Arts & Sciences

PROJECT TITLE
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SCALE CHECK 5 10

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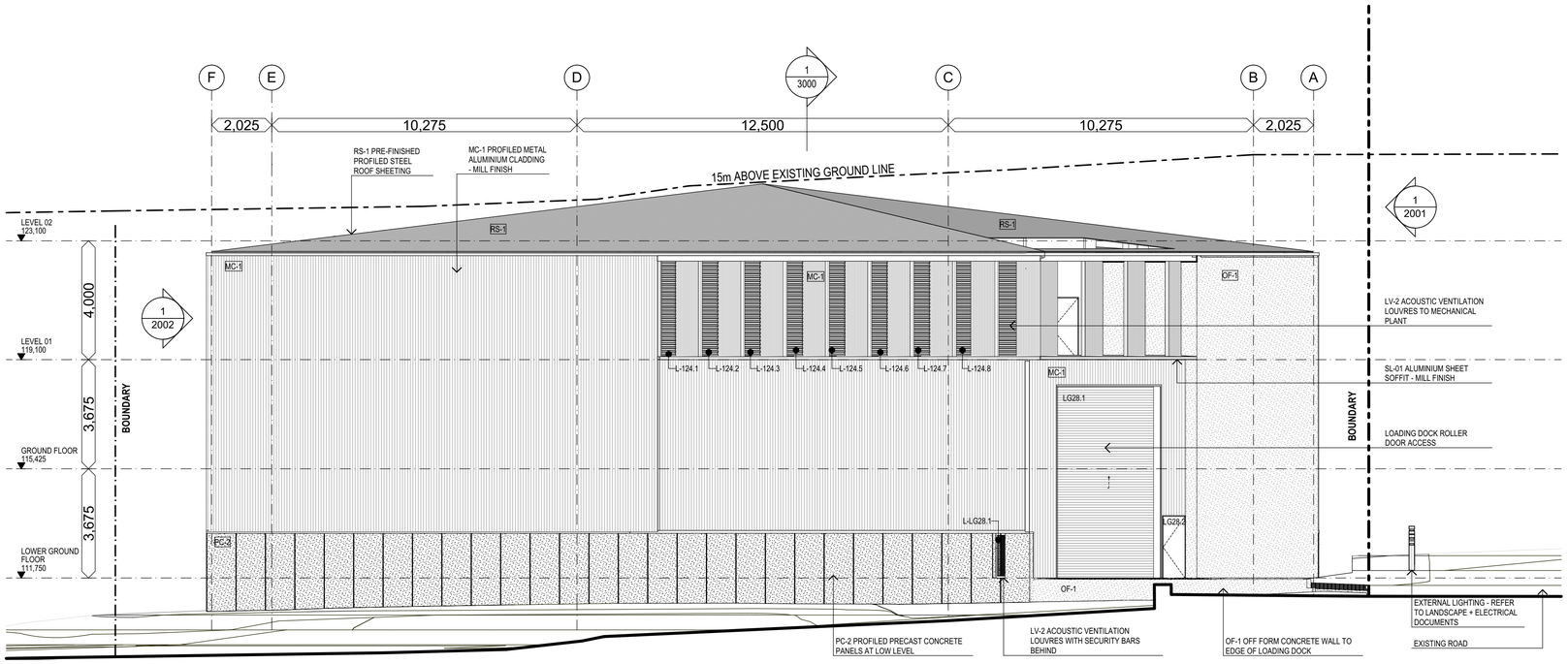
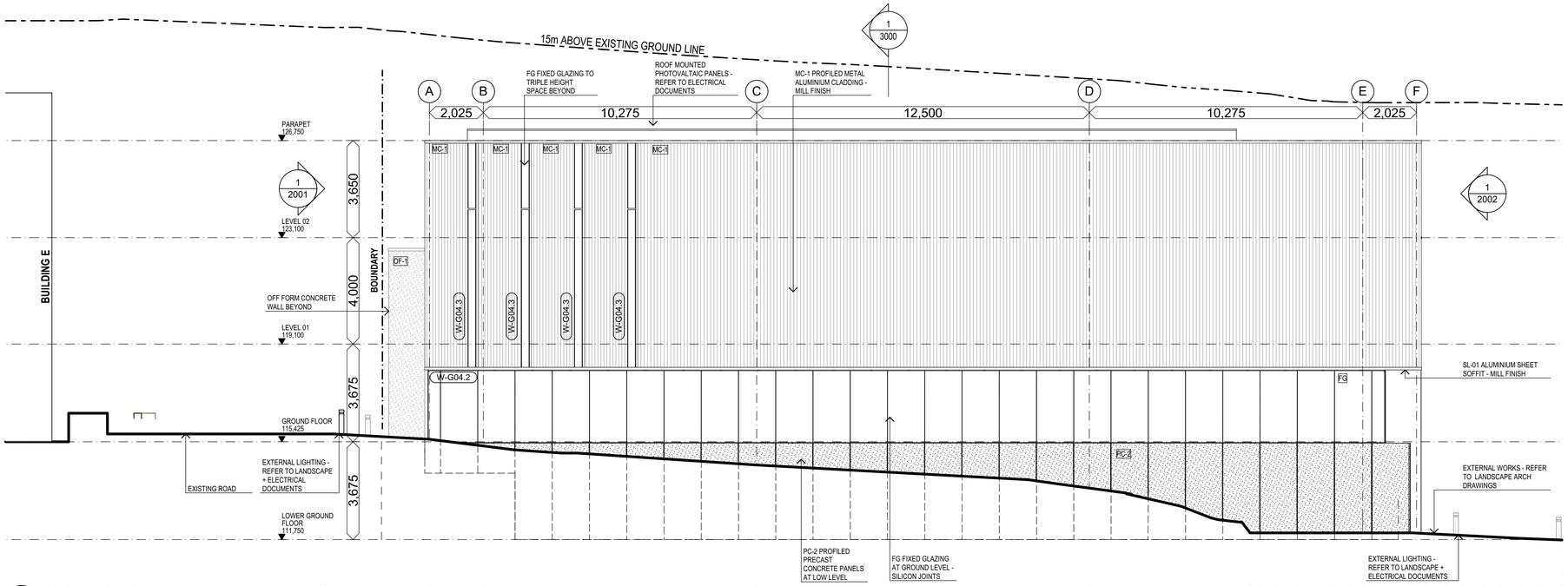
DISCIPLINE **ARCHITECTURE**

TITLE
ROOF PLAN

DRAWN	PLOT DATE	SCALE @A1
BG	18/02/2021	1:100
CHECKED	PROJECT NO.	DRAWING NO. / REV. NO
BC	18-14	J-WD-A1408 / 07



1 **NORTH ELEVATION**
1:100



2 **SOUTH ELEVATION - SHOWGROUND ROAD**
1:100

EXTERNAL FINISHES LEGEND	
NOTES REFER TO FINISHES SCHEDULE FOR DETAILED FINISHES DESCRIPTIONS	
MC-01	Mill finish corrugated aluminium cladding
OF-1	Off-form concrete walls - Class 2 finish
PC-2	External precaste concrete panels with corrugated finish to external face
FG	Fixed glazing
SS-1	Proprietary powdercoated aluminium sun shade
LV-1	(South) plant room ventilation louvres
LV-2	(North) plant room acoustic ventilation louvres
RS-01	Pre-finished profiled roof sheeting

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	REV	DESCRIPTION	DATE
01	OPTION 3F - Costing Issue	13/02/19	12	50% TENDER ISSUE	30/10/2020
02	OPTION 3F - Costing Issue Amended	15/02/19	13	70% TENDER ISSUE	30/11/2020
03	OPTION 3F - Amended issue for consultant information	05/03/19	14	ISSUE FOR TENDER	15/12/2020
04	OPTION 3G	03/04/19	15	ISSUED FOR TENDER	17/02/2021
05	OPTION 05 - Issue For Information	28/01/20			
06	OPTION 06	04/05/20			
07	PRELIMINARY SSDA DRAWING ISSUE	15/05/2020			
08	Updated for SSDA Submission	10/07/2020			
09	DRAFT SSDA ISSUE	07/08/2020			
10	PROGRESS ISSUE	25/09/2020			
11	40% TENDER ISSUE	16/10/2020			

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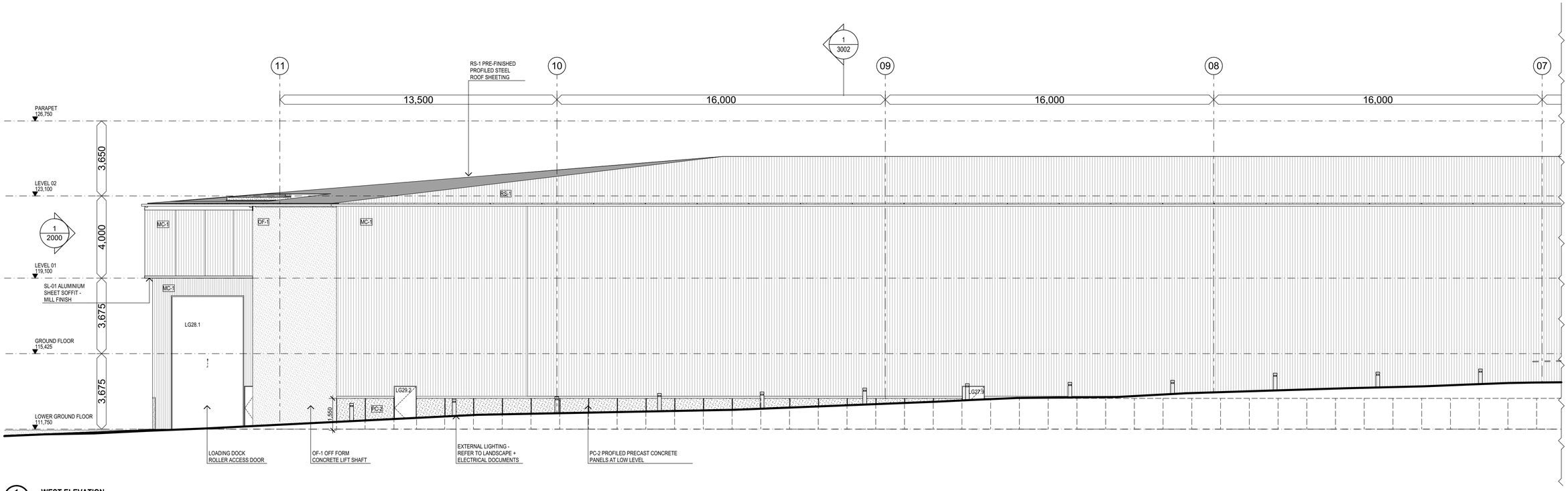
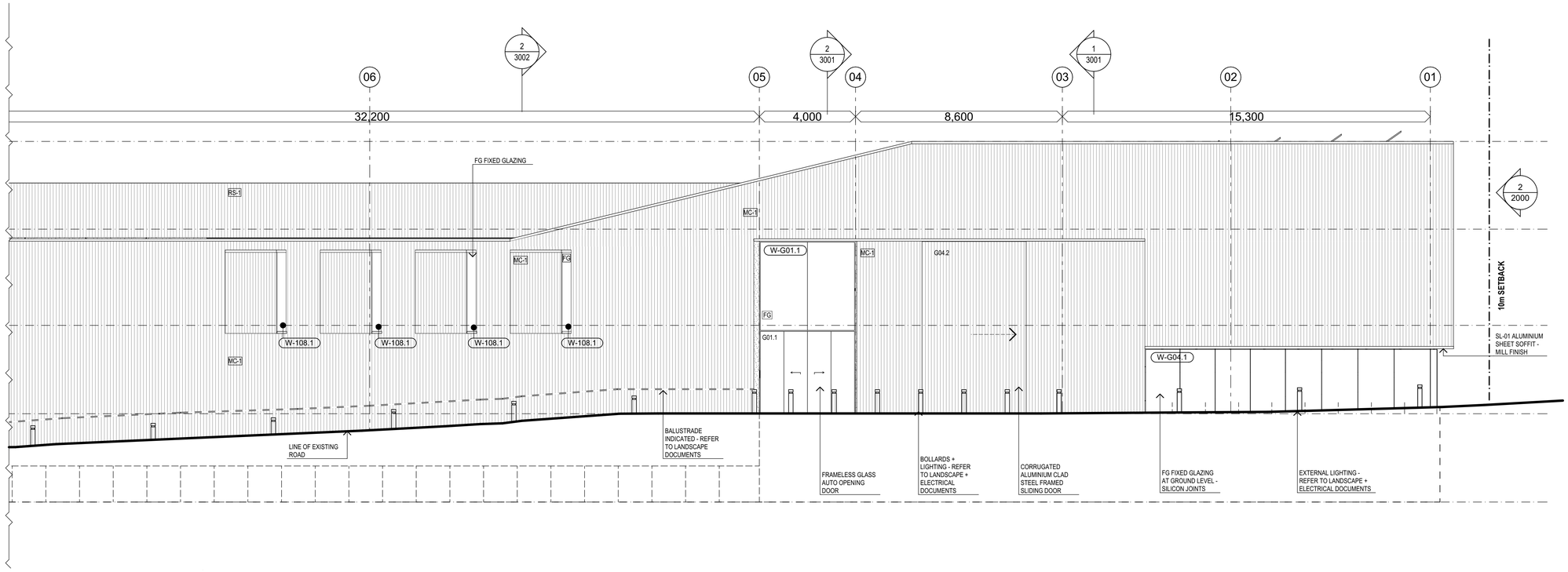
DISCIPLINE **ARCHITECTURE**

TITLE
ELEVATIONS

DRAWN	PLOT DATE	SCALE @A1
BG	18/02/2021	1:100
CHECKED	PROJECT NO.	DRAWING NO.	REV. NO
BC	18-14	J-WD-A2000	15



1 **WEST ELEVATION**
1:100



EXTERNAL FINISHES LEGEND	
NOTES REFER TO FINISHES SCHEDULE FOR DETAILED FINISHES DESCRIPTIONS	
MC-01	Mill finish corrugated aluminium cladding
OF-1	Off-form concrete walls - Class 2 finish
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FG	Fixed glazing
SS-1	Proprietary powdercoated aluminium sun shade
LV-1	(South) plant room ventilation louvres
LV-2	(North) plant room acoustic ventilation louvres
RS-01	Pre-finished profiled roof sheeting

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	REV	DESCRIPTION	DATE
01	OPTION 3F - Costing Issue	13/02/19	12	50% TENDER ISSUE	30/10/2020
02	OPTION 3F - Costing Issue Amended	15/02/19	13	70% TENDER ISSUE	30/11/2020
03	OPTION 3F - Amended issue for consultant information	05/03/19	14	ISSUE FOR TENDER	15/12/2020
04	OPTION 3G	03/04/19	15	ISSUED FOR TENDER	17/02/2021
05	OPTION 05 - Issue For Information	28/01/20			
06	OPTION 06	04/05/20			
07	PRELIMINARY SSDA DRAWING ISSUE	15/05/2020			
08	Updated for SSDA Submission	10/07/2020			
09	DRAFT SSDA ISSUE	07/08/2020			
10	PROGRESS ISSUE	25/09/2020			
11	40% TENDER ISSUE	16/10/2020			

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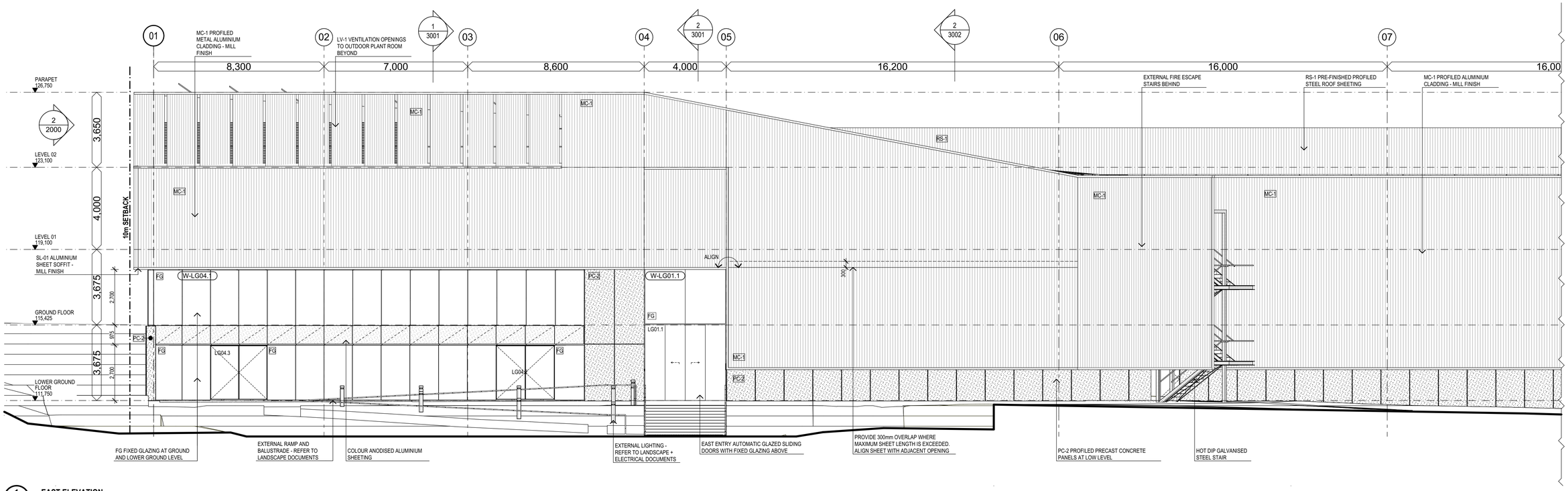
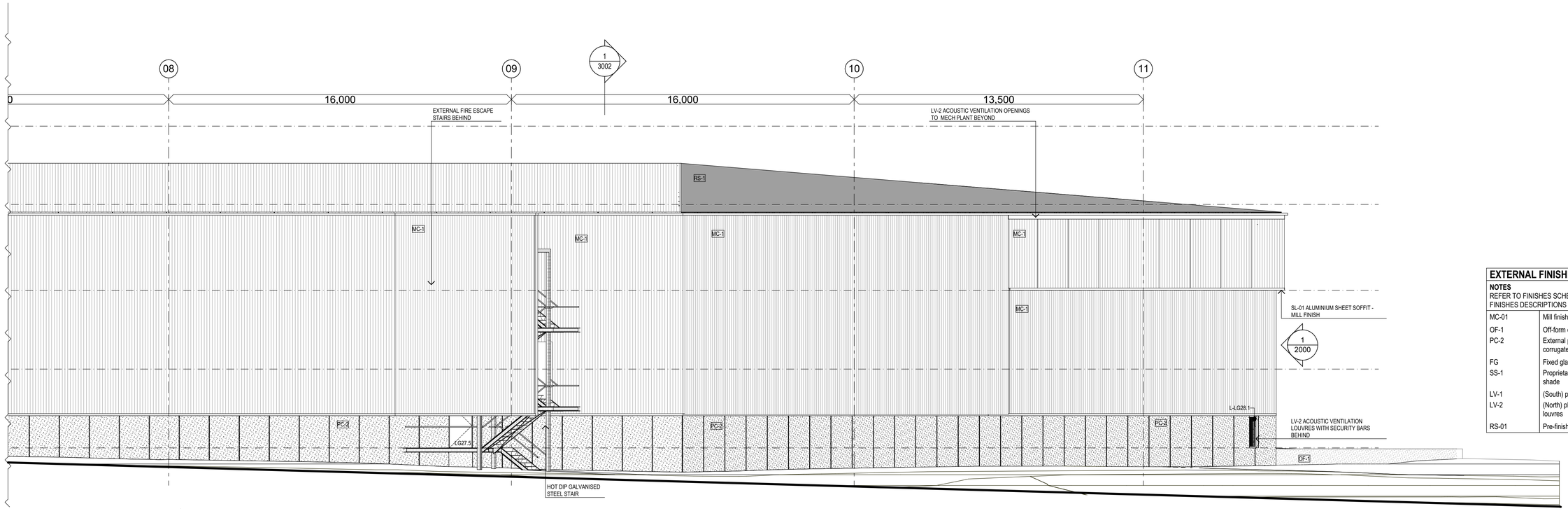
REVIEW	DIRECTOR SIGNATURE	DATE
TENDER		
CONST		

DISCIPLINE **ARCHITECTURE**
TITLE **ELEVATIONS**

DRAWN	PLOT DATE	SCALE @A1
BG	18/02/2021	1:100
CHECKED	PROJECT NO.	DRAWING NO. / REV. NO
BC	18-14	J-WD-A2001 / 15



1 **EAST ELEVATION**
1:100



EXTERNAL FINISHES LEGEND

NOTES
REFER TO FINISHES SCHEDULE FOR DETAILED FINISHES DESCRIPTIONS

MC-01	Mill finish corrugated aluminium cladding
OF-1	Off-form concrete walls - Class 2 finish
PC-2	External precaste concrete panels with corrugated finish to external face
FG	Fixed glazing
SS-1	Proprietary powdercoated aluminium sun shade
LV-1	(South) plant room ventilation louvres
LV-2	(North) plant room acoustic ventilation louvres
RS-01	Pre-finished profiled roof sheeting

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE
01	PROGRESS ISSUE	25/09/2020
02	40% TENDER ISSUE	16/10/2020
03	50% TENDER ISSUE	30/10/2020
04	70% TENDER ISSUE	30/11/2020
05	ISSUE FOR TENDER	15/12/2020
06	ISSUED FOR TENDER	17/02/2021

REV	DESCRIPTION	DATE

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DELIVERY AGENCY
NSW GOVERNMENT Public Works Advisory

Museum of Applied Arts & Sciences

PROJECT TITLE
BUILDING J
Museums Discovery Centre,
172 Showground Road
Castle Hill

SCALE CHECK 5 10

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3 Gladstone St
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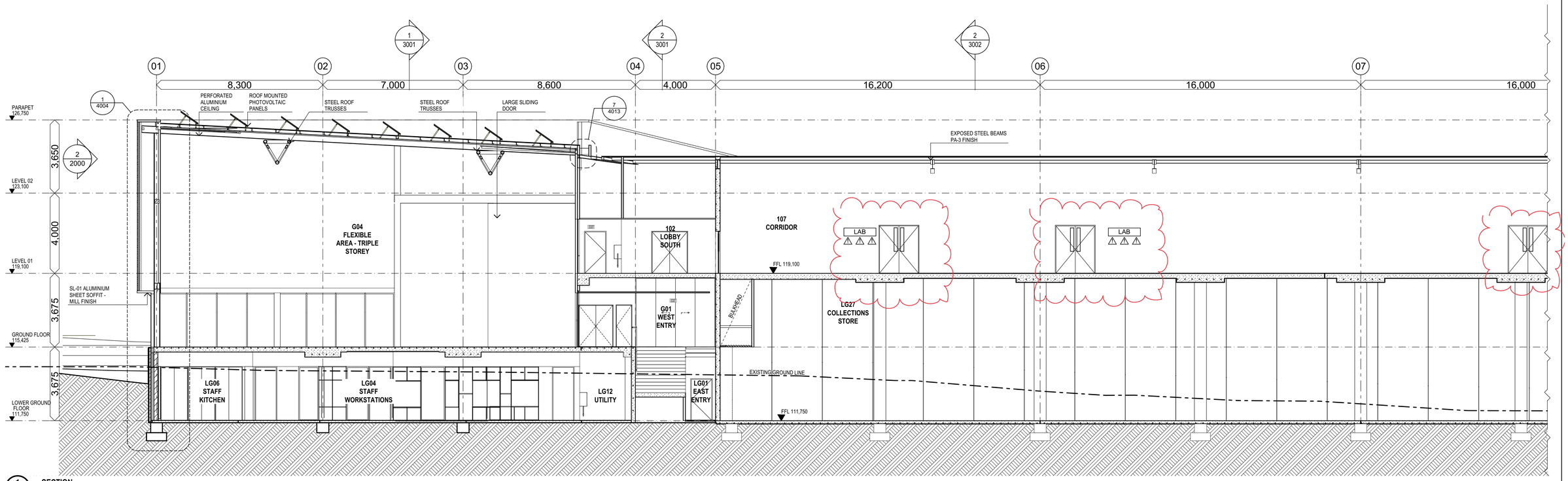
F 02 9550 5233
www.lahznimmo.com

REVIEW	DIRECTOR SIGNATURE	DATE
TENDER		
CONST		

DISCIPLINE **ARCHITECTURE**
TITLE
ELEVATIONS

DRAWN	PLOT DATE	SCALE @A1
BG	18/02/2021	1:100
CHECKED	PROJECT NO.	DRAWING NO. / REV. NO
BC	18-14	J-WD-A2002 / 06



1 SECTION
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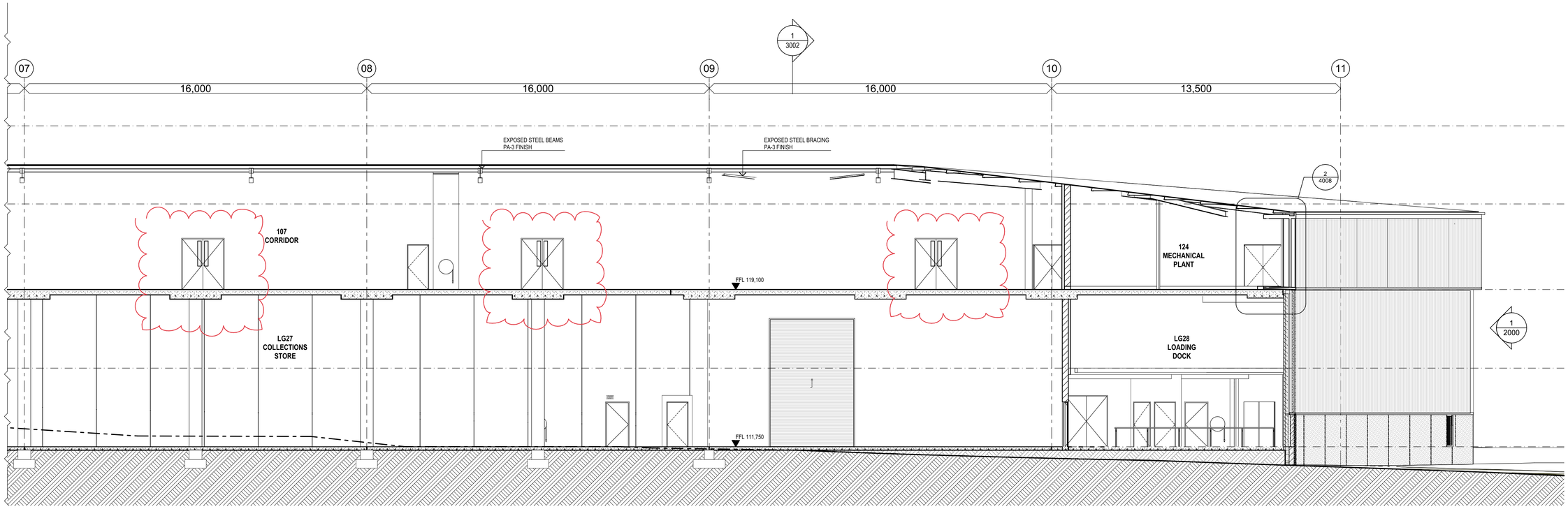

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	REV	DESCRIPTION	DATE
01	OPTION 3E - Preliminary Issue	23/01/19	12	PROGRESS ISSUE	25/09/2020
02	OPTION 3F - Costing Issue	13/02/19	13	40% TENDER ISSUE	16/10/2020
03	OPTION 3F - Costing Issue Amended	15/02/19	14	50% TENDER ISSUE	30/10/2020
04	OPTION 3F - Amended issue for consultant information	05/03/19	15	70% TENDER ISSUE	30/11/2020
05	OPTION 3G	03/04/19	16	ISSUE FOR TENDER	15/12/2020
06	OPTION 05 - Issue For Information	28/01/20	17	ISSUED FOR TENDER	17/02/2021
07	OPTION 06	04/05/20			
08	PRELIMINARY SSDA DRAWING ISSUE	15/05/2020			
09	Amended Level 1 Plan + Section Drawings	12/06/2020			
10	Updated for SSDA Submission	10/07/2020			
11	DRAFT SSDA ISSUE	07/08/2020			

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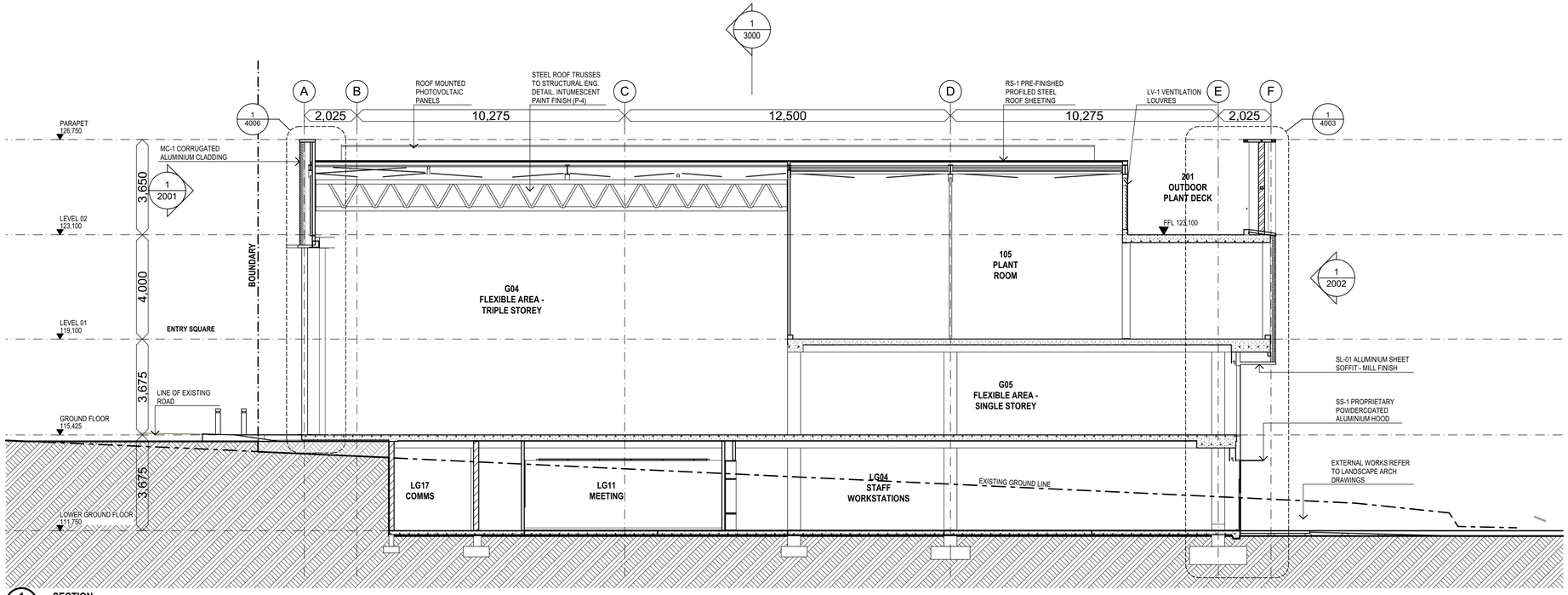
CONST		

DISCIPLINE **ARCHITECTURE**
TITLE
SECTIONS 01

DRAWN	PLOT DATE	SCALE @A1
BG	18/02/2021	1:100
CHECKED	PROJECT NO.	DRAWING NO. / REV. NO
BC	18-14	J-WD-A3000 / 17



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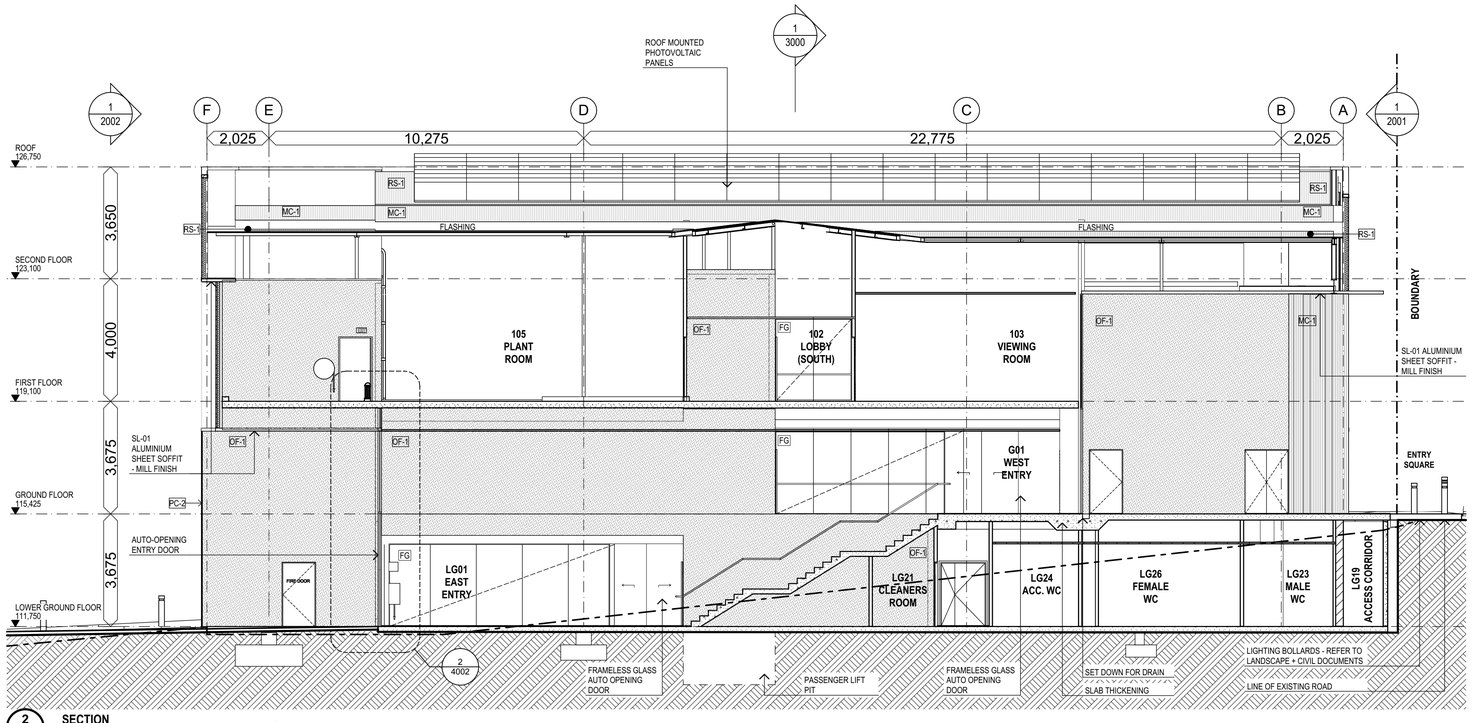

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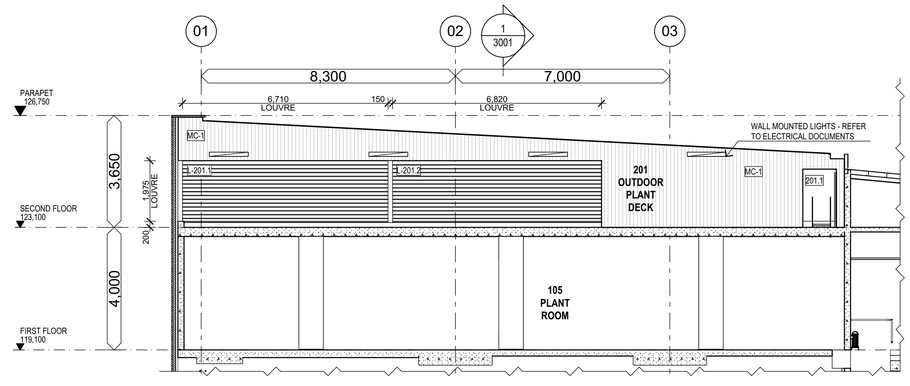

3 **SECTION**
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NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE
01	PROGRESS ISSUE	25/09/2020
02	40% TENDER ISSUE	16/10/2020
03	50% TENDER ISSUE	30/10/2020
04	70% TENDER ISSUE	30/11/2020
05	ISSUE FOR TENDER	15/12/2020
06	ISSUED FOR TENDER	17/02/2021

REV	DESCRIPTION	DATE

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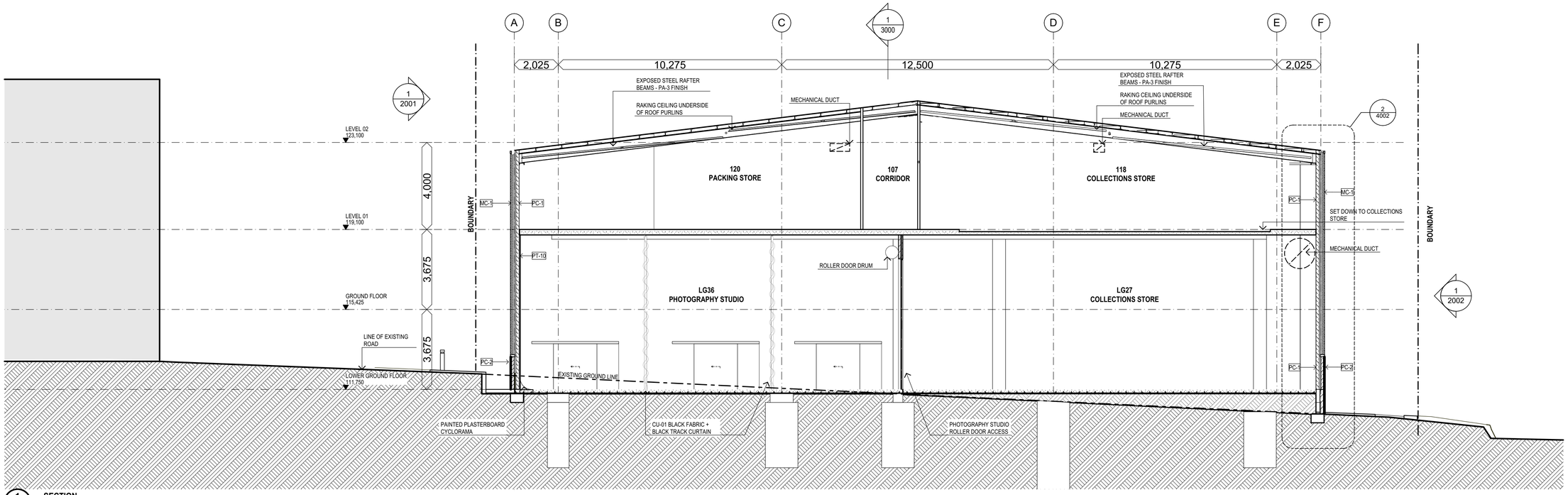
CONST		

DISCIPLINE **ARCHITECTURE**
TITLE
SECTIONS 02

DRAWN	PLOT DATE	SCALE @A1
BG	18/02/2021	1:100
CHECKED	PROJECT NO.	DRAWING NO.	REV. NO
BC	18-14	J-WD-A3001	06



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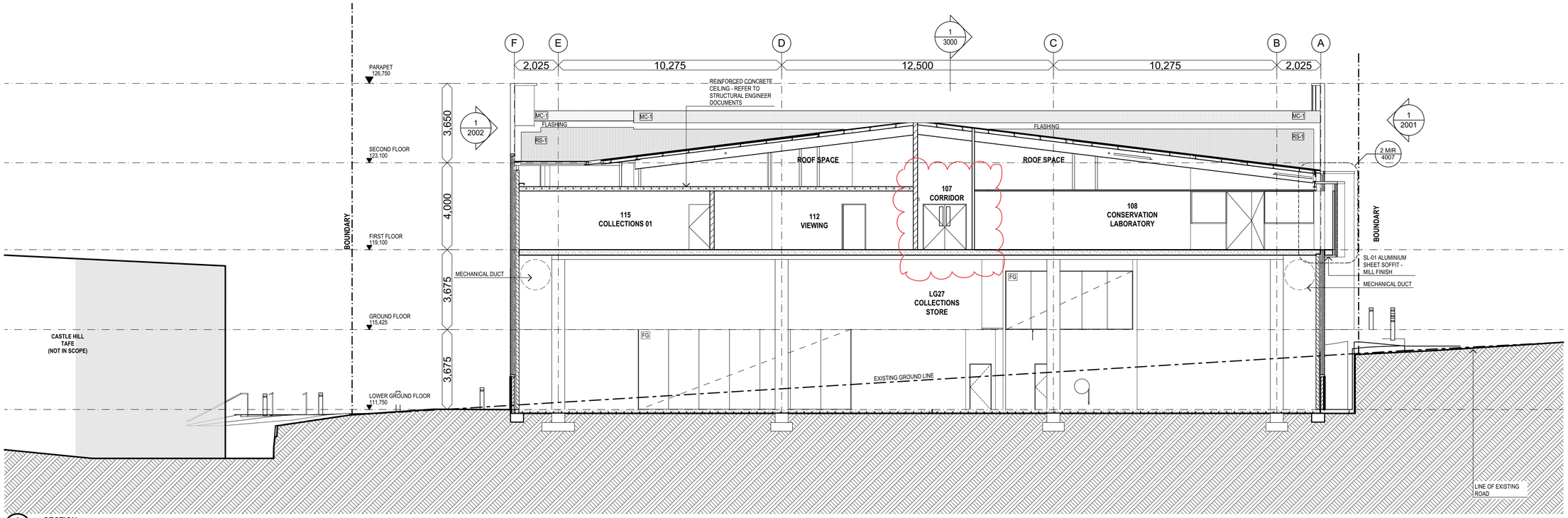

2 SECTION

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE
01	PROGRESS ISSUE	25/09/2020
02	40% TENDER ISSUE	16/10/2020
03	50% TENDER ISSUE	30/10/2020
04	70% TENDER ISSUE	30/11/2020
05	ISSUE FOR TENDER	15/12/2020
06	ISSUED FOR TENDER	17/02/2021

REV	DESCRIPTION	DATE

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CONST		

DISCIPLINE ARCHITECTURE
TITLE
SECTIONS 03

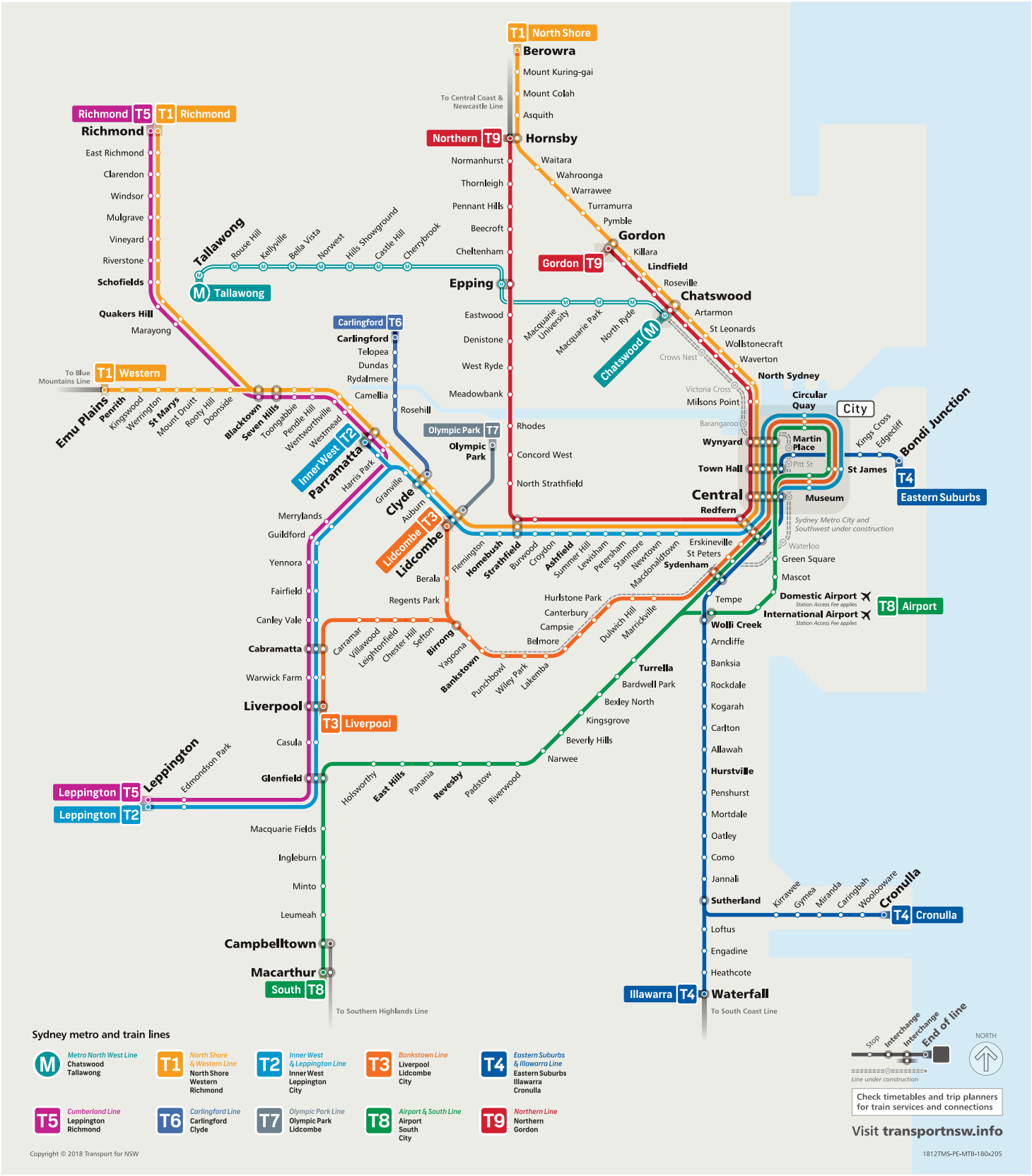
DRAWN	PLOT DATE	SCALE @A1
BG	18/02/2021	1:100
CHECKED	PROJECT NO.	DRAWING NO.	REV. NO
BC	18-14	J-WD-A3002	06

Appendix B

Public Transport Provisions

ttpa

Sydney rail network



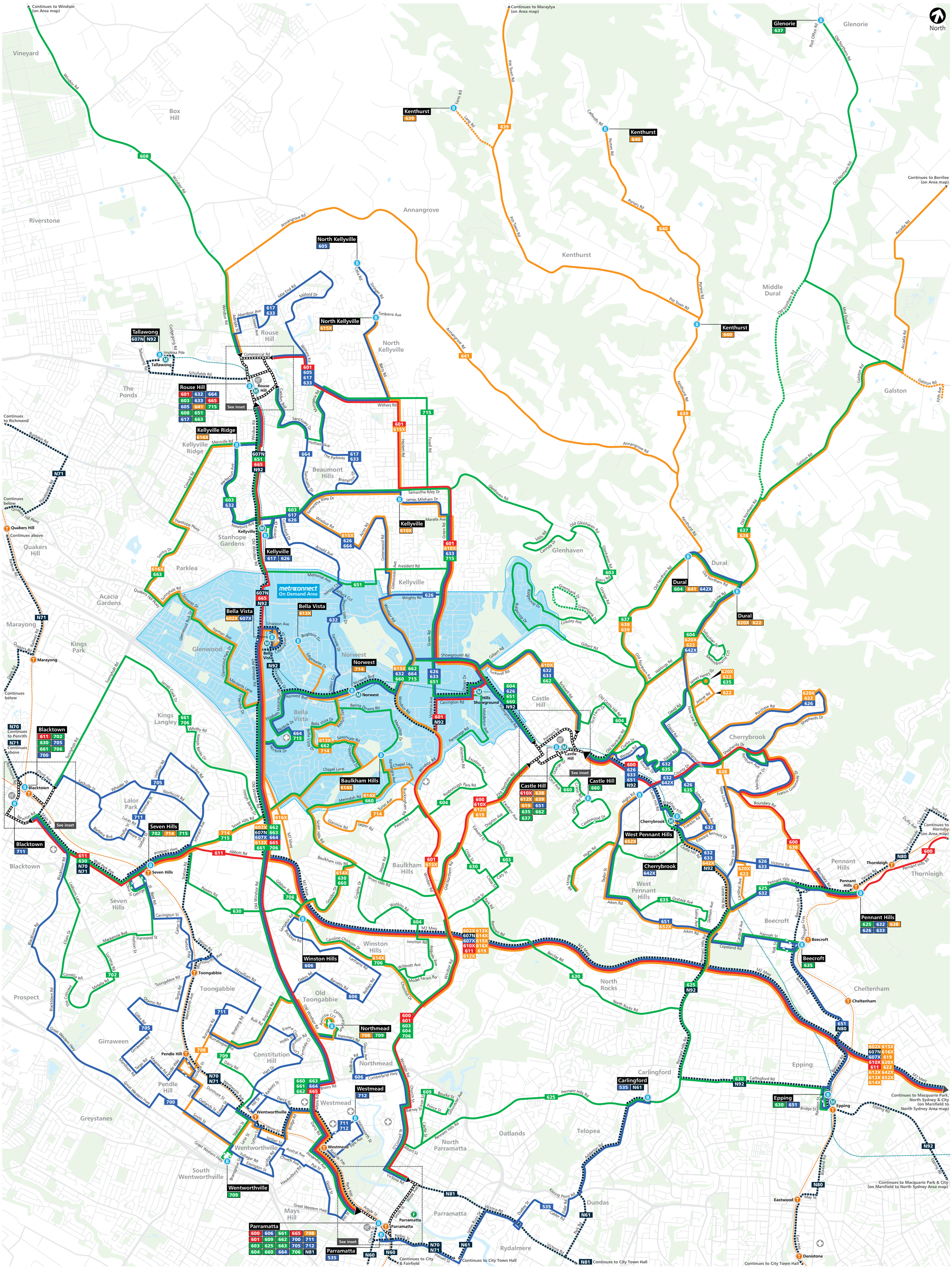
NSW GOVERNMENT

Transport

transportnsw.info

Hills District Bus Guide - Network Map Effective from: 23 August 2020

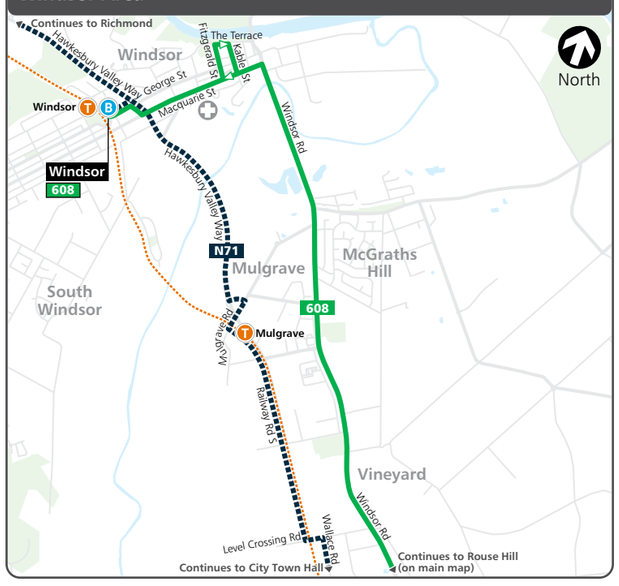
B



Hills District Bus Guide - Inset Maps Effective from: 23 August 2020

B

Windsor Area

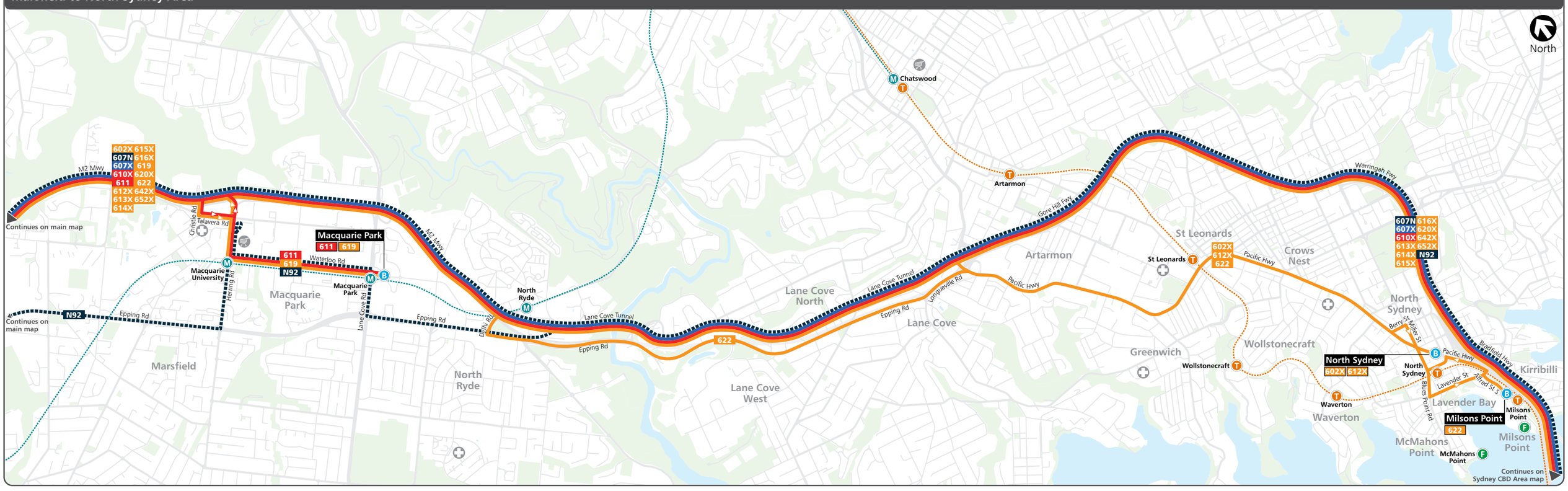


Maraylya Area

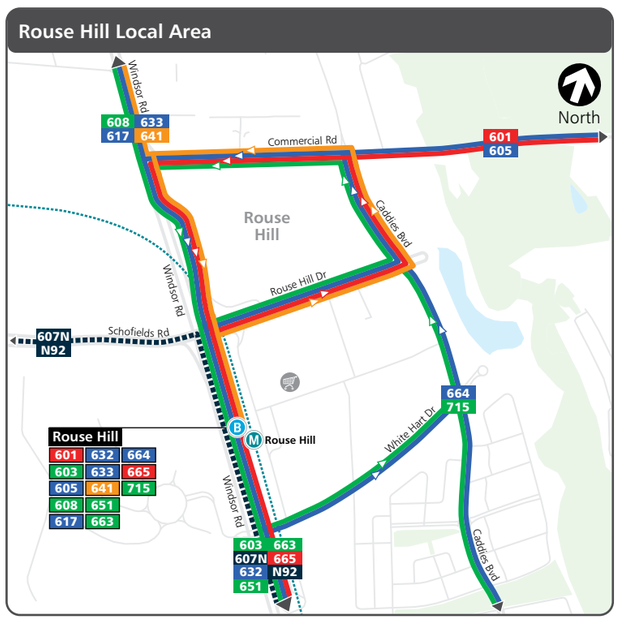
Berrilee Area

Hornsby Area

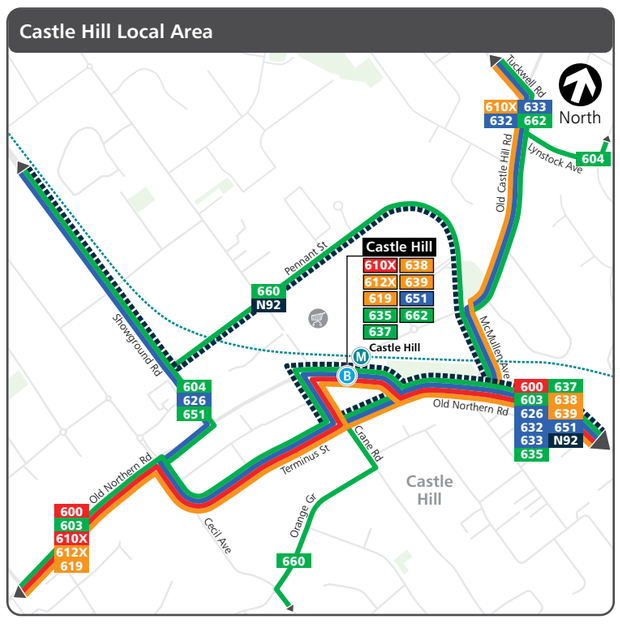
Marsfield to North Sydney Area



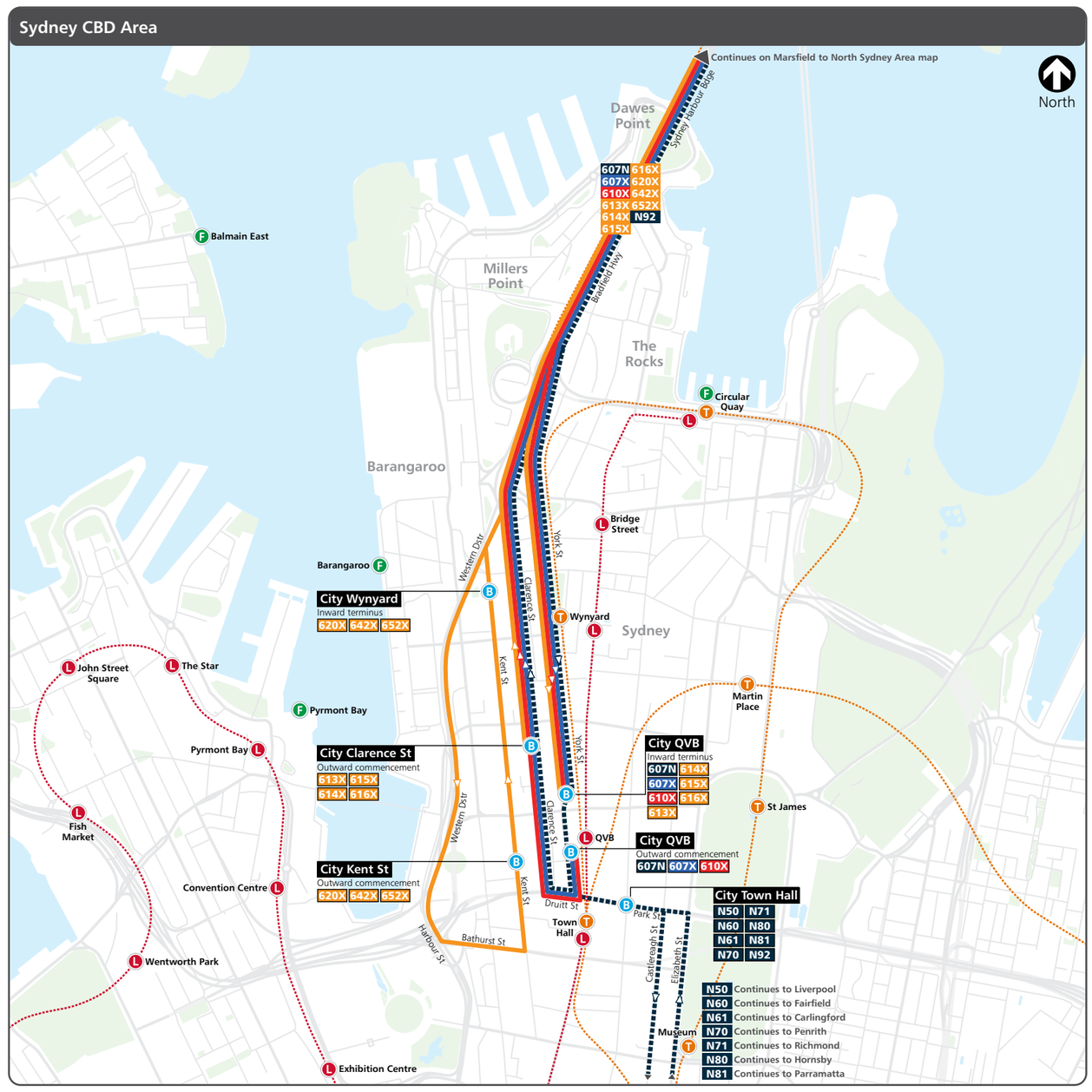
Rouse Hill Local Area



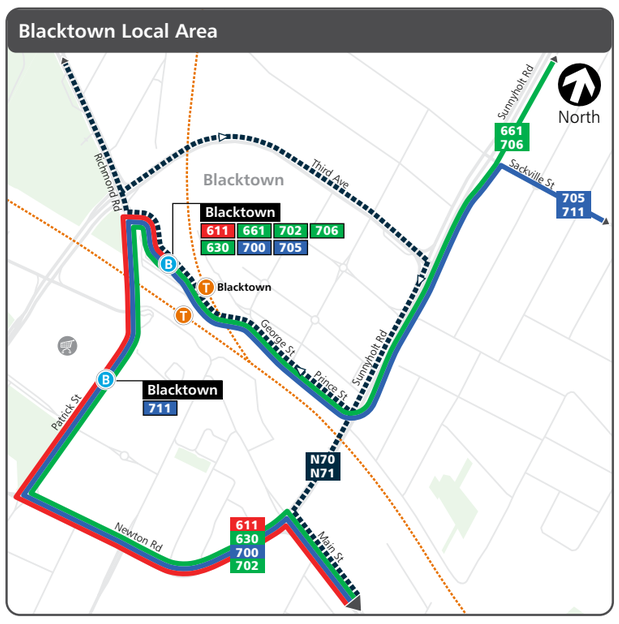
Castle Hill Local Area



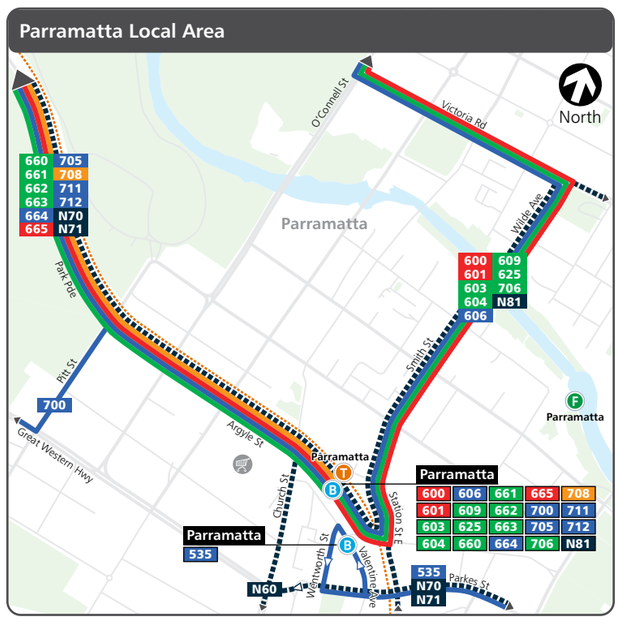
Sydney CBD Area



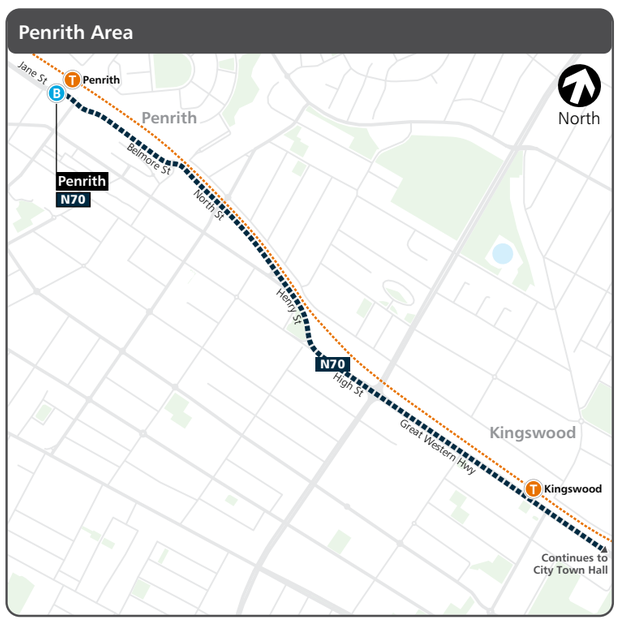
Blacktown Local Area



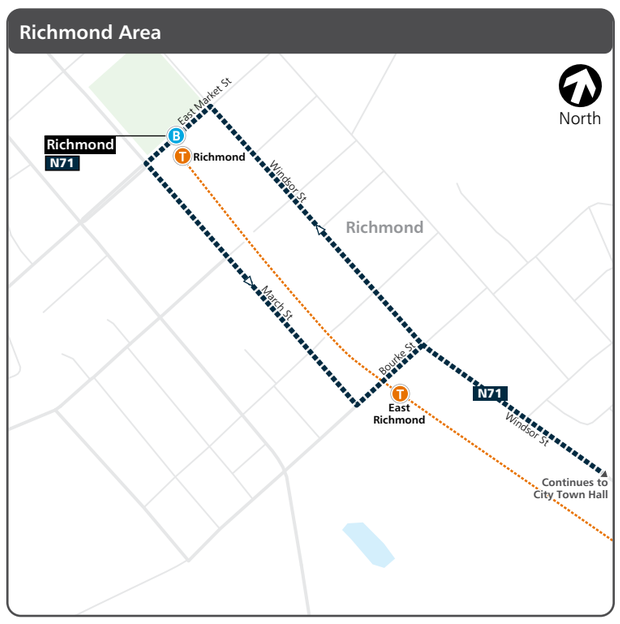
Parramatta Local Area



Penrith Area

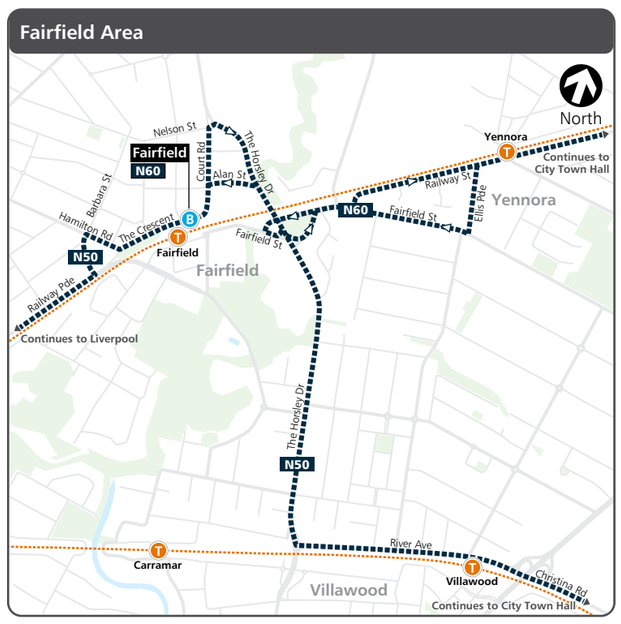


Richmond Area



Liverpool Area

Fairfield Area



Legend

- Bus route
- Occasional bus route
- 600 Bus route number
- B 600 Bus route terminus
- Common bus route
- Direction of service
- M Metro line/station
- T Train line/station
- F Ferry wharf
- L Light rail line/stop
- Major shopping centre
- Hospital

Frequency

Bus routes are colour-coded based on approximate frequency during the middle of weekdays. Services may operate more frequently during peak times, and at lower frequencies at night and on weekends. Plan your trip or check the timetable on **www.transportnsw.info** for exact service times.

- Every **15 minutes**
- Every **20-30 minutes**
- Every **60 minutes**
- Peak hours only
- Night service

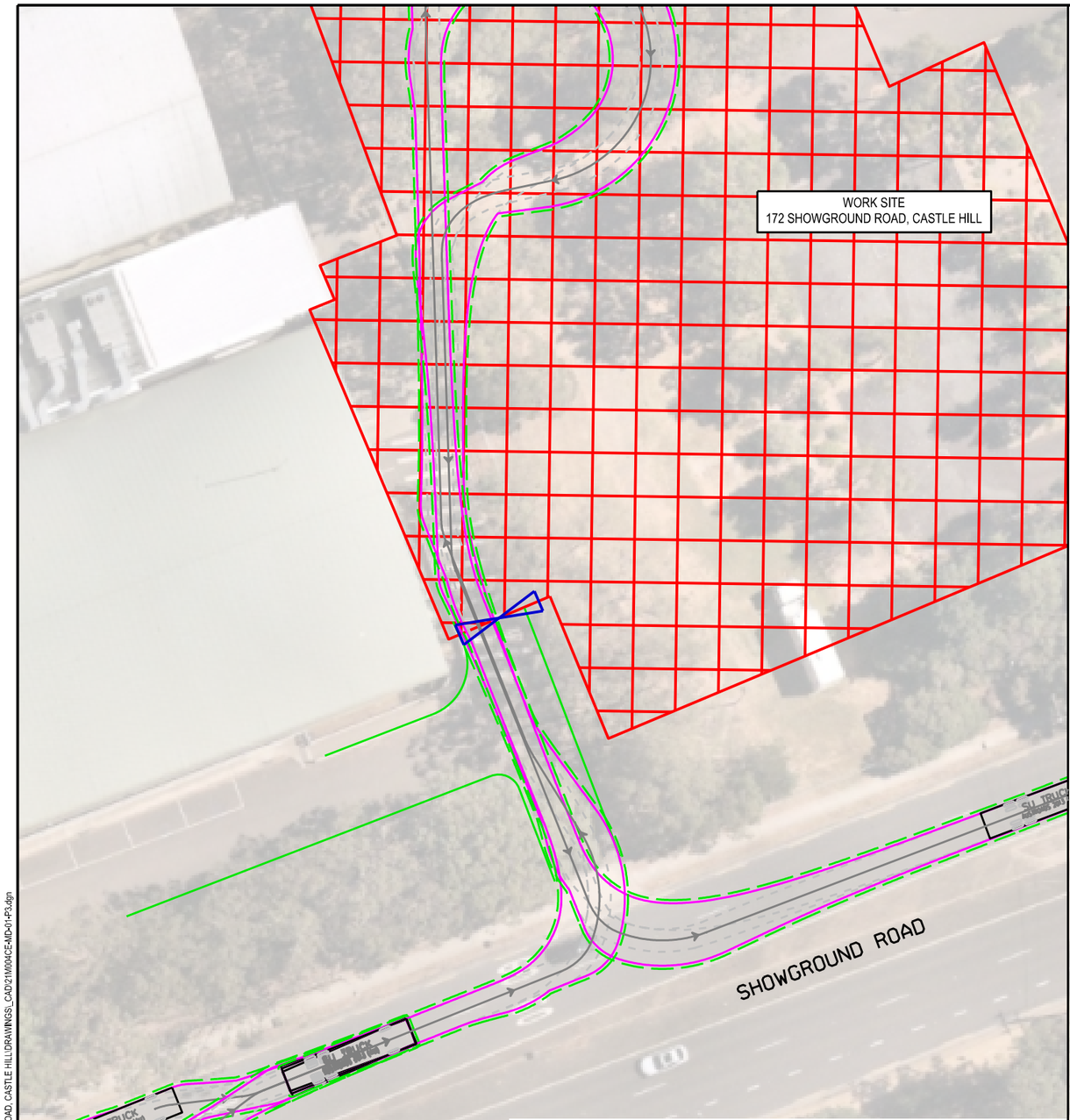
CDC NSW

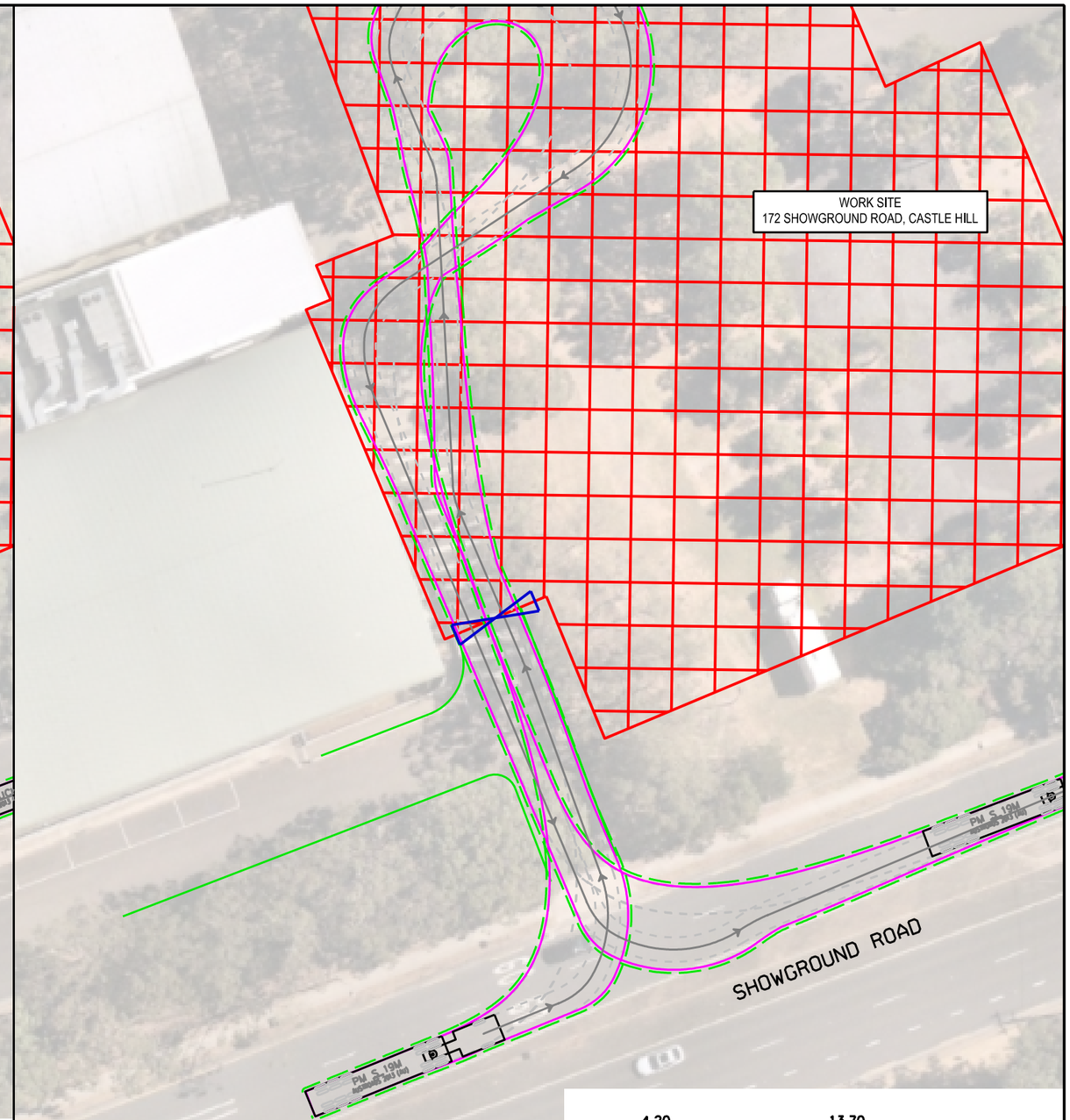
hillsbus

cartography by transitgraphics.com.au TG20350 | base map © OpenStreetMap contributors

Appendix C

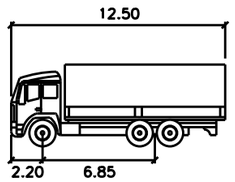
Turning Path Assessments





LEGEND:

- WORK SITE (TEMPORARY CHAINWIRE FENCE)
- SITE ACCESS
- EXISTING FEATURES (KERB LINE)



SU TRUCK

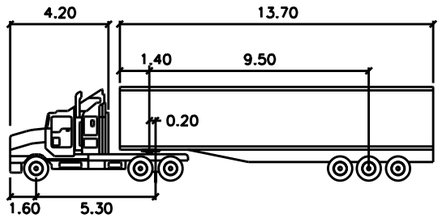
	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 36.6

SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY

SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY



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		

MUSEUMS DISCOVERY CENTRE EXPANSION
2 GREEN ROAD AND 172 SHOWGROUND ROAD, CASTLE HILL
CONSTRUCTION TRAFFIC MANAGEMENT PLAN - EARLY WORKS
SWEPT PATH ASSESSMENT

DRAWING REF NO. 21M004CE-MD-01-P3

SHEET NO. 03 OF 05

ISSUE DATE 21 JULY 2021

DESIGNED BY S.YOU

REVIEWED BY M.KONG

SCALE A3 0 5 10 1:500

PRELIMINARY PLAN
FOR DISCUSSION PURPOSES ONLY SUBJECT TO CHANGE WITHOUT NOTIFICATION

WARNING
THE LOCATIONS OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY. THE EXACT LOCATION SHOULD BE PROVEN ON SITE. ALL EXISTING SERVICES SHOWN ARE NOT GUARANTEED.

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Established 1994
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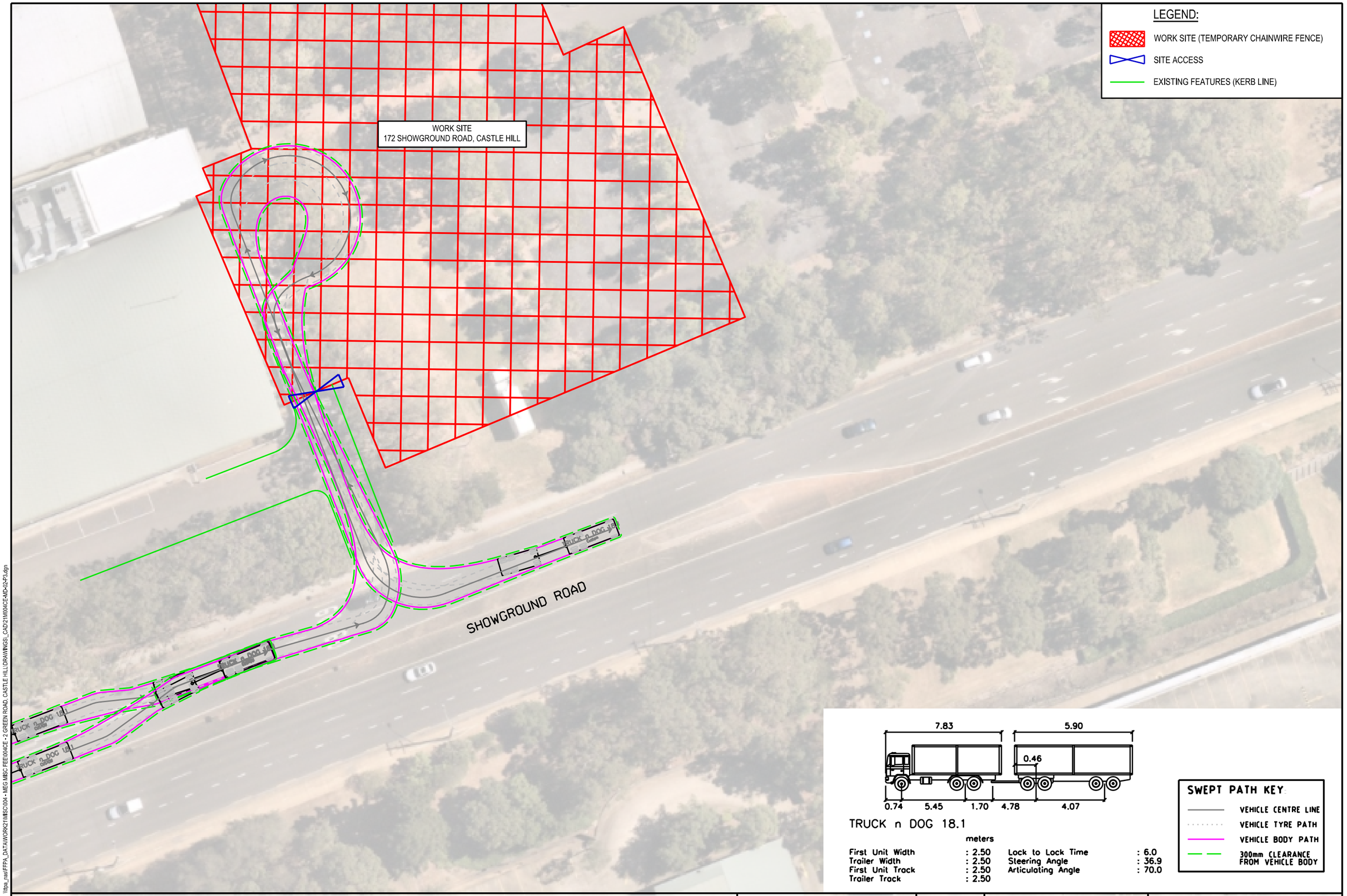
P: 02 9411 5660 E: info@ttpa.com.au W: www.ttpa.com.au

\\ttpa_nas\FFPA_DATA\WORK21\MISC\004 - MEG MISC FEE\004CE - 2 GREEN ROAD, CASTLE HILL\DRAWINGS_CAD\21M004CE-MD-01-P3.dgn
Plot by sherlock



MUSEUMS DISCOVERY CENTRE EXPANSION
2 GREEN ROAD AND 172 SHOWGROUND ROAD, CASTLE HILL
CONSTRUCTION TRAFFIC MANAGEMENT PLAN - MAIN WORKS
SWEPT PATH ASSESSMENT

DRAWING REF NO. 21M004CE-MD-02-P3

SHEET NO. 03 OF 05

ISSUE DATE 21 JULY 2021

DESIGNED BY S.YOU

REVIEWED BY M.KONG

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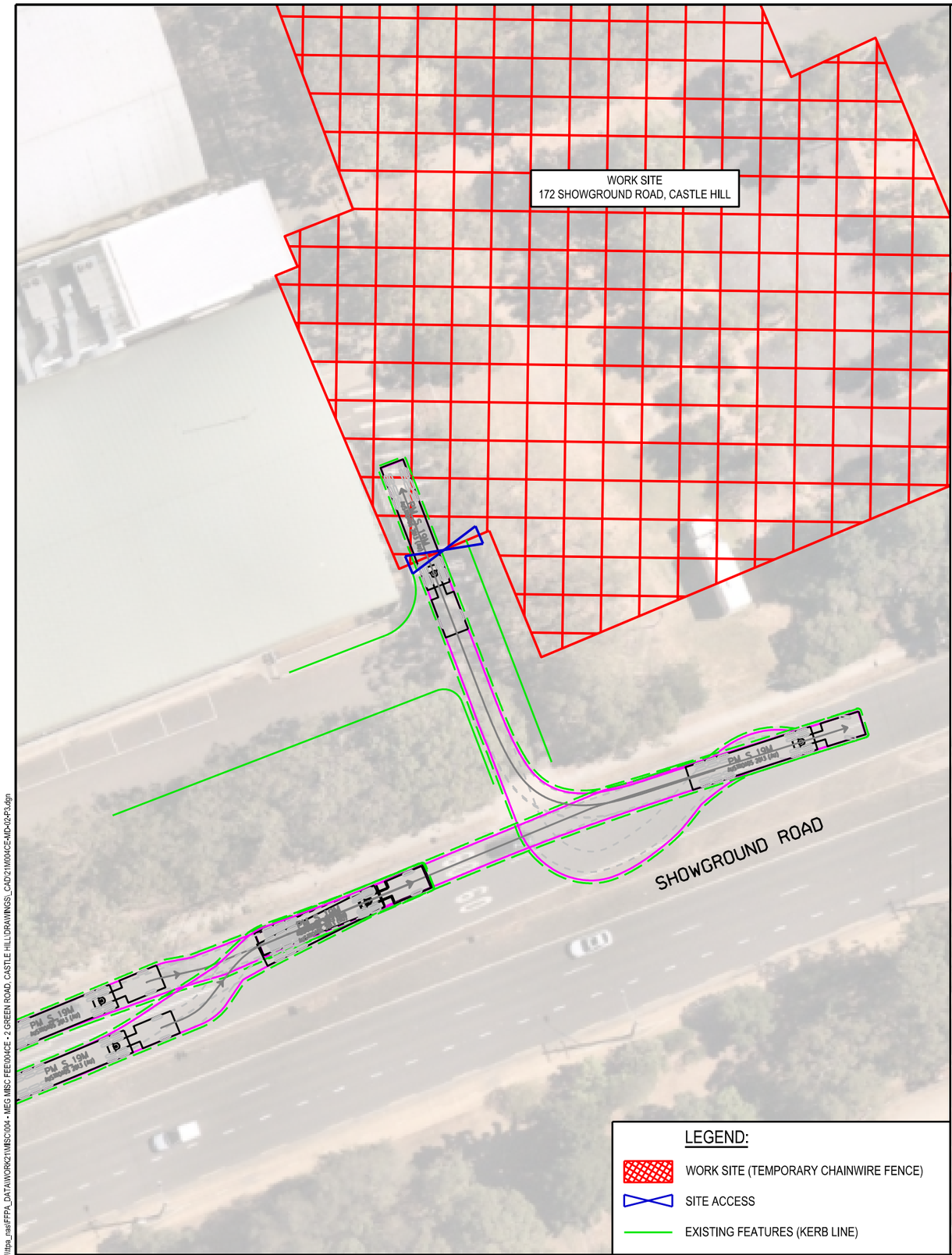
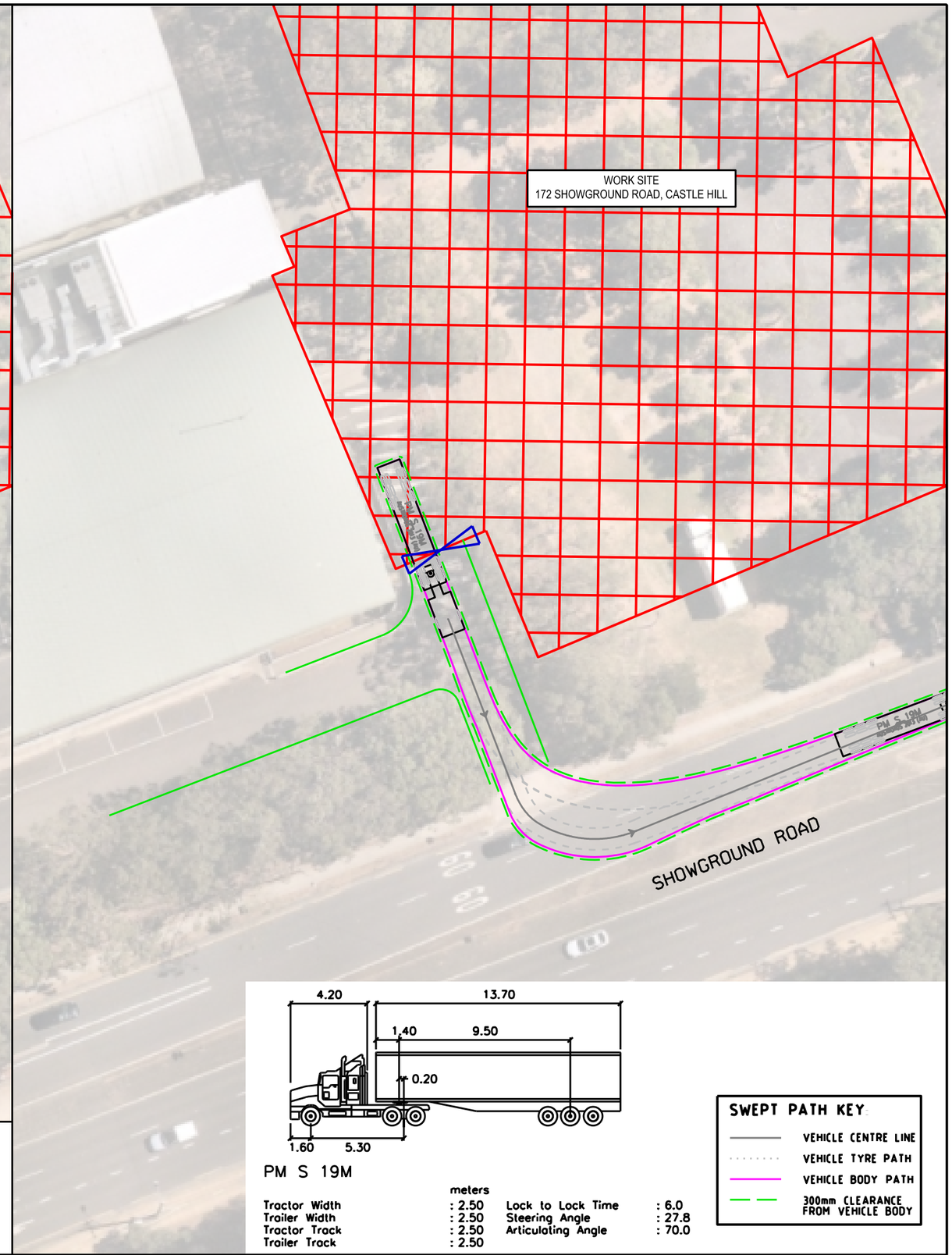
\\ttpa_nas\FPPA_DATA\WORK21\MISC\004 - MEG MISC FEE\004CE - 2 GREEN ROAD, CASTLE HILL\DRAWINGS_CAD\21M004CE-MD-02-P3.dgn
Plot by sherlock





MUSEUMS DISCOVERY CENTRE EXPANSION
2 GREEN ROAD AND 172 SHOWGROUND ROAD, CASTLE HILL
CONSTRUCTION TRAFFIC MANAGEMENT PLAN - MAIN WORKS
SWEPT PATH ASSESSMENT

DRAWING REF NO. 21M004CE-MD-02-P3

SHEET NO. 04 OF 05

ISSUE DATE 21 JULY 2021

DESIGNED BY S.YOU

REVIEWED BY M.KONG

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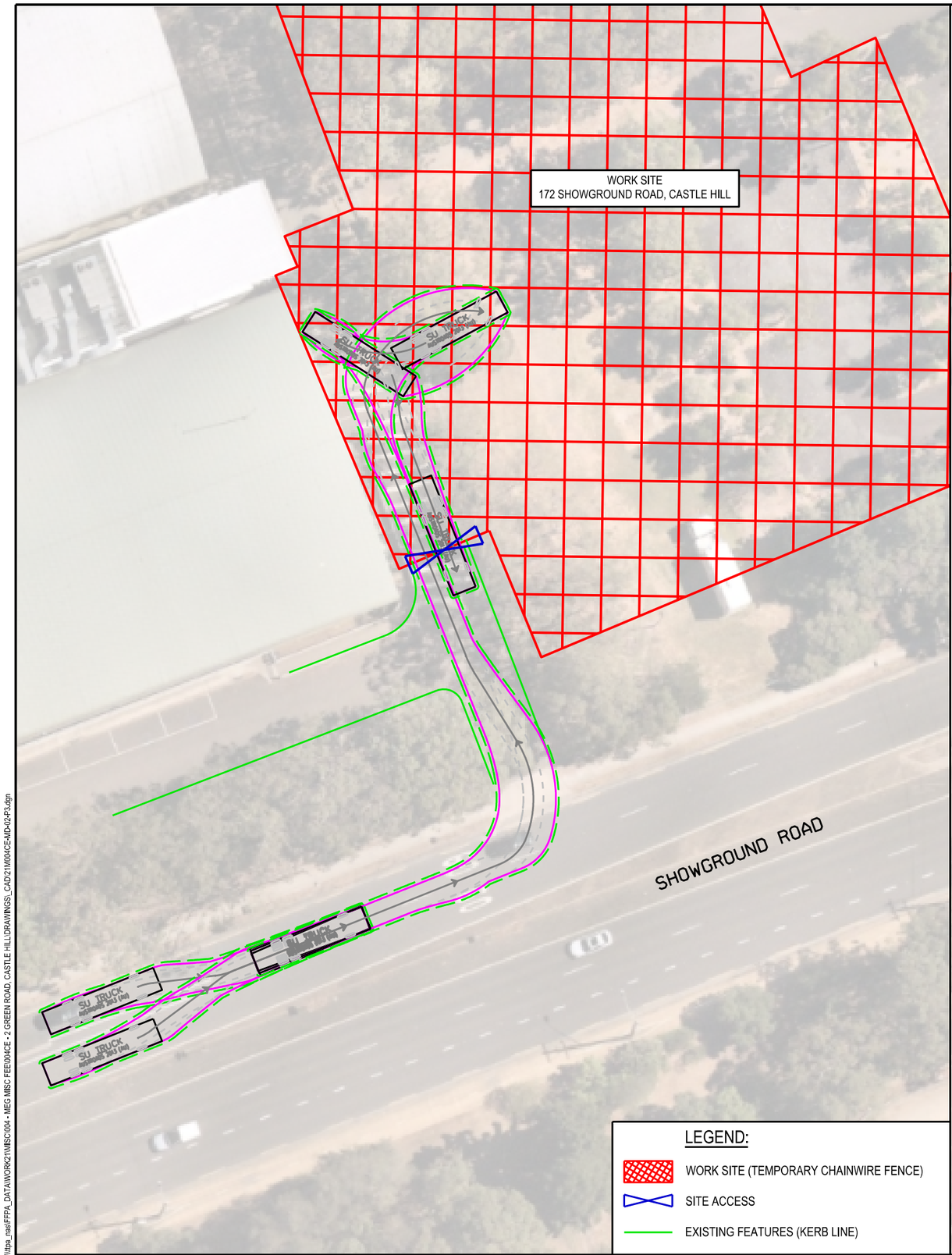
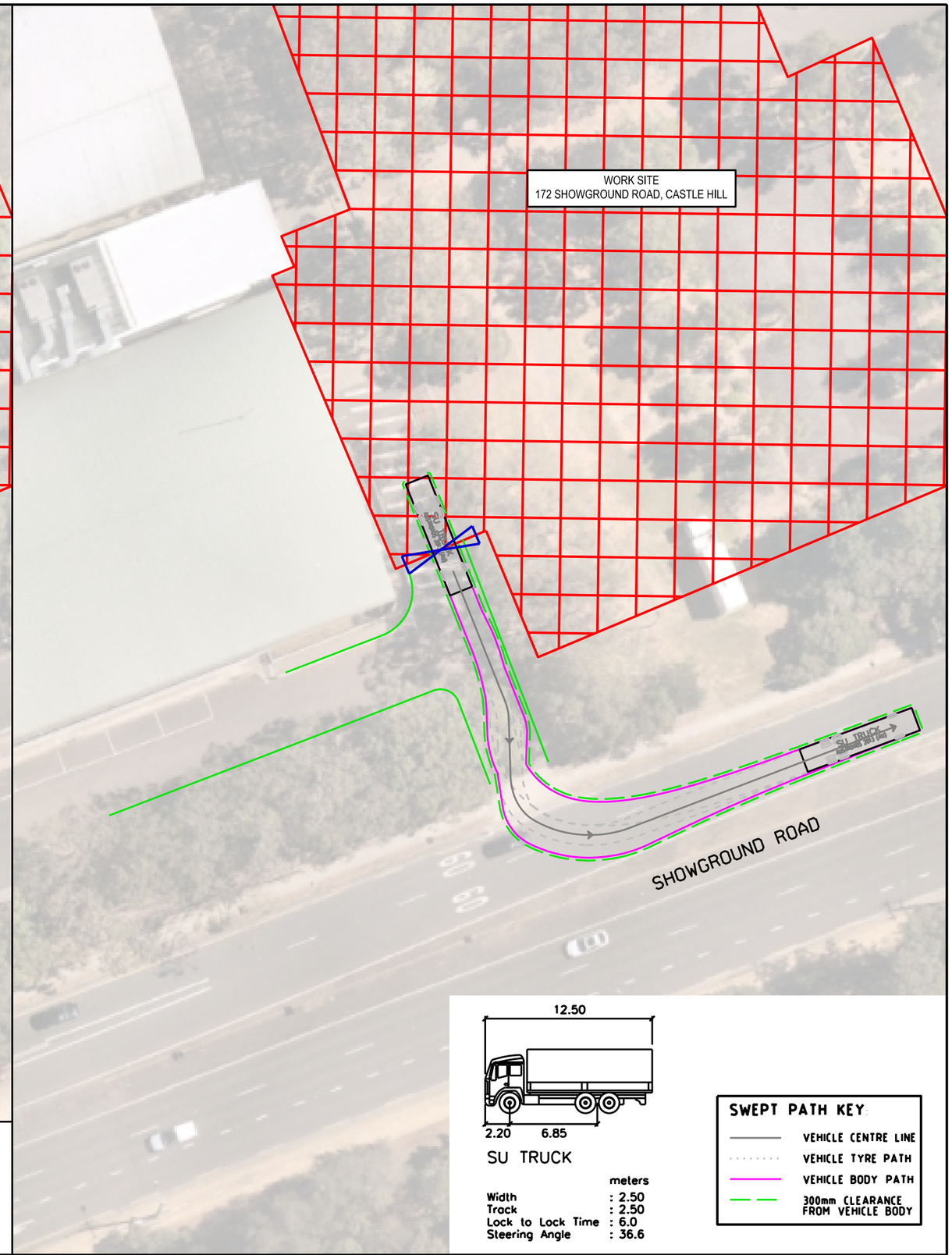
Plot by sherlock





MUSEUMS DISCOVERY CENTRE EXPANSION
2 GREEN ROAD AND 172 SHOWGROUND ROAD, CASTLE HILL
CONSTRUCTION TRAFFIC MANAGEMENT PLAN - MAIN WORKS
SWEPT PATH ASSESSMENT

DRAWING REF NO. 21M004CE-MD-02-P3

SHEET NO. 05 OF 05

ISSUE DATE 21 JULY 2021

DESIGNED BY S.YOU

REVIEWED BY M.KONG

SCALE A3 — 0 5 10 — 1:500

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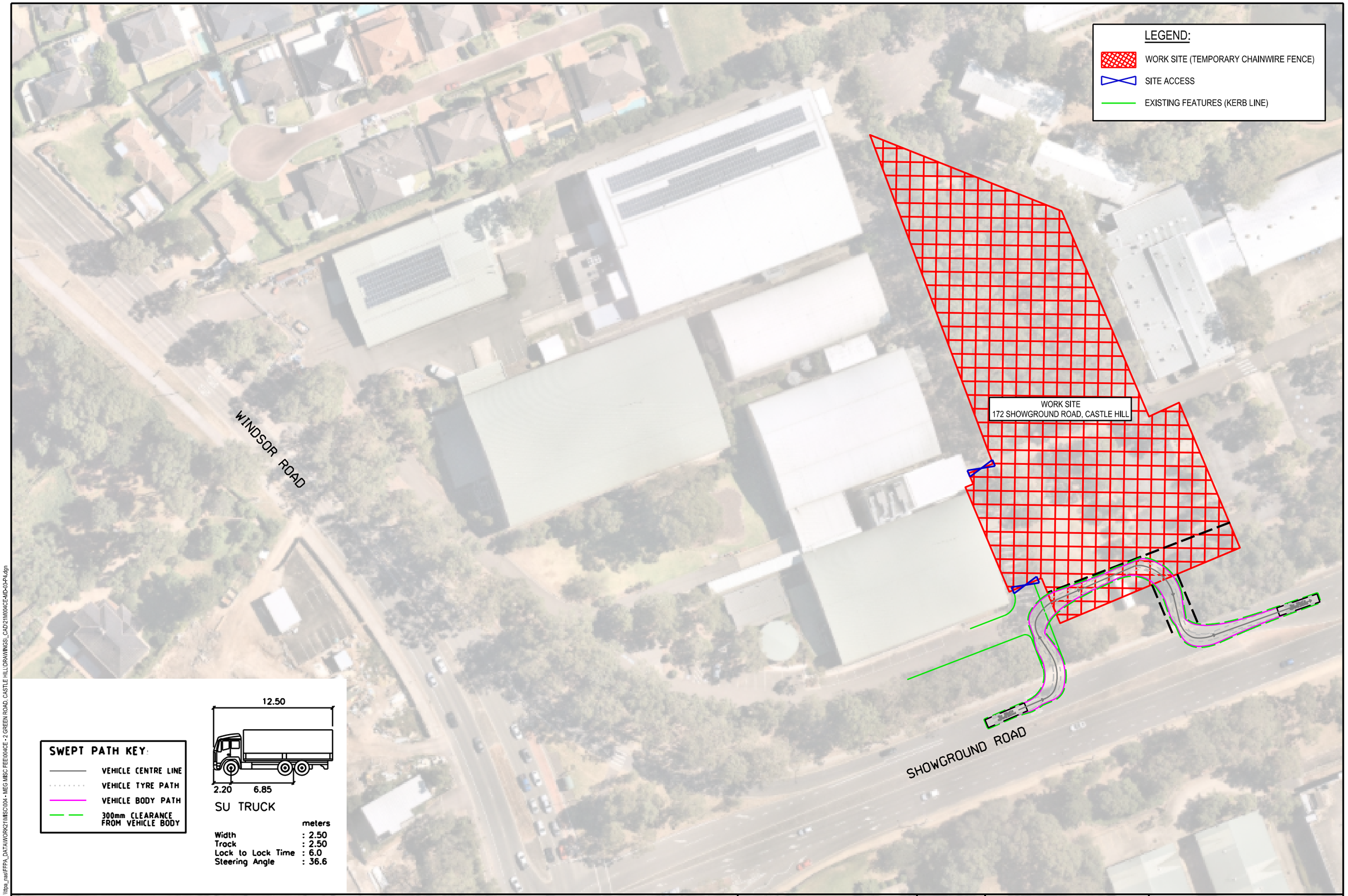

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2 GREEN ROAD AND 172 SHOWGROUND ROAD, CASTLE HILL
ALTERNATIVE CONSTRUCTION ACCESS
SWEPT PATH ASSESSMENT

DRAWING REF NO. 21M004CE-MD-03-P4

SHEET NO. 03 OF 06

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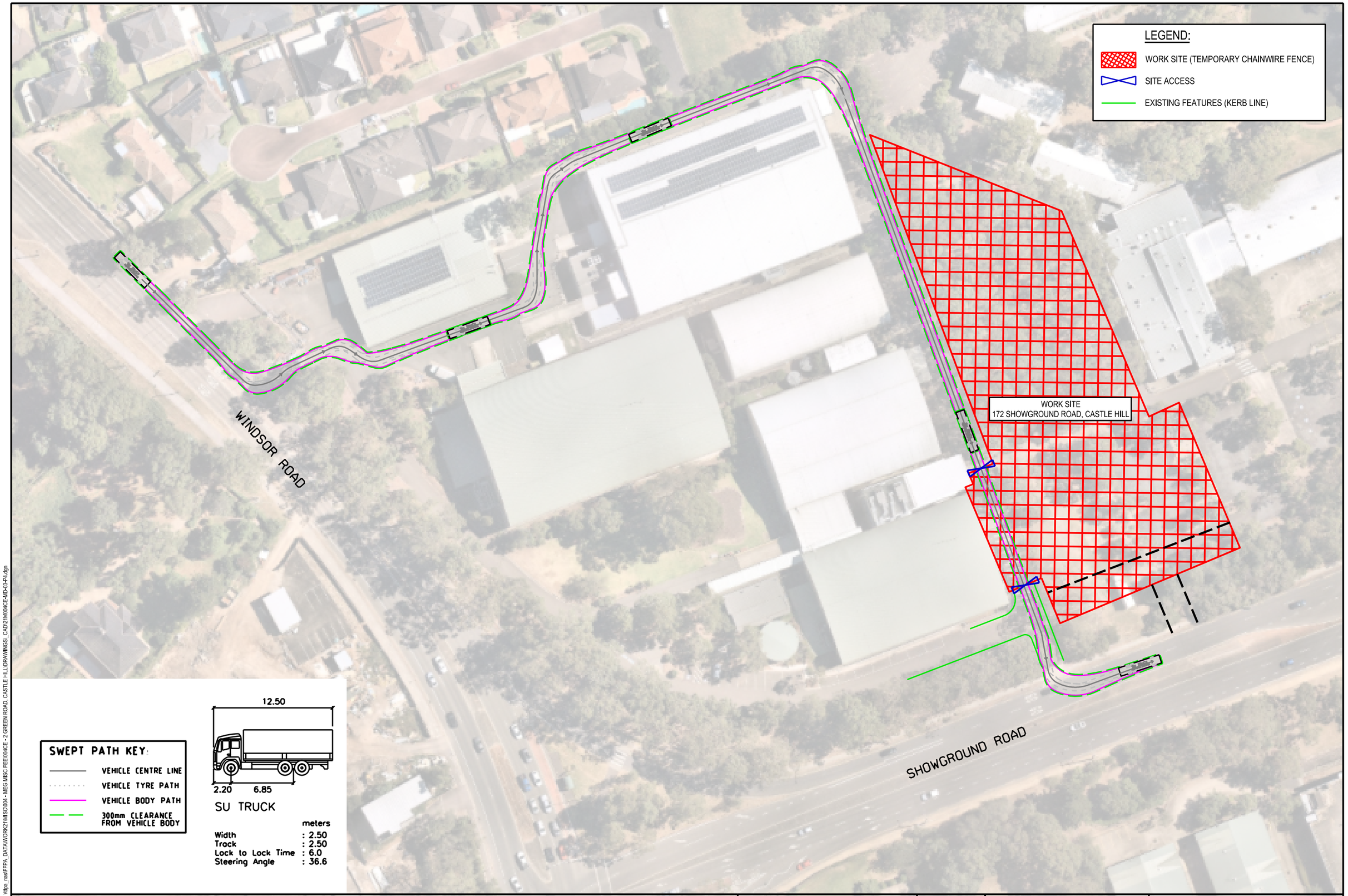

MUSEUMS DISCOVERY CENTRE EXPANSION
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ONE OFF DELIVERY VIA EXISTING RING ROAD
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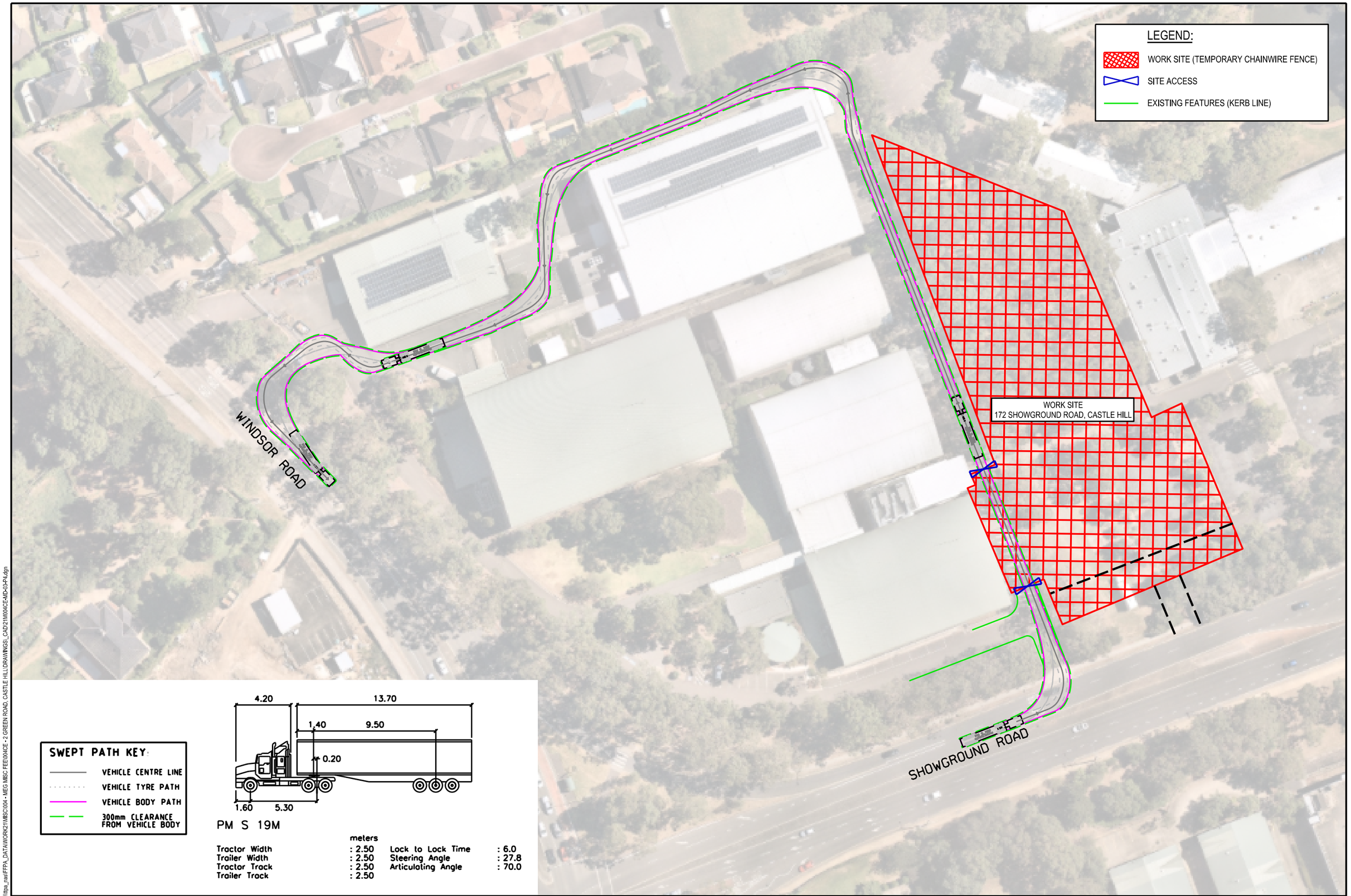

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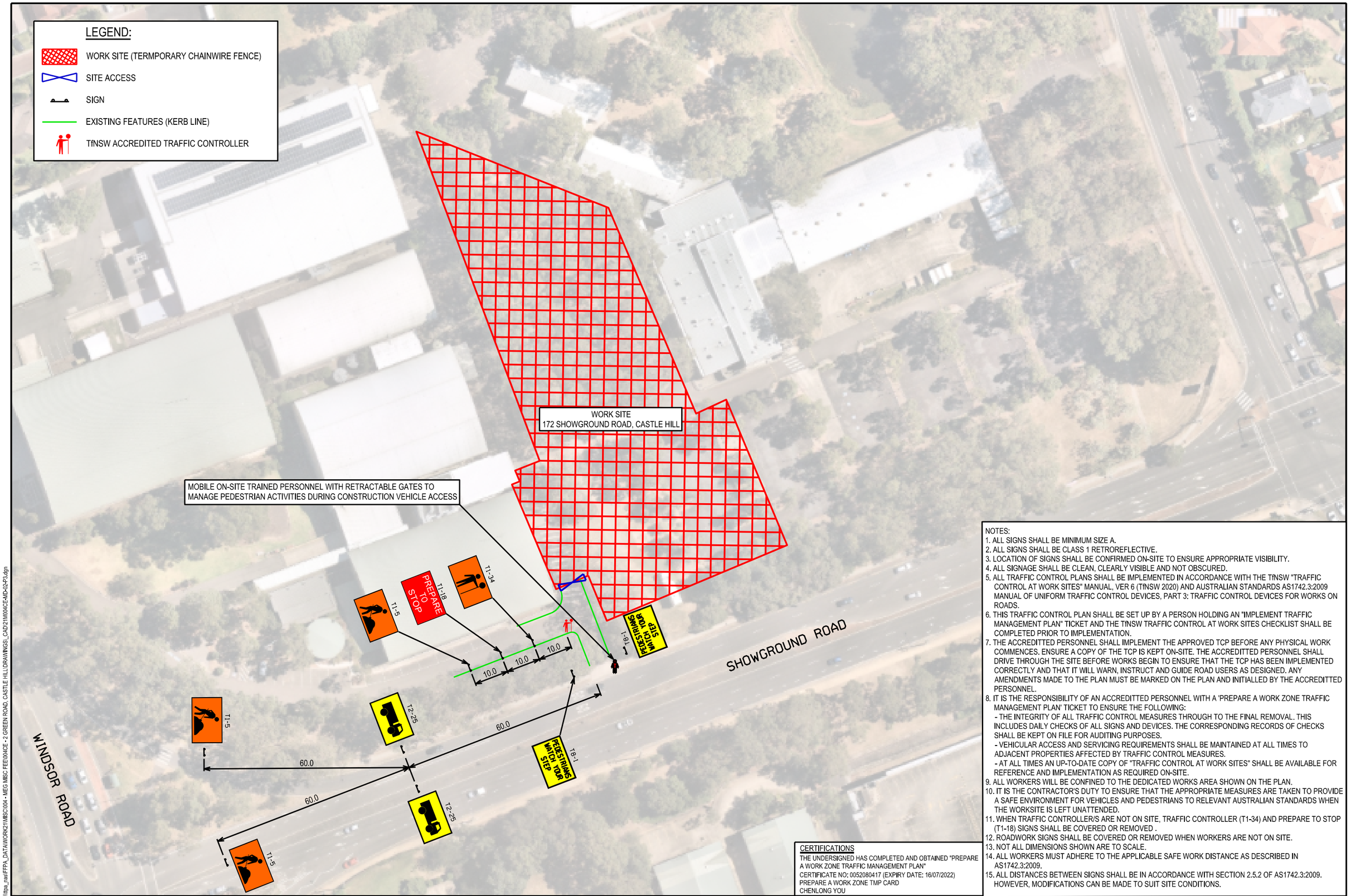
Appendix C

Traffic Control Plans



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CERTIFICATE NO: 0052080417 (EXPIRY DATE: 16/07/2022)
PREPARE A WORK ZONE TMP CARD
CHENLONG YOU

MUSEUMS DISCOVERY CENTRE EXPANSION
2 GREEN ROAD AND 172 SHOWGROUND ROAD, CASTLE HILL
CONSTRUCTION TRAFFIC MANAGEMENT PLAN - MAIN WORKS
TRAFFIC GUIDANCE SCHEME

DRAWING REF NO. 21M004CE-MD-02-P3

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REVIEWED BY M.KONG

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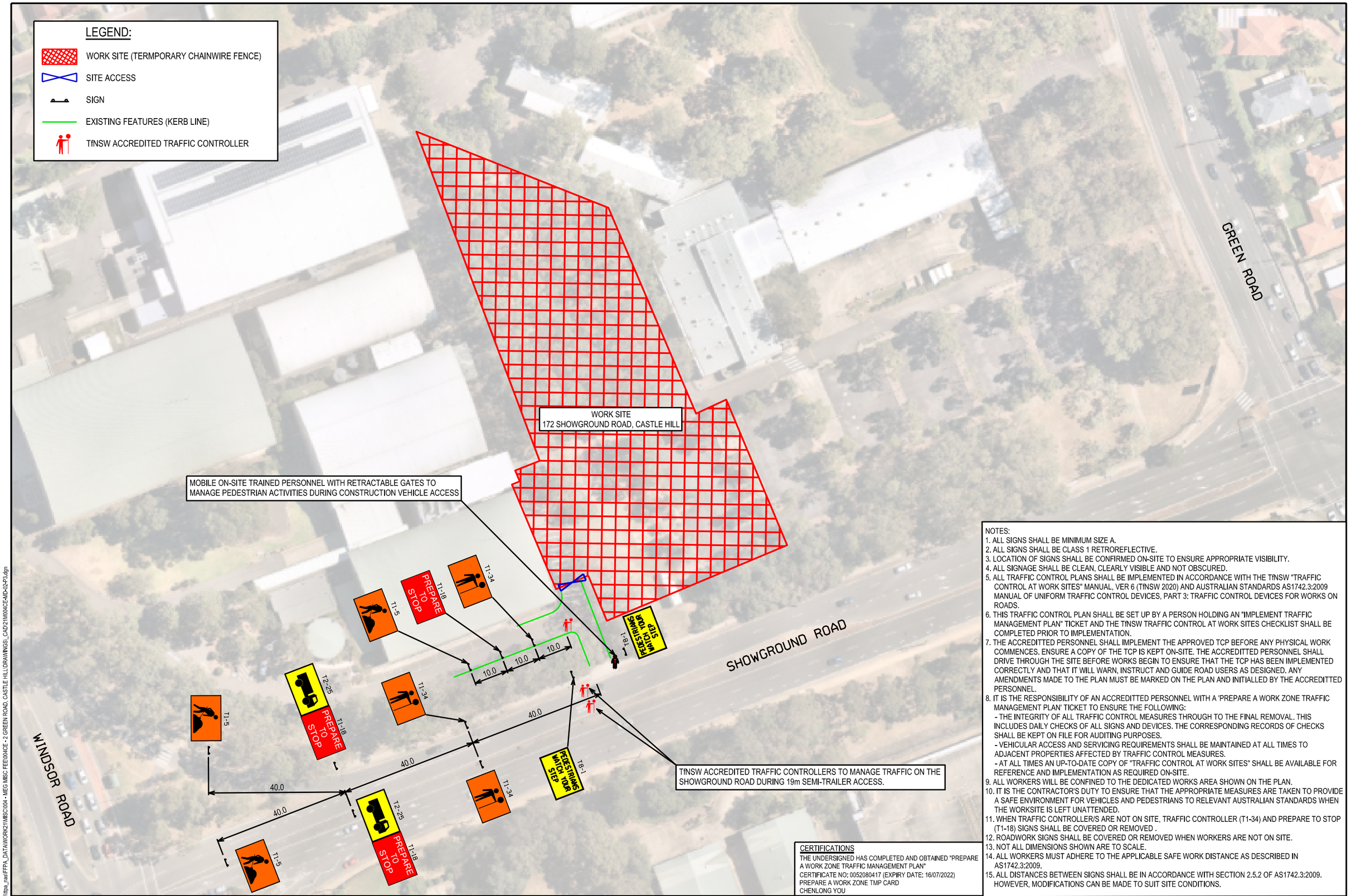

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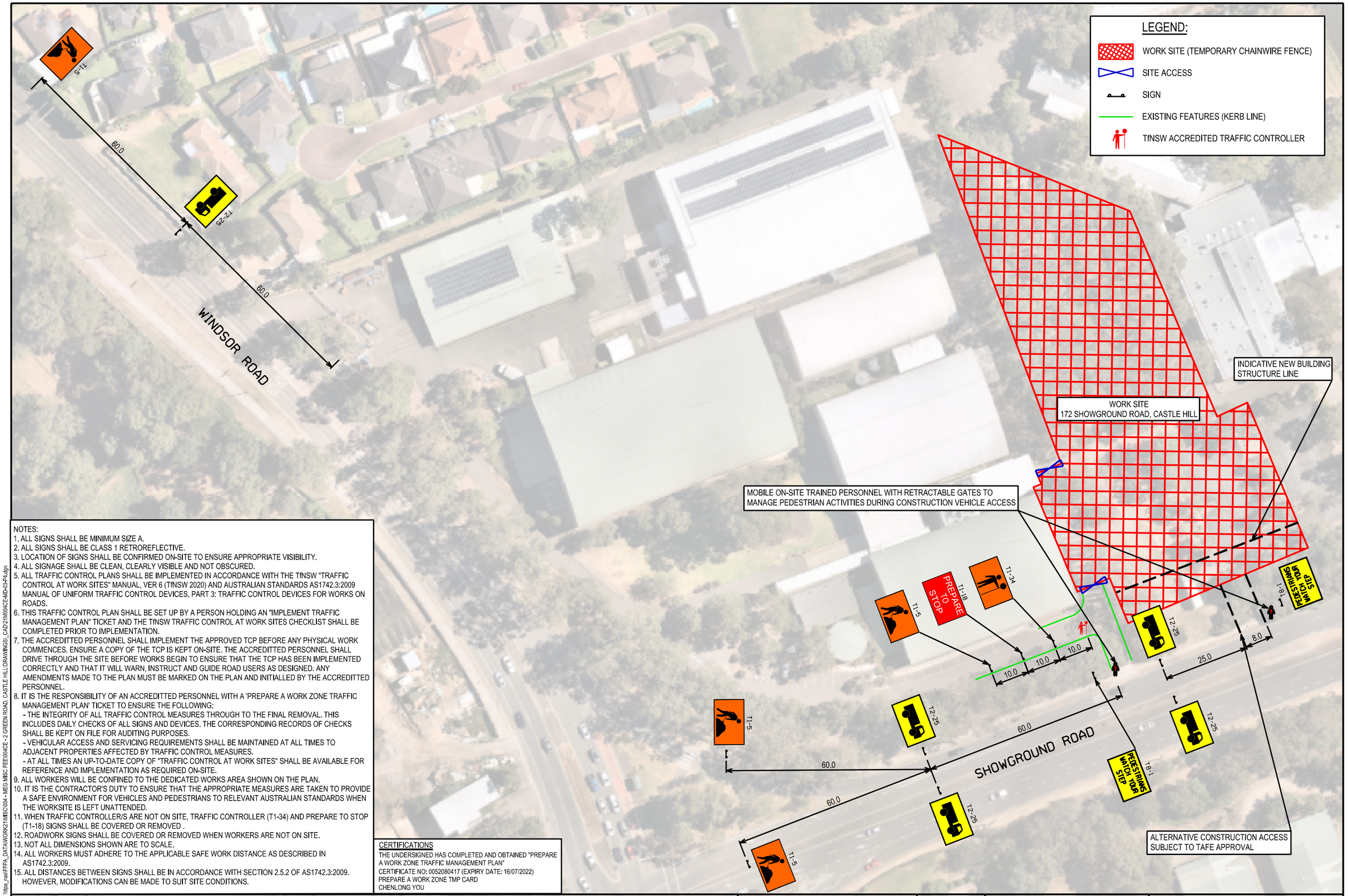

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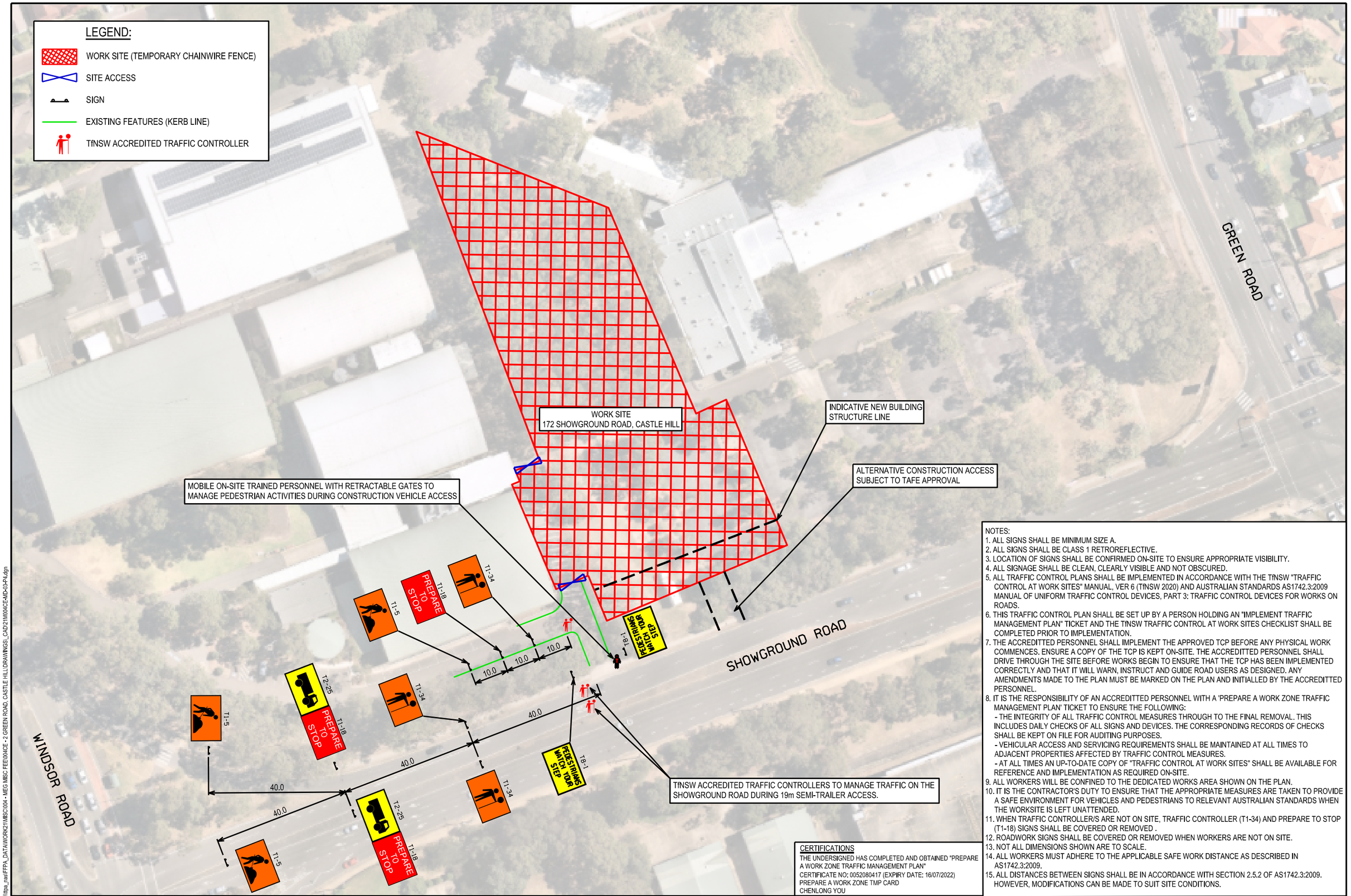

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13. NOT ALL DIMENSIONS SHOWN ARE TO SCALE.
14. ALL WORKERS MUST ADHERE TO THE APPLICABLE SAFE WORK DISTANCE AS DESCRIBED IN AS1742.3:2009.
15. ALL DISTANCES BETWEEN SIGNS SHALL BE IN ACCORDANCE WITH SECTION 2.5.2 OF AS1742.3:2009. HOWEVER, MODIFICATIONS CAN BE MADE TO SUIT SITE CONDITIONS.

CERTIFICATIONS
THE UNDERSIGNED HAS COMPLETED AND OBTAINED "PREPARE A WORK ZONE TRAFFIC MANAGEMENT PLAN"
CERTIFICATE NO: 0052080417 (EXPIRY DATE: 16/07/2022)
PREPARE A WORK ZONE TMP CARD
CHENLONG YOU

MUSEUMS DISCOVERY CENTRE EXPANSION
2 GREEN ROAD AND 172 SHOWGROUND ROAD, CASTLE HILL
CONSTRUCTION TRAFFIC MANAGEMENT PLAN - 19m SEMI-TRAILER ACCESS
TRAFFIC GUIDANCE SCHEME

DRAWING REF NO. 21M004CE-MD-03-P4
SHEET NO. 02 OF 06
ISSUE DATE 21 JULY 2021

DESIGNED BY S.YOU
REVIEWED BY M.KONG
SCALE A3
0 10 20 1:1000

PRELIMINARY PLAN
FOR DISCUSSION PURPOSES ONLY SUBJECT TO CHANGE WITHOUT NOTIFICATION

WARNING
THE LOCATIONS OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY. THE EXACT LOCATION SHALL BE PROVEN ON SITE. ALL EXISTING SERVICES SHOWN ARE NOT GUARANTEED.

ttpa TRANSPORT AND TRAFFIC PLANNING ASSOCIATES
Established 1994
Address: Level 5, Suite 502 / 282 Victoria Ave, Chatswood NSW 2067
P: 02 9411 5660 E: info@ttpa.com.au W: www.ttpa.com.au

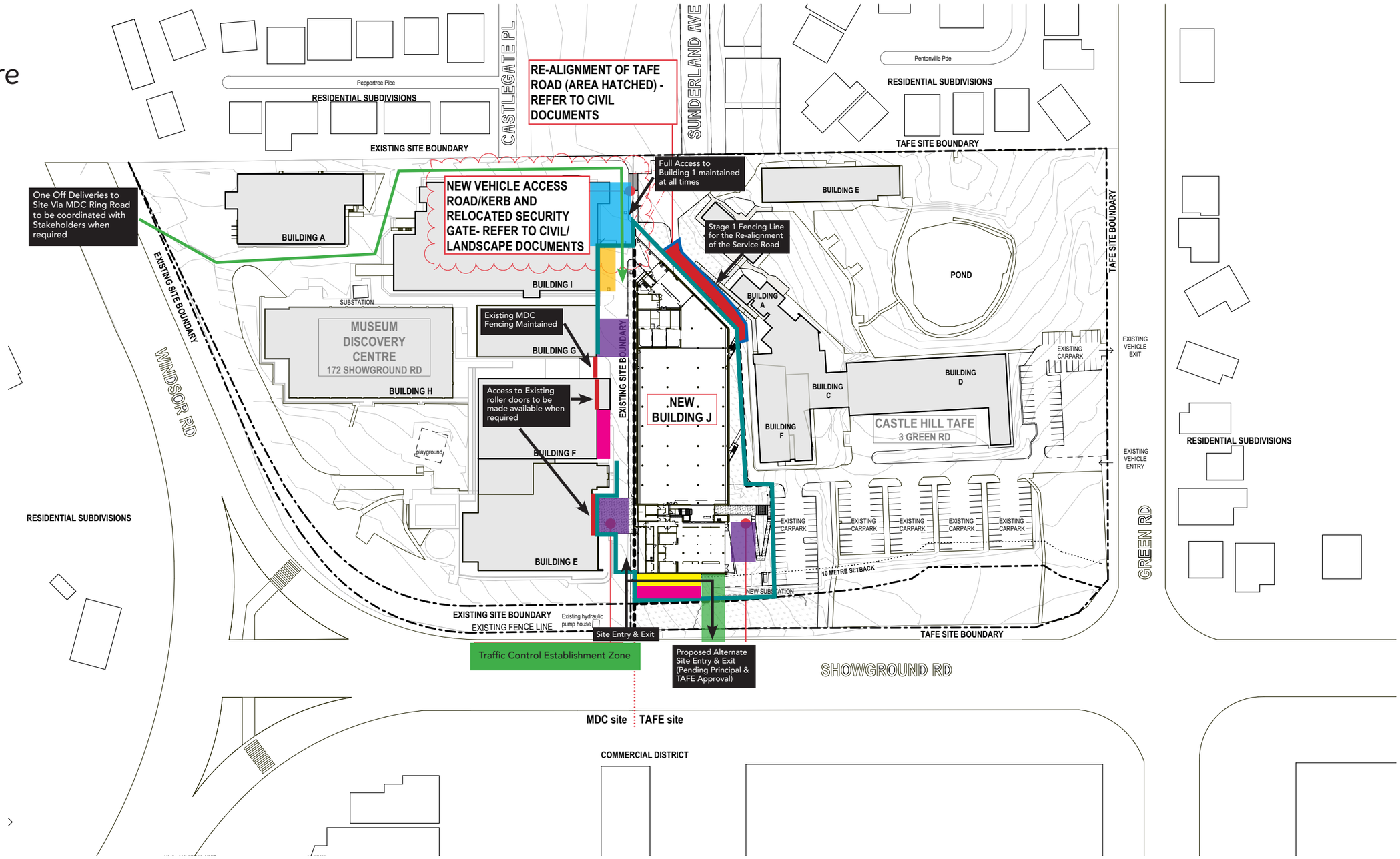
\\ttpa_nas\FPA_DATA\WORK21\MISC\004 - MEG MISC FEE\004CE - 2 GREEN ROAD, CASTLE HILL\DRAWINGS_CAD\21M004CE-MD-03-P4.dgn
Plot by sherlock

Appendix E Site Establishment Plan

Hibbs & Associates Pty Ltd © 2021

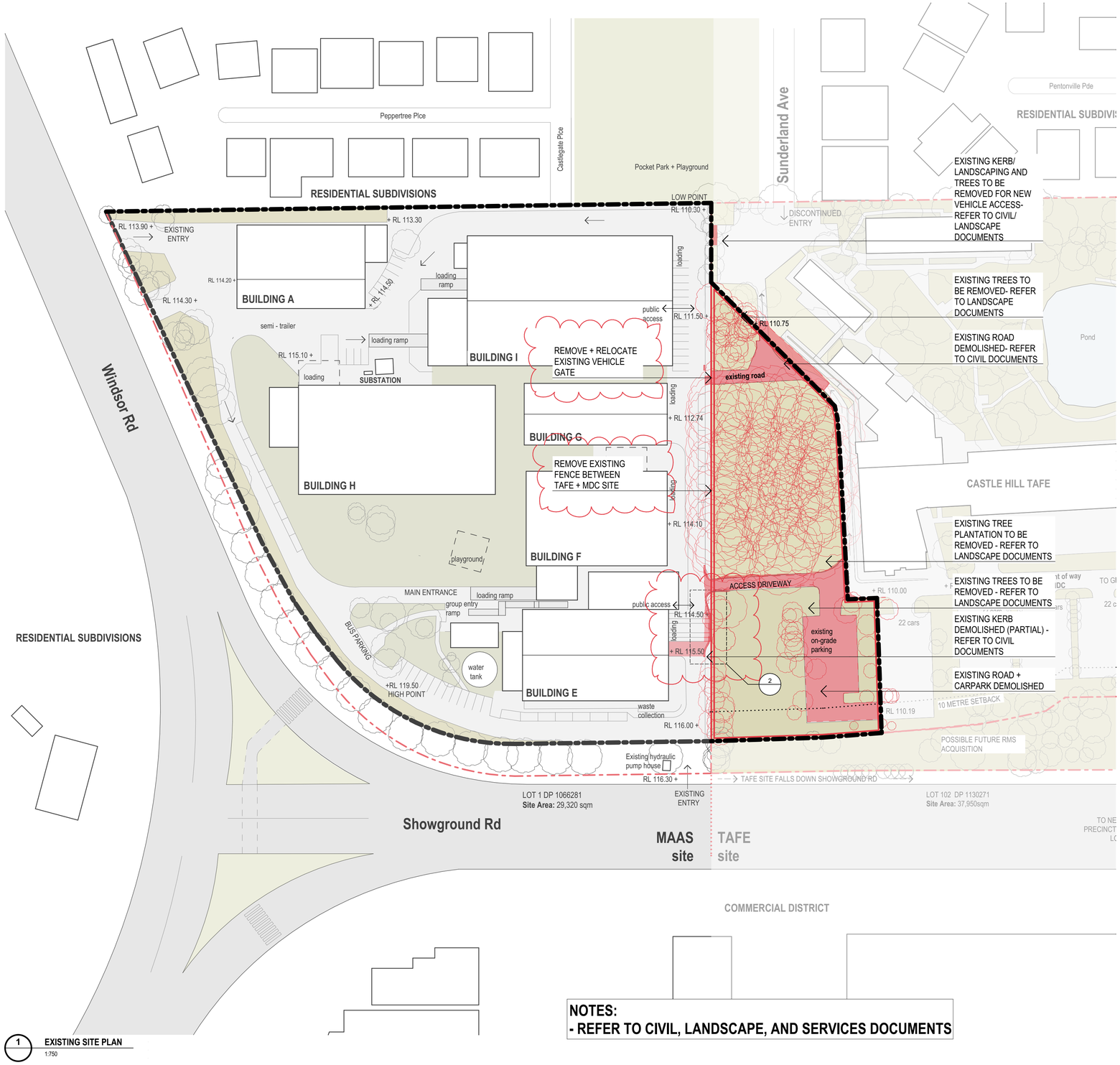
Powerhouse Museum
Discovery Centre

Key	
Sheds	
Material Lay Down	
Amenities	
Site Boundary	
Mobile Crane/ Pump Establishment Zone	



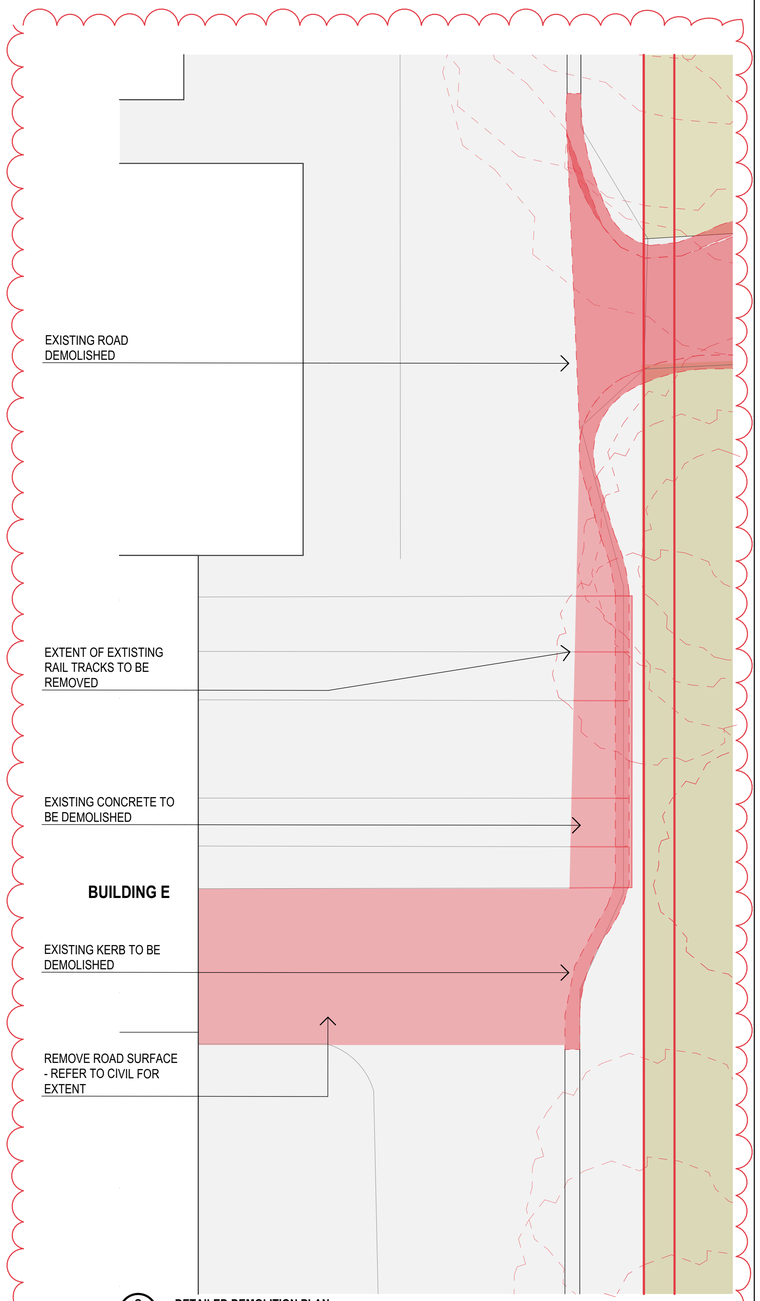
Appendix F Site Demolition Plan

Hibbs & Associates Pty Ltd © 2021



1 EXISTING SITE PLAN
1:750

NOTES:
- REFER TO CIVIL, LANDSCAPE, AND SERVICES DOCUMENTS



2 DETAILED DEMOLITION PLAN
1:100

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE
01	DRAFT SSDA ISSUE	07/08/2020
02	50% TENDER ISSUE	30/10/2020
03	70% TENDER ISSUE	30/11/2020
04	ISSUED FOR TENDER	17/02/2021

REV	DESCRIPTION	DATE

STRUCTURAL / CIVIL / SERVICES CONSULTANTS
NORTHROP
LANDSCAPE
ASPECT Studios

NOTES

NORTH

DO NOT SCALE DRAWINGS. USE FIGURED DIMENSIONS ONLY. VERIFY ALL DIMENSIONS ON SITE
REFER ANY DISCREPANCIES TO THE ARCHITECT
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PROJECT SPONSOR
NSW GOVERNMENT | Create NSW | Arts, Screen & Culture

DELIVERY AGENCY
NSW GOVERNMENT | Public Works Advisory

Museum of Applied Arts & Sciences

PROJECT TITLE
BUILDING J
Museums Discovery Centre,
172 Showground Road
Castle Hill

SCALE CHECK 5 10

lahznimmo architects
Suite 404, Flourmill Studios
3 Gladstone St
Newtown NSW 2042 Australia
T 02 9550 5200
F 02 9550 5233
www.lahznimmo.com

REVIEW	DIRECTOR SIGNATURE	DATE
TENDER		
CONST		

DISCIPLINE **ARCHITECTURE**
TITLE
SITE DEMOLITION PLAN

DRAWN	PLOT DATE	SCALE @A1
BG	18/02/2021	1:750, 1:100
CHECKED	PROJECT NO.	DRAWING NO. / REV. NO
BC	18-14	J-WD-A1200 / 04

Appendix G Project Environmental Management Plan (PEMP)

Hibbs & Associates Pty Ltd © 2021

PROJECT ENVIRONMENTAL MANAGEMENT PLAN (PEMP)

Powerhouse Museum Discovery Centre

Main Works Package, Construction of Building J and Associated Works

172 Showground Road, Castle Hill NSW 2154

Rev. 0 - July 2021 | Approved by Steve Ziaziaris

Uncontrolled copy once printed

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TAYLOR

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1. INTRODUCTION

1.1. PROJECT INFORMATION TABLE

Project information table		
Project name	Powerhouse Museum Discovery Centre	
Location	172 Showground Road, Castle Hill NSW	
Client	NSW Government – Public Works Advisory	
Duration of contract	70 weeks	
Taylor contacts information		
Company name	Taylor Construction Group Pty Ltd	
ABN	25 067 428 344	
Address	Level 13, 157 Walker Street, North Sydney 2060	
Telephone and fax	Ph.: 02 8736 9000 Fax: 02 8736 9090	
Position	**Contact name**	**Phone numbers**
Chief Executive Officer	George Bardas	N/A
General Manager Refurbishment & Live Environment	Ben Folkard	0414 705 457
Senior Project Manager	Steve Ziaziaris	0413 182 641
Senior Site Manager	Brent Kendall	0488 022 764
HSE Manager	Andrew Andreou	0404 492 614
Safety Advisor	TBC	N/A
Quality & Compliance Manager	Stephen Player	0419 578 201
Senior Contract Administrator	Scott Dobson	0414 984 567
Structure Manager	Gary Shaw	0404 030 512
Services / Green Star	Aaron Persson	0404 858 895
Site Engineer	TBC	N/A
Foreman	Shane Johnson	
Cadet	TBC	N/A

Document control	Name	Position	Signature	Date
Prepared by Approved by	S. Ziaziaris	Snr Project Manager		27.7.21

Revised by	Revision #	Date	Changes made

1.2. PROJECT DESCRIPTION

Construction of the following development located at 172 Showground Road & 2 Green Road Castle Hill for NSW Government Public Works Advisory:

1. Construction of the proposed new Building J. The proposed new Building J will cater for the following uses:
   - Storage for the Powerhouse collection and archives (both collected archives and institutional archives).
   - Flexibles spaces for education and public programs, workshops, talks, exhibitions and events.
   - Suites of conservation laboratories and collection workspaces.
   - Photography, digitisation and collection documentation facilities.
   - Workspace for staff, researchers, industry partners and other collaborators. This will include amenities, meeting and storage rooms, collection research and study areas as well as other ancillary facilities.
   - Components of the image and research library.
   - Object and exhibition preparation, packing, quarantine and holding areas.
2. Construction of new vehicle accessways to maintain connectivity to the MDC and TAFE sites.
3. Demolition of existing car park and vehicle accessway along the eastern and north-eastern parts of the site. A new at-grade car park is proposed to be constructed by the Early Works Contractor on the eastern side of the TAFE site and will accommodate 24 car parking spaces (22 new and 2 reconfigured spaces) removed from the Building J site.

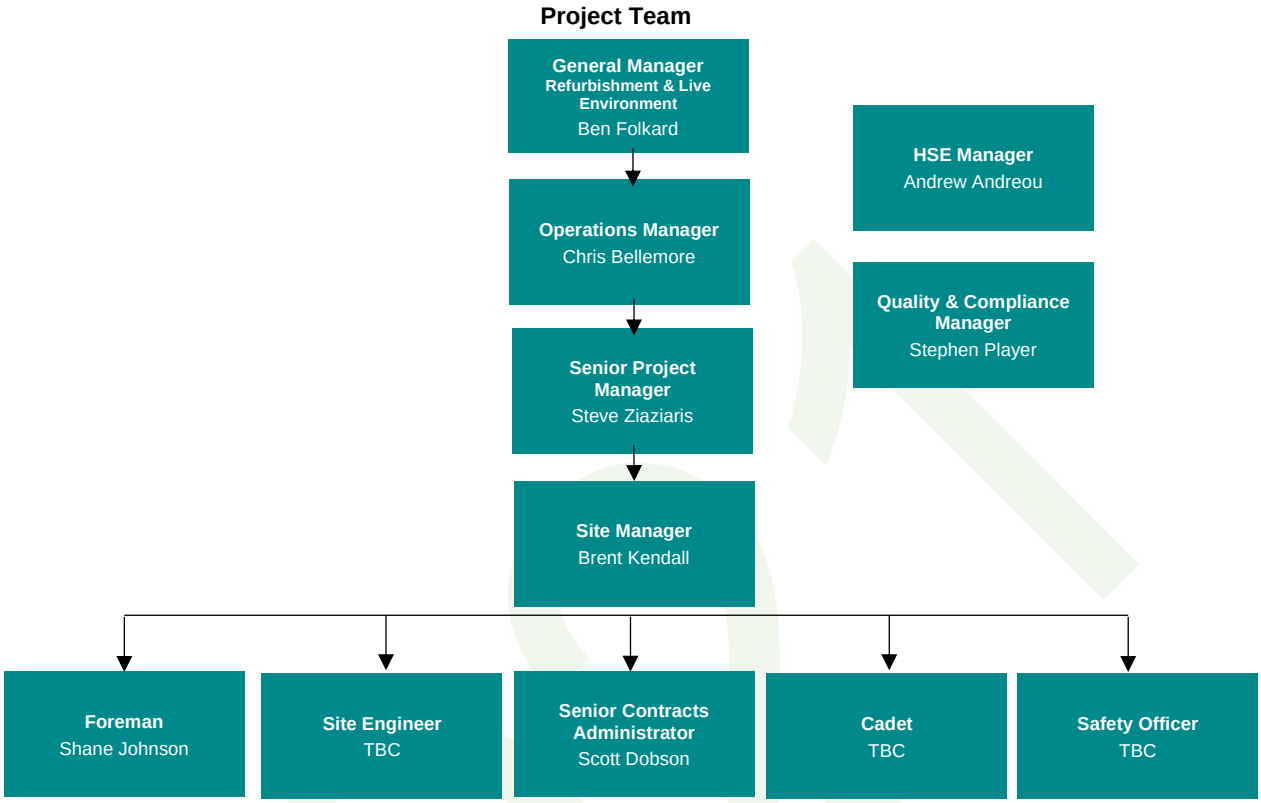
1.3. PURPOSE OF THE PROJECT ENVIRONMENTAL MANAGEMENT PLAN

Taylor Construction Group Pty Ltd has a documented Quality, Health, Safety and Environmental (QSE) Management System. While the management systems are integrated, key documents such as the Project Environmental Management Plan (PEMP), the Project Safety Plan (WHSP) and the Project Management Plan (PMP, overarching plan with Quality provisions) are developed as separate documents to give each area a strong individual focus. The 'hierarchy of system documents' diagram below provides an overview of where the PEMP fits in the management system hierarchy.

This document is a key component of the integrated QSE Management System and sets out the environmental management strategy to be adopted on site by Taylor Construction Group Pty Ltd as the principal contractor for works undertaken on this project. The purpose of this document is to provide guidance on the essential environmental requirements on a project level and reference to other important management system processes and procedures. A Project Environmental Management Plan must be prepared for each project managed by Taylor Construction Group.

The project-specific Environmental Management Plan is to be read in accordance with Taylor Construction Management Manual, Site Management Plan and Site Safety Plan.

1.4. PROJECT ORGANISATIONAL STRUCTURE



2. HIERARCHY OF HSE SYSTEM DOCUMENTS

QSE System documents can be found on SharePoint under the Taylor Management System (TMS), within the 'Quality' and 'HSE' folders.

The Management System structure:

- Corporate:
- QSE manual
- Corporate policies
- Corporate (system) procedures
- Forms and templates
- Registers and matrices
- Objectives and targets
- Organisational charts
- Certificates/ accreditations
- Training material

Hammertech a cloud-based software platform will used to enable teams to manage their processes effectively and maintain uniformly across all projects. This includes the collating and storing of

- Onboarding & Inductions
- Safety Plans / SWMS / Risk assessment
- Permits
- Pre-start & Toolbox talks
- Equipment & maintenance records / schedules
- Personnel training records / competencies / licences
- WHS&E inspections / audits
- Accident and incident
- Attendance (site diaries)

Hammertech can also be used to send out news bulletins and updates to individuals advising of alerts, meetings, industry news and updates to site rules and procedures.

2.1 ENVIROMENTAL POLICY

Taylor Construction Group has an Environmental Policy outlining our commitment to protection of the environment. This policy can be found in Appendix 2 of this document. A copy of the Environmental Policy is to be posted on the walls or notice board at the project site.

3. LEGAL AND OTHER REQUIREMENTS

The processes for identifying and keeping up to date with legal and other requirements are outlined in the **Legal and Other Requirements Procedure SE-P-01**. *(Attach to this plan)*

An **Environmental Legal and Other Requirements Register E-R-01** has been prepared and is periodically updated to ensure that it reflects current legal requirements. This register identifies the key relevant legislation and guidelines and should be attached to this plan in appendix 7.

3.1. ENVIRONMENTAL FACTORS

Factor	Objectives	Requirements
Noise management*		
Noise/ vibration	Protect the amenity of nearby residents/TAFE from noise/ vibration impacts resulting from activities associated with the proposed or existing development by ensuring that noise/ vibration levels meet statutory requirements and acceptable standards.	Identification of sources of noise/ vibration and estimates of project-wide noise. Ensure that noise and vibration levels meet acceptable standards and that an adequate level of service, safety and public amenity is maintained. Propose measures to manage and/ or mitigate impacts. Follow Acoustic Report for State Significant Development Application Powerhouse Museum Discovery Centre (prepared by Northrop and dated 12.02.2021),
Water management*		
Surface water quality	Maintain or improve the quality of surface water to ensure that existing and potential uses, including ecosystem maintenance, are protected.	Details of site drainage, hydrocarbon use, disposal of plant site waste (including sewage), dewatering, and fate of water used/ pumped. Incorporate measures and/ or operating procedures to ensure that storm water run-off from the site reflects patterns, volumes and quality that exist prior to development, as far as reasonably practicable. Drainage lines are to be naturalised as much as possible and should enhance the ecological values and recreational opportunities. Propose measures to manage and/ or mitigate impacts.

Groundwater quality	Maintain or improve the quality of groundwater to ensure that existing and potential uses, including ecosystem maintenance, are protected.	Describe water requirements for any on-site processing. Incorporate measures and/ or operating procedures that will minimise the demand of the development on potable water supplies. Ensure that no contaminated water, including those containing sediments, leaves the site. Propose measures to manage and/ or mitigate impacts.
Air management		
Air	Ensure that potential air pollutants are contained and that activities do not impact on the natural environment.	Identify sources of air pollution. Propose measures to manage and/ or mitigate impacts.
Particulates/ dust	Ensure that particulate/ dust emissions, both individually and cumulatively, meet appropriate criteria and do not cause an environmental or human health problem.	Identification of sources of particulates/ dust and estimates of project-wide emissions. Propose measures to manage and/ or mitigate impacts.
Odour	Ensure that operations do not generate odour that causes environmental nuisance.	Identification of sources of odour and estimates of project-wide emissions. Propose measures to manage and/ or mitigate impacts.
Waste management		
Solid/ liquid waste	Ensure that wastes are contained and isolated from land, ground and surface water surrounds and treatment or collection does not result in long-term impacts on the natural environment.	Identify sources of solid and liquid waste and estimate the proposed amount generated. Propose measures to manage and/ or mitigate impacts.
Contaminated land and water		
Land	Ensure that existing or proposed activities do not discharge to land.	Identify activities that have the potential to discharge to land. Propose measures to manage and/ or mitigate impacts.
Surface water	Ensure that existing or proposed activities do not discharge to surface waters.	Identify activities that have the potential to discharge to surface waters. Propose measures to manage and/ or mitigate impacts.
Groundwater	Ensure that existing or proposed activities do not discharge to groundwater.	Identify activities that have the potential to discharge to groundwater. Propose measures to manage and/ or mitigate impacts Follow Northrop sediment control plan Sediment and Erosion Control Plan Rev - 3
Hazardous materials management		
Scheduled wastes	Ensure scheduled wastes are specially treated for their destruction.	Identify scheduled wastes and describe treatment of their destruction. Propose measures to manage and/ or mitigate impacts.

Resource storage	Ensure that chemicals and other potentially harmful resources used in the manufacturing process are stored and disposed of correctly.	Describe the use and management of chemicals and other potentially harmful resources. Propose measures to manage and/ or mitigate impacts.
Compressed/ liquid gas	Ensure the suitable storage of compressed/ liquid gas.	Describe the use and management of compressed/ liquid gas. Propose measures to manage and/ or mitigate impacts.

3.2. SPECIFIC UNDERTAKING FROM FORMAL ENVIRONMENTAL IMPACT ASSESSMENT

- Mitigation of dust will be managed and controlled with appropriate wheel washing measures (cattle grates, wheel washers, hose down bays) to ensure that road surfaces are always kept clean. This will be supplemented by manually sweeping when needed. Activities with potential to create dust omissions are to be controlled and suitable equipment is utilised to mitigate the release of dust
- Incorporate recommendations of the Acoustic Report for State Significant Development Application Powerhouse Museum Discovery Centre revision 6 prepared by Northrop, dated 20.02.2021
- Complaints - The Main Contractor will be responsible for setting up regular construction and Project Reference Group meetings, liaise with MAAS, Create Infrastructure staff and key stakeholders regularly. Complaints received regarding construction activities (including tree removal and earthworks) are to be documented and addressed via a Complaints Management Procedure to be outlined in the detailed CEMP prepared by the contractor for the project prior to works commencing on-site.
- Establishment of tree protection zones around trees to be retained in accordance with the guidance provided in Australian Standard AS4970-2009 Protection of Trees on Development Sites.
- The tree protection measures provided in the Arboricultural Impact Assessment Report prepared by MacKay Tree Management will be implemented.

3.3. DEVELOPMENT CONSENT CONDITIONS

- Consent working hours are:

Monday to Friday	7:00am	5:00pm
Saturdays	8:00am	1:00pm
Sundays and public holidays	NO WORK	

- Rock breaking, rock hammering, sheet piling, piledriving and similar activities may only be carried out between the following hours: (a) 9.00 am to 12.00 pm, Monday to Friday: (b) 2.00 pm to 5.00 pm, Monday to Friday; and (c) 9.00 am to 12.00 pm, Saturday**. (C9)**
- Provide (b) Construction Traffic and Pedestrian Management Sub-Plan **(see Condition B28);** (c) Construction Noise and Vibration Management Sub-Plan **(see Condition B29);** (d) Construction Soil and Water Management Sub-Plan **(B30)**
- Regular community liaison with sensitive receivers around the site**(B29)**
- Include a complaints management system that would be implemented for the duration of the construction**(B29)**
- All erosion and sediment control measures are to be effectively implemented and maintained at or above design capacity for the duration of the construction works and until such time as all ground disturbed by the works has been stabilised and rehabilitated so that it no longer acts as a source of sediment**(C19)**
- Adequate measures must be taken to prevent dust from affecting the neighbouring amenity during construction**. (C22)**
- Any noise generated during the construction of the development must not be offensive noise within the meaning of the Protection of the Environment Operations Act 1997 or exceed noise limits for the site**. (C17)**

- All vehicles carrying spoil or rubble to or from the site covered to prevent the dust or other materials escaping **(C22)**
- **(C27).** Any hazardous materials, including asbestos, must be identified before demolition work commences and be removed in a safe manner. **(C28).** All materials requiring removal from the site must be classified in accordance with Waste Classification Guidelines (NSW EPA, 2014). The Applicant must ensure that demolition works are undertaken so that cross-contamination of the site does not occur. **(C29).** Removal of asbestos and other hazardous building materials must only be undertaken by a suitably licensed contractor and an asbestos clearance certificate must be submitted before waste classification, disposal or site validation is undertaken
- **(A18)**. Independent Environmental Audits, prepared in accordance with the Independent Audit Post Approval Requirements, must be submitted to the Planning Secretary: (a) within 12 weeks of the commencement of construction (b) at intervals no greater than 26 weeks from the initial audit during the construction phase.

3.4. ENVIRONMENT PROTECTION LICENSE OR OTHER APPROVALS

References:

- NSW Environmental Management System Guidelines 2015
- Legal and Other Requirements Procedure SE-P-01
- Environmental Legal and Other Requirements Register E-R-01

4. ENVIRONMENTAL RISK IDENTIFICATION AND ASSESSMENT

Standard ISO 14001 requires that environmental aspects relating to the organisation's activities, products and services are identified and those aspects that can have a significant impact on the environment, determined. At Taylor Construction Group, the environmental aspects relating to general construction activities have been identified through a risk assessment workshop attended by key project and site managers and an environmental consultant. The aspects, impacts, risk assessment outcomes and generic controls are documented in the **HSE Risk Register HSE-R-01**. Detailed requirements for risk assessments (environmental and OHS) are described in **Risk Assessment Procedure SE-OP-03.**

4.1. ENVIRONMENTAL RISK ASSESSMENT

The methodology for risk assessments is based on the requirements described AS/NZS 4360 (Risk Assessment) and HB203 (Environmental Risk Assessment).

Taylor Construction procedure requires an initial Project Risk Assessment to be undertaken at the commencement of each project. The Risk Assessment is to be conducted in the form of a workshop and is to include the project/ site manager, HSE manager, key members of the project team and, to the extent required, key subcontractors, and is to be recorded on form **HSE-R-01 HSE Risk Register**.

The HSE Risk Register is to be developed to address both legal and other requirements covered in this plan and is to be referenced to implement systems and work practices that will eliminate or minimize the likelihood of injury, illness or incident occurring.

When developing the Project HSE Risk Register, members of the workshop will take into consideration available information which is relevant to the works and is contained in any published copies of the HSE Acts; WHS regulation; Australian/ National Standards; codes of practice; available internal and external industry bulletins/ alerts and industry reports to identify and document any known or foreseeable hazards associated with that tasks.

The completed Environmental Risk Assessment can be found in Appendix 13 of the project HSE Plan (**WHS-PLAN-02**).

References:

- SE-P-03 Risk Assessment Procedure

5. OBJECTIVES AND TARGETS

Objectives and targets are set at a corporate level. They are monitored and measured to ensure that Taylor Construction Group continually improves our environmental performance. To ensure that we meet our corporate objectives and targets, key performance indicators (KPIs) are set at a project level and reported to management monthly.

Objectives	Targets
Effective site environmental controls.	Achieve alignment with Taylors and Client expectations in relation to best practice control measures. Fulfil environmental obligations.
Increase amount of waste being recycled, reduce waste cost.	Eighty-five per cent (85%) of waste to be recycled.
Environmental performance.	Zero major environmental incidents and no breaches. Zero infringement notices. All environmental spills to be reported to Taylor Construction within 2 hours of occurrence. Environmental inspection competed weekly and documented in **SE-F-02 HSE Inspection Checklist** (more often if required).
Reduce the amount of environmental impact our operations have on the environment.	Environmental issues identified and controlled prior to causing negative impacts on the project or on the environment.
Effective implementation of the environmental system.	Eighty per cent (80%) or better internal audit results. Full compliance with planning approval requirements.
Community issues carefully handled.	Zero valid complaints. All complaints reported to Taylor's representative.

6. ROLES AND RESPONSIBILITIES

All persons working for and on behalf of Taylor Construction Group have responsibilities in relation to ensuring that environmental issues are appropriately managed. Generic WHS and environmental responsibilities are outlined in the **Roles, Responsibilities and Authorities Procedure QSE-P-06.**

Subcontractors. The subcontractor shall be required to comply with all applicable work health, safety and environmental legislation, including any additional Taylor's requirements, whilst engaged on a Taylor-managed project. The subcontractor shall be responsible to communicate any relevant environmental information to their personnel (workers) who are engaged in carrying out the work or providing material to the job site, including any secondary subcontractors or sole traders engaged by them and approved by Taylor Construction.

Subcontractor's minimal environmental requirements:

- Has the subcontractor identified in the SWMS environmental hazards and controls in relation to the work task (where required), i.e. refuelling plant and equipment on site, nuisance dust controls, nuisance noise, waste management (off-cuts), rubbish, concrete wash-out?
- Have hazardous substances or dangerous goods to be used on site by the subcontractor been identified? **Note:** the subcontractor will need to provide copies of relevant Safety Data Sheets (SDS) for all materials and/ or hazardous substances or dangerous goods to be used on site and note reference to training of employees in the SDS prior to first use and controls listed in the SWMS.

Taylor Construction personnel. For this project, the key roles and specific responsibilities of our managers, supervisors, and site personnel regarding environmental management on site are outlined below. Project-related management and staff are required to sign off that they have read and understood their responsibilities

6.1. DIRECTORS

Directors are responsible for:

- Defining Taylor Construction workplace WHS&E policies and setting their objectives.
- Acquire and keep up to date knowledge of environmental matters relevant to the organisation.
- Gain an understanding of the nature of the operation of the business or undertaking and general environmental issues associated with those operations.
- Providing leadership that promotes and maintains Taylor's determination to continually improve its performance in workplace health safety and the environment.
- Demonstrating genuine interest in workplace health and safety and the environment; supporting all project teams to encourage incident prevention.
- Ensure that there is available for use and used by those engaged in the business or undertaking, appropriate resources and processes to eliminate or minimise risks to the environment and non-compliance with licences during the conduct of the business or undertaking.
- Ensure that people engaged in the business or undertaking have appropriate processes for receiving and considering information regarding environmental incidents, hazards, and risks, and respond in a timely way to that information.
- Ensure that those engaged in the business or undertaking have in place and implement processes for complying with any duty or obligation of the organisation under the Act, including complying with licence conditions and notices served.

2021

6.2. CHIEF EXECUTIVE OFFICE

The Chief Executive Officer's responsibilities include.

- Inform the board of all events within, or which reasonably should be within, his/her knowledge or awareness, which may or do have a material impact on the organisation's activities or well-being.
- Monitor and interpret the external environment in order to continually position the organisation in its markets to best advantage.
- Maintain awareness of political, governmental, business and industry components of the external environment, on a local, national, and international level.
- Reviewing environmental objectives and targets to ensure compliance with our environmental commitments and achieve continuous improvement in our environmental performance.
- Work proactively with our clients, regulators, and other community stakeholders to enable environmental issues to be addressed at an early stage of development.
- Monitor that the activities which are undertaken by employees and subcontractors are done so in a manner that is consistent with the principles of ecologically sustainable development.
- Oversee the implementation of company procedures and policies that will prevent pollution and reduce adverse environmental impacts of our activities on the natural, built, and cultural environment.
- Set realistic environmental objectives and targets at all relevant levels within the company and continually monitor performance.
- Promote the efficient use of natural resources and reduce waste through the use of the waste hierarchy –avoid, reduce, re-use, recycle and finally dispose.
- Identifying alternative, financially viable and sustainable courses of action to minimise environmental impacts.

Name: George Bardas

Signed: **Date:**

6.3. OPERATIONS MANAGER

The Operations Manager is responsible for

- Defining Taylor Construction WHS&E policies and setting their objectives.
- Ensure project teams compliance with any licence, permit, notice or order from the EPA. For example, failure to have a monitoring program at a licensed site is a breach of your licence.
- Own and understand the key project environmental issues involved.
- Gaining an understanding of the operations of the business and the hazards and risks involved.
- Promote and oversee procurement standards for goods and services that help minimise environmental hazards.
- Ensuring information regarding incidents, hazards and risks is received responded to in a timely way.
- Ensuring the PCBU has, and implements, processes for complying with any legal duty or obligation.
- Being fully briefed of the safety status of all current Taylor Construction projects.
- Support and consult employees and subcontractors on environmental performance.
- Setting targets and allocating priorities for workplace health and safety matters for all Taylor Construction staff.
- Leading by example in all matters concerning workplace health and safety.
- Conduct or participate in periotic environmental compliance inspections and or audits.
- Were required, engaging with the local community to understand their environmental concerns and impacts linked to the organisation's operations.
- Where events or non-compliance occurs, all reasonable and appropriate precautions are reviewed and as necessary, ensure new controls are designed and implemented.
- Examine whether risk management and other environmental compliance / systems requirements have been effectively reported to the general manager.
- Participate in periodic compliance inspections / audits to review the effectiveness of management structures and risk controls for environmental performance are appropriate and remain effective.

Name: Chris Bellemore

Signed: **Date:**

6.4. GENERAL MANAGER

The General Manager is responsible for:

- Demonstrating genuine interest in workplace health, safety, and environment; supporting all project and site managers to encourage incident prevention and compliance.
- Assessing and allocating appropriate resources and equipment within the company for the effective implementation of the Workplace Health, Safety & Environmental Management System and the management of WHS&E related hazard/ risks relevant to the construction projects.
- Being fully briefed of the WHS&E performance and compliance of all current Taylor Construction projects.
- Assisting in the development and implementation of continuous improvement processes for workplace environmental management

Specific roles:

- Ensure the implementation and overall effectiveness of the Taylor environmental, health and safety programs.
- Provide visible commitment to a safe and healthy work environment by ensuring regular reviews are undertaken. Participate in WHS&E meetings and consultation regarding workplace health safety & environmental matters.
- Consider workplace health safety and environment matters with other senior members of the organisation as part of normal business practice and incorporate WHS&E into meeting agendas.
- Allow appropriate budget allocations for WHS&E management and improvement.
- Encourage and promote safety within the company by participating and openly consulting with employees in respect to their health and safety.
- Follow up with the WHS&E manager and site teams on any compliance breaches or external authority notices issued to projects and or subcontractors.
- Reports on critical incidents which then embed ‘lessons learnt’ and system improvement will demonstrate the board’s commitment to environmental responsibility.
- Participate in periodic compliance inspections / audits to review the effectiveness of management structures and risk controls for environmental performance are appropriate and remain effective.

Name: Ben Folkard

Signed: **Date:**

6.5. PROJECT MANAGER

The Project Manager is responsible for:

- Ensure that environmental, health and safety obligations are carried out by everyone working in their operations.
- Communicate to their employees, workers, and visitors that health and safety and concern for the environment are top priorities on Taylor Projects and that everyone shares in the obligation to perform work in a safe, healthful, environmentally protective manner.
- Analyse work procedures to identify hazards; ensure measures are implemented to eliminate or control those hazards.
- Ensure safe operating procedures are in place and are observed.
- Curtail or stop work being carried out under their authority if they reasonably believe that continuation of the work poses an imminent danger to health or safety. Upon directing that work be curtailed or stopped, if the situation cannot be corrected immediately, the Manager must notify the WHS&E Manager
- Ensure that self-assessment inspections are performed regularly, that records are retained and that deficiencies identified in any inspection (self-assessment or HSE inspections) are addressed.
- Consulting with Taylor's construction manager and the HSE manager to ensure enough resources are allocated to the project to comply with legislative and Taylor's WHS&E requirements.
- Ensuring compliance with safety legislation, regulations, licensing conditions and authorities' requirements relevant to all construction work.
- Ensure adequate Taylor's site supervision is maintained throughout all hours of operation and those assigned with supervisory roles are competent and authorised to do so (e.g., PM, SM, or foreman).
- Ensure incidents are investigated and appropriate action taken as required by Taylor's site Safety Plan requirements in consultation with the WHS&E manager.
- Providing visible commitment to a safe and healthy work environment by ensuring regular reviews are undertaken, and by participating in health and safety meetings and consultation regarding WHS&E matters
- Ensure safety Notices issued and/ or visits made to the project by industrial representatives and/ or SafeWork NSW are reported to both managing director and WHS&E manager.
- Selecting appropriate subcontractors, giving due regard to their ability to comply with legislative and Taylor's WHS&E requirements.
- The project manager is required to participate in at least one formal site HSE inspection per month on a project under their control.
- Report back to Taylor's senior managers on project HSE incidents, any external authority visits and/ or Notices issued by external authorities.
- Oversee the development and implementation of a site evacuation and emergency procedures and overseeing at least one spontaneous evacuation drill every six months and assessing the results of that drill.
- Supporting the site manager in the management of employee, subcontractor, and supplier's performance in complying with Taylor's Environmental Plan and the site-specific rules for the project.
- Be familiar with the emergency plan, the emergency assembly area and emergency coordinators for their project and participate in emergency drills.

Name: Steve Ziaziaris

Signed: **Date**

6.6. HSE MANAGER

The HSE Manager is responsible for:

- Oversees development and implementation of Taylor policies and procedures related to environmental health and safety and that provide additional support for environmental.
- Develops and maintains electronic systems and technology solutions related to environmental health and safety.
- Disseminates information and provides guidance regarding compliance with federal, state, and local regulations and Taylor policies and procedures.
- Provides guidance, direction, and oversight to help ensure adherence to federal, state, and local regulations and Taylor policies and procedures instituted to protect the health and safety of employees, workers, visitors, and the environment.
- Overseeing the implementation of Taylor's Health, Safety and Environmental Management System throughout all Taylor Construction activities.
- Ensure that a systematic internal reporting system exists to guarantee that information about environmental hazards and unsafe practices is promptly conveyed to senior management and acted on
- Maintaining good relationship with government regulatory authorities.
- Setting targets and allocating priorities within the framework of the QSE System.
- Safeguarding compliance and maintenance of the company's third-party accreditations.
- Planning and delivering training in environmental management and/ or arranging for the appropriate internal or external trainers/ facilitators to conduct the training.
- Researching, developing, and implementing new procedures and forms, and updating the manual as required.
- Reviewing, analysing, and reporting on safety and environment project performance to Taylor's managing director, sector managers and any party as arranged by the managing director.
- Ensuring compliance with environmental legislation, regulations, licensing conditions and authorities' requirements.
- Ensuring Taylor's workplace health safety and environment performance is reviewed on a regular basis (i.e., arranging for internal and external audits).
- Ensure that periodic audits of the effectiveness of management structures and risk controls for environmental performance are conducted.
- Reviewing internal and external (independent) audit reports and, in consultation with the directors and the project manager, develop appropriate Action Plans if necessary.
- Identifying environmental hazards, assessing risks and in consultation with project teams select risk control measures for site-specific situations.
- When required, acting as the lead investigator in workplace incidents/ accidents, liaise with external authorities in managing them and report back to managing director and/ or sector managers on outcomes of investigations.
- Ensuring WHS&E policies and procedures are implemented on all projects and that a specific site Environmental Plan is prepared and implemented for all projects.

Name: Andrew Andreou

Signed: **Date:**

6.7. PROJECT SAFETY ADVISOR

The Project Safety Advisor is responsible for:

- Providing visible commitment to a safe and healthy work environment by ensuring regular reviews are undertaken, and by participating in safety and health meetings and consultation regarding WHS&E matters.
- Ensure workplace hazards and environmental, health and safety-related policies and procedures are communicated to employees, workers, and visitors.
- Assisting the WHS&E manager and project teams in implementing Taylor's health, safety and environmental procedures, policies, and project systems in line with best practice and the relevant statutory legislation.
- Reporting any serious environmental incident or near miss and unexpected finds immediately to the WHS&E manager.
- Safeguarding compliance and maintenance of the company's third-party accreditations.
- Assisting project teams and subcontractors in meeting their workplace health safety and environmental obligations.
- Ensuring compliance to this project Environmental plan.
- Monitoring subcontractor's compliance with the site environmental Plan, and subcontractor compliance to their Safe Work Method Statements by conducting regular task observation/ audits.
- Undertaking regular workplace inspections to identify hazards and unsafe/ unhealthy workplace conditions and practices.
- Be familiar with the emergency plan, the emergency assembly area and emergency coordinators for the project and participate in emergency drills.
- Assisting the site manager/ area foreman in the supervision of subcontractors.
- Ensuring WHS&E items identified by safety inspections and or audits are rectified within specified timelines in consultation with the Site manager, and subcontractors.
- Reporting incidents and/ or identified environmental hazards and appropriate risk control measures to line managers.
- Ensuring all workplace health and safety and environment documents are maintained and filed in accordance with Taylor Construction filing requirements.
- Coordinating or conducting site toolbox talks and ensure subcontractors regularly consult with their employees on matters relating to environmental issues.
- Liaising with the project/ site manager to implement controls on hazards identified.
- Completing Safe Work Method Statement checklists for the site (task observation);
- Collating completed contractor required forms, authority to work permits and checklists.
- Acting site safety representative for the site (unless another person has been elected to perform this role as per the consultation statement S-F-04 WHS Consultation Statement).
- Other HSE and/ or CW's issues or activities that may require their attention.

If no safety advisor is allocated to the project, the roles and responsibilities mentioned above are to be allocated to alternative Taylor Construction persons engaged on the project who are competent or have been suitably trained to fulfil these duties.

Name:

Signed: **Date:**

6.8. SITE MANAGERS

The Site Manager is responsible for:

- Providing visible commitment to a safe and healthy work environment by ensuring regular reviews are undertaken, and by participating in safety and health meetings and consultation regarding WHS&E matters.
- Facilitating the process to ensure the project team and the WHS&E manager are consulted and participate in the development of the project specific WHS&E Risk Assessment. This is to be done prior to such activities commencing.
- Ensure that prior to the works commencing a formal assessment of the emergency control equipment requirements has been completed and that these remain effective throughout the duration of the project. (e.g., first aid, nurse call, emergency warning alarms, fire extinguishers, spill kits, lighting, and signage)
- Ensure workplace hazards and environmental, health and safety-related policies and procedures are communicated to employees, workers, and visitors.
- Ensure individuals working in their operations have the proper safety equipment and personal protective equipment to perform their work safely.
- Leading or participating in formal site safety inspections weekly and record results using SE-F-02 HSE Inspection Checklist. Daily informal inspections should be noted in site diary.
- **Unexpected finds –** ensure that all unexpected finds are treated, reported, and managed in accordance with Taylor's unexpected finds procedure.
- **Environmental Controls –** ensure all environmental controls (sediment and erosion, noise, hours of operation, etc) as mentioned by permits or building approvals are adhered to and workers are advised of these requirements during the site induction process.
- **Emergency Response and Training Plan** - Contribute to the development of the ERP, ensure that all employees, workers, and others know about the plan, and communicate the importance of participating in drills and otherwise following procedures set out in the plan.
- **Groundwater Protectio**n **Program - Report** any hazardous materials or other pollutants spilled to or discovered in soil or groundwater to EH&S for appropriate emergency or non-emergency clean up.
- **Hazardous Material and Waste Management -** Inform employees and workers that hazardous materials and hazardous waste, except as expressly authorized by regulations, licenses or permits, may not be disposed of via the sewer system, or other unsafe or environmentally damaging routes; and to stress the importance of proper hazardous material/waste management.
- **Training** - Ensure that everyone working in their operations is appropriately trained to identify and mitigate potential hazards. Ensure that work requiring training is performed only by persons who have received the proper training.
- **Hazardous Spill Response -** Upon request, provide assistance in hazardous material spill clean-up, preparing written reports about reportable releases and notifying appropriate persons about reportable spills.
- **Noise Monitoring and Hearing Conservation -** Conduct noise surveys to determine exposure levels.
- **Environmental Procedures / Permits –** ensure activities requiring internal and or external permit or approvals do not commence until permit or approval has been formally granted the user has the responsibility for providing relevant information to obtain permits, meeting permit conditions, and any responsibility. Taylor site management shares in the responsibility to advise those performing the works of Taylors procedure and permit requirements.
- Ensuring WHS&E items identified by safety inspections and or audits are rectified within specified timelines in consultation with the project manager, Project safety advisor and subcontractors.
- Ensuring that all plant and equipment used on Taylor Construction sites are environmentally safe, correctly maintained and that the operator is appropriately licensed or qualified to operate and or use that equipment.
- Utilizing experience and judgement to shut down and/ or evacuate any part of the site if a major health and safety and environmental risk occurs.
- Reviewing, coordinating, and implementing emergency evacuation procedures and participating in drills at specified intervals (quarterly).

Name: Brent Kendall **Signed:** **Date:**

6.9. SITE FOREMAN

The Site Foreman is responsible for:

- Implementing, through consultation with the project manager, the Site environmental plan and procedures in accordance with WHS&E legislation, regulations, codes of practice, Australian Standards and/ or other statutory requirements.
- Ensuring no work is undertaken on site until the relevant SWMS has been reviewed and signed off in accordance with form **SE-F-14 Safe Work Method Statement Review Form**.
- Monitoring subcontractor's compliance with the site Environmental Plan and subcontractor's compliance to their Safe Work Method Statements by conducting regular task observation /audits.
- Ensuring all workers and, if required, visitors, are site-inducted and aware of any environmental compliance obligations.
- Assisting with implementing and undertaking formal and proactive consultation measures between the project team and subcontractors.
- Ensuring items identified by Environmental or system audits findings are rectified and closed out within specified timelines in consultation with the project manager, site manager, site safety advisor and subcontractors.
- Consulting with all persons on Environmental issues, including changes to the workplace layouts and access egress points, and encourage the involvement of all personnel in achieving a safe and healthy site.
- First response in managing site-specific workplace environmental issues in the first instance, and discussing these with the project manager, site manager and/ or site safety advisor as required.
- Assisting the site manager with developing, planning, implementing, and reviewing site-specific emergency and evacuation procedures.
- Identifying any environmental hazards and assessing any risks on site and implementing risk control measures.
- Leading or participating in formal site safety inspections weekly using form SE-F-02 HSE Inspection Checklist. Note: informal inspections should be noted in site diary.
- In consultation with the project manager and the senior site manager, and utilizing experience and judgement, shut down and/ or evacuate any part of the site if a major environmental risk or situation occurs.
- When requested by the Site manager participate in any environmental incident and assist with the Investigating, recording, and reporting,
- Be familiar with the emergency plan, the emergency assembly area and emergency coordinators for the project and participate in emergency drills.
- Monitoring the use of personal protective equipment (PPE) by site personnel.
- Were requested by the site manager, assist with monitoring of environmental issues (e.g., dust, noise, air quality)
- Assist the site manager with reviewing, coordinating, and implementing emergency evacuation procedures and participating in drills at specified intervals, minimum every six months.
- Ensuring that all plant and equipment used on Taylor Construction sites are environmentally safe to use, appropriately maintained and that the operator is correctly licensed or qualified for operating that equipment.

Name: Shane Johnson

Signed: **Date:**

6.10. CONTRACT ADMINISTRATOR/ SITE ENGINEER

The Contract Administrator and Site Engineer are responsible for:

- Support the project and site management in the management of employee, subcontractor, and suppliers' performance in complying with Taylor Construction WHS&E and the site-specific rules for the project.
- Assist the project/ site manager to ensure the site environmental plans and associated documentation, including standard forms, procedures, and templates, remain current and up to date.
- Where required, assist the project and site manager with site inductions.
- Include in subcontract agreement the requirement for subcontractors to carry out their works in accordance with the company's or subcontractor's approved QSE Plans.
- Forward to subcontractors a copy of HSE subcontractor requirement Contractor's HSE Requirements QSE-F-15.23 (letter template), ensuring this is completed and returned by subcontractor prior to commencing.
- At the tender interview stage, discuss with the subcontractors their obligation for managing HSE requirements by issuing to them relevant sections of the tender interview form and ensuring this is completed by subcontractor prior to commencing on site.
- Request and obtain from the subcontractor prior to their arrival to site copies of their Workers Compensation and Public Liability Certificates of Currency, environmental and or council licences and or required permits ensuring they are current and that copies are available on site.
- Ensure that all completed copies of form Contractor's HSE Requirements QSE-F-15.23 (letter template) are returned and filed in the project files.
- Ensure that the latest copies of Project Plans and WHS&E Risk Assessments are uploaded onto Project Centre, or preferred data control system used, and engaged subcontractors have access to these.
- Ensure all external complaints/ incidents are recorded on SE-F-21 Incident Report Form and filed in the External Complaints Register or Hammertech
- Assist project and site management in the general administration of WHS&E where requested.
- Be familiar with the emergency plan, the emergency assembly area and emergency coordinators for the project and participate in emergency drills.

Name: Scott Dobson

Signed: **Date:**

Name: TBC

Signed: **Date:**

6.11. BUILDING CADET

The Building Cadet's responsibilities are:

- Provide general assistance to management on an assigned project.
- Provide administrative assistance in managing site safety, quality assurance and environmental management systems.
- Maintain project registers and records up to date.
- Where requested provide assistance with site contract administration and tendering.
- Manage project document control and provide design management assistance.
- Assist the project/ site manager to ensure the site QSE plans and associated documentation, including standard forms, procedures, and templates, remain current and up to date.
- Fulfil responsibilities as outlined in the 'Taylor Cadet Program Guidelines', including undertaking an approved course of study at an Australian University.
- Assist project and site management in the general administration of HSE where requested.
- Monitor the use of personal protective equipment (PPE) by site personnel.
- Complete site diaries as per project administration requirements.

Name: TBC

Signed: **Date:**

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6.12. FIRST AID OFFICERS

It is the job of the trained first aider to provide initial treatment to injured or ill employees, which is consistent with first aider's level of training and competency. Where the treatment required is beyond a first aider's level of competency, they should recommend that the employee seek immediate medical assistance.

The nominated site first aid officers shall possess the required level of competency (Senior First Aid Certificate or Occupational First Aid Certificate) and they shall be responsible for:

I. Providing first aid assistance to persons ill or injured on site.

II. Recording all such assistance provided.

III. Liaising with the site manager and/ or site foreman to achieve first aid obligations.

First aid officer records:

The nominated first aider shall be relied upon to exercise a common sense-approach in determining what type of injuries require a first aid report to be completed. First aid/ incident reports shall only be completed for injuries or illnesses for which first aid assistance was sorted **immediately** following an event. Employees, including subcontractor is, seeking to report an injury or incident for which first aid assistance was not initially sort **shall not** be provided with a copy of the report unless this has been authorised by the site/ project manager and/ or Taylor Construction HSE manager.

Some typical injuries that may require reporting are:

- All injuries requiring off-site medical treatment.
- Impact injuries.
- Head injuries.
- Musculoskeletal injuries.
- Open wounds (cuts);
- Eye injuries.

The first aid officers shall also be responsible for the regular maintenance and replenishment of the first aid kits and equipment. At all times during normal operations there shall be a minimum of 1 trained first aider on site for every 25 workers

Name: Brent Kendall	**Signed: ……**	**Date: ……..**
Name: Steve Ziaziaris	**Signed: ……**	**Date: ……..**
Name: Scott Dobson	**Signed: ……**	**Date: ……..**

6.13. PCBU AND WORKERS

PCBU and workers are responsible for:

- Attending Taylor Construction site-specific induction prior to commencing work on site.
- Taking reasonable care for their individual health and safety and that of others on site, including members of the public.
- Familiarising themselves and adhering to Taylor Construction corporate policies.
- Performing only those works in which they possess the required competencies for or have been suitably trained to perform.
- Taking corrective actions to eliminate hazards within the workplace and /or reporting those hazards they cannot correct.
- Reporting all injuries to a first aid officer or supervisor.
- Cooperating with Taylor Construction management in all requirements imposed in the interest of health, safety the environment and wellbeing.
- Never intentionally or recklessly interfering with, misusing, or removing any items and/ or equipment provided in the interest of health and safety.
- Complying with all site safety instructions and abiding by the procedures and work practices identified in the Workplace Heath Safety Project Plans and/ or as directed or informed by the site manager/ foreman.
- Complying with all relevant workplace health and safety legislation, standards, and codes of practice.
- Reporting promptly to a site manager/ foreman any unsafe conditions, practices or defects discovered in any control measures, including personal protective equipment.
- Maintaining safe work practices when working with, or near, hazardous substances, so that their own health and safety, and the health and safety of those around them, is maintained.
- Using personal protective equipment (PPE) as required. The equipment should be kept clean and maintained in an appropriate manner.
- Practicing a high-standard personal hygiene in and around all amenity areas such as lunch, change and toilet facilities by washing thoroughly and removing all protective clothing before eating, drinking, and smoking.
- Do not perform any activity or act that endangers or impacts on the environment.

References:

- Roles, Responsibilities and Authorities Procedure QSE-P-06

7. INDUCTION

Taylor Construction employees, including those workers engaged by or working on behalf of the subcontractors, are required to be site-inducted prior to commencing work on the site. General environmental awareness and specific environmental requirements of this PEMP must be incorporated into the site-specific induction as required.

As a minimum, inductions must include the following environmental information:

- Community issues.
- Hours of operation.
- Noise and vibration.
- Dust management.
- Traffic access.
- Washing requirements for construction plant and equipment.
- Storage and handling of fuels, oils, and other chemicals.
- Waste management: recycling, disposal, litter.
- Soil and water issues: controls, tracking of mud off-site.

Where there are significant environmental issues identified for the project, these must be incorporated into the site-specific induction. These may include but shall not be limited to (where required):

- Environmentally sensitive areas of the site (specify details in this section);
- Contaminated or Acid Sulphate soils.
- Endangered flora and fauna.
- Environmental controls and management.
- Noise emissions.
- Plant emissions.
- Archaeology and heritage management.

References:

- SE-F-11 Site Induction Form and Mandatory Safety Requirements
- SE-F-11a Induction Register

8. TRAINING AND COMPETENCY

All persons undertaking work on the project (employees and subcontractors) must be trained and competent to carry out their work. This includes undertaking tasks in an environmentally sound manner.

Subcontractors shall be responsible to ensure that Taylor Construction Environmental Risk Management, as prescribed in chapter 11.3 of this plan, are adopted and controls, as contained in Taylor's **HSE-R-01 HSE Risk Register,** are implemented when developing their systems of work.

The subcontractor shall be responsible to consult and train workers under their management in agreed environmental system. Evidence of appropriate training shall be made available by the subcontractor to Taylor Construction upon request by a Taylor nominated representative.

The project/ site management, along with relevant members of the project team, must be made aware of the requirements of the Taylor Environmental Management System and shall be required to attend Environmental Awareness and Due Diligence training sessions when organised by the company.

References:

- QSE-P-19 Training, Competency and Awareness Procedure
- WHS-PLAN-02 Project Workplace Health and Safety Plan (PWHSP)

9. COMMUNICATION

The requirements for internal and external communication are outlined in the QSE Management System Manual. The following provides essential information in relation to environmental communication on projects.

9.1. INTERNAL COMMUNICATIONS

Essential information relating to project environmental management will be communicated through toolbox talks and inductions.

Environmental alerts will be periodically prepared and sent to sites for posting on notice boards.

Key changes to environmental legislation will be sent by email to all project managers and site managers

9.2. EXTERNAL COMMUNICATIONS - COMMUNITY

Community complaints must be reported as environmental incidents and all correspondence relating to the complaint must be retained and filed on site, including information on how the complaint was resolved.

9.3. REGULATOR SITE VISITS AND WRITTEN COMMUNICATIONS

If an authorised officer *(*Council or DECCW representative*)* visits your site, you should contact the HSE manager or construction manager for assistance and advice. While you can request that a higher level of management assists you, you cannot refuse to answer questions. An authorised officer must show their identification on request (ensure you ask for it) and has the right to ask any person on site questions relating to environmental issues. When being enquired, always be polite, discuss only the facts and do not elaborate or provide opinions.

Any Penalty Infringement Notices or official warnings from regulators are to be treated as 'incidents' and reported in the Incident Report Form, investigated and corrective actions assigned and completed to address the root cause of the infringement.

Any communication from a regulator must be notified to the HSE manager. Records of all communications must be retained and appropriately filed.

10. ENVIRONMENTAL RISKS

10.1. STANDARD OPERATING PROCEDURES

Several standard operating procedures have been developed as part of the HSE Management System to provide detailed information on the management of site issues in relation to environmental and safety risks. The following procedures have been developed to date and are available on SharePoint:

- SE-OP-01 Hazardous Substances and Dangerous Goods Procedure
- E-OP-01 Erosion and Sedimentation Controls
- E-OP-02 Waste and Resource Management
- QSE-OP-02 Asbestos Management Procedure
- SE-OP-04 Noise Management (OHS and Environmental)

10.2. SAFE WORK METHOD STATEMENTS (SWMS)

While Safe Work Method Statements are primarily used in WHS to manage high-risk activities, any relevant or foreseen environmental risk must also be considered in the preparation of the SWMS.

Taylor's site managers or their nominees are responsible for ensuring that subcontractors include environmental issues in their task-specific SWMS by using **SE-F-14**. If environmental issues are not appropriately addressed, the subcontractor should be advised of the requirements. It is recommended that subcontractors are assisted with identifying environmental issues, particularly during the early implementation of Taylor's Environmental Management System and PEMP.

References:

- SE-F-03 Taylor Construction Group Safe Work Method Statement
- SE-F-14 Safe Work Method Statement Review Form

- SE-F-14.1 Contractor's HSE Plan Review

10.3. ENVIRONMENTAL RISK MANAGEMENT AND CONTROL

This section provides an overview of environmental issues typically encountered on site based on the generic issues identified in the master Environmental Risk Assessment. When preparing this document, the project manager should add any additional environmental issues that may have been identified through the environmental impact assessment, development consent/ approval, etc.

10.3.1. PROJECT DESIGN – ENVIRONMENTAL CONSIDERATIONS

During the planning phase of the project, consideration should be given to the following:

- How will design minimise energy use and allow for and use the natural environment?
- How will materials, products and systems be selected or designed to minimise adverse impacts and/ or benefit the environment?

These questions should be considered prior to commencement of the project and may require the input from the client.

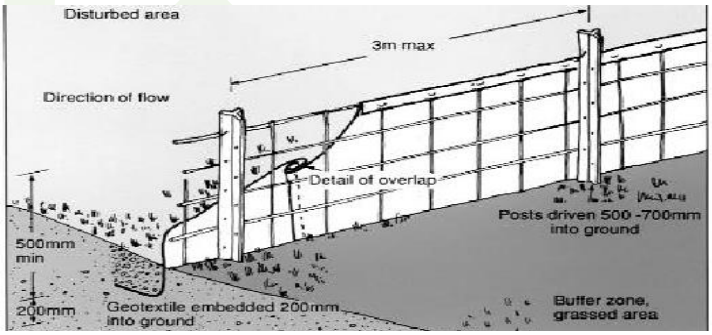
10.3.2. SOIL AND WATER MANAGEMENT/ SEDIMENTATION AND EROSION CONTROL

Taylor Construction Group and subcontractors shall plan and carry out works to avoid erosion and prevent sediment leaving the site to the surrounding land, watercourses, water bodies, wetlands and storm water drainage systems. This includes the installation of erosion and sedimentation controls prior to commencing clearing works. Where possible, works should be staged to reduce the areas cleared at the same time to minimize soil disturbance. Where required, prepare erosion and sediment control plans (ESCP), install the controls in accordance with the plan and maintain them regularly. For more detailed information, refer to the procedure and external guidelines listed below.

The following controls will be implemented within Taylor Construction site boundaries to control erosion, sediment and pollution within the site:

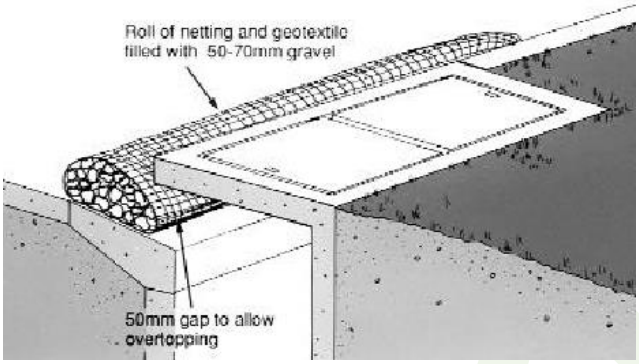
Sediment and erosion control devices. Unnecessary disturbance of the site shall not occur, and all cuts are to be stabilised as soon as possible after the completion of site earthworks. Extra care will be taken to prevent sediment run-off into all neighbouring lots and storm water. Any collected silt will be disposed of in accordance with all other relevant codes and standards.

Silt fences. Silt fences are to be installed to site boundaries as required. Geotextile fabric will be fixed to the temporary construction fencing where 'downhill' boundaries exist. The fabric will be turned down under the existing ground line and secured at regular intervals not exceeding 3m, in accordance with the following diagram:



Vehicle access. Vehicular access will be controlled to prevent sediment being tracked. This will be done by maintaining an all-weather access/ driveway composed of an approved coarse aggregate surface. Moreover, if the need arises, a shaker grid will be installed to the main access by Taylor during the construction works. Any sediment that is tracked onto the surrounding roads will be cleaned off in a timely manner.

Storm water inlets. All storm water inlets are to be covered with geotextile fabric in a roll or other format to ensure that no sediment enters the storm water system. This will be the responsibility of the site manager to enforce. The rolls will not only be placed directly at the inlets as shown below, but also at regular intervals in the gutters 'upstream' from the inlets, creating multiple barriers.



Stockpiles. If appropriate topsoil is to be stockpiled on site, then the following measures will be put in place:

- Stockpiles shall be stored at least 2 metres away from drainage lines, natural watercourse and established trees;
- Stockpiles will have temporary silt fences around it to create an enclosure and, if necessary, they will be covered with shade cloth or tarpaulin to retain the materials inside it. The location of stockpiles will be determined on site.

Monitoring. To maintain the various erosion and sediment control devices, regular inspections, repairs and cleaning will be carried out on the silt fences to the boundaries, stockpiles, waste enclosures and to the stockpile covers.

References:

- E-OP-01 Erosion and Sedimentation Controls Procedure
- Managing urban stormwater: soils and construction, Volume 1, 4th edition, 2004
-

10.3.3. VEGETATION MANAGEMENT

Taylor Construction Group and subcontractors shall plan the works to preserve existing trees, plants and other vegetation, that are to remain within or adjacent to the works. Areas of the site that contain vegetation that must be preserved should be fenced-off, marked or otherwise isolated to ensure they are not inadvertently damaged. If there are any endangered species on site, specific management techniques may be required; these should be addressed in an Environmental Impact Assessment.

On completion of the works, all areas disturbed by construction activities shall be restored to the contract specifications. Where required and practical, efforts will be made to mulch and re-use vegetation on site or send it to a green waste recycling facility.

10.3.4. WASTE MANAGEMENT AND RESOURCE RECOVERY

Taylor Construction Group and subcontractors shall adopt the hierarchy of waste (avoid, reduce, reuse, recycle/ reprocess), dispose to maximise resource recovery and minimise disposal wherever possible and practical. The importance of appropriate waste management practices is to be included in the site induction.

Sites are to be provided with suitable bins and skips for appropriate collection and separation of waste and recyclables, and these are to be collected with appropriately qualified and licensed (where required) waste contractors.

Prior to disposal, waste must be classified in accordance with the DECCW Waste Classification Guidelines (latest version 2014) prior to transporting waste off-site. Excerpts from the waste classification guidelines are contained within appendix

B of the **Waste and Resource Management Procedure E-OP-02**. Waste receipts must be kept for legal requirements; details of waste separated and disposed of is to be documented in the **Waste and Recycling Register QSE-R-16**. The information from the register is to be used to complete the waste management section of the KPI Monthly Report Form and forwarded to the HSE manager for tracking of TCG environmental targets.

References:

- E-OP-02 Waste and Resource Management Procedure
- SE-F-23 KPI Monthly Report Form
- QSE-R-16 Waste and Recycling Register

10.3.5. NOISE MANAGEMENT

From an environmental viewpoint, noise can create a nuisance to neighbours and members of the public and is subject to legal requirements. Taylor Construction Group and subcontractors shall make all practical efforts to comply with statutory requirements for noise management and minimize nuisance to neighbours. Protection of the Environment Operations Act 1997 (sections 139 and 140) and the Department of Environment and Climate Change NSW 'Interim Construction Noise Guideline' risk controls for noise must be incorporated in relevant Safe Work Method Statements, including nuisance to neighbours. Where required by development consent conditions, environmental noise monitoring will be undertaken as per the conditions. Further information on noise management from a WHS and environmental viewpoint is contained within the Noise Management Procedure.

References:

- SE-OP-04 Noise Management Procedure

10.3.6. WATER QUALITY MANAGEMENT

Taylor Construction Group and subcontractors shall comply with the requirements of section 120 of the Protection of The Environment Operations Act 1997 (Prohibition of Pollution of Waters). The act prohibits all forms of water pollution unless specifically authorised through and environment protection license (EPL). On most projects undertaken by Taylor Construction, an EPL will not be required.

There are substantial penalties for individuals and the company and controls must be in place to ensure that site activities do not cause water pollution.

Potentially hazardous activities, including washing out of concrete delivery vehicles and washing down of construction plant, are not permitted on site except in specially constructed bays that retain high PH water. Washing out of concrete delivery vehicles off-site is only permitted at locations approved for that purpose by the appropriate authority. Drains will be labelled to reduce likelihood of misuse.

Washing of paint brushes must be undertaken to avoid any paint wash-water entering drains or waterways. Wash-water must be removed from site and appropriately treated and/ or disposed of. The chemicals, acids or residue from any 'wet trades' such as brick cleaning must also be prevented from entering drains and waterways.

All liquids and materials that could cause water pollution must be stored in areas with secondary containment. Also refer to section on hazardous substances, chemicals, oils and other contaminants and the related procedure.

Pumping of storm water. If a sediment basin is required and storm water is required to be pumped out of the site, the pump intake is to be located no more than one metre (1m) below the surface of the collected water to reduce the amount of settled silt being pumped out for further treatment.

Storm water treatment. There are two treatment options for storm water collected on site, flocculation and/ or filtration. For each option, the applicable procedures in their entirety are to be followed.

References:

- SE-OP-01 Hazardous Substances and Dangerous Goods Procedure
- Storing and Handling Liquids - Environmental Protection (DECCW)

10.3.7. AIR QUALITY MANAGEMENT

Taylor Construction Group and subcontractors shall comply with all statutory requirements governing air quality management, i.e. Protection of The Environment Operations (POEO) Act 1997, section 124, and the POEO Clean Air Regulation 2010.

The project/ site manager will ensure that all construction facilities erected at the site are designed and operated to minimise the emission of smoke, dust, cement dust, plant and vehicle exhausts and other substances into the atmosphere.

Taylor Construction Group and subcontractors shall employ construction methods that will keep the air pollution to a minimum and apply measures such as those listed below to ensure that airborne pollutants do not cause pollution and nuisance near the works:

- The spraying of disturbed soil and roads with water whilst under construction as required.
- The removal of mud from the wheels and bodies of plant and vehicles before it enters public roads or other sealed pavements. This could be rumble grids, dry brushing, wheel wash, etc., depending on the nature of the site.
- The removal of mud or dirt spilt by construction equipment onto public roads or other sealed pavements.
- The provision of coverings or stabilization of topsoil stockpiles.
- Covering all loads leaving the site.
- Stabilisation of ground likely to be exposed for significant time periods (e.g., using sterile seed);
- Fitting power tools with dust collection devices where practical.
- Keeping all plant and equipment well maintained and not leaving them idling while not being used.
- Reporting excess air emissions from plant and arranging for a service to fix the problem.

Dust Including Crystalline Silica Dust

Dust containing respirable crystalline silica particles is commonly called silica dust. Activities such as cutting, grinding, sanding, drilling, loading or demolishing products that contain silica can generate respirable particles of crystalline silica dust that are small enough to breathe into your lungs. Crystalline silica dust can be harmful when it is inhaled into your lungs over a long period of time at low to moderate levels, or short periods at high levels.

From the **1st of July 2020** in NSW “Dry cutting will be an offence and for those who choose to ignore the law and put their employees a risk, SafeWork inspectors will issue tough new fines for noncompliance,

All Subcontractors working on a Taylors project that are using, drilling, cutting, sanding or grinding products that are known to contain silica will need to have a system in place that will allow their workers to either wet cut or drill, or will be required to use dust extraction systems on portable tools, or adopt other methods that eliminate or minimise the generation of silica dust.

10.3.8. HAZARDOUS SUBSTANCES, CHEMICALS, OILS AND OTHER CONTAMINANTS

Prior to commencing work on site, an assessment of the quantities and locations of hazardous substances, chemicals, etc. likely to be held on site must be undertaken. The location of hazardous substances and other contaminants must be marked on a site map (refer to appendix 5). The site manager will use the assessment when planning the works to minimise the potential for pollution. This includes providing appropriate storage; separation of incompatible materials and bunding; and ensuring that all activities that use or handle these substances are undertaken in an area that will not cause water pollution or land contamination.

Spill kits will be provided wherever substances that could potentially cause pollution are stored and handled. Relevant site personnel will be trained in spill response and will be familiar with the contents and function of the spill kit materials on site. All spills, no matter how small, must be cleaned up immediately and be 0reported as an environmental incident.

Refuelling or maintenance of plant and equipment, or any other activity which may result in the spillage of a chemical, fuel or lubricant on the site, is not permitted without appropriate temporary controls measures.

The use and storage of any hazardous substances or other chemicals will be made strictly in accordance with the manufacturer's instructions and the relevant materials safety data sheets (MSDS).

References:

- SE-OP-01 Hazardous Substances and Dangerous Goods Procedure
- Storing and Handling Liquids - Environmental Protection (DECCW)

Spill response. Major spillages must be notified immediately, and all efforts made to contain the spill and prevent escape into storm water drains and waterways, provided it is safe to do so. If the spill is beyond the capacity of the site personnel to contain and clean up, specialist services must be employed.

Minor spillages must be cleaned up immediately. If soil or ground is contaminated, the soil is to be removed and placed into a bag or designated waste drum and disposed of appropriately.

If the spill enters drains or waterways, the incident may be required to be reported to the appropriate regulatory authority (local council) as soon as practicable, in accordance with the duty to report under the POEO Act. The decision to report must be discussed with the HSE manager or a director prior to making the report.

Spill response procedures for this project are:

- Provide site map showing location of all hazardous substances, chemicals, fuels, oils, spill kits, storm water drains and natural waterways (appendix 5).
- Spill Response Procedure flow chart (appendix 3).
- Call emergency services (fire, hazmat): call 000.
- Local council phone number: Hills Shire Council 02 9843 0555
- MSDSS are located at: First Aid office/site office/Online

10.3.9. PESTICIDE USE AND STORAGE

If pesticides are used at the site, they must be stored appropriately as per ‘hazardous substances’ section (11.3.8 above) and used in accordance with the manufacturer’s requirements and the NSW Pesticides Management Act and Regulations. The act and regulations have strict record keeping requirements for the use of more than 20 litres of product.

Taylor Construction Group general policy on the use of pesticides is that they should only be applied by suitably qualified pest control contractors.

10.3.10. CONTAMINATED LAND

Prior to commencing project work, checks should be made on the potential for the site to be contaminated. This should generally be identified by the client and addressed in an Environmental Impact Assessment. If the site is found to be contaminated, the recommendations for management of the contaminated soils from the assessment and other reports should be incorporated into this PEMP below.

Should contamination be suspected once working on the site (e.g. unusual odours, visual indications of soil or water pollution, etc.) work should cease immediately and the Taylor’s project/ site manager contacted. Where relevant, the client

should be notified by Taylor's project manager and investigations undertaken into the nature of the contamination. Work should not recommence until the nature and extent of the contamination is established and can be safely managed without environmental risk.

Taylor Construction Group and subcontractors shall comply with relevant statutory requirements of Contaminated Land Management Act and the POEO Act (NSW) in relation to disturbance or treatment of potentially contaminated ground.

The company shall install any control measures needed to divert surface run-off away from contaminated ground and to treat any surface run-off contaminated by exposure to contaminated ground. Contaminated material removed from site must be recorded on the **Waste and Recycling Register QSE-R-16**.

References:

- Waste and Recycling Register QSE-R-16

10.3.11. ACID SULPHATE SOILS (ASS)

Acid sulphate soils are naturally occurring soils generally found in estuarine areas. When exposed to air, they can oxidize and cause run-off of highly acid water. Acid sulphate soils require specialist management techniques.

The client should be aware of any potential for encountering acid sulphate soils and, if there is a potential, it should be addressed in the Environmental Impact Assessment undertaken for the project.

10.3.12. COMMUNITY COMPLAINTS

Community complaints should be treated as 'incidents': they must be reported to the HSE manager, be thoroughly investigated and reported on SharePoint. Reference to these are also to be documented and included in site diary entries. The project or site manager should try to resolve the issue with the community member in a conciliatory manner.

References:

- SE-F-21 Incident Report Form
- SE-F-22 Incident Investigation Form (report on SharePoint – forms are back-up only)
- SE-F-23 KPI Monthly Report (as above)

10.3.13. ARCHAEOLOGY AND HERITAGE MANAGEMENT

If any unexpected heritage item is discovered during maintenance and construction works, the following must be taken into consideration:

Indigenous heritage. All aboriginal objects, regardless of significance, are protected under law. Should any deposit, artefact or material evidence (including skeletal remains) of Aboriginal origin be found, Taylor Construction Group and subcontractors **shall cease all construction works that might disturb or damage** the deposit, artefact or material. The project manager will notify the client immediately, who will then consult the relevant government department (i.e., DECCW - National Parks and Wildlife Services). Examples of Aboriginal objects include stone tool artefacts, shell middens, axe grinding groves, pigment or engraved rock art, burials, and scarred trees.

Historic heritage. Historic (non-Aboriginal) heritage items may include archaeological 'relics and other historical items such as works, structures, buildings or moving objects. Should any item which is suspected to be of historical heritage value be encountered, Taylor Construction Group and subcontractors **shall cease all construction works that might disturb or damage the item**. The project manager will notify the client immediately, who will arrange for an officer from the relevant government heritage department to be consulted. A 'relic' is 'any deposit, artefact, object or material evidence that relates to the settlement of the area, not being Aboriginal settlement; and is of State or local heritage significance'. It can include bottles, remnants of clothing, pottery, building materials and general refuse.

References:

- Heritage Act 1977

- National Park and Wildlife Act 1974
- Unexpected Heritage Items Procedure – Roads and Maritime Services, 2015

10.3.14. ADDITIONAL ENVIRONMENTAL ISSUES

N/A

11. INCIDENT AND EMERGENCY MANAGEMENT

11.1. EMERGENCY RESPONSE

The Emergency Response Plan for this site has been developed based on a template provided in the **SE-P-07 Project Emergency Control Management Plan**. Additional information for the management and control of emergency situations can be found in the Project Safety Plan (**WHS-PLAN-02**) but a Spill Response Procedure Flow Chart is contained in appendix 3 of this plan. For additional information on response to a spill, refer to section 11.3.8 'Spill response'.

Emergency response posters and flow charts are to be posted in the site and induction office, WHS notice boards, in crib rooms and other areas of the site as required.

References:

- SE-P-07 Project Emergency Control Management Plan
- QSE-F-10.1 Pre-Start Site QSE Checklist
- SE-F-31 Emergency Evacuation Rehearsal Register
- SE-F-05 Site Layout Evacuation Plan
- SE-F-06 On-Site Emergency Control Plan

11.2. INCIDENT REPORTING AND INVESTIGATION REPORTING

Site environmental incidents must be reported to the project/ site manager as soon as practically possible. In addition, any major environmental incidents must also be reported to the HSE manager in accordance with the **Incident Reporting and Investigation Procedure QSE-OP-05**. The priority is to ensure that the situation is controlled as soon as possible and to avoid further pollution or other adverse environmental consequences. Reporting of the incident should not delay any immediate responses to the incident.

Incident Reports must be completed and forwarded to the HSE manager within 24 hours and must be kept for a minimum of five (5) years.

Environmental incidents that cause, or threaten to cause, material environmental harm must be reported to the Appropriate Regulatory Authority (ARA, the local council in which the project is located) as soon as practicable following the incident. This would include any spillage or leak of substances that cause water or land pollution. Material environmental harm generally means that the harm is not trivial and/ or costs more than $10,000 to clean up. The phone number of the ARA should be included in the Emergency Response Plan.

If the site manager believes that the incident may be reportable to the Appropriate Regulatory Authority (ARA), contact the WHS manager for further advice prior to making an Investigation Report.

All environmental incidents that cause, or could potentially result, in an environmental harm are to be investigated, and corrective actions implemented following the investigation. Depending on the seriousness of the incident, key site personnel, the HSE manager, witnesses, etc. should be consulted on the investigation and in determining appropriate corrective or preventive actions.

References:

- QSE-OP-05 Incident Reporting and Investigation Procedure
- SE-F-21 Incident Report Form (report on SharePoint – forms are back-up only)
- SE-F-22 Incident Investigation Form (as above)

12. ENVIRONMENTAL MONITORING AND INSPECTIONS

12.1. SITE ENVIRONMENTAL INSPECTIONS

Site environmental inspections are to be undertaken weekly using **SE-F-02 HSE Inspection Checklist** to ensure that environmental hazards are recognised and can be promptly rectified. Additional environmental issues may be added to the site HSE inspection form as required.

12.2. PHYSICAL MONITORING

For many projects undertaken by Taylor Construction, physical environmental monitoring is not typically required (e.g. dust, water quality, noise levels, air quality, etc.). Should the Environmental Impact Assessment specify that environmental monitoring is required, the project manager will arrange for appropriately qualified consultants to undertake that monitoring. All equipment used to measure environmental parameters will be calibrated in accordance with manufacturer's instructions.

12.3. MONITORING OF PROJECT ENVIRONMENTAL TARGETS

Objectives and targets for the project are specified under 'Objectives and Targets' section of the PEMP. Data relating to these targets will be documented daily using site diaries, reviewed by project/ site managers on a monthly basis and forwarded to the HSE manager for reporting to senior management.

The KPI Monthly Report captures information on lag and lead indicators. The current indicators are:

Lag indicators:
- Number of environmental incidents.
- Number of penalty infringement notices (pins) or clean-up notices.
- Number of community complaints.

Lead indicators:
- Number of toolbox talks (combined with WHS and environmental issues);
- Number of environmental inspections undertaken.
- Waste and recycling volumes (initially to set benchmark, then track improvement)

Add any additional KPIs that may be set from Environmental Impact Assessments, conditions of consent and client requirements, etc.

13. NON-CONFORMITY, CORRECTIVE AND PREVENTIVE ACTIONS

Taylor Construction has a non-conformance and corrective action process in place to address all non-conformities across the business, regardless of the source. The process is defined in the **Reporting Non-Conformance, Corrective and Preventive Actions Procedure QSE-OP-29**. Typically, environmental non-conformances would result from audits, inspections and from observations by the site manager of poor environmental practices, including incorrect waste disposal/ recycling (liquid waste, poor storage of hazardous substances, oils, chemicals and damage to existing environmental controls such as sediment fencing, etc.). Non-conformances may be issued for serious breaches or repeated minor breaches.

References:
- QSE-OP-29 Reporting Non-Conformance, Corrective and Preventive Actions Procedure

- Notices (electronic) raising of non-conformances (internal)
- Notices (printable) for raising NCRS on subcontractors.

14. PURCHASING/ PROCUREMENT

Purchasing and procurement includes the purchase of goods and the supply of services of contractors. When purchasing goods, the following environmental considerations should be considered:

- Is there a less toxic, less harmful alternative (e.g. chemicals, paints, solvents, etc.)?
- How much do we need? Will anything be wasted? Precise ordering will minimise wastage of resources and money.
- Can the product be purchased locally to reduce transport impacts?
- Are there any opportunities to use 'green' products in construction to improve the efficiency of the building in terms of energy and water usage (design issue – may need client input)?
- S-F-18.1 Pre-Hire Purchasing Assessment Form

When engaging contractors, the following should be taken into consideration:

- Has the environmental capability been assessed and signed-off through contract administration?
- Has the contractor attended a pre-award interview and assessed Taylor Construction Group environmental requirements?
- Has **Subcontractor Tender Interview and Assessment Form QSE-F-15.6** been completed?

References:

- QSE-OP-15 Subcontracting, Purchasing and Hiring Procedure
- QSE-F-15.6 Subcontractor Tender Interview and Assessment Form

15. CONTRACTOR MANAGEMENT

Taylor Construction Group, as the principal contractor, will ensure that contractors performing work on site are aware of the environmental requirements and enforce compliance to requirements.

Prior to commencing on site, contractors are to be inducted to the site as part of the HSE requirements. Inductions will include an environmental component to ensure all contractors are aware of the environmental risks on the project.

Contractors are required to submit Safe Work Method Statements (SWMS*)* prior to commencement of work as part of the WHS requirements. SWMS must also address the environmental risks for the tasks and will be reviewed and checked-off on **SE-F-14 Safe Work Method Statement Review Form** by the site manager to ensure that all environmental risks are appropriately identified, and controls documented.

Environmental inspections will be undertaken at least once monthly. This will include an inspection of the contractor's work area and checking that all environmental controls are in place. Serious breaches or repeated minor breaches will result in the issue of a Non-Conformance Report, and the issue must be resolved within designated time frames.

16. ENVIRONMENTAL AUDIT

Audits of the Environmental Management System will be conducted regularly to ensure the system is appropriately in place and implemented. As part of the audit program, audits will also be undertaken on project sites for compliance to the requirements of the Project Environmental Management Plans. Audits should be undertaken by suitably experienced auditors.

Projects that have duration of more than six months will have at least one audit against the PEMP and, after the 6 months, will be audited at least once per year. This will generally be undertaken as an integrated audit in conjunction with the Project

Safety Plan and Project Management Plan (Quality). Projects with high-risk activities or that performed poorly at the initial audit may be audited at a higher frequency. The HSE manager is responsible for coordinating project audits.

17. REVIEW OF THIS PLAN

This Environmental Management Plan must be reviewed by the project manager in consultation with the project team and HSE manager whenever any major change occurs on the site that may have an impact on the environment, or at least twice (every 6 months) during construction.

2021

APPENDIX 1: GLOBAL MARK ACCREDITATION

global-mark®

Certificate of Approval

This certificate confirms that the company below complies with the following standard:

Company Name	**Taylor Construction Group**		
Company Other Name			
Client ID	**101009**	*Scheme*	**Environmental Management Systems Scheme**
Certification Standard	**AS/NZS ISO 14001-2016: Environmental management systems - Requirements with guidance for use**		
Scope of Certification	**Design, construction, project management and property development services**		
Type of Certification	**Management System**		

CERTIFICATE DATES:

Original / Initial	**19/11/2009**	*Last Certificate update*	**18/05/2018**
Certification / Re Certification	**7/05/2018**	*Expiry*	**7/05/2021**
Last Certification Decision	**18/05/2018**		

APPROVED COMPANY/SITE ADDRESS(ES):

Level 13, 157 Walker Street North Sydney 2060 NSW Australia

The use of the Accreditation Mark indicates accreditation by the Joint Accreditation System of Australia and New Zealand in respect to those activities covered by JAS-ANZ accreditation. Refer to www.jas-anz.org/register for verification.

This certification remains valid until the above mentioned expiry date and subject to the organisation's continued compliance with the certification standard, and Global-Mark's Terms and Conditions.

This Certificate of Approval remains the property of Global-Mark Pty Ltd, Company Number: ACN.108-087-654

JAS-ANZ

Certification Manager

Unique Certificate Code: 5CC89063499 2E158CA2582830041 2EAC

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APPENDIX 2: ENVIRONMENTAL POLICY

TAYLOR

Environmental Policy

Taylor regards appropriate management of environmental issues as integral to our business. We are committed to the protection of the environment and ecologically sustainable practices in all aspects of our operations.

We will comply with all relevant legislation governing the protection of the environment. Our environmental management systems will address all aspects of the International Standard, ISO 14001:2016: "Environmental Management Systems – Requirements with guidance for use".

In managing our business, we make a commitment to:

- Work pro-actively with our clients, regulators, and other community stakeholders to enable environmental issues to be addressed at an early stage of development.
- Take local community views into consideration and ensure that we inform, listen to and respond to reasonable concerns relating to our projects.
- Undertake our activities in a manner that is consistent with the principles of ecologically sustainable development.
- Prevent pollution and reduce adverse environmental impacts of our activities on the natural, built and cultural environment.
- Promote the efficient use of natural resources and reduce waste through the use of the waste hierarchy – avoid, reduce, re-use, recycle and finally dispose.
- Set realistic environmental objectives and targets at all relevant levels within the company and continually monitor performance.
- Promote environmental awareness among all employees and subcontractors to achieve our environmental objectives.
- Continually improve our environmental performance through periodic review and evaluation of our policy and management systems to ensure they remain suitable, adequate and effective.
- Encourage a sense of personal responsibility for environmental issues amongst employees and subcontractors through effective communication, training and positive organisational culture.

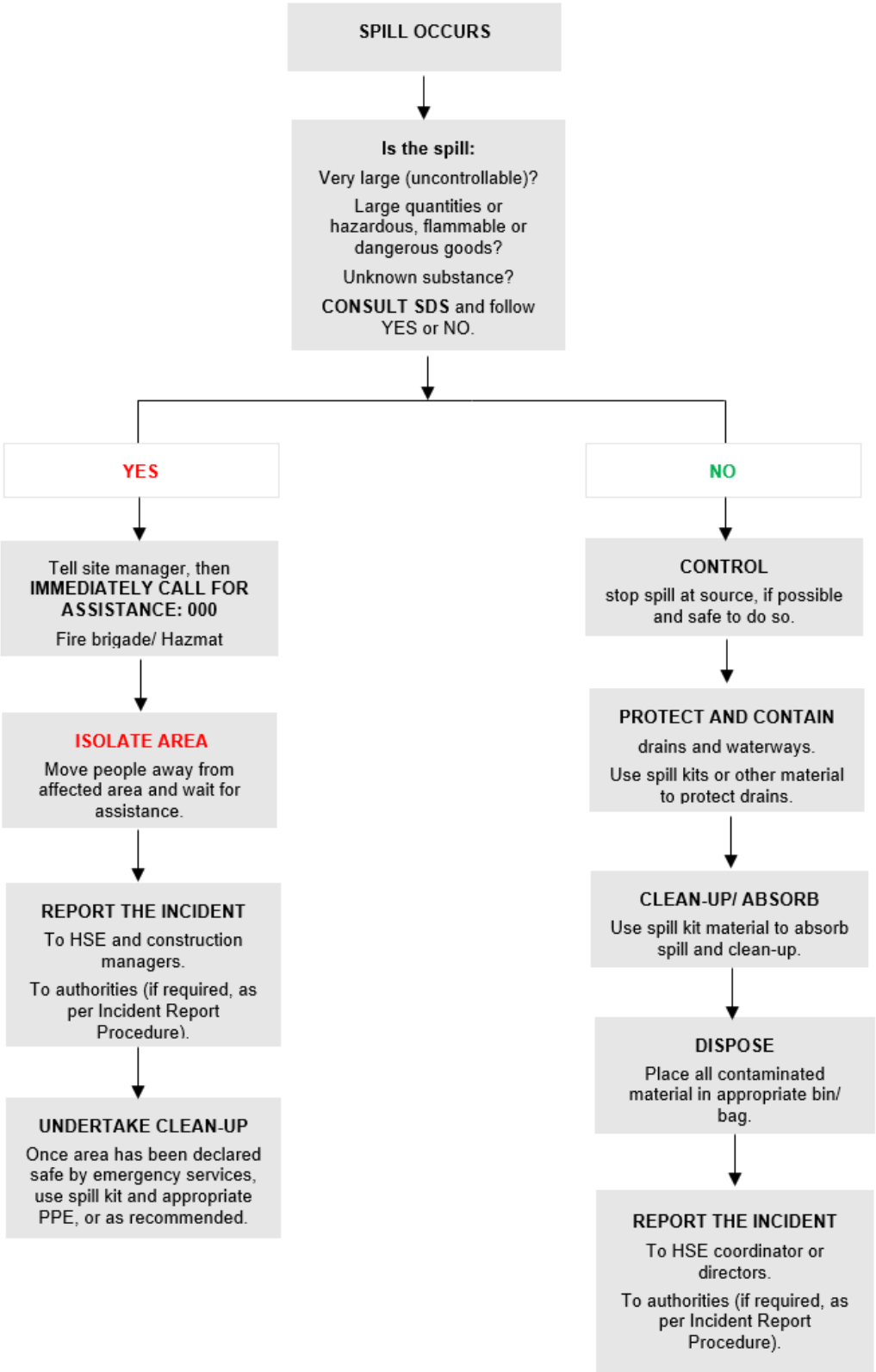
This policy will be reviewed in December 2021.

George Bardas
Chief Executive Officer

Environmental Management · ISO14001
Global-Mark.com.au®

Environmental Policy 2021 V1

APPENDIX 3: TAYLOR CONSTRUCTION SPILL RESPONSE PROCEDURE FLOW CHART

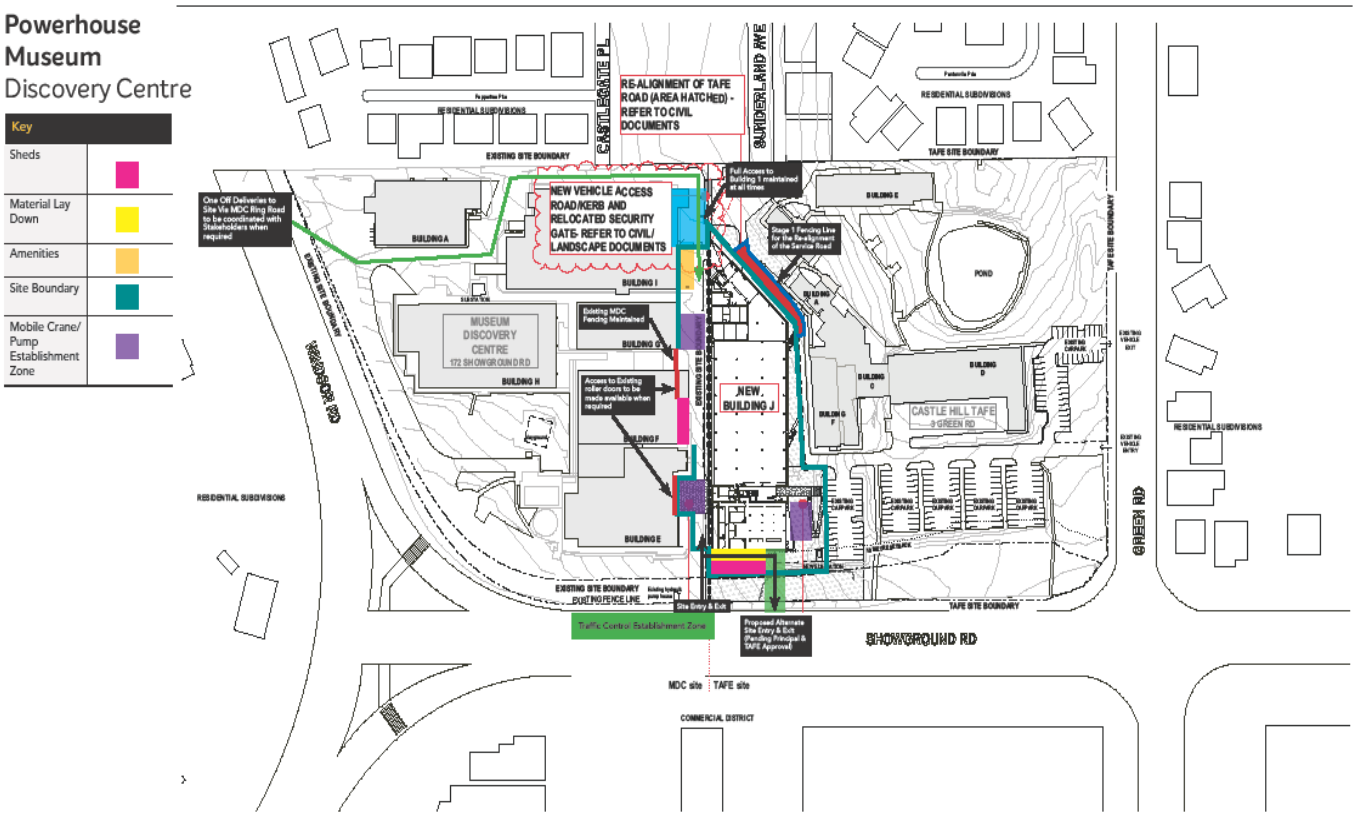


APPENDIX 4: SITE ENVIRONMENTAL EMERGENCY RESPONSE PLANS

Potential emergency	What to do?	Relevant authorities and persons
Injury caused by: – Fire – Explosion – Machinery accidents – Minor injuries	• For serious injuries, call an ambulance. You should also have the contact details of the nearest doctor, medical centre and hospital. • Immediately inform the site first aid officer; • Follow the procedures as detailed in the Site Safety Plan. • For major injuries, contact the site manager or project manager.	Emergency services Nearest doctor Medical centre Site manager Project manager
Fire **Fire at the diesel tank** **Fire at any of the machineries** **Fire caused by vandalism**	• Evacuate all personnel to a safe area immediately. • Call the fire brigade (emergency services); • If the fire is likely to damage neighbouring property, inform the adjacent residents. • Follow the procedures as detailed in the Site Safety Plan; • For major fire emergencies, contact the site manager or project manager. • Inform terminal security. **Note**: fire extinguishers are located throughout the site as detailed in the Emergency Evacuation Map.	Emergency services Site manager Project manager Adjacent residents
Spills management and contaminated soils Major spills: • Spill or release of diesel fuel or oil; • Spill or release of other hazardous chemicals or material	For major spills (defined as a spill that is likely to have direct environmental consequences): • Immediately call the Fire Brigade and notify the project manager. • Identify the source of the spill; • Refer to the Material Safety Data Sheet (MSDS) and evaluate the hazards of the material.	Emergency services (fire brigade) HSE manager SM and PM EPA
Minor site spills **Acid sulphate soils**	• If the material is dangerous, evacuate the site immediately and notify all neighbours. • If it is safe to do so, halt the source of the spill immediately. • Contain the spill and control its flow. • Block storm water drains downstream of the spill. • EPA and local council must be notified about any spills that are likely to threaten the environment. • Minor spills (defined as spills which can be contained and rectified correctly without the need of external services), shall be contained and rectified with the site spill kit and disposed of correctly. Superintendent to be notified via incident report. • Reported to the site manager. • Where acid sulphate soils are discovered, the spoil shall not be removed from site; subsequent notification and testing will follow.	Emergency services (fire brigade) HSE manager SM and PM EPA
Heavy rainstorm and flood beyond the capacity of the sediment and erosion controls on-site or failure of the sedimentation control measures.	• Contain/ minimise the flow. • Contact council immediately. • Investigate reasons for failure and prepare an incident report. • Contact the project manager.	Council Site manager Project manager
Discovery of items of conservation value (e.g. flora and fauna, heritage).	Fence-off the area as 'no go' zone and contact the site manager or project manager immediately for further action.	Site manager Project manager
Discovery of contaminated material on site (e.g. underground fuel storage tanks).	Fence-off the area as 'no go' zone and contact the site manager or project manager immediately for further action.	Site manager Project manager

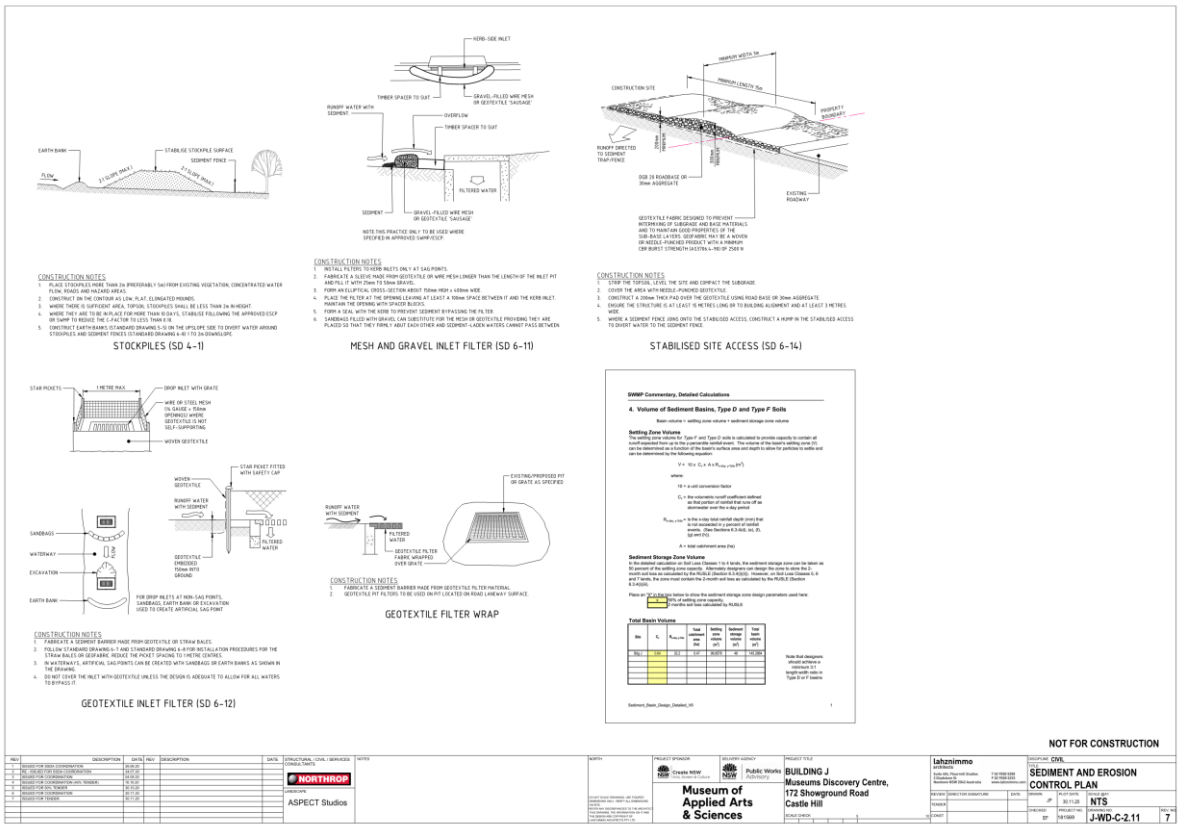
APPENDIX 5: SITE MAP – ENVIRONMENTAL REQUIREMENTS

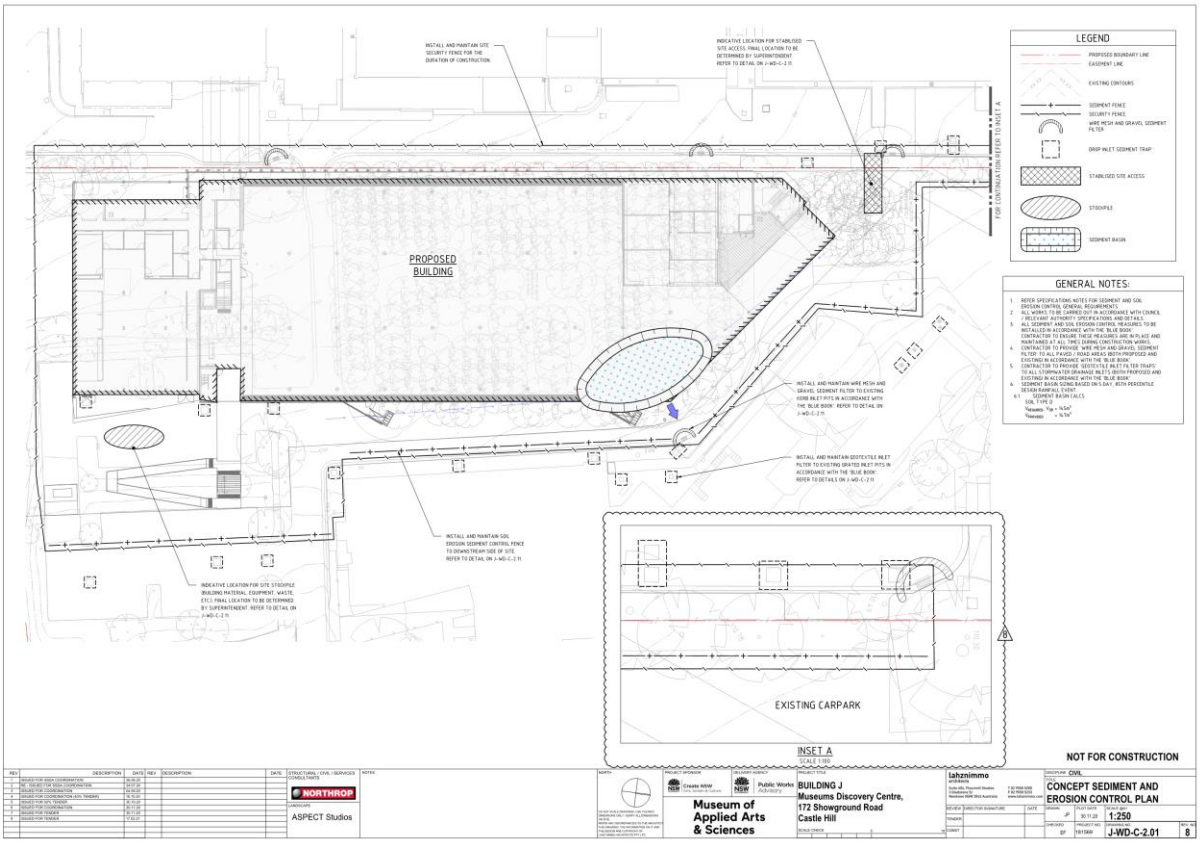
N



Powerhouse Museum Discovery Centre
Title: Site Establishment Plan
Revision: 01
Prepared: April 2021
TAYLOR

APPENDIX 6: SEDIMENT CONTROL PLAN





LEGAL AND OTHER REQUIREMENTS PROCEDURE

SE-P-01

PURPOSE

The purpose of this procedure is to:

- Establish a process for the identification of the Legal and Other Requirements related to Taylor Construction Group HSE obligations.
- Outline how that information will be kept up-to-date and disseminated across the organisation;
- Establish a methodology for periodically evaluating TCG's compliance with environmental and HSE Legal and Other Requirements.

SCOPE

This procedure applies to all operational and construction activities controlled by, or being conducted on, Taylor Construction premises.

DEFINITIONS

Legal requirements. Laws, acts, regulations, licenses, permits and regulatory approvals.

Other requirements. Industry codes of practice, agreements with public authorities, non-regulatory guidelines and agreements with community groups and non-government organisations, etc. (note the term 'Other Requirements' is used in AS/NZS 4801 and ISO 14001).

RESPONSIBILITIES

Executive team and general/ construction managers. Have overall responsibility and authority to approve and ensure implementation of this procedure.

HSE manager. Responsible for identifying WHS. Environmental, Legal and Other Requirements relevant to Taylor Construction and monitoring ongoing changes to legislation. This could include engaging the services of specialist consultants as required. The manager is also responsible for communicating relevant information to appropriate personnel including executive management, project and site managers as appropriate. Maintaining and updating HSE Legal and Other Requirements Register.

Project/ site managers. Shall be responsible for reviewing section 4 of the Project WHS Plan containing a list of legislative requirements and identifying standards and codes which are applicable to that project.

The project/ site manager shall also be responsible for ensuring that all identified legal requirements are accessible and implemented on the projects.

Subcontractors. Shall be responsible for providing to their direct employees (upon request) copies of all relevant standards and codes associated with their works. All subcontractors shall be required to have a fair level of understanding of relevant standards and codes, to meet the requirements of necessary legal requirements and for documenting relevant standards and codes into their SWMS.

Employees. Shall be responsible for complying with all legal requirements as mentioned in their SWMS and as directed by their direct supervisor and by the Taylor Construction project/ site manager.

PROCEDURE

Identification of Legal and Other Requirements

Legal and Other Requirements are initially identified by the HSE manager (or qualified consultant) and documented in an HSE Legal and Other Requirements Register.

The **HSE Legal and Other Requirements Register SE-R-01** is available on the Taylor Management System. It is in a spreadsheet format, with columns identifying the acts and regulations relevant to the works completed by Taylor Construction Group, a link to legislation and relevant web sites and the method in place to monitor compliance to these forms of legislation.

Critical HSE legislation is summarised in both the Project Safety Plan and Project Environmental Management Plan. Codes of Practice and AS/NZ Standards relevant to construction activities undertaken at a project level are to be listed in SWMS.

Ongoing review and communication of Legal and Other Requirements

The HSE Legal and Other Requirements Register will be reviewed by the HSE manager periodically and each time a notification of new standards or codes is made available or following a notification/ publication of an amended existing document

Where possible, changes shall be incorporated into section 4 of the project WHS Plan, TMS plans and procedures amended. Significant changes will be communicated via email, management meetings, toolbox talks, etc.

The HSE manager will keep abreast of changes to legislation and standards through access to relevant newsletters, publications, industry groups and websites. TCG also has access to industry groups such as the Master Builders Association, etc. that provide advice and intermittent updates on industry and legislative changes.

This information is also available from the relevant web sites:

- http://www.safeworkaustralia.gov.au
- https://bca.saiglobal.com/

If you are unable to obtain required Australian Standard through this data base, call HSE Manager for access or availability of required standards. Employees requiring access to any of the noted legislation, codes and/ or standards are to make the request to their supervisor. Subcontractor's employees may request access to this information from their employer and, if not available, a request may be made to Taylor Construction site management. Employees working on site shall be made aware at time of site induction of how to gain access and the availability of these documents.

Evaluation and compliance

The HSE manager, in consultation with a group of selected site safety advisors, will be responsible to review new or amended codes of practice and Australian Standards which are relevant to the company and to determine how these impacts the business and how best these can be incorporated into our system and the information

relayed to project teams. Reviews will be conducted using Taylor's template **QSE-F-14.1 Management System Audit Report.** Any significant changes or amendments highlighted by this review will then be reported back to site teams.

Once the Legal and Other Requirements have been identified and understood, it is important to evaluate whether TCG complies with the requirements. At Taylor Construction Group, this is done through regular inspections of the workplace, and through periodic audits against the Project Safety Plans and Environmental Management Plans.

The HSE Legal and Other Requirements Register identify how compliance is to be evaluated. Key legal requirements are included in site checklists and audits to ensure ongoing compliance.

REFERENCES

- SE-R-01 Legal and Other Requirements Register
- SE-F-02 HSE Inspection Checklist
- SE-F-03 SWMS Form
- WHS-PLAN-02 Project Workplace Health and Safety Plan (chapter 4)
- E-PLAN-03 Project Environmental Management Plan (chapter 4)
- QSE-F-14.1 Management System Audit Report
- QSE-F-14.2 WHS Project-Based Management Plan Audit Report
- AS/NZS AS 4801:2001 Occupational Health and Safety Management Systems - Specifications with guidance for use
- AS/NZS ISO 14001:2016 Environmental Management Systems - Specifications with guidance for use

2021

TAYLOR

Project : **Powerhouse MDC** **Date: 23/07/2021**

ENVIRONMENTAL -LEGAL -REGISTER -01

Environmental Legal Register

Legislation	*Key Requirements*	*Relevance to Taylor Construction Group*	*Mechanism for Evaluating Compliance*	*Link to legislation and relevant web sites*
Protection of the Environment Operations Act 1997 (POEO Act)	The POEO Act is the key piece of environment protection legislation, and is administered by the Department of Environment and Climate Change (DECC) – formerly EPA. The objective of the Act is to protect restore and enhance the quality of the environment in NSW with a need to maintain ecologically sustainable development. Schedule 1 of the POEO Act lists activities that are subject to environmental licensing. Where an environmental Protection Licence is required, the DECC is the Appropriate Regulatory Authority (ARA). In most other cases, the local council is the ARA.	Environmental Protection Licences may be required for large projects by TPG. (Refer to Schedule 1) Therefore, in most cases, the local council is the Appropriate Regulatory Authority . Environmental protection offences and penalties, and a duty to notify of environmental harm, apply to all personnel working on the project. Managers, supervisors, workers and contractors need to comply with all requirements of the Act, with particular emphasis on duty to notify, and prevention of pollution (see key sections in adjacent column to the left)	**Environmental inspections** **Compliance checks / audits against Environmental Management Plan**	www.austlii.edu.au/au/legis/nsw/consol_act/poteoa1997455/ http://www.environment.nsw.gov.au/licensing/
	The POEO Act imposes severe penalties for causing environmental harm, polluting water, not operating equipment in an efficient manner and inappropriate handling and disposal of waste. Penalties also exist for failure to notify pollution incidents.	The company and individuals can be prosecuted in criminal proceedings under this Act.	**Environmental inspections** **Plant pre-start inspections and plant maintenance** **Compliance checks / audits against Environmental Management Plan**	
	The following is a summary of key sections of the Act that must be complied with: ▪ S 120 – Prohibition of Water pollution ▪ S 124 - 125 Air pollution - failing to maintain and operate plant, or carry out maintenance work on plant, in a proper and efficient manner. ▪ S 128 Standard of air impurities not to be exceeded (air pollution)		Environmental inspections Plant pre-start inspections and plant maintenance Compliance checks / audits against Project Environmental Management Plan	http://www.environment.nsw.gov.au/water/polltreatment.htm http://www.environment.nsw.gov.au/air/

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		Environmental Legal Register		
Legislation	***Key Requirements***	***Relevance to Taylor Construction Group***	***Mechanism for Evaluating Compliance***	***Link to legislation and relevant web sites***
	▪ S 139 – Noise Pollution – operation of plant S 142 A-E – Land Pollution (offence if cause or permit land to be polluted S 143 – Land Pollution (unlawful transport of waste) S 144 – Land Pollution – permitting land to be used as unlawful waste facility	**Waste must be transported by an appropriately licenced transporter to a facility that is licenced to accept waste**		http://www.environment.nsw.gov.au/noise/
	S 148 – Duty to Notify S 152 Offences for failure to notify of pollution incident	**Licenced disposal authority to provide reciepts for all waste received , reciept is to include date, time and amount of waste disposed , ALL reciepts MUST be provided to Taylors site management on their return to site or when requested**	**Environmental incident reports (indicating if notification was required). Reviewed at Management Review.**	
	Penalties **Most Serious Offences Causing Harm to the Environment and Involving Wilfulness or Negligence** Maximum penalty: Corporations $5,000,000 (wilful) or $2,000,000 (negligence): Individuals $1,000,000 or 7 years' imprisonment, or both, (wilful) or $500,000 or 4 years' imprisonment, or both (negligence)	Damage to corporate reputation / image **Possible exclusion from tendering for future environmental sensitive projects**	**Environmental inspections** **Plant pre-start inspections and plant maintenance** **Compliance checks / audits against Environmental Management Plan**	
	Tier 2 (strict liability) Corporations: $1,000,000 and up to $120,000 for each day the offence continues. Individuals: Up to $250,000 and up to $60,000 each day the offence continues. **Tier 3 (penalty notice – on the spot fine)** $1500 for corporation $750 for individuals	**Financial Cost to company and project stake holders**	**Monitor compliance with DA concent**	

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		Environmental Legal Register		
Legislation	***Key Requirements***	***Relevance to Taylor Construction Group***	***Mechanism for Evaluating Compliance***	***Link to legislation and relevant web sites***
	Failure to Notify a Pollution Incident Maximum penalty: corporations $1,000,000; individuals $250,000			
POEO (General) Regulation 2009	The Regulation (among other things): • sets out fees for environment protection notices and noise control notices; • sets out matters to be included by the EPA in its statement of reasons for the grant or refusal of a licence application; • makes it an offence to provide false or misleading information in relation to a licence application; • requires licensees to retain records used to calculate licence fees; • prescribes certain matters when placed into water to be water pollution, and the methodology for testing matter in waters; • exempts certain water pollution from the water pollution offence under the *POEO Act 1997*; • allows the EPA to prohibit or regulate certain activities that threaten the safety of drinking water that is part of a public water supply; declares certain bodies to be the ARA in relation to certain activities for the purposes of the *POEO Act 1997*;	Projects may require environmental protection licences. (Refer to Schedule 1 of the POEO Act)	**Planning - requirement for Licence set out in PEMP (if required)** **Audits against PEMP**	https://www.google.com.au/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwiQq5ew4rzYAhWHE7wKHXiTDUUQFggnMAA&url=http%3A%2F%2Fwww.austlii.edu.au%2Fau%2Flegis%2Fnsw%2Fconsol_reg%2Fpoteor2009601%2F&usg=AOvVaw1RKZIXEv0dxWGfFhkVRVb3

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ENVIRONMENTAL -LEGAL -REGISTER -01

Environmental Legal Register

Legislation	Key Requirements	Relevance to Taylor Construction Group	Mechanism for Evaluating Compliance	Link to legislation and relevant web sites
POEO (Clean Air) Regulation 2010	This Regulation replaces the ***Clean Air (Domestic Solid Fuel Heaters) Regulation 1997, Clean Air (Motor Vehicles and Motor Vehicle Fuels) Regulation 1997, Clean Air (Plant and Equipment) Regulation 1997*** and the ***Protection of the Environment Operations (Control of Burning) Regulation 2000POEO (Clean Air) Regulation 2002***			http://www.austlii.edu.au/au/legis/nsw/consol_reg/poteoar2002601/
	In relation to motor vehicles, the regulation deals with the emission of air impurities, including excessive smoke from motor vehicles. In relation to Plant and Equipment, the regulation sets maximum limits on emissions from activities and plant for a number of substances, including chlorine, dioxins furans, smoke, solid particles and sulphur. In relation to the control of burning, the regulation controls burning in the open or in incinerators in local government areas, prohibits the burning of certain articles (including tyres, paint and solvent containers, and certain treated timbers), and imposes a general duty on persons to prevent or minimise air pollution when burning in the open or in an incinerator	Keep vehicles maintained to minimise air pollution and avoid a "smoky vehicle" fine. Maintain plant and equipment to minimise air pollution General Policy at Taylor Construction Group is no burning off at site.	Environmental Inspection checklist Pre-start checks on plant	http://www.legislation.nsw.gov.au/fragview/inforce/subordleg+428+2010+whole+0+N?tocnav=y
POEO (Noise Control) Regulation 2008	This Regulation repeals and remakes, with minor amendments, the provisions of the Protection of the Environment Operations (Noise Control) Regulation 2000: • the sounding of sirens and similar devices and the use of sound systems on vessels, • the emission of noise from the engines or exhausts of motor vehicles and vessels, • the maintenance of noise control equipment on motor vehicles and vessels, • the issue of defective vehicle notices and defective vessel notices,	**Noise emissions from machinery and activities.**	**Environmental Inspection checklist** **Pre-start checks on plant**	www.austlii.edu.au/au/legis/nsw/consol_reg/poteocr2008693/ http://www.environment.nsw.gov.au/noise/

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		Environmental Legal Register		
Legislation	**Key Requirements**	**Relevance to Taylor Construction Group**	**Mechanism for Evaluating Compliance**	**Link to legislation and relevant web sites**
	• the times during which it is not permissible to use certain articles if they emit noise that can be heard in any residential premises, • the inspection and testing procedures for the purpose of determining noise emission levels of certain motor vehicles, motor vehicle accessories, vessels, articles or equipment			
POEO (Penalty Notices) Regulation 2004	This Regulation: • sets out the offences under the *Protection of the Environment Operations Act 1997* and related Acts and regulations for which penalty notices may be issued, and the amount of such fines; • specifies the organisations authorised to issue penalty notices for particular offences; and • authorises the service of a penalty notice relating to an offence, applying to an owner of a motor vehicle or vessel, on the owner without naming the address of the owner and by leaving the penalty notice on that vehicle or vessel.	Environmental protection offences and penalties, and a duty to notify of environmental harm, apply to all personnel working on projects.		www.austlii.edu.au/au/legis/nsw/consol_reg/poteonr2004710/
POEO (Waste) Regulation 2005	Schedule 1 of the regulation sets out the types of waste to which waste tracking requirements apply.	Certain chemicals used or generated may be subject to tracking requirements in this regulation. If waste tracking requirements apply, waste dockets and other records must be kept	**Periodic (monthly) review of project waste dockets and records to ensure compliance with tracking requirements.**	http://www.austlii.edu.au/au/legis/nsw/consol_reg/poteor2005609/
Protection of the Environment Operations Amendment (Scheduled Activities and Waste) Regulation 2008 (Note – part of 2005 Regulation)	**This framework uses a mix of legislative, policy, educative and economic tools to encourage waste avoidance and the further recovery of resources. This new framework includes:**	Altered definitions of waste categories and disposal requirements (since April 2008). If using recovered resources (eg recycled asphalt, etc), ensure material meets threshold contaminant requirements (obtain from supplier prior to use)		www.environment.nsw.gov.au/waste www.austlii.edu.au/au/legis/nsw/consol_reg/poteor2005609/
	• **Fewer and simpler licensing categories for waste;** • A streamlined waste classification system;			http://www.environment.nsw.gov.au/waste/classification.htm

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Environmental Legal Register

Legislation	Key Requirements	Relevance to Taylor Construction Group	Mechanism for Evaluating Compliance	Link to legislation and relevant web sites
	• **New resource recovery licensing categories and resource recovery exemptions; and** • **Clearer requirements for managing asbestos and clinical waste.** **The waste regulatory framework is administered under the principal legislation of the Protection of the Environment Operations Act 1997 and the Waste Avoidance and Resource Recovery Act 2001.**	includes 2011 amendment		http://www.environment.nsw.gov.au/waste/RRecoveryExemptions.htm http://www.legislation.nsw.gov.au/sessionalview/sessional/subordleg/2011-151.pdf
Protection of the Environment Operations (Underground Petroleum Storage Systems Regulation 2008)	Regulation requires that underground petroleum storage tanks must not be commissioned unless it has been properly designed, installed and equiped, and integrity test performed. A storage system must not be used unless groundwater monitoring wells are installed on the storage site and these are not to be installed unless properly designed. The storage system must not be used unless an environment protection plan is in place and must be used in accordance with that plan. (for detail, of plan requirements refer to clause 19) Note - this requirement will apply to old tanks from June 2009. Groundwater monitoring requirements on old storage tanks will come be required from June 2011 (Clause 21) Loss detection procedures must be in place and acted upon if any loss is detected (clause 22) Records must be kept for at least 7 years	The regulation generally will only apply to TPG if it owns or operates sites with Underground Petroleum Storage Systems (UPSSs). When working on sites with UPSTs, ensure location is known, and that client can provide details on locations of groundwater monitoring wells, and other required information	If UPSSs are owned or operated by TCG, extensive monitoring would be required in accordance with an Environmental Protection Plan specifically relating to the tank. Periodic evaluations would be conducted agains the Plan.	www.austlii.edu.au/au/legis/nsw/consol_reg/poteopssr2008983/ http://www.environment.nsw.gov.au/clm/upss.htm
Contaminated Land Management Act 1997 *Contaminated Land Management Amendment Act 2008*	The main objective of this Act is to establish a process for investigating and remediating land areas where contamination presents a significant risk of harm to human health or some other aspect of the environment. The amendment Act strengthens EPA/DECC powers in relation to contaminated land. Under this act DECC has the power to: • Declare an investigation site and order and investigation	Environmental Hygienist may be engaged to provide advice , reports and monitor activities when undertaking work on contaminated sites is required .	**If contaminated land is likely to be encountered, measures for testing, handling and disposing of contaminated spoil are in the Project Environmental Management Plan. Testing is undertaken to ensure compliance.**	http://www.austlii.edu.au/au/legis/nsw/consol_act/clma1997238/ http://www.austlii.edu.au/au/legis/nsw/consol_act/clmaa2008318/sch1.html

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Legislation	Key Requirements	Relevance to Taylor Construction Group	Mechanism for Evaluating Compliance	Link to legislation and relevant web sites
	• Declare a remediation site and order remediation to take place • Agree to a voluntary proposal to investigate or remediate a site			http://www.environment.nsw.gov.au/clm/
Contaminated Land Management Regulation 2008	This Regulation prescribes a number of matters for the purposes of the *Contaminated Land Management Act 1997*, including: • the content of site auditors' annual returns; • the form to be used when reporting contamination; and • the amount which the EPA may recover for its costs incurred in relation to investigation and remediation orders.	Minimal relevance.	N/A	http://www.austlii.edu.au/au/legis/nsw/consol_reg/clmr2008329/
Environmentally Hazardous Chemicals Act 1985	The purpose of this Act is to control chemicals that are environmentally hazardous. DECC may make chemical control orders (CCOs) with respect to assessed chemicals or declared chemical wastes. The CCOs may regulate the manufacture, processing, conveying, buying, selling or disposal of chemical or declared waste. A CCO may prohibit activities in relation to declared chemical wastes, ~~except under the authority of a license issued by~~	Certain chemicals used or generated may be subject to handling and disposal requirements in this Act. Chemicals subject to this Act include Dioxin wastes, Asbestos wastes, PCBs, and organochlorine pesticide wastes. It is unlikely that Taylor Construction Group activities would generate hazardous wastes covered by a CCO	**Measures for identification, handling, disposal of hazardous wastes are in the Project Environmental Management Plan.**	http://www.austlii.edu.au/au/legis/nsw/consol_act/ehca1985373/
Environmentally Hazardous Chemicals Regulation 2008	This Regulation: • sets various fees in relation to assessments of technology and prescribed activities by the EPA and in relation to licences to carry on prescribed activities; • specifies the matters to be included in applications for assessment of prescribed activities, in EPA notices about assessments of chemicals, and in EPA notices about applications for licences and transfers of licences; • prescribes the information to be included in registers under the Act.	No relevance.		

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ENVIRONMENTAL -LEGAL -REGISTER -01

Environmental Legal Register

Legislation	*Key Requirements*	*Relevance to Taylor Construction Group*	*Mechanism for Evaluating Compliance*	*Link to legislation and relevant web sites*
Pesticides Act 1999	This Act promotes the protection of human health, environment, property and trade in relation to the use of pesticides. It is an offence under the Act to: • Use a pesticide that harms or damages a person or property, a non-target animal or plant; • Use a pesticide that harms a threatened species or protected animal; • Possess or use an unregistered pesticide without a permit, or contrary to the approved label; • Fail to comply with the label or permit while using a pesticide; • Keep a registered pesticide in a container without a label; • Possess or use a restricted pesticide without authorisation. DECC may make pesticide control orders which prohibit use or possession of restricted pesticides	Generally pest control would be undertaken by specialist contractors. If pesticides are applied by TPG personnel, stringent storage, handling and record keeping requirements apply. Refer to the full Act and Regulations	**If pesticides are used, the requirements would be documented in the Project Environmental Management Plan for the project. Regular audits would be undertaken against the Plan, and pesticide records would be reviewed once monthly by the project manager.**	www.austlii.edu.au/au/legis/nsw/consol_act/pa1999120/ http://www.environment.nsw.gov.au/pesticides/
Pesticides Regulation 1995	This regulation requires that any person or organisation applying a chemical in a public place must apply this chemical as described in their Notification Plan for Pesticide Use in Public Places. The regulation makes it compulsory for all people who use pesticides for commercial or occupational purposes to make a record of their pesticide use.	As above	As above	www.austlii.edu.au/au/legis/nsw/consol_reg/pr1995211/
Environmental Planning and Assessment Act 1979 **(EP&A Act)**	The main objective of the EP&A Act is to ensure that proper management and development of land is undertaken incorporating the ecologically sustainable development principles. To achieve this the EP&A Act: • Ensures that development consent is obtained prior to construction;	Development Approval / Consent required prior to construction as per EP&A Act and as detailed in LEPs. Need to comply with Conditions of Consent once granted	**Compliance audits / checks against development consent conditions (likely to be done by client)**	www.austlii.edu.au/au/legis/nsw/consol_act/epaaa1979389/

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		Environmental Legal Register		
Legislation	***Key Requirements***	***Relevance to Taylor Construction Group***	***Mechanism for Evaluating Compliance***	***Link to legislation and relevant web sites***
	• Ensures compliance with planning consents and conditions associated with the consent; • Ensures environmental assessment is undertaken prior to development consent; • Has provision for penalties to be issued should development conditions be breached. Also has Planning instruments such as Local Environmental Plans (LEPs)			
Fisheries Management Act 1994	The primary aim of this Act is to conserve, develop and share fisheries resources of NSW to benefit present and future generations. To do this the Act: • Provides Fishery Management Strategies for commercial and recreational purposes; • **Protects marine flora and fauna (eg. Mangroves);** • Describes dredging and reclamation approval process; • Prevents the sale or possession of noxious fish and marine vegetation; • Has provision for penalties to be issued for breaches of the requirements of this Act.	The Act applies to works that involve dredging or working in water bodies including estuaries, lakes, intertidal zones etc.:	**If dredging or other activities in fisheries are undertaken, the requirements would be documented in the Project Environmental Management Plan for the project. Regular audits would be undertaken against the Plan.**	www.austlii.edu.au/au/legis/nsw/consol_act/fma1994193/
Marine Pollution Act 1987 ***Marine Pollution Regulation 2006***	This Act and the *Marine Pollution Amendment Regulation 2006* oblige marine operations to: • Prevent pollution of marine environment by spillages from ships and transfer operations; • Report/record oil or noxious liquid discharges from ships. Schedule 4 of the regulation provides Standards for treated sewage from vessels (faecal coliform, suspended solids and BOD)	Relevant only when dredging or working in a marine environment.	**If dredging or work in the marine environment is anticipated, the measures for monitoring compliance will be documented in the Project Environmental Management Plan.**	http://www.austlii.edu.au/au/legis/nsw/consol_act/mpa1987200/
Waste Avoidance and Resource Recovery Act 2001	This Act promotes waste avoidance and resource recovery by: • Encouraging efficient use of resources in accord with ecologically sustainable principles;	Waste is generated during construction. The principles of the Act are applied to all aspects of construction to reduce impacts from waste.	**Regular environmental inspections using standard checklist** **Audit against Waste Management Plan (if applicable) or against Project Environmental Management Plan**	

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		Environmental Legal Register		
Legislation	**Key Requirements**	**Relevance to Taylor Construction Group**	**Mechanism for Evaluating Compliance**	**Link to legislation and relevant web sites**
	• Promoting the "Avoid, reuse, recycle, dispose" hierarchy; • Ensuring industry has a responsibility for reducing and dealing with waste; • Providing penalties for breaches of this Act.	A Waste Management Plan may be required to be prepared as part of conditions of consent.		www.austlii.edu.au/au/legis/nsw/consol_act/waarra2001364/ http://www.environment.nsw.gov.au/waste/
Threatened Species Conservation Act 1995	This Act outlines the protection of threatened species, communities and critical habitat. An independent Scientific Committee determines which species, populations and ecological communities should to be listed as endangered, vulnerable or extinct, and also determines key threatening processes. Any animal, plant or habitat that is listed as endangered, vulnerable or threatened must not be harmed or damaged, unless planning approvals or licences from DECC have been granted.	Construction activities may be undertaken in areas where threatened species, communities and critical habitat exit. The presence of these should be identified by the Environmental Impact Assessment process prior to construction – usually identified by the client	**If threatened species have been identified in the Environmental Impact Assessment (usually by client), the requirements would be documented in the Project Environmental Management Plan for the project. Regular audits would be undertaken against the Plan.**	www.austlii.edu.au/au/legis/nsw/consol_act/tsca1995323/ http://www.environment.nsw.gov.au/threatenedspecies/
Native Vegetation Act 2003	This Act regulates the clearing of native vegetation on all land in NSW except for National Parks, State Forests and reserves and urban areas. Native vegetation is any species of vegetation that existed in	Approval is generally required for clearing native vegetation, although some exceptions apply.		www.austlii.edu.au/au/legis/nsw/consol_act/nva2003194/ http://www.environment.nsw.gov.au/vegetation/
Noxious Weeds Act 1993	This Act requires occupiers of land to control noxious weeds required under control categories specified in relation to the weeds concerned. There are five classes of noxious weeds: Class 1 – State Prohibited Weeds: must not be introduced/become established in NSW; Class 2 – Regionally Prohibited Weeds: must not be introduced or become established in parts of NSW; Class 3 – Regionally Controlled Weeds: area that these weeds occupy must be reduced; Class 4 – Locally Controlled Weeds: impact on economy, community, environment must be minimised; Class 5 – Restricted Plants: must not be introduced or allowed to spread from current areas.	Classified weeds that are present on project sites or establish themselves during construction must be eradicated.	**If noxious weeds are present, regular inspections should be carried out as part of the environmental inspection process**	www.austlii.edu.au/au/legis/nsw/consol_act/nwa1993182/ http://www.environment.nsw.gov.au/pestsweeds/

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		Environmental Legal Register		
Legislation	**Key Requirements**	**Relevance to Taylor Construction Group**	**Mechanism for Evaluating Compliance**	**Link to legislation and relevant web sites**
	Notices ordering the eradication of a classified weed may be served.			
National Parks and Wildlife Act 1974	Under this Act, NPWS is responsible for the care, control and management of all national parks, historic sites, nature reserves, reserves, Aboriginal areas and state game reserves. The Act governs various activities including: • Protection of flora and fauna; • Protection of Aboriginal heritage; • Licences and approvals to modify or destroy flora, fauna or Aboriginal heritage; • Penalties for breaches of the Act.	Relates to any Aboriginal heritage or relics, and protection of flora and fauna.	**If works are undertaken in areas with potential Aboriginal Heritage, These should be identified in the Environmental Impact Assessment and related documents, and incorporated into the PEMP. Regular inspections and audits would be undertaken to ensure compliance.**	www.austlii.edu.au/au/legis/nsw/consol_act/npawa1974247/ http://www.environment.nsw.gov.au/licences/
	An Aboriginal Heritage Impact Permit (AHIP) is required for any activity likely to have an impact on Aboriginal objects or places.			http://www.environment.nsw.gov.au/nswcultureheritage/dec_consultation_080103_ReviewInterimRequirementsForAHIP.htm
National Parks and Wildlife Regulation 2002	This regulation governs various activities under the *National Parks and Wildlife Act 1974* , including: • the regulation of the use of national parks and other areas administered by the NPWS (Part 2) • the preservation of public health in Kosciuszko National Park (Part 3) • licences and certificates (Part 4) • the protection of fauna (Part 5) The regulation replaces the former NPW (Land Management) Regulation 1995, the NPW (Administration) Regulation 1995 and the NPW (Fauna Protection) Regulation 2001.	Relates to any Aboriginal heritage or relics, and protection of flora and fauna.	If works are undertaken in areas with potential Aboriginal Heritage, These should be identified in the Environmental Impact Assessment and related documents, and incorporated into the PEMP. Regular inspections and audits would be undertaken to ensure compliance.	www.austlii.edu.au/au/legis/nsw/consol_reg/npawr2002338/

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Environmental Legal Register

Legislation	Key Requirements	Relevance to Taylor Construction Group	Mechanism for Evaluating Compliance	Link to legislation and relevant web sites
Heritage Act 1977	The Heritage Act protects NSW's natural and cultural heritage including archaeological remains. If a site or place is of great significance, the Heritage Council can list it on the State Heritage Register. Items listed on the State Heritage Register are subject to the provisions of the *Heritage Act 1977*, which protects items of State heritage significance. Items 50 years or older are also considered heritage items and need to be managed as such. The Act prohibits the demolition, damage or development of or around any heritage item without approval from the Heritage Office.	Requirements will be triggered if there are natural or culturally significant sites or places. These should be identified through the Environmental Impact Assessment (EIA) process (eg – EIA, REF)	**If works are undertaken in areas with potential European Heritage, these should be identified in the Environmental Impact Assessment and related documents, and incorporated into the PEMP. Regular inspections and audits would be undertaken to ensure compliance.**	http://www.austlii.edu.au/au/legis/nsw/consol_act/ha197786/
Heritage Regulations 2005	The Heritage Regulation 2005: • restates the minimum standards for the maintenance and repair of items on the State Heritage Register set in the previous regulation; and • provides for equitable and adequate funding for heritage protection through cost recovery for statutory processing..	Minimal relevance.		
Water Act 1912	An Act consolidating water rights, water and drainage and artesian wells. Provisions include: • To obtain a licence to sink or alter an artesian bore; • Not to waste water taken from dams, lakes, artesian wells and bores; • Not to unlawfully interfere with sub-surface water or obstruct its flow.	Minimal relevance.	N/A	
Water Management Act 2000 and Water Management (General) Regulation 2004	The *Water Management Act 2000* is the main piece of water legislation in NSW and governs: • Extraction of water from waterways and bores • The construction of water storage and supply structures • Development or building within the proximity of waterways	Approvals may be required to undertake water supply works, drainage works or floodplain works	**If water is extracted from waterways, this would be addressed in the EIA and PEMP. Audits of the PEMP would be undertaken to determine compliance**	http://www.austlii.edu.au/au/legis/nsw/consol_act/wma2000166/

Last updated October 2015

Project :	Powerhouse MDC	TAYLOR ENVIRONMENTAL -LEGAL -REGISTER -01		Date: 23/07/2021
		Environmental Legal Register		
Legislation	**Key Requirements**	**Relevance to Taylor Construction Group**	**Mechanism for Evaluating Compliance**	**Link to legislation and relevant web sites**
	• A licensing system established under the *Water Management Act 2000* allows for regulated usage of water resources The WMA Act consolidates the Water Act 1912 and the Rivers and Foreshores Improvement Act 1948.			
Rivers & Foreshore Improvement Act 1948	*This Act has been repealed and is replaced by the Water Management Act 2000*	Nil - repealed	N/A	
Commonweath Legal Requirements				
Environment Protection and Biodiversity Conservation Act 1999 ***(Commonwealth Act)*** (EPBC Act)	This Act aims to protect the environment, particularly matters of National Environmental Significance. Approval is required for actions that are likely to have a significant impact on: • a matter of national environmental • environment of Commonwealth land (even if taken outside Commonwealth land); • environment anywhere in the world if the action is undertaken by the Commonwealth. Permits are required under the EPBC Act for: • certain activities in Commonwealth reserves; • activities that affect listed species or communities in Commonwealth areas; cetaceans in Commonwealth waters and outside Australian waters; • the import and export of wildlife. The Act contains compliance and enforcement mechanisms such as court injunctions, required environmental audits, strict civil and criminal penalties, remediation of environmental damage, liability of executive officers, and publicising contraventions.	Approvals may be required when working in areas that may have matters with national significance. Examples may include: * Work on Commonwealth land that may have a significant impact on the environment Working in areas that are listed as: *World Heritage property * National Heritage places * Listed wetlands (Ramsar) * Threatened species or communities * Migratory species * Nuclear actions * Marine Environments	**Specific requirements for complianceshould be addressed in Environmental Impact assessments and Project Environmental Management Plans. Audits and inspections would be undertaken against the stated requirements.**	http://www.austlii.edu.au/au/legis/cth/consol_act/epabca1999588/
Other Requirements				

Last updated October 2015

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Project : Powerhouse MDC Date: 23/07/2021

ENVIRONMENTAL -LEGAL -REGISTER -01

Environmental Legal Register

Legislation	Key Requirements	Relevance to Taylor Construction Group	Mechanism for Evaluating Compliance	Link to legislation and relevant web sites
NSW Environmental Management System Guidelines Edition 2, 2007	The guidelines are published by the NSW Government to provide a framework for managing evnironmental issues on construction sites	Taylor Construction Group is seeking to gain accreditation to the NSW EMS Guidelines. The Integrated HSE management system and the Project Environmental Management Plan templates have been designed and prepared to meet these requirements		

** Note: This Legal Register provides guidance on the applicability of certain Environmental Acts and Regulations at Taylor Construction Group and should not be seen as legal advice. Should legal advice be required, appropriate legal firms should be engaged.*

Last updated October 2015

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TAYLOR

Appendix H Construction Soil and Water Management Sub-plan - Concept of Sediment and Erosion Control

J-WD-C-2.01
J-WD-C-2.11

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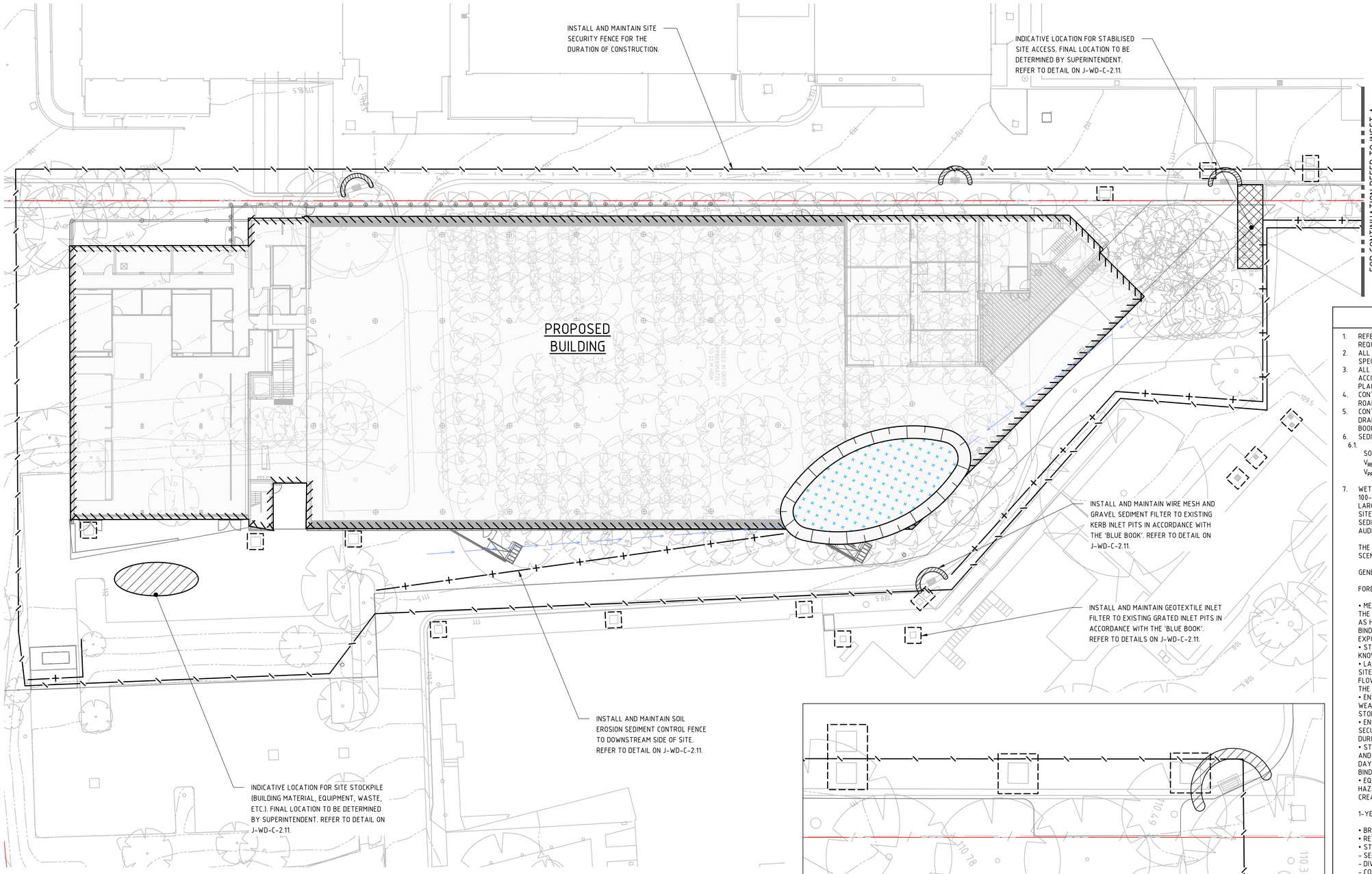

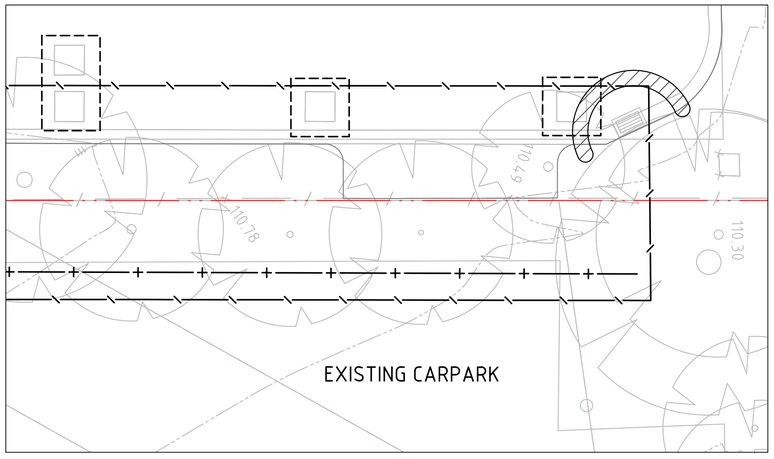

INSET A
SCALE 1:100

LEGEND

- PROPOSED 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

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'.
6. SEDIMENT BASIN SIZING BASED ON 5 DAY, 85TH PERCENTILE DESIGN RAINFALL EVENT.
   6.1. SEDIMENT BASIN CALCS
   SOIL TYPE D
   $V_{REQUIRED}$, V_{SB} = 145m³
   $V_{PROVIDED}$ = 147m³
7. WET WEATHER EVENT MANAGEMENT THE SITE IS UNAFFECTED BY FLOODING UP TO THE 100-YEAR EVENT BASED ON THE SITE LEVELS. HOWEVER, THERE IS A RISK DURING LARGE RAIN EVENTS THAT WATER RUNOFF WILL RESULT IN SEDIMENT WASHING OFF SITE AND OR DAMAGE TO THE SEDIMENT AND EROSION CONTROL SYSTEMS IN PLACE. SEDIMENT CONTROLS SHOULD BE MONITORED DAILY AND MAINTAINED REGULARLY. AUDITING MUST OCCUR ON A REGULAR BASIS TO ENSURE COMPLIANCE.

THE FOLLOWING MITIGATION MEASURES WILL BE IMPLEMENTED FOR THE FOLLOWING SCENARIOS:

GENERAL MANAGEMENT

FORECAST FOR HEAVY RAIN AND MAKE DECISIONS ON THE FOLLOWING ACCORDINGLY:

• MEASURES THE SLOW THE VELOCITY OF WATER OVER EXPOSED SURFACES WITHIN THE CONSTRUCTION AREA SUCH
AS HAY BAIL BARRIERS, INTRODUCING ROUGHNESS, FLOW CHECK MEASURES, TEXTILES, BINDING COMPOUNDS OR
EXPOSED SURFACE PROTECTIONS.
• STORAGE OF HAZARDOUS MATERIALS AND EQUIPMENT AWAY FROM FLOW PATHS AND KNOWN DRAINAGE CHANNEL
• LAYOUT OF SITE COMPOUND FACILITIES WEST OF SERVICE ROAD AND HIGH SIDE OF THE SITE AND AWAY FROM THE
FLOW PATHS WHICH ARE SHOWN ON THE SEDIMENT AND EROSION CONTROL PLANS AND THE CIVIL DRAWINGS.
• ENSURE EVACUATION ROUTES ARE KEPT CLEAR DURING HIGH-RISK PERIODS BASED ON WEATHER AND
STORM FORECASTS.
• ENSURE LOOSE MATERIALS, FUEL, CHEMICALS AND EQUIPMENT CAN EITHER BE SECURED OR REMOVED
DURING A FLOOD EVENT IF REQUIRED
• STOCKPILES SHOULD BE LOCATED A MINIMUM OF 5M FROM OVERLAND FLOW SWALES AND IF UNUSED FOR 10
DAYS THEY SHOULD BE STABILISED BY EITHER COMPACTION, COVERING, OR POLYMER BINDER
• EQUIPMENT TO BE COVERED AS REQUIRED IF RUNOFF FROM EQUIPMENT CAN BE HAZARDOUS OR
CREATE SEDIMENT OR OIL DISPLACEMENT.

1-YEAR ARI

• BRIEF PERSONNEL AT PRESTART
• REVIEW OF ALL CURRENT ERSED CONTROLS AND ENSURE ESCP IS STILL CURRENT
• STORMWATER WOULD BE MANAGED USING THE FOLLOWING CONTROLS:
- SEDIMENT FENCING
- DIVERSION BUNDS / SWALES
- COIR LOGS/ SANDBAGS/ SILT SOCKS.

5 YEAR ARI

• IMPLEMENT AS ABOVE FOR THE 1-YEAR ARI EVENT
• ENSURE ALL PLANT AND EQUIPMENT ARE REMOVED FROM AREAS OF CONCENTRATED FLOW
• SEDIMENTATION BASINS MAXIMUM CAPACITIES WILL BE MAINTAINED WHERE PRACTICALLY POSSIBLE.

100 YEAR ARI

• IMPLEMENT AS ABOVE FOR THE 1-YEAR ARI EVENT
• REMOVE ALL PLANT AND EQUIPMENT FROM SITE AREAS WHERE THERE IS POTENTIAL FOR INUNDATION
• PERIMETER CONTROLS ARE NOT EXPECTED TO BE BREACHED.

FOR CONSTRUCTION

REV	DESCRIPTION	DATE	REV	DESCRIPTION	DATE
1	ISSUED FOR SSDA COORDINATION	26.06.20			
2	RE - ISSUED FOR SSDA COORDINATION	24.07.20			
3	ISSUED FOR COORDINATION	04.09.20			
4	ISSUED FOR COORDINATION (40% TENDER)	16.10.20			
5	ISSUED FOR 50% TENDER	30.10.20			
6	ISSUED FOR COORDINATION	20.11.20			
7	ISSUED FOR TENDER	30.11.20			
8	ISSUED FOR TENDER	17.02.21			
9	ISSUED FOR DRAFT CONSTRUCTION CERTIFICATE	30.07.21			
10	ISSUED FOR CONSTRUCTION CERTIFICATE 1	16.08.21			
11	ISSUED FOR CONSTRUCTION (CC1)	08.09.21			
12	ISSUED FOR CONSTRUCTION (CC1)	15.11.21			

STRUCTURAL / CIVIL / SERVICES CONSULTANTS
NORTHROP

LANDSCAPE
ASPECT Studios

NOTES

NORTH

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PROJECT SPONSOR
NSW GOVERNMENT Create NSW Arts, Screen & Culture

DELIVERY AGENCY
NSW GOVERNMENT Public Works Advisory

Museum of Applied Arts & Sciences

PROJECT TITLE
BUILDING J
Museums Discovery Centre,
172 Showground Road
Castle Hill

SCALE CHECK 5 10

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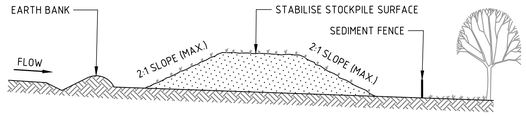
REVIEW	DIRECTOR SIGNATURE	DATE
TENDER		
CONST		

DISCIPLINE **CIVIL**

TITLE
CONCEPT SEDIMENT AND EROSION CONTROL PLAN

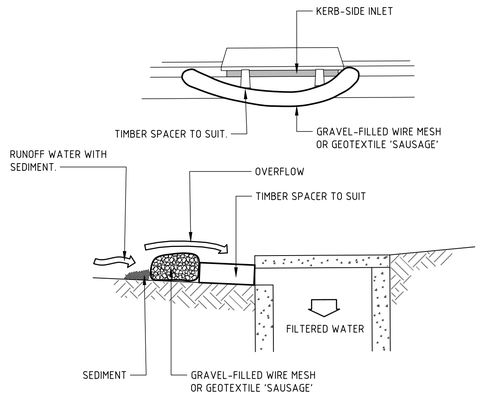
DRAWN	PLOT DATE	SCALE @A1	
CB	15.11.21	1:250	
CHECKED	PROJECT NO.	DRAWING NO.	REV. NO
BS	181569	J-WD-C-2.01	12



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.

STOCKPILES (SD 4-1)

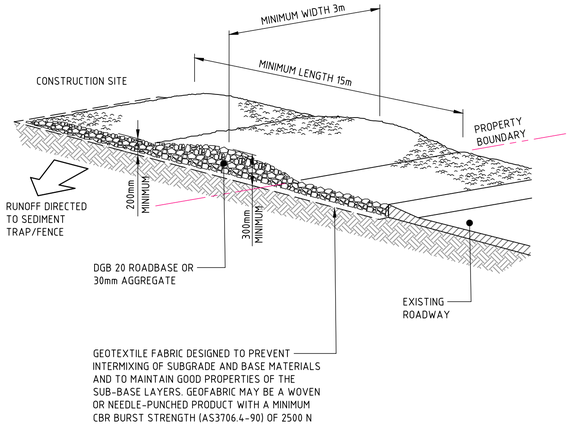


NOTE:THIS PRACTICE ONLY TO BE USED WHERE SPECIFIED IN APPROVED SWMP/ESCP.

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.

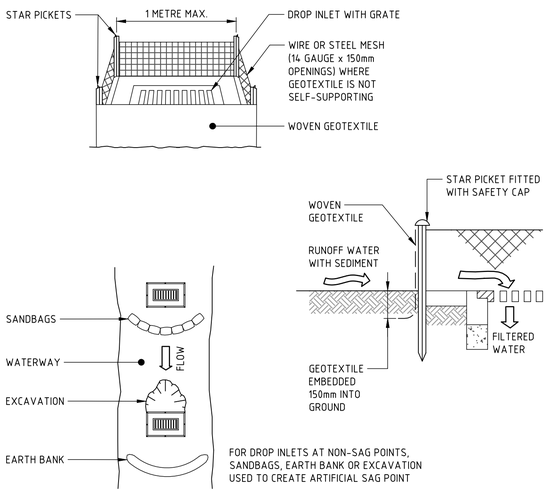
MESH AND GRAVEL INLET FILTER (SD 6-11)



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 HUMP IN THE STABILISED ACCESS TO DIVERT WATER TO THE SEDIMENT FENCE.

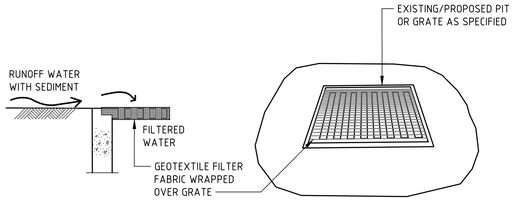
STABILISED SITE ACCESS (SD 6-14)



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 (SD 6-12)



CONSTRUCTION NOTES

1. FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE FILTER MATERIAL.
2. GEOTEXTILE PIT FILTERS TO BE USED ON PIT LOCATED ON ROAD LANEWAY SURFACE.

GEOTEXTILE FILTER WRAP

SWMP Commentary, Detailed Calculations

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:

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

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

$R_{x\text{-day, y-\%ile}}$ = 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)(iii)). 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,
	2 months soil loss calculated by RUSLE

Total Basin Volume

Site	C_v	$R_{x\text{-day, y-\%ile}}$	Total catchment area (ha)	Settling zone volume (m^3)	Sediment storage volume (m^3)	Total basin volume (m^3)
Bdg J	0.64	32.2	0.47	96.8576	48	145.2864

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

Sediment_Basin_Design_Detailed_V6 1

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	REV	DESCRIPTION	DATE
1	ISSUED FOR SSDA COORDINATION	26.06.20			
2	RE - ISSUED FOR SSDA COORDINATION	24.07.20			
3	ISSUED FOR COORDINATION	04.09.20			
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7	ISSUED FOR TENDER	30.11.20			

STRUCTURAL / CIVIL / SERVICES CONSULTANTS: NORTHROP

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PROJECT SPONSOR: NSW GOVERNMENT Create NSW Arts, Screen & Culture

DELIVERY AGENCY: NSW GOVERNMENT Public Works Advisory

Museum of Applied Arts & Sciences

PROJECT TITLE: **BUILDING J Museums Discovery Centre, 172 Showground Road Castle Hill**

SCALE CHECK 5 10

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REVIEW	DIRECTOR SIGNATURE	DATE
TENDER		
CONST		

DISCIPLINE: CIVIL

TITLE: **SEDIMENT AND EROSION CONTROL PLAN**

DRAWN	PLOT DATE	SCALE @A1
JP	30.11.20	NTS
CHECKED	PROJECT NO.	DRAWING NO. / REV. NO
EF	181569	J-WD-C-2.11 / 7

Appendix I Construction Waste Management Sub-Plan

Site Waste Management Plan (SWMP)

Hibbs & Associates Pty Ltd © 2021

SITE WASTE MANAGEMENT PLAN (SWMP)

Powerhouse Museum Discovery Centre (MDC)

Main Works Package, Construction of Building J and Associated Works

172 Showground Road, Castle Hill NSW 2154

E-PLAN-01 (Rev. July 2021) | Amended by:

Uncontrolled copy once printed

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1.2 PROJECT OVERVIEW AND SITE DESCRIPTION 4
1.3 PURPOSE OF THE SITE WASTE MANAGEMENT PLAN 4
2. WASTE MANAGEMENT RESPONSIBILITIES 4
3. DISTRIBUTION 4
4. INSTRUCTION AND TRAINING 4
5. WASTE MANAGEMENT ON SITE 5
5.1 CATEGORIES 5
5.2 WASTE REGULATIONS IN NSW 5
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1. INTRODUCTION

1.1 PROJECT INFORMATION TABLE

PROJECT INFORMATION TABLE			
PROJECT NAME		Powerhouse Museum Discovery Centre	
LOCATION		172 Showground Road, Castle Hill NSW 2154	
CLIENT		NSW Government – Public Works Advisory	
DURATION OF CONTRACT		70 Weeks	
TAYLOR CONTACT INFORMATION			
COMPANY NAME		Taylor Construction Group Pty Ltd	
ABN		25 067 428 344	
ADDRESS		Level 13, 157 Walker Street, North Sydney 2060	
TELEPHONE & FAX		Ph.: 02 8736 9000 Fax: 02 8736 9090	
POSITION		**CONTACT NAME**	**PHONE NUMBERS**
Chief Executive Officer		George Bardas	02 8736 9000
General Manager Refurbishment & Live Environment		Ben Folkard	0414 705 457
Senior Project Manager		Steve Ziaziaris	0413 182 641
Senior Site Manager		Brent Kendall	0488 022 764
HSE Manager		Andrew Andreou	0404 492 614
Safety Advisor		TBC	
Quality Manager		Stephen Player	0419 578 201
Senior Contract Administrator		Scott Dobson	0414 984 567
Structure Manager		Gary Shaw	0404 030 512
Services / Green Star		Aaron Persson	0404 858 895
Site Engineer		TBC	TBC
Foreman/ Leading Hand		TBC	TBC
Cadet		TBC	TBC
DOCUMENT CONTROL			
PREPARED BY:	D. Pribadi	Senior Contracts Administrator	
REVIEWED BY:	S. Ziaziaris	Senior Project Manager	
REVIEWED BY:		General Manager – Refurbishment & Live Environment	

REVISED BY	REV. No.	DATE	CHANGES MADE
D. Pribadi	0	13/07/2021	Initial Issue

1.2 PROJECT OVERVIEW AND SITE DESCRIPTION

Construction of the following development located at 172 Showground Road & 2 Green Road Castle Hill for NSW Government Public Works Advisory:

1. Construction of the proposed new Building J. The proposed new Building J will cater for the following uses:
   - Storage for the Powerhouse collection and archives (both collected archives and institutional archives).
   - Flexibles spaces for education and public programs, workshops, talks, exhibitions and events.
   - Suites of conservation laboratories and collection work spaces.
   - Photography, digitisation and collection documentation facilities.
   - Work space for staff, researchers, industry partners and other collaborators. This will include amenities, meeting and storage rooms, collection research and study areas as well as other ancillary facilities.
   - Components of the image and research library.
   - Object and exhibition preparation, packing, quarantine and holding areas.
2. Construction of new vehicle accessways to maintain connectivity to the MDC and TAFE sites.
3. Demolition of existing car park and vehicle accessway along the eastern and north eastern parts of the site. A new at-grade car park is proposed to be constructed by the Early Works Contractor on the eastern side of the TAFE site and will accommodate 24 car parking spaces (22 new and 2 reconfigured spaces) removed from the Building J site.

1.3 PURPOSE OF THE SITE WASTE MANAGEMENT PLAN

Taylor Construction Group is committed to improving sustainability on all of its projects: we aim to reduce the environmental impact of our operations and enable the integration of sustainability principles and practices to all activities carried out on site. Our goal on this project is to maximise the re-use of waste products, therefore minimizing the amount of waste going to landfill. The Site Waste Management Plan (SWMP) incorporates the processes that will assist the project team in achieving this goal, whilst providing the necessary means to ensure waste management is efficient, cost-effective and compliant to NSW waste regulations.

2. WASTE MANAGEMENT RESPONSIBILITIES

The site manager is the SWMP coordinator of the project and, as such, is responsible for ensuring the instruction of workers and for implementing and overseeing the SWMP.

The site manager will monitor the effectiveness and accuracy of the SWMP during the routine site visits. Independent audits will also be completed by the HSE manger via site inspections. Copies of these reports will be forwarded to the HSE manager for monitoring.

3. DISTRIBUTION

This SWMP will be communicated to the whole project team by the contract manager, who shall also distribute copies to the relevant authorities, client, project/ site manager and each subcontractor where relevant/ applicable. This will be undertaken every time the plan is updated.

4. INSTRUCTION AND TRAINING

The site manager shall provide on-site briefing via induction of appropriate separation, handling, recycling, re-use and return methods to be adopted by all parties and at appropriate stages of the project. Toolbox talks will be carried out regularly on waste issues and all subcontractors will be expected to attend. These toolbox talks are aimed at providing

employees and subcontractors with the necessary information and instruction regarding waste management so that they understand the importance of the role they play and feel motivated to work together toward the same goals.

5. WASTE MANAGEMENT ON SITE

5.1 CATEGORIES

Waste materials fall into four categories for management. These are:

1. **Reuse**. If surplus materials can be used in future operations, they are classified as materials that can be reused.
2. **Recycling**. If surplus materials cannot be reused in their present form, they will be sent to recycling.
3. **Residual waste**. Residual waste can come in several forms, including waste that cannot be disposed of due to their nature (i.e. metals, contaminated waste), unused machinery, spare parts or discarded parts.
4. **Landfill**. If the above options cannot be satisfied, materials will be sent to landfill. The project team must make all the necessary efforts to reuse and recycle materials generated on site. L**andfill must be avoided and will only be used as a last resort.**

5.2 WASTE REGULATIONS IN NSW

Acts and regulations govern waste management in NSW. According to EPA, those ho handle, store, transport, process, recycle and dispose of waste must follow these rules to minimize harm to human health and to the environment. The waste legislation in NSW is as follows:

Protection of the Environment Operations Act 1997. It is the principal environmental protection legislation for NSW. The act:

- Defines 'waste' for regulatory purposes;
- Establishes management and licensing requirements for waste;
- Defines offences relating to waste and sets penalties;
- Establishes the ability to set various waste management requirements via the Protection of the Environment Operations (Waste) Regulation 2014 (Waste Regulation).

Protection of the Environment Operations (Waste) Regulation 2014. The Waste Regulation allows the EPA to protect human health and the environment and provides a platform for a modern and fair waste industry. It includes strict thresholds for environment protection licenses and outlines the waste levy system.

Waste Avoidance and Resource Recovery Act 2001. The Waste Avoidance and Resource Recovery Act 2001 (WARR Act) promotes waste reduction and better use of our resources in NSW. It includes provisions for waste strategies and programs and for industry actions to reduce waste.

5.3 WAYS OF MINIMISING WASTE

Daily activities on this project will generate a wide range of residues such as general waste, obsolete infrastructure and/ or contaminated/ hazardous materials. With a view to maximizing waste management, the following waste hierarchy principles must be followed:

1. Reduce

Minimise waste production and over-consumption of materials by:

- Incorporating design and building practices that minimise waste production;
- Not over-ordering products or materials;
- Specifying project requirements and planning ahead to avoid over-consumption of products and materials;
- Minimising rework from errors and poor workmanship;
- Ensuring storage areas are safe and secure;
- Arranging deliveries to match work stages to avoid materials being stored on site longer than necessary.

2. Reuse

Wherever possible, reuse surplus or salvaged materials on site, off-site or on other projects:

- Establish a system whereby all products that can be reused (for the same purpose or for a new one) are identified and stored;
- Repair items so they can be reused or returned to the supplier.

3. Recycle

All materials that can be recycled must be separated and sent to a recycling facility.

5.3.1 ACTIONS TABLE

Actions for minimising waste will be updated into the following table:

Current actions table		
Action	**Responsibility**	**Notified on**

5.4 DISPOSAL OF HAZARDOUS WASTES

All hazardous or dangerous materials found or to be used during the demolition and construction phases must be handled and disposed of by competent persons only, in accordance with the EPA NSW guidelines. These materials can include:

- Dangerous or hazardous liquids;
- Asbestos waste;
- Waste lead acid batteries;
- Contaminated soil;
- Fluorescent tubes and HID lamps, etc.

5.5 SITE WASTE MANAGEMENT PLAN CHECKLIST

Item description	Yes	No
Have the recycling and waste contractors been identified?	☐	☐
Have terms and commercial rates been agreed with contractors?	☐	☐
Has each material to be used on site been identified?	☐	☐
Have all hazardous and toxic materials (e.g. asbestos) been identified and do they comply with SafeWork NSW requirements?	☐	☐
For off-site or disposal, have all the waste destination details been verified?	☐	☐
Has a waste segregation/ collection area been prepared?	☐	☐
Has the waste area been adequately signposted?	☐	☐
Has the quantity of general waste to be produced on site been estimated? Is this estimation realistic?	☐	☐
Has the person responsible ensured not to over order on materials?	☐	☐
Has the SWMP been approved by the contract manager?	☐	☐
Is returning waste to the supplier an option (e.g. plasterboard)?	☐	☐
Has the SWMP document control/ filing system been set up (site safety pack)?	☐	☐
Has the SWMP been communicated to the whole team and to the contractors?	☐	☐
Have all the SWMP training/ induction procedures for staff been met?	☐	☐
Have all the SWMP training/ induction procedures for contractors been met?	☐	☐
Comments/ further actions		

5.6 WASTE CLASSIFICATION, QUANTITIES AND MANAGEMENT PRACTICES

A specific area shall be laid out and labelled to facilitate the separation of materials for potential recycling, salvage, reuse and return. Recycling and waste bins are to be kept clean and clearly marked in order to avoid contamination of materials.

Monitoring must take place to ensure contamination of segregated skips does not occur. The type of surplus materials being produced must be continually reviewed and site set-up modified where possible to maximise reuse and recycling. The use of landfill will be the last resort.

Waste classification, quantities and management practices					
Waste type	**Classification**	**Waste stream**	**Quantity (approx.)**	**Waste destination**	**Contractor**
Asbestos	Hazardous waste (special waste)	TBC	TBC	TBC	Bingo / Yalagan Group
Batteries (lead-acid/ nickel-cadmium)	Hazardous waste	TBC	TBC	TBC	Bingo / Yalagan Group

Bricks/ blocks	General waste (non-putrescible)	TBC	TBC	TBC	Bingo / Yalagan Group
Cardboard	General waste (non-putrescible)	TBC	TBC	TBC	Bingo / Yalagan Group
Concrete	General waste (non-putrescible)	TBC	TBC	TBC	Bingo / Yalagan Group
Containers of dangerous goods	Hazardous waste	TBC	TBC	TBC	Bingo / Yalagan Group
General waste, including food	General waste (putrescible)	TBC	TBC	TBC	Bingo / Yalagan Group
Metals	General waste (non-putrescible)	TBC	TBC	TBC	Bingo / Yalagan Group
Mortar	General waste (non-putrescible)	TBC	TBC	TBC	Bingo / Yalagan Group
Pallets	General waste (non-putrescible)	TBC	TBC	TBC	Bingo / Yalagan Group
Paper	General waste (non-putrescible)	TBC	TBC	TBC	Bingo / Yalagan Group
Plasterboard	General waste (non-putrescible)	TBC	TBC	TBC	Bingo / Yalagan Group
Plastic packaging/ bags	General waste (non-putrescible)	TBC	TBC	TBC	Bingo / Yalagan Group
Sanitary products	General waste (putrescible)	TBC	TBC	TBC	Bingo / Yalagan Group
Soils		TBC	TBC	TBC	Bingo / Yalagan Group
Subsoil (clean)		TBC	TBC	TBC	Bingo / Yalagan Group
Subsoil (hazardous)		TBC	TBC	TBC	Bingo / Yalagan Group
Timber		TBC	TBC	TBC	Bingo / Yalagan Group
Trees/ plants		TBC	TBC	TBC	Bingo / Yalagan Group
Redundant Machinery		TBC	TBC	TBC	Bingo / Yalagan Group
Other		TBC	TBC	TBC	Bingo / Yalagan Group

6. RELEVANT SIGNATURES

Contract manager (name and signature)		**Date**	
Project/ site manager (name and signature)	Steve Ziaziaris	**Date**	

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Waste Management & Recycling Plan (NSW)

BINGO Industries offers a complete, comprehensive solution to the management and recycling of wastes to assure compliance with clients' waste management policy.

BINGO Recycling Centre's combine bin storage, waste collection, waste recycling and waste transfer to service the building and construction industry and domestic waste management needs in New South Wales. Wastes collected by BINGO Industries are taken directly to one of these facilities where approximately 90% of wastes are converted to recovered resources.

BINGO Recycling Centre Alexandria EPL No. 4679
BINGO Recycling Centre Artarmon EPL No. 20763
BINGO Recycling Centre Auburn EPL No. 10935
BINGO Recycling Ecology Park Eastern Creek EPL No. 20121
BINGO Recycling Centre Greenacre EPL No. 20847
BINGO Recycling Centre Kembla Grange EPL No. 20601
BINGO Recycling Centre Mortdale EPL No. 20622
BINGO Recycling Centre Patons Lane EPL No. 21259
BINGO Recycling Centre Revesby EPL No. 20607
BINGO Recycling Centre Tomago EPL No. 20585

As can be expected waste materials inwards vary considerably and are delivered to the Recycling Centres in tipping and non-tipping vehicles or in skip bins. Of the wastes inwards approximately 90% is recovered and recycled as materials outwards and the balance 10% to landfill. Waste materials inwards are processed to achieve the maximum recovery of resources and the minimum of un-recoverable material for disposal.

Typical Composition of BINGO's Wastes Inwards

Wastes Inwards	Percentage (approx.)
Heavy Recyclable Materials	45%
Light Recyclable Materials	35%
Metals	10%
Non-Recyclable Materials	10%
Total	100%

Heavy Recyclable Materials:

- Soil
- Dirt
- Sand
- Rubble
- Brick
- Concrete
- Tiles
- Stone
- Asphalt

Light Recyclable Materials:

- Timber
- Green Waste
- Cardboard/ Paper
- Plastic
- Plasterboard

Metals:

- Ferrous (steel, black iron)
- Non-Ferrous (copper, wire, aluminium, stainless)

1300 424 646
bingoindustries.com.au

At the Resource Recovery Facility an effective waste processing procedure is applied. See Materials Flow Diagram (below). Wastes inwards unloaded onto the sorting area where the waste is raked with a hydraulic excavator to expose the contents and where recyclable materials are hand and machine sorted.

BINGO Recycling Centre
Materials Flow Diagram

In summary, BINGO Industries take all their mixed waste skip bins directly to EPA Licensed Recycling Centres. From there the waste is sorted and separated into the following material classes for processing and recycling.

Type of Material	Where Processed/ Recycled	How Processed/ Recycled
Heavy Recyclable Materials (soil, dirt, sand, rubble, concrete, brick, tiles, asphalt, stone)	• BINGO Recycling Centres	Re-processed into recycled products (such as aggregates and roadbase) by crushing and screening.
Timber / Green Waste	• Clean & Green Organics • BINGO Recycling Ecology Park	Re-processed into woodchip and mulch by shredding.
Metal / Steel	• Sell & Parker • CMI • SIMS • Sydney Copper Scraps	Re-processed into new metal and steel products by shearing, baling and re-smeltering.
Brick / Concrete	• BINGO Recycling Ecology Park	Re-processed into recycled products (such as aggregates and roadbase) by crushing and screening.
Cardboard / Paper / Plastic	• Polytrade Recycling • J.J. Richards • Orora	Re-processed into new cardboard, paper and plastic products by breaking down the material into a form for re-use.
Plasterboard	• ReGyp	Re-processed into gypsum products by shredding and screening.
General Waste	• Eastern Creek Landfill	n/a

- **BINGO Recycling Centres**
  76-82 Burrows Road, Alexandria NSW 2015
  10 Mclachlan Ave, Artarmon NSW 2064
  3-5 Duck Street, Auburn NSW 2144
  Honeycomb Drive, Eastern Creek NSW 2766
  35 Wentworth St, Greenacre NSW 2190
  50 Wyllie Road, Kembla Grange NSW 2526
  20 Hearne Street, Mortdale NSW 2223
  Patons Lane, Orchard Hills NSW 2748
  37-51 Violet Street, Revesby NSW 2212
  29 Laverick Avenue, Tomago NSW 2322

- **Clean & Green Organics**
  769 The Northern Rd, Bringelly NSW 2566

- **Sell & Parker**
  45 Tattersall Road, Blacktown NSW 2148

- **CMI**
  38 York Road, Ingleburn NSW 2565

- **SIMS**
  43 Ashford Ave, Milperra NSW 2214
  76 Christie St, St Marys NSW 2760

- **Sydney Copper Scraps**
  130 Adderley St, Auburn NSW 2760

- **Polytrade Recycling**
  32 South St, Rydalmere NSW 2116
  40 Madeline St, South Strathfield NSW 2136

- **J.J. Richards**
  12 Heald Rd, Ingleburn NSW 1890
  8 Kommer Pl, St Marys NSW 2760

- **Orora**
  1891 Botany Rd, Matraville NSW 2036

- **ReGyp**
  330 Captain Cook Drive, Kurnell NSW 2231

- **Eastern Creek Landfill**
  Honeycomb Drive, Eastern Creek NSW 2766

Taylor Construction Group Pty Ltd
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TAYLOR

Appendix J Unexpected Finds Protocol

J.1 - Potential Contamiantion
J.2 - Aboriginal and Non-Aboriginal Heritage

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J.1 - Unexpected Finds Procedures – Potential Contamination

If an unexpected find of potential contamination be encountered during the development works, the following step from 1 to 13 should be followed, with reference to the flow and decision chart below. It must be ensure that implemented procedures are in accordance with other adopted site documentation.

1. Stop work in the potentially contaminated area as soon as it is safe to do so and move to a designated meeting point or safe area. Excavation will cease in the vicinity of the discovery.

2. Contact the Site Manager/Construction Foreman or Environmental Manager or Person in control of the workplace.

3. A suitable person must assess the potential risk to human health and environment posed by the unexpected find and assess if evacuation or emergency services need to be contacted. A suitably experienced environmental consultant should undertake an assessment of any unexpected finds and determine any further actions required e.g. sampling and/or validation of material, potential for remediation and/or management.

4. Delineate an exclusion/quarantine zone around the area using fencing and/or appropriate barriers and signage.

5. If required, Site Manager/Construction Foreman to arrange inspection by environmental officer/external Environmental Consultant to assess the unexpected find and provide advice as follows:

- preliminary assessment of the find and need for immediate management controls (if any)
- further assessment and/or remediation works are required and how such works are to be undertaken in accordance with contaminated site regulations and guidelines
- preparation of remedial action plan for large scale contamination or specification for smaller or minor volumes of material (if necessary)
- remediation works required (where applicable)
- validation works required following remediation works (if applicable)

6. Works are not to commence in the affected area until appropriate advice has been obtained from the Environmental Consultant or suitable qualified person and they have provided clearance. Excavation will bot recommence until the extent of the contamination has been assessed and, if necessary, a remedial action plan (RAP) has been prepared.

7. Air monitoring requirements are to be advised by an Environmental Consultant.

8. If it is deemed safe to do so, the Environmental Consultant will provide clearance for works to be proceed in the affected area. If it is not considered to be safe, works must remain on hold until appropriate assessment, remediation and/or validation measures have been actioned.

9. Excavated material from remedial activities will be separated from other materials and stockpiled assessment. Sampling of the materials will be undertaken in accordance with relevant guidelines or professional judgement where justification is applied. Samples will be analysed for a range of analytes as required for beneficial reuse or offsite disposal.

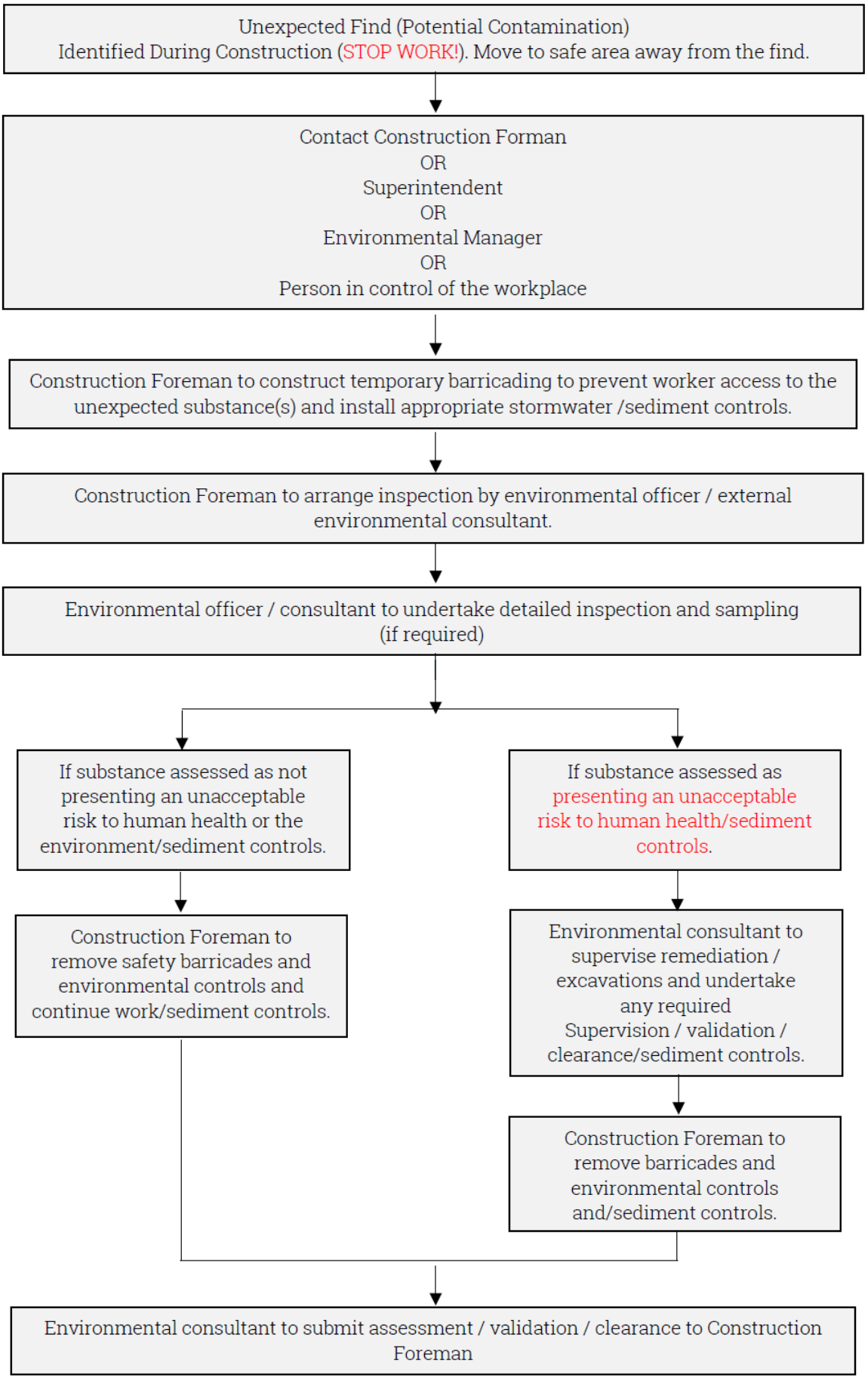
10. For materials requiring offsite disposal, laboratory results will be assessed to determine the appropriate waste classification of the material in accordance with the NSW EPA Waste Classification Guidelines (2014). Depending on the classification, materials will be transported to an appropriate waste facility that is licensed to accept waste of the relevant classification or beneficially reused if appropriate.

11. A waste tracking system recording the volume of the material waste classification/beneficial reuse status, removal documentation and truck and receiving landfill facility details must be recorded to ensure all waste is accounted for and disposed of appropriately in accordance with NSW EPA requirements.

12. Any unexpected finds must be documented, and records of volumes and types of materials identified removed from the site must be kept in file.

13. Keep a record of the unexpected find (refer to below example record sheet). The record must include exact location/GPS coordinates of the find. Documentation on the removal of any contaminated materials from the site must be kept in file.

- Volume of material removed,
- The type (classification) of material,
- Licensed facility that the material was disposed to,
- Receipt documentation from the licensed facility confirming volume received.


Unexpected Find (Potential Contamination)
Identified During Construction (STOP WORK!). Move to safe area away from the find.
Contact Construction Forman
OR
Superintendent
OR
Environmental Manager
OR
Person in control of the workplace
Construction Foreman to construct temporary barricading to prevent worker access to the unexpected substance(s) and install appropriate stormwater /sediment controls.
Construction Foreman to arrange inspection by environmental officer / external environmental consultant.
Environmental officer / consultant to undertake detailed inspection and sampling (if required)
If substance assessed as not presenting an unacceptable risk to human health or the environment/sediment controls.
If substance assessed as presenting an unacceptable risk to human health/sediment controls.
Construction Foreman to remove safety barricades and environmental controls and continue work/sediment controls.
Environmental consultant to supervise remediation / excavations and undertake any required Supervision / validation / clearance/sediment controls.
Construction Foreman to remove barricades and environmental controls and/sediment controls.
Environmental consultant to submit assessment / validation / clearance to Construction Foreman

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Unexpected Finds Register

Finds No	Time and Date	Worker(s) Name	GPS Location		Item Found	Comments and/or Observations	Who and when was notified	Results and/or comments
			Easting	Northing				
001								

J.2 - Unexpected Finds Procedures Aboriginal / Non-Aboriginal Objects

Upon discovery of an archaeological feature that is suspected to be an Aboriginal Unexpected Find (excluding human remains - see Unexpected Skeletal Remains below), the following procedure should be followed:

1. Cease works in the immediate vicinity of the find.

2. Contact the project archaeologist to verify the nature of the find.

3. If Unexpected Find is confirmed as Aboriginal archaeology, project archaeologist will notify project RAPs and DPIE of the find. (If Unexpected Find is confirmed as not Aboriginal in origin, project archaeologist will provide advice for works to recommence).

4. Project Archaeologist/Project RAPs will undertake a preliminary assessment and recording of the find.

5. Formulate archaeological or heritage management plan - specific to nature of the find.

6. Implement archaeological/heritage management plan.

7. Works may commence once archaeological/heritage management plan has been successfully implemented and project archaeologist provides sign off to contractor for works to resume in vicinity of find.

Unexpected Skeletal Remains

The unexpected discovery of any potential skeletal remains during development works would be managed in accordance with the approved Heritage NSW protocol for the discovery of human remains which is stated as:

If any suspected human remains are discovered and/or harmed the proponent must:

a) Not further harm these remains;

b) Immediately cease all work at the particular location;

c) Secure the area so as to avoid further harm to the remains;

d) Notify the local police and OEH's Environment Line on 131 555 as soon as practicable and provide any available details of the remains and their location; and

e) Not recommence any work at the particular location unless authorised in writing by Heritage NSW.

Appendix K Noise and Vibration Management Sub-Plan

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CONSTRUCTION NOISE AND VIBRATION MANAGEMENT PLAN

Powerhouse Museums Discovery Centre

2 Green Road, Castle Hill NSW 2154

PREPARED FOR
Taylor
Level 13
157 Walker Street
North Sydney NSW 2060
Tel: 02 8736 9000

Ref: SY181569-AUR03
Rev: 3
Date:12.11.2021

Construction Noise and Vibration Management Plan

Revision Schedule

Date	Revision	Issue	Prepared By	Approved By
23.07.2021	1	Preliminary for review	I. Adlington	J. Ameli
28.07.2021	2	For issue	I. Adlington	J. Ameli
12.11.2021	3	For issue	I. Adlington	J. Ameli

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1. Executive Summary

Northrop Consulting Engineers Pty Ltd (Northrop Acoustics) have been engaged by Taylor to provide a Construction Noise and Vibration Management Plan for the new works at Museums Discovery Centre at 2 Green Road, Castle Hill, NSW.

A Construction Noise and Vibration Management Plan is a site specific plan developed to ensure that appropriate work practices are implemented during the demolition, excavation and construction to minimise noise and vibration impact upon the surrounding buildings. This document provides a construction noise management plan so as to comply with the relevant consent conditions and the Interim Construction Noise Guideline.

Procedures for engagement of the neighbouring community to keep noise and vibration affected neighbours informed are addressed in this construction noise management plan. Procedures on dealing with community complaints are also outlined in this construction noise management plan.

Providing our recommendations are implemented, it is expected that any construction Noise & Vibration impact upon the surrounding buildings will be minimised in accordance with NSW Interim Construction Noise Guidelines.

2. Referenced Documents

This assessment has been prepared considering the following documentation:

Consent authority, design guidelines and standards:

- SSD 10472 Development Consent Conditions B29 and C6-C9
- *NSW Noise Policy for Industry* (NPfI), 2017, issued by NSW Environmental Protection Authority
- *Noise Guide for Local Government*, 2013, issued by NSW Environmental Protection Authority
- *NSW Interim Construction Noise Guideline* (ICNG), 2009, issued by NSW Department of Environment, Climate Change and Water
- AS 2436:2010: Guide to Noise and vibration control on construction demolition sites, 2010, issued by Standards Australia
- AS 2670:2001: Vibration and shock – Guide to the evaluation of human exposure to whole body vibration, 2001, issued by Standards Australia
- Update of Noise Data Base for the Prediction of Noise on Construction Sites, 2005, issued by UK Department for Environment Food and Rural Affairs

Project documents:

- *SY181569-AUR01-7 Museums Discovery Centre Upgrade - Acoustic Report for SSDA,* issued by Northrop

3. Site Description

The existing site is located at 2 Green Road, Castle Hill. The project involves addition of a new building to the existing site. The site is bound by Showground Road to the south, existing Museums Discovery Centre Site to the west, Castle Hill TAFE to the east, residences and playground/public park to the north.

The location of the site is shown in Figure 1.

Figure 1: Aerial view of site, the proposed building and noise measurement locations

3.1 Nearest Affected Sensitive Receivers

The nearest potentially affected neighbouring buildings are shown in Table 1, below.

Table 1: Nearest affected receivers and typical worst-case distances from the Site

Reference	Location	Typical worst case distance from the Site (m)
R1	10 Sunderland Avenue	47
R2	2 Peppertree Place	63
E1	TAFE Buildings	13

4. Relevant Acoustic Criteria

The following criteria is relevant to the project during construction phase. This section outlines the requirements of the criteria, documents and consent conditions relevant to construction noise and vibration for this project.

Construction site operators must comply with construction noise and vibration control requirements of the NSW statutory requirements and the conditions set out in the NSW Critical State Significant Infrastructure Standard Secretary's Environmental Assessment Requirements (SEARs) 2015.

The Protection of the Environment Operations Act 1997 (NSW) Act is the key piece of environment protection legislation, and the Protection of the Environment Operations (Noise Control) Regulation 2008 (NSW) provides for inspection and testing of noise emissions.

The "Interim Construction Noise Guidelines" (2009) published by the NSW Environment Protection Authority (EPA), deals with the assessment of noise from construction activities and advises on best practice approaches to minimise noise impacts. It is aimed at managing noise from construction works regulated by Office of Environment and Heritage and is used to set statutory conditions in licences or other regulatory instruments.

The "Assessing vibration: A Technical Guideline" (2006) published by the NSW EPA, is based on guidelines contained in BS 6472-1992, and presents preferred and maximum vibration values for use in assessing human responses to vibration and provides recommendations for measurement and evaluation techniques. It does not address motion sickness, occupational vibration, blasting vibration effects or vibration-induced damage to buildings or structures.

4.1 Consent Conditions

Consent Condition B29 stipulates the following:

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) Incorporate recommendations of the Acoustic Report for state Significant Development Application revision 6 prepared by Northrop, dated 20.02.2021*
- *(c) Describe procedure for achieve the noise management levels in EPA's Interim Construction Noise Guideline (DECC, 2009)*
- *(d) Hours of construction in accordance with Conditions C6 to C9*
- *(e) Outline regular community liaison with sensitive receivers around the site*
- *(f) Outline how noise and vibration impacts would be monitored during construction*
- *(g) Describe the measures to be implemented to manage high noise generating works, in close proximity to sensitive receivers*
- *(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*

4.2 NSW EPA Interim Construction Noise Guideline

Construction noise is a major environmental noise issue in NSW and it is well accepted that this activity can adversely affect, sleep, concentration and learning performance and mental and physical health. While construction noise is temporary in nature, its impacts need to be controlled.

The NSW Interim Construction Noise Guideline (ICNG) is specifically aimed at managing noise from construction works. From a regulatory perspective, the local Council is the appropriate regulatory authority for non-scheduled construction activities.

Table 2: GCN noise criteria at residences, using quantitative assessment, L_{Aeq}

Time of Day	Management Level – $L_{Aeq\ (15min)}$	How to apply
Recommended Hours: 7 am – 5 pm, Mondays to Fridays inclusive; and 8 am – 1 pm, Saturdays. No work may be carried out on Sundays or public holidays	Noise affected RBL + 10 dB	The noise affected level represents the point above which there may be some community reaction to noise. Where the predicted or measured $L_{Aeq\ (15min)}$ 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 dB(A)	The highly noise affected level represents the point above which there may be strong community reaction to noise. Where noise is above this level, the relevant authority (consent, determining, regulatory) may require respite periods by restricting the hours that the very noisy activities can occur, taking into account: 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 longer period of construction in exchange for restrictions on construction times.
Outside recommended hours	Noise affected RBL + 5 dB	A strong justification would typically be required for work outside the recommended 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(A) above the noise affected level, the proponent should negotiate with the community For guidance on negotiating agreements see Section 7.2.2 (NSW Interim Construction Noise Guideline)
Passive recreation areas	60 dB(A)	When in use

Table 3 of the construction Noise Guideline (excerpt in Table 3, below) provides recommended noise management levels for sensitive land uses other than residences.

Table 3: Noise at sensitive land uses (other than residences) using quantitative assessment

Land use	Management level, $L_{Aeq\ (15\ min)}$ (applies when properties are being used)
Classrooms at schools and other educational institutions	Internal noise level 45 dB(A)

4.3 Road Noise Policy

Noise from the vehicles associated with the development will be assessed using NSW Road Noise Policy. Table 4 presents the noise assessment criteria for land use developments with potential to create additional traffic on existing local and sub-arterial roads.

Table 4: Noise levels - Road Noise Policy

Road category	Type of project/Land use	Assessment criteria, dB(A)	
		Day	Night
Local roads	Existing residences affected by additional traffic on existing local roads generated by land use development	$L_{Aeq,1hr}$ 55 (External)	$L_{Aeq,1hr}$ 50 (External)
Freeway/arterial/sub-arterial roads	Existing residences affected by additional traffic on existing freeway/arterial/sub-arterial roads generated by land use development	$L_{Aeq,15hr}$ 60 (External)	$L_{Aeq,9hr}$ 55 (External)

- RNP recommends that "Where feasible, existing noise levels should be mitigated to meet the noise criteria. In this regard, the RNP states that for existing roads there is limited potential for noise control as the development is not linked to road improvements. It does however advise that applicable strategies include appropriate location of private access roads, regulating time of use, using clustering, and using barriers and acoustic treatments".
- Section 3.4.1 of the RNP specifies a limit of 2 dB for vehicular noise level increase over existing noise level of local roads for such developments/projects.

4.4 Construction Vibration Limits

The following criteria are considered applicable when assessing vibration emission levels from the construction works.

The effects of ground vibration on buildings near construction sites may be broadly defined by the following three categories:

1. Disturbance to building occupants - Vibration in which the occupants or users of the building are inconvenienced or possibly disturbed,
2. Effects on building contents - Vibration where the building contents may be affected, and,
3. Effects on building structures - Vibration in which the integrity of the building or structure itself may be prejudiced.

In general, vibration criteria for human disturbance (1) are more stringent than vibration criteria for effects on building contents (2) and building structural damage (3). Hence, compliance with the more stringent limits dictated by Category 1, would allow for compliance to be achieved for the other two categories.

For disturbance to human occupants of buildings, we refer to the EPA's *'Assessing Vibration; a technical guideline'*, published in February 2006. This document provides criteria which are based on the British Standard BS 6472-1992, *'Evaluation of human exposure to vibration in buildings (1-80Hz)'*.

Vibration sources are defined as C*ontinuous, Impulsive or Intermittent.* Section 2 of the technical guideline defines each type of vibration as follows:

*'**Continuous** vibration continues uninterrupted for a defined period (usually throughout the day-time and/or night-time).*

***Impulsive** vibration is a rapid build-up to a peak followed by a damped decay that may or may not involve several cycles of vibration (depending on frequency and damping). It can also consist of a sudden application of several cycles at approximately the same amplitude, providing that the duration is short, typically less than 2 seconds.*

***Intermittent** vibration can be defined as interrupted periods of continuous or repeated periods of impulsive vibration that varies significantly in magnitude'.*

The criteria are to be applied to a single weighted root mean square (rms) acceleration source level in each orthogonal axis. Section 2.3 of the guideline states:

'Evidence from research suggests that there are summation effects for vibrations at different frequencies. Therefore, for evaluation of vibration in relation to annoyance and comfort, overall weighted rms acceleration values of the vibration in each orthogonal axis are preferred (BS 6472).'

Preferred and maximum values for continuous and impulsive vibration are defined in below in Table 5 extracted from "Table 2.2 of the guideline" and the values for residential type buildings are reproduced below.

Table 5: Preferred and Maximum Weighted RMS Values for Continuous and Impulsive Vibration Acceleration (m/s^2) 180Hz

Location	Assessment period	Preferred values		Maximum values	
		z axis	x & y axis	z axis	x & y axis
Continuous vibration					
Residences	Daytime (7am-10pm)	0.010	0.0071	0.020	0.014
Impulsive vibration					
Residences	Daytime (7am-10pm)	0.30	0.21	0.60	0.42

Intermittent vibration is to be assessed using vibration dose values (VDVs). The VDV method is a fourth power approach which is more sensitive to peaks in the acceleration waveform and makes corrections to the criteria based on the duration of the source's operation.

The VDV can be calculated using the overall weighted rms acceleration of the vibrating source in each orthogonal axis and the total period during which the vibration may occur. Weighting curves are provided in each orthogonal axis in the guideline.

Preferred and maximum VDV values are defined in Table 6 below extracted from "Table 2.4 of the guideline" and VDV values for residential type buildings are reproduced below.

Table 6: Preferred and Maximum VDV Values

Location	Daytime (7am-10pm)		Night-time (10pm-7am)	
	Preferred values	Maximum values	Preferred values	Maximum values
Residences	0.20	0.40	0.13	0.26

4.5 Site Specific Criteria

Measurements were undertaken as to determine the noise criteria in accordance with the Noise Policy for Industry for the boundary of the nearest affected receiver. Measurement locations are shown in Figure 1, and details of the measurement results can be found in the Acoustic Report for State Significant Development Application prepared by Northrop entitled "*SY181569-AUR01-7 Museums Discovery Centre Upgrade - Acoustic Report for SSDA*". Based on the ambient measurements undertaken in accordance with NSW Industrial Noise Policy the project construction noise criteria at the boundary of the nearest affected residences at Peppertree Place and Sunderland Avenue are shown in Table 7, below.

Table 7: Noise Criteria and Noise Management Levels

Period	Rating Background Noise Level (RBL) – $L_{Aeq,15min}$, dB(A)	Construction Noise Criteria (RBL + 10) – $L_{Aeq,15min}$, dB(A)
Day	44	54

The criteria for Highly Noise Affected Level is 75 dB(A) and is independent of the background RBL level.

The RBLs for the evening and night periods are 43 dB(A) and 37 dB(A) respectively.

Operator attended measurements were also undertaken at the site, the details and results of which can be found in the Acoustic Report for SSDA.

5. Acoustic Assessment

At this stage, the proposed nature of construction works and activity has not been finalised and will be subject to final input by the construction contractor. We have assumed typical plant and activity will entail the following stages and typical plant items as follows:

- Demolition and excavation works – trucks, site excavation works, loaders, skid steer, truck and dog, tree mulcher, chain saws and concrete saws
- Structural works – main structural works, crane hoists, concrete pumps, concrete saws, grinding, hammering
- Fit out works – mainly enclosed finishing works using hand tools. For the purposes of this assessment we have assumed a typical shielding loss of 20 dB.

Representative plant and plant sound power levels have been derived from the UK Department for Environment Food and Rural Affairs (DEFRA 2005) *'Update of Noise Data Base for the Prediction of Noise on Construction Sites'* and TfNSW *'Construction Noise & Vibration Strategy (CNVS)'*.

Noise from construction activities has been predicted at nearest sensitive noise receivers. A 25dB(A) facade attenuation has been applied for the TAFE buildings as the assessment criteria is for internal spaces.

Results are shown in Tables 8-10, below.

Table 8: Predicted construction noise levels at "R1": 10 Sunderland Avenue

Construction Activity	SWL, dB(A)	Predicted Noise Level at R1, dB(A)	Complies with Noise Affected Level?	Complies with Highly Affected Level?
Demolition and excavation				
Truck delivery	107	66	No	Yes
Excavator	107	66	No	Yes
Loaders	112	71	No	Yes
Skid steer	110	69	No	Yes
Truck and dog	108	67	No	Yes
Mulcher	116	75	No	Yes
Chain saws	114	73	No	Yes
Concrete saws	107	66	No	Yes
Structural works				
Excavator	107	66	No	Yes
Truck delivery	107	66	No	Yes
Concrete pump	108	67	No	Yes
Concrete saws	107	66	No	Yes
Mobile crane	104	63	No	Yes
Angle grinder	108	67	No	Yes
Hammer	97	56	No	Yes
Fit Out				
Angle grinder	108	47	Yes	Yes
Hammer	97	36	Yes	Yes
Truck delivery	107	66	No	Yes

Table 9: Predicted construction noise levels at "R2": 2 Peppertree Place

Construction Activity	SWL, dB(A)	Predicted Noise Level at R2	Complies with Noise Affected Level?	Complies with Highly Affected Level?
Demolition and excavation				
Truck delivery	107	63	No	Yes
Excavator	107	63	No	Yes
Loaders	112	68	No	Yes
Skid steer	110	66	No	Yes
Truck and dog	108	64	No	Yes
Mulcher	116	72	No	Yes
Chain saws	114	70	No	Yes
Concrete saws	107	63	No	Yes
Structural works				
Excavator	107	63	No	Yes
Truck delivery	107	63	No	Yes
Concrete pump	108	64	No	Yes
Concrete saws	107	63	No	Yes
Mobile crane	104	60	No	Yes
Angle grinder	108	64	No	Yes
Hammer	97	53	Yes	Yes
Fit Out				
Angle grinder	108	44	Yes	Yes
Hammer	97	33	Yes	Yes
Truck delivery	107	63	No	Yes

Table 10: Predicted internal construction noise levels at "E1": TAFE buildings

Construction Activity	SWL, dB(A)	Predicted Noise Level at E1, dB(A)	Complies with internal Management Level?
Demolition and excavation			
Truck delivery	107	52	No
Excavator	107	52	No
Loaders	112	57	No
Skid steer	110	55	No
Truck and dog	108	53	No
Mulcher	116	61	No
Chain saws	114	59	No
Concrete saws	107	52	No
Structural works			
Excavator	107	52	No
Truck delivery	107	52	No
Concrete pump	108	53	No
Concrete saws	107	52	No
Mobile crane	104	49	No
Angle grinder	108	53	No
Hammer	97	42	Yes
Fit Out			
Angle grinder	108	33	Yes
Hammer	97	22	Yes
Truck delivery	107	52	No

The above summary results indicate that for residences most activities/noise levels comply with the Highly Noise Affected Levels but mostly exceed the Noise Affected Level. The Interim Construction Noise Guideline proposes that noise levels not exceeding the Noise Affected Level i.e. background noise levels (RBL for day – see Table 7) by 10 dB are considered acceptable for construction works. However, for those exceeding the above and exceeding the Highly Noise Affected Level, it's expected that community will have a strong reaction.

The acoustic assessment results at the worst-case distances are as follows:

- At R1, exceedances up to 21dB(A) over the Noise Management Level are predicted. Exceedance of the Highly Noise Affected Level is not expected.
- At R2, exceedances up to 18dB(A) over the Noise Management Level are predicted. Exceedance of the Highly Noise Affected Level is not expected.
- At E1, exceedances up to 16dB(A) over the internal Noise Management Level are predicted.

Given predicted exceedences, suitable mitigation and management measures will be required for the project.

6. Recommended Construction Noise & Vibration Mitigation and Management Strategies

6.1 Construction Noise Mitigation

Information in Table 11 referenced from AS 2436:2010 details the potential noise reduction of standard engineering mitigation measures, typically utilised on construction and demolition sites.

Table 11: AS 2436:2010 – Construction noise mitigation measures

Noise mitigation measure	Typical noise reduction, L_p – dB(A)
Distance attenuation	6 dB per doubling of distance
Screening and barriers	Typically, 5 to 10 dB(A) maximum 15 dB(A)
Enclosure	Typically, 15 to 25 dB(A) maximum 50 dB(A)
Silencing	Typically, 5 to 10 dB(A) maximum 20 dB(A)

Feasible and reasonable work practices should be implemented to reduce the noise impact to the nearest affected receivers. The following is recommended to reduce the noise impact as much as possible:

- Locate the noisiest equipment as far from the residences and TAFE buildings as possible, preferably to the south of the site near Showground Road where possible. Increasing the distance to over 150m from the residences and over 60m from the TAFE buildings will result in an audible difference in noise levels (predicted exceedance of up to 10dB(A) for residences and 3dB(A) for TAFE buildings), reducing the noise impact. It is recommended that in particular the tree mulcher is used only to the south of the site, as far from the residential and TAFE buildings as possible. Where possible, trees are recommended to taken off site to be mulched.
- It is recommended that local acoustic barriers are used for noisy equipment identified in Tables 8-10. Barriers are recommended to be installed for the duration of the use of the equipment, surrounding the location of each piece of equipment such that line of site between the equipment and residences and classrooms is blocked. Barriers shall be minimum R_w 25 such as “Flexshield” curtains supported by temporary fencing, plywood of fibre cement, minimum 2.1m in height with no gaps, including to the bottom. Barriers are most effective when they are installed as close to the noise source as possible.

6.2 Hours for Construction Work

Conditions C6 to C9 stipulate the permitted construction hours for the project as follows:

C6. Construction, including the delivery of plant, equipment and any materials to and from the site, may only be carried out between the following hours:

(a) between 7 am and 5 pm, Mondays to Fridays inclusive; and
(b) between 8 am and 1 pm, Saturdays.
(c) No work may be carried out on Sundays or public holidays.

C7. Construction activities may be undertaken outside of the hours in Condition C6:

(a) if required 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.

C8. Notification of such construction activities as referenced in Condition C7 must be given to affected residents before undertaking the activities or as soon as is practical afterwards.

C9. Rock breaking, rock hammering, sheet piling, piledriving and similar activities may only be carried out between the following hours:

(a) 9.00 am to 12.00 pm, Monday to Friday:
(b) 2.00 pm to 5.00 pm, Monday to Friday; and
(c) 9.00 am to 12.00 pm, Saturday.

As such, construction activities shall be limited to the above hours. For any activities undertaken outside the regular construction hours allowed under condition C7 (a) and (b), the surrounding affected residences shall be notified in writing before undertaking the activities or as soon as is practical afterwards.

For condition C7 (c), activities are considered inaudible if they are predicted to be less than the rating background noise level (RBL). The RBLs for the evening and night periods are 43 dB(A) and 37 dB(A) respectively. The only activity predicted to be below these RBLs is hammering during fit out stage (assuming 20dB(A) façade loss), so this is the only activity that can be undertaken outside of the recommended construction hours under condition C7(c). It should be noted that the evening period begins at 6pm and out of hours work would be considered from 5pm, however it is expected that the RBL would be similar during this time so the assessment would have the same outcome.

The highly noise affected level represents the point above which there may be strong community reaction to noise. 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:

- 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.

6.3 Operational Practices to Minimise Construction Noise Impacts

The Highly Noise Affected level represents the point above which there may be strong community reaction to noise. The construction noise mitigation measures detailed in Section 6.1 above do not provide sufficient attenuation to achieve construction noise levels compliant with the ICNG criteria, therefore, noise from construction activity must be managed to minimise the temporary loss of acoustic amenity on the nearest affected receivers and surrounding community. Noise management can be achieved through activities such as scheduling, community engagement and operational practices to minimise noise impact.

The Interim Construction Noise Guideline notes that there may be some community reaction to noise from major construction projects where this is more than 10 decibels above the background noise level for work during the daytime. This recognises that construction noise is generally temporary with the community having a slightly higher tolerance for it.

The best management practices involve adopting particular operational procedures that minimise noise while retaining production efficiency. Some common general noise reduction strategies include:

- Changing the activity to reduce the noise impact or disturbance (e.g. reorganising the way the activity is carried out).
- Replacement of noisy equipment by less noisy equipment / operations. For example at close distances, jack hammering should be replaced by saw cutting or impact piling to be replaced by screw piling,
- Choosing a suitable time — schedule noisy activity to less sensitive times of the day. There are sensitive times of the day for different people, for example, schools during the day, times of religious services, and residences during evenings and night. Where several noisy pieces of equipment are used, their operation should be scheduled to different times to minimise impacts.
- Keeping neighbours informed of a planned noisy activity, its duration and the reasons for the activity. Neighbours may be more accepting of temporary noise if they know when and why the noise is happening, and how long it will last.
- Educating staff and contractors about noise and quiet work practices. This could include signage, for example, some construction sites have signs reminding contractors to consider neighbours and be quiet, and not to start noisy work too early (e.g. before 7.00 am).

Noise can be controlled in the transmission path by using separation distances, barriers and sound absorptive materials.

- Increasing the separation distance (distance attenuation) between the noise source and receiver reduces the noise level. As a rule of thumb, each doubling of the distance from a noise source equates to a reduction of sound pressure level of 6 dB (the inverse square law). This does not apply close to a loud noise source.
- Careful site selection for a new noisy activity can help minimise noise impacts where it is possible to provide adequate separation distances.
- Barriers are most effective when they are located close to the noise source, or close to the noise receiver and block the line of sight between the source and receiver. The amount of noise reduction achieved depends on the height and mass of the barrier and the frequency of the noise (barriers are less effective for low-frequency noise). Noise barriers should have no gaps. Use of absorptive material on the side of the barrier facing the noise source can also help to reduce noise levels by reducing noise reflections. Trees or other vegetation do not provide an effective noise barrier. Some limited attenuation may be gained where trees are densely planted but little attenuation is achieved for low frequencies.
- Sound-absorptive materials reduce the level of reflected sound. They are porous materials such as glass fibre, wool and mineral wool. Thin layers are capable of absorbing only high frequencies, whereas thicker layers can absorb a wider frequency range.

6.4 Construction Truck and Traffic Management

Taylor has advised the following regarding truck access to the site throughout the construction:

Consistent with the Transport Impact Assessment prepared by JMT Consulting, it is imperative that vehicles travelling to the site enter and exit in a left turn in / left turn out pattern via the Showground Road entry. There will be strictly no access to the site via Green Road or Castle Hill TAFE.

Vehicles such as truck and dog trailers which will be used to export spoil material, will be able to complete a U-turn on the benched pad of Building J. A similar U-turn pattern for semi-trailer vehicles will not be possible as the project progresses as new structure such as footings & retaining walls will block access to the central area of the site. As such, Taylor, through consultation with all required stakeholders, would organise for entry via Showground Road and exit via Windsor Road (or vice versa) as per the marked-up plan from JMT Consulting's report below. Such a route will only be

utilised for particular circumstances such as precast or structural steel delivery or on a concrete pour day where vehicle traffic entering and exiting site would be higher than usual.

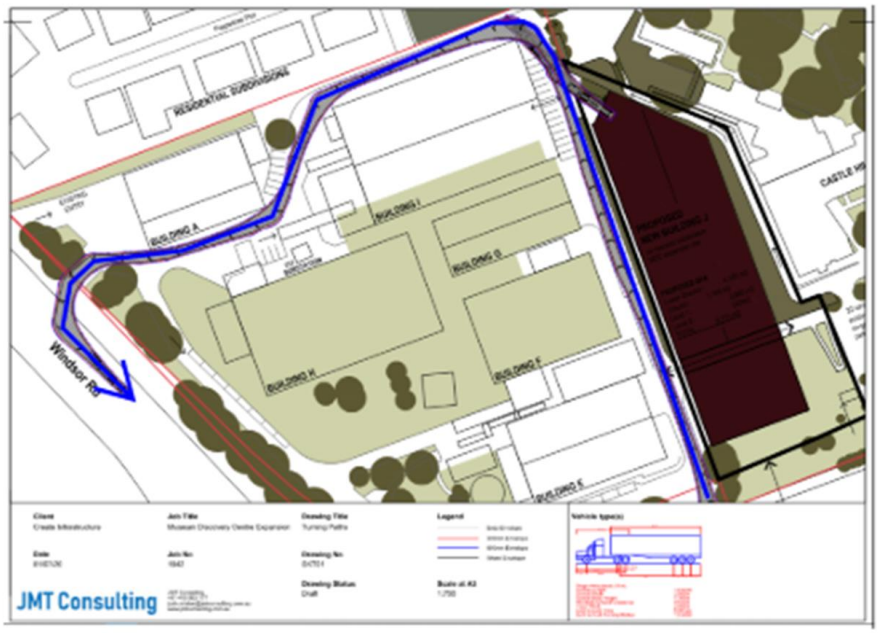

Figure 2: Alternative truck route – note use of this route is expected to be limited.

A traffic controller will also be used to manage entry and exit into site along with the management of pedestrian flows both entering site and those travelling to adjacent buildings and along existing paths. During peak periods, an additional traffic controller will be used to manage traffic flows within site boundaries.

All truck movement should be limited to the approved construction hours in Section 6.2.

In general, surrounding residences along the route will be subject to passing truck noise. To minimize any noise impact the contractor should train and instruct the truck drivers to exercise caution to keep the noise to a minimum. The following is recommended for truck activity at the Site:

- Drivers should avoid unnecessary idling and switch off engines during loading/unloading of the trucks, and whenever trucks are stopped. Signage to be displayed along the route to and within the loading dock to notify drivers to switch off engines during loading/unloading and whenever trucks are stopped
- Limit speed to 10km/hr within the delivery route, signage to be displayed enforcing speed limit
- Broadband “quacker” reverse alarms are recommended to be used over tonal reverse alarms
- Trucks should be properly maintained and have proper silencers fitted to control engine noise. Brake noise not to be emitted

Additionally, any residences neighbouring the route between Showground and Windsor Roads shall be given reasonable notice of any truck movements scheduled on that route.

For trucks travelling on the surrounding road network the noise impact will be assessed against the requirements of NSW Road Noise Policy (RNP). At this stage, the exact truck numbers are not known. Trucks will predominantly be entering and exiting via Showground Road, as stipulated above.

For generated traffic associated with such developments the RNP allows 2 dB(A) increase on local and collector roads. In order for a road noise level to increase by 2 dB(A), a significant increase in traffic volume would be needed. A 2 dB(A) increase in noise levels will require a 66% increase in

traffic volume (note: the addition of noise is on logarithmic basis. A doubling in traffic volume corresponds to a noise increase of 3 dB(A)).

From experience with similar projects, it is estimated that the number of trucks travelling to Site will be approximately 8-10 per day. Assuming that the truck movements are spread evenly throughout the day, there will be 1-2 truck entering or leaving the Site in each hour.

Considering the high volume of traffic on Showground and Windsor Roads, the addition of 1-2 truck/hour, will be well below 66% volume increase hence will not result in a perceptible difference in noise level. The resulting noise increase will be well within the 2 dB(A) limit increase, hence will comply with RNP noise requirements.

6.5 Respite Periods

The following construction-related noise-generating activities have been identified by the ICNG as having particularly annoying or intrusive characteristics

- Use of power saws, such as used for cutting timber, rail lines, masonry, road pavement or
- Steel work
- Grinding metal, concrete or masonry
- Rock drilling
- Line drilling
- Vibratory rolling
- Jackhammering, rock hammering or rock breaking
- Impact piling

It is recommended that respite periods are exercised for the above activities such that:

- They are only undertaken after 8.00 am,
- They are only undertaken over continuous periods not exceeding 3 hours with at least a 1 hour respite every three hours ('Continuous' means any period during which there is less than an uninterrupted 60 minute respite between temporarily halting and recommencing any of the intrusive and annoying work referred to in section 4.5 of ICNG.)

6.6 Community Engagement

For the construction works, contact with the nearest affected community is desirable once approval has been given to commence works and should be undertaken prior to any work beginning. The type of community engagement should relate to the likelihood and extent of noise and vibration impacts from the construction works.

The aim of community engagement is to:

- Establish good working relationships between the development owner, builder, the community and other stakeholders in relation to the construction project
- Receive feedback on the project’s environmental performance, discuss community concerns and identify opportunities for the resolution of community complaints and concerns
- Gain advice on how best to communicate relevant information on the project and its environmental performance to the broader community
- Work cooperatively towards outcomes of benefit to the project, immediate neighbours and the local and regional community.

The Project Manager shall nominate the construction site manager as a community liaison officer for the project as a point of contact for the community regarding issues related to the construction of the development, including issues relating to noise and vibration. Any formal complaints received regarding noise and vibration matters at the construction site shall be passed on to the Project Manager for the complaints to be addressed and resolved.

Being up-front with the noise affected community from the outset can assist in transferring information to the affected community. An example of being up-front is to present noise and vibration related information on the construction works to noise affected community before commencing works.

6.6.1 Dealing with Community and Public Complaints during Construction

Complaints from the community and public can arise when accidental or unintentional noise and/or vibration are generated due to unforeseen circumstances or error of judgement made by the construction team. The community and public generally understand when this happen once or not too often. The complaints must be handled in a serious and respectful way. The complaints should be recorded and logged in a noise and vibration complaints log book and followed up by the construction site manager. Noise monitoring may be an appropriate response to a compliant, to determine whether noise levels are consistently exceeding predicted noise levels. Noise and vibration monitoring details are provided in Section 6.8.

Following resolution of the noise or vibration problem, the complainant should be informed of the remedial actions taken before the complaint can be recorded as being resolved.

6.6.2 Training

The site manager shall implement appropriate training and induction in the requirements of this construction noise management plan. All employees, contractors and utility staff working on site will undergo site induction training which includes Environmental Due Diligence Training. The induction will address:

- This Construction Noise Management Plan
- The existence of noise legislation and what this means for the project, i.e. OEH and Noise Management Levels
- Delivery hours and locations.
- Reporting and recording environmental incidents related to noise and vibration.
- Noise and vibration minimisation measures.
- The importance of regular maintenance noise and vibration generating plant.

Records will be kept of all personnel undertaking the site induction and training, including the contents of the training, date and name of trainer/s. Key staff will undertake more comprehensive training relevant to their position and/or responsibility. This training may be provided as “toolbox” talk training.

6.7 Vibration Mitigation and Management

The management objective for the site is to limit vibration from construction activities so as to avoid building damage and human discomfort associated with the construction works. It is noted that buildings in the vicinity of development are residential. Vibration impacts on the buildings and their occupants should be considered for the assessment of structural damage and human annoyance, respectively.

Typical vibration levels from construction plant equipment most likely to cause significant vibration are summarised in Table 12 below.

Table 12: Typical ground vibration generated by construction plant

Activity	Typical ground vibration
Bulldozers/ Excavators	Typical ground vibration from bulldozers range from 1mm/s to 2mm/s at distances of approximately 5m and at distances greater than 20m, vibration levels are usually below 0.2mm/s.
Jack Hammers	Typical ground vibrations from jack hammers are generally greater than 5mm/s at distances of 1m and no more than 2mm/s for distances of 5m or more.
Truck traffic	Typical vibration from heavy trucks passing over normal (smooth) road surfaces generate relatively low vibration in the range 0.01-0.2mm/s at the footings of buildings located 10-20m from a roadway. In general ground vibration from trucks is usually imperceptible in nearby buildings.

Therefore, vibration management strategies implemented on site shall consider these items of plant and construction activities involving these items of plant.

6.7.1 Buffer Distances for Vibration Control

The relationship between vibration and the probability of causing human annoyance or damage to structures is complex. This complexity is mostly due to the magnitude of the vibration source, the particular ground conditions between the source and receiver, the foundation-to-footing interaction and the large range of structures that exist in terms of design (i.e. dimensions, materials, type and quality of construction and footing conditions).

The intensity, duration, frequency content and number of occurrences of a vibration, all play an important role in both the annoyance caused and the strains induced in structures.

As the pattern of vibration radiation is very different to the pattern of airborne noise radiation, and is very site specific, below are some indicative minimum 'buffer' distances determined for some common construction plant with data available from recent projects, which assist to avoid human discomfort in terms of perceptible (or tactile) vibration during daytime construction hours.

Table 13: Recommended Minimum Buffer Distances for Construction Plant

Plant Item	Recommended Minimum Buffer Distance (m)
CFA (Continuous Flight Auger) Piling rig	10
Excavators	10
Jack hammers	5
Vibratory rollers	30

6.7.2 Vibration Management Measures

Where vibration generating equipment work occurs within the buffer distances, to ensure vibration impacts are minimised during the construction period, the following vibration management control measures are recommended:

1. The proper implementation of a vibration management plan is required to avoid adverse vibration disturbance to affected occupancies. Consultation with occupants and property owners is recommended and should be aimed at providing a communication path directly to the Project Manager.
2. A management procedure will be implemented to deal with vibration complaints. Each complaint will be investigated and where vibration levels are established as exceeding the set limits, appropriate amelioration measures shall be put in place to mitigate future occurrences

3. Where vibration is found to be excessive, management measures shall be implemented to ensure vibration compliance is achieved. Management measures may include modification of construction methods such as using smaller units, establishment of safe buffer zones and if necessary, time restrictions for the most excessive vibration activities. Time restrictions are to be negotiated with affected receivers.

The residential and TAFE buildings are not within the Buffer Distances of CFA, excavator and jack hammer hence these equipment do not need any specific measures.

If vibratory rollers are to be used, the buffer distances should be considered and a small suitable unit to be selected to avoid vibration impacts.

Note that the museum buildings E, F, G and I are in the vicinity of the construction site. If there is any excavation close to the buildings or if the buildings fall within the Buffer distances of any equipment, the above rules and mitigations should be strictly observed to avoid damage to the buildings.

6.8 Monitoring Program

At the discretion of the Council, regular noise and/or vibration monitoring may be required during the construction period.

If required, noise and/or vibration monitoring shall be undertaken by a suitably qualified acoustic consultant. Reports shall be provided stating the measurement methodology and results of monitoring, and any recommendations for mitigation.

Where noise or vibration impacts are likely to occur (i.e. vibration generating equipment working within the buffer distance), it is recommended that regular noise or vibration checks, monitoring or inspections are undertaken during the construction period. Where monitoring indicates that measured noise levels consistently exceed the predicted noise level by more than 3dB, additional mitigation measures will be implemented to reduce the noise levels.

Noise and vibration monitoring shall be undertaken by a suitably qualified acoustic consultant in accordance with Table 14. Reports shall be provided stating the measurement methodology and results of monitoring, and any recommendations for mitigation. Long term noise monitoring data shall be acquired over a period of minimum 10 days, excluding rain and excessive wind events using 15-minute A frequency weighted measurements and broadband levels for L_{Aeq}, L_{A10}, L_{A90}, L_{Amax} and L_{Amin} shall be recorded.

Spot checks using a hand-held Type 1 integrating sound level meter with octave band filters may be undertaken to check equipment noise levels against manufacturers specifications and to check worst-case noise impacts at the commencement of high noise generating activities. Operator attended measurements shall be 15-minute A frequency weighted measurements and record octave band levels for L_{Aeq}, L_{A10}, L_{A90}, L_{Amax} and L_{Amin}. Reports shall be provided stating the measurement methodology and results.

Table 14: Recommended noise and vibration monitoring program

Monitoring condition		Frequency	Monitoring Location
Noise monitoring	During high noise construction activities	Monthly	Nearest affected receiver
	Where a complaint has been received and monitoring is considered an appropriate response to determine whether noise levels are consistently exceeding predicted noise level by more than 3dB	As required	At address of complainant
Vibration monitoring	Vibration generating works undertaken at distances less than the buffer distances presented in Table 13	As required	Nearest affected receiver
	Where a compliant has been received and monitoring is considered an appropriate response to determine whether noise levels are consistently exceeding vibration criteria shown in Table 5	As required	At address of complainant

7. Conclusion

A Construction Noise and Vibration Management Plan is a site specific plan developed to ensure that appropriate work practices are implemented during the demolition, excavation and construction to minimise noise and vibration impact upon the surrounding buildings. This document provides a construction noise management plan so as to comply with the relevant consent conditions and the Interim Construction Noise Guideline.

Procedures for engagement of the neighbouring community to keep noise and vibration affected neighbours informed are addressed in this construction noise management plan. Procedures on dealing with community complaints are also outlined in this construction noise management plan.

Providing our recommendations are implemented, it is expected that any construction Noise & Vibration impact upon the surrounding buildings will be minimised in accordance with NSW Interim Construction Noise Guidelines.

Appendix L An Environemntal Policy

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TAYLOR

Environmental Policy

Taylor regards appropriate management of environmental issues as integral to our business. We are committed to the protection of the environment and ecologically sustainable practices in all aspects of our operations.

We will comply with all relevant legislation governing the protection of the environment. Our environmental management systems will address all aspects of the International Standard, ISO 14001:2016: "Environmental Management Systems – Requirements with guidance for use".

In managing our business, we make a commitment to:

- Work pro-actively with our clients, regulators, and other community stakeholders to enable environmental issues to be addressed at an early stage of development.
- Take local community views into consideration and ensure that we inform, listen to and respond to reasonable concerns relating to our projects.
- Undertake our activities in a manner that is consistent with the principles of ecologically sustainable development.
- Prevent pollution and reduce adverse environmental impacts of our activities on the natural, built and cultural environment.
- Promote the efficient use of natural resources and reduce waste through the use of the waste hierarchy – avoid, reduce, re-use, recycle and finally dispose.
- Set realistic environmental objectives and targets at all relevant levels within the company and continually monitor performance.
- Promote environmental awareness among all employees and subcontractors to achieve our environmental objectives.
- Continually improve our environmental performance through periodic review and evaluation of our policy and management systems to ensure they remain suitable, adequate and effective.
- Encourage a sense of personal responsibility for environmental issues amongst employees and subcontractors through effective communication, training and positive organisational culture.

This policy will be reviewed in December 2021.

George Bardas
Chief Executive Officer

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Appendix M Spill Response Flowchart

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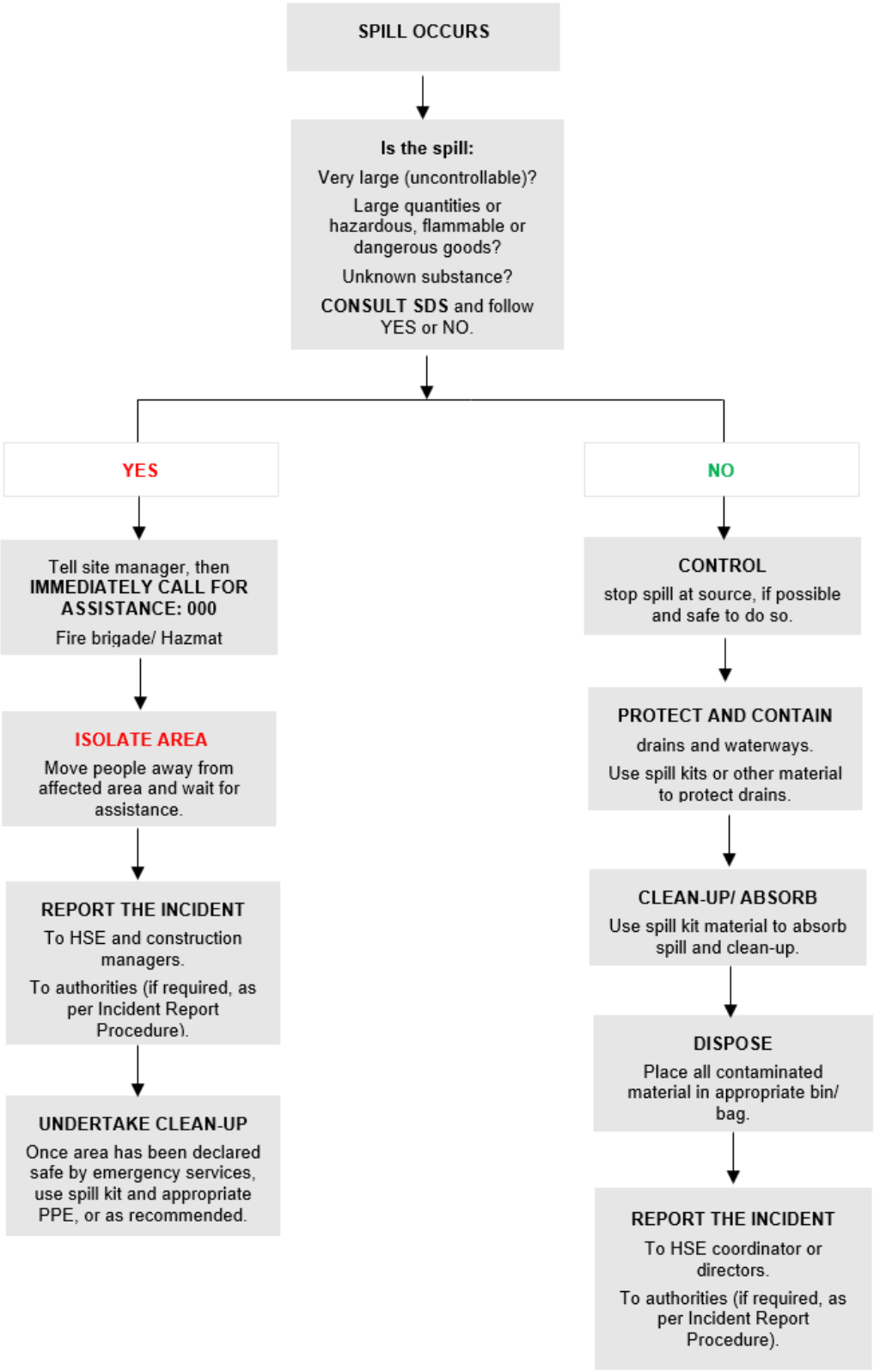
SPILL OCCURS
Is the spill:
Very large (uncontrollable)?
Large quantities or hazardous, flammable or dangerous goods?
Unknown substance?
CONSULT SDS and follow YES or NO.
YES
NO
Tell site manager, then IMMEDIATELY CALL FOR ASSISTANCE: 000
Fire brigade/ Hazmat
ISOLATE AREA
Move people away from affected area and wait for assistance.
REPORT THE INCIDENT
To HSE and construction managers.
To authorities (if required, as per Incident Report Procedure).
UNDERTAKE CLEAN-UP
Once area has been declared safe by emergency services, use spill kit and appropriate PPE, or as recommended.
CONTROL
stop spill at source, if possible and safe to do so.
PROTECT AND CONTAIN
drains and waterways.
Use spill kits or other material to protect drains.
CLEAN-UP/ ABSORB
Use spill kit material to absorb spill and clean-up.
DISPOSE
Place all contaminated material in appropriate bin/ bag.
REPORT THE INCIDENT
To HSE coordinator or directors.
To authorities (if required, as per Incident Report Procedure).

Appendix N An Organisational Chart of Project Team

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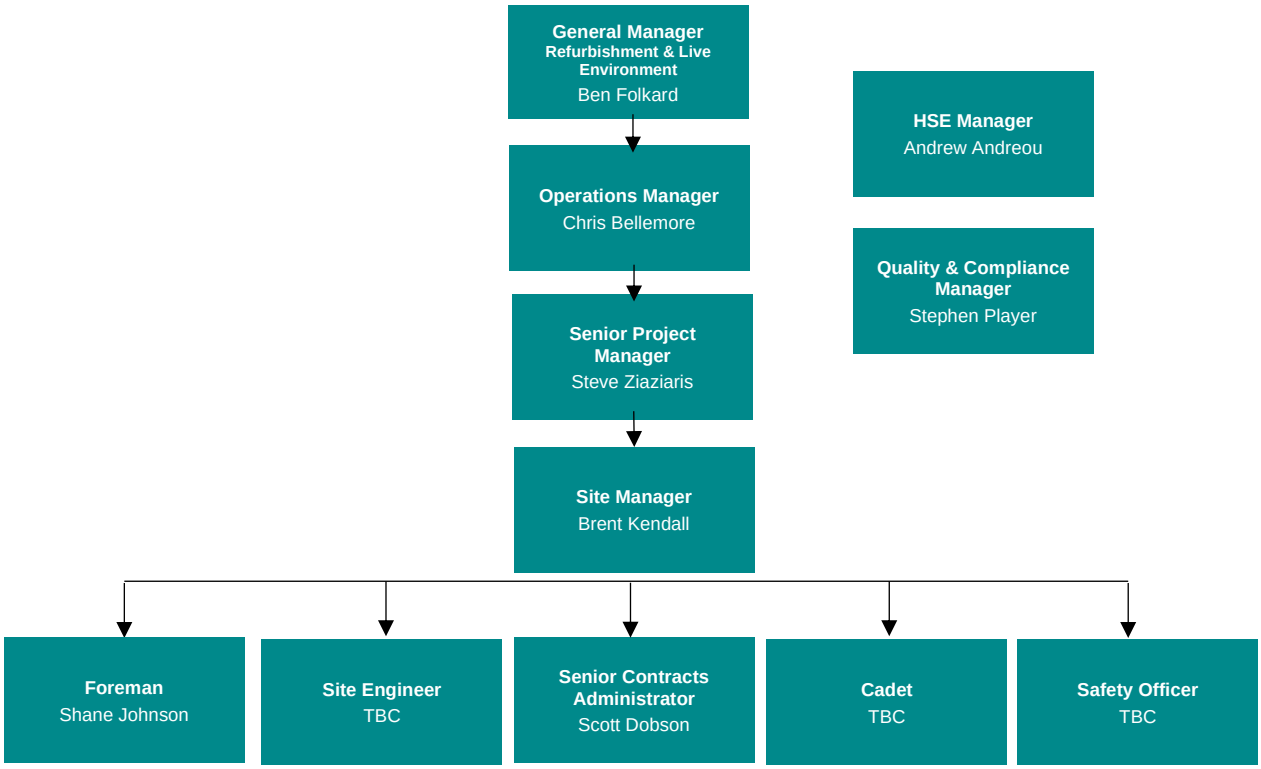
Project Team



Appendix O Environmental Risk Assessment

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Section D - Environmental aspects. Environmental Risk Matrix

When it is not reasonably practicable to eliminate the risk, workplace health and safety legislation requires the hierarchy of controls to be implemented

Hierarchy of controls	The measure of what is reasonably practicable
1. Eliminate the hazard altogether (e.g. design change)	Something is 'practicable' if it's capable of being done. Whether it is also 'reasonable', the following must be considered: • The severity of any injury or harm to health or the environment that may occur; • The predictability of the risk and the likelihood of the injury or harm occurring as a result; • How much is known about the risk and the methods of reducing, eliminating or controlling the risk; and the availability, suitability and cost of the safeguards. The risk and its potential severity of injury or environmental harm must be weighed against the overall cost and feasibility of the controls needed to remove it. Common practice and knowledge throughout a relevant industry is to be considered when determining whether a control is 'reasonably practicable'. Individual employers could not claim that they did not know what to do about certain hazards if those hazards are well known and documented for their industrial sector and controls are readily available. While cost is a factor, it is not an excuse for failure to provide appropriate controls, particularly where there is risk of serious, or frequent but less severe, injury or environmental harm.
2. Substitute the hazard with a safer alternative (e.g. use alternate materials or substances)	
3. Isolate the hazard from anyone who could be harmed (e.g. provide an enclosure or fencing)	
4. Use engineering controls to reduce the risk (e.g. provide guards to machinery)	
5. Use administrative controls to reduce the risk (e.g. provide adequate training and documented procedures)	
6. Use PPE (personal protective clothing and equipment), e.g. provide hand, ear and eye protection	

Consequence \ Likelihood	5 **Almost certain** (50 times per year)	4 **Likely** (10 times per year)	3 **Possible** (1 per year)	2 **Unlikely** (1 every ten years)	1 **Rare** (> 1 every ten years)
5: Catastrophic S*: fatality, long term illness E*: long-term perm damage	Extreme (EXT) **25**	Extreme (EXT) **20**	High (H) **15**	Moderate (M) **10**	Moderate (M) **5**
4: Major **S**: Extensive injury **E**: Medium effect/ off-site release	Extreme (EXT) **20**	High (H) **16**	Moderate (M) **12**	Moderate (M) **8**	Low (L) **4**
3: Moderate **S**: Medical treatment **E**: Moderate effect/ off-site emission	High (H) **15**	Moderate (M) **12**	Moderate (M) **9**	Moderate (M) **6**	Low (L) **3**
2: Minor **S**: First Aid **E**: Min off site impact	Moderate (M) **10**	Moderate (M) **8**	Moderate (M) **6**	Low (L) **4**	Very low (VL) **2**
1: Insignificant **S**: Pain, inconvenience **E**: No off-site impact	Moderate (M) **5**	Low (L) **4**	Low (L) **3**	Very low (VL) **2**	Very low (VL) **1**

*S= safety; E= environmental

Environmental significance

Each environmental aspect shall be assessed and given an impact status

E = Significant in emergency situations
S = Significant in routine operations
M = Minor significance in routine operations
N = No significant impact in routine operations

Section D - Environmental aspects

E = Significant in emergency situations **S** = Significant in routine operations **M** = Minor significance in routine operations **N** = No significant impact in routine operations

Activity	Environmental aspect	Environmental impact	Legal requirements	Environmental actions, controls and criteria	Risk rating	Significance	Monitoring required			
							Resp.	Type	Freq.	Record
Demolition Excavation Construction	Dust generation Particulate emissions (general)	Air pollution	NSW POEO Act 1997 (Protection of the Environment Operations Act), sections 124-126	• Install shade cloth on perimeter fencing; • Vehicle corridors will be clearly identified and restricted to control vehicle access onsite; • Limit vehicle speed onsite to 40km/h; • Fixed and mobile (water tanker) water sprays; • Reduce work activities/ stop work during moderate to high wind velocity periods; • Maintain equipment. Smokey plant to be stopped until repair works completed.		S	SM	Visual inspection	Daily Weekly	Diary Site Inspection Checklist
Demolition	Dust generation (demolition)	Air pollution	NSW POEO Act 1997, sections 124-126	• Breakers and crushing equipment to be fitted with dust filtration equipment or water sprays to control dust emissions.		N/A	SM	Visual inspection	Daily Weekly	Diary Site Inspection Checklist
Construction Excavation	Dust generation (construction)	Air pollution	NSW POEO Act 1997, sections 124-126	• Minimise areas of site to be excavated and stage works where possible; • Dust suppression strategies to be used, i.e. water sprays, soil binders, hydro mulching, controlled speed onsite, road base, shaker grids; • Stockpiled topsoils and rubble will be restricted to 4m high; Stabilise if in situ for >4-6months; • On site drilling or coring operations will be undertaken by equipment fitted with air filtration equipment.		S	SM	Visual inspection	Daily Weekly	Diary Site Inspection Checklist
Demolition Excavation Construction	Odour	Air pollution Odour	NSW POEO Act 1997, section 129; Local Government Act 1993, section 125	• If odorous materials uncovered, recover immediately; • Seek advice from consultant regarding soil/ materials management.		M	SM	Visual	Daily	Diary
Demolition Excavation Construction	Emissions to Air	Air pollution	NSW POEO Act 1997, sections 124, 125, 139	• Ensure machinery is maintained correctly.		S	SM	Visual inspection	Daily Weekly	Diary Site Inspection Checklist
Construction Fit-out	Greenhouse	Resource use Air pollution Global warming	AGBR Greenstar	• Ensure purchased electrical products/ whitegoods products comply with specification for CFCS and energy ratings; • Low solvent paints to be used as a priority; • Building to conform to AGBR or Green Star performance criteria; • Deliveries/ transport from site effectively planned to limit inefficient transport, assist back loading, etc.		M	SM			
Demolition Excavation Construction	Stormwater (discharge from sedimentation basins, flooding)	Water contamination	NSW POEO Act 1997, sections 120,122 Protection of the Environment Operations (General) Regulation 1998, clause 55	• Water quality to meet ANZECC Water Quality Guidelines: **PH 6.5-8.5, Turbidity <50NTU, No visible oil or grease;** • Obtain advice for use of flocculants to settle sediment from water; • Sedimentation pond to be maintained at low levels to ensure capacity during rainfall event; • **Do not discharge if contaminants suspected**. Obtain advice.		S	SM	Visual inspection	Daily Weekly	Diary Site Inspection Checklist

Section D - Environmental aspects

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Activity	Environmental aspect	Environmental impact	Legal requirements	Environmental actions, controls and criteria	Risk rating	Significance	Monitoring required			
							Resp.	Type	Freq.	Record
			Local Government Act 1993, section 638 ANZECC Water Quality Guidelines NSW Office of Environment & Heritage 'Managing Urban Stormwater' 2004							
Demolition Excavation Construction	Adjoining waterways (dewatering, soil erosion and run-off)	Water contamination Erosion	NSW POEO Act 1997, sections 120, 122 POEO (General) Regulation 1998, clause 55 Local Government Act 1993, section 638 ANZECC Water Quality Guidelines NSW Office of Environment & Heritage 'Managing Urban Stormwater' 2004	• Temporary drainage systems will be established to divert clean waters around the land development areas as appropriate; • Erect silt fences, bunds and construct swale drains; • Inspect at least weekly and after rainfall; • Maintain and/ or replace as required; • Street sweepers will be employed on a regular basis; • Install erosion and sediment controls before work starts; • Leave as much vegetation as possible; • Install temporary fences to define 'no go' areas in those areas that are not to be disturbed. Include the area under the canopy of trees so that tree roots will not be damaged by soil compaction; • Divert run-off from upslope away from the site but ensure that you do not flood your neighbours. For example, dig drainage channels (catch drains sized to accommodate the upslope catchment); • Install sediment controls downslope of the site to catch sediment. • Leave or lay a kerbside turf strip (for example, the nature strip) to slow the speed of water flows and to trap sediment; • Limit vehicle entry and exit to one point, and lay geotextile and blue metal to stabilise it for all-weather access; • Clearly mark the access points and give an access map to all suppliers; • Protect all drains with a gravel sausage made from geotextile filled with blue metal; • Save the topsoil and stockpile it for use later in revegetation. Never place it around trees as this will kill them; • Store all stockpiles and building materials behind sediment fences. Cover them with plastic to prevent erosion by wind; • Get council approval before placing stockpiles or other materials on the nature strip or footpath; • Connect downpipes from the guttering to the stormwater drain as soon as the roof goes on; • Surround the wash-out area with a sediment fence that slows down the water flow. Site this area upslope of another sediment control; • Fill in all trenches immediately after services have been laid; • Spread the topsoil back when the work is finished and revegetate the site as soon as possible to control erosion; • Remove the sediment and erosion controls only after this is done;		S	SM	Visual Inspection	Daily Weekly	Diary Site Inspection Checklist

Section D - Environmental aspects

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Activity	Environmental aspect	Environmental impact	Legal requirements	Environmental actions, controls and criteria	Risk rating	Significance	Monitoring required			
							Resp.	Type	Freq.	Record
				• Sweep the road and footpath regularly. Washing down is not a preferred method; • Never place any materials in the gutter or on the road. You will be fined for this; • Filter or settle-out all water pumped off the site. The water must be clear before it enters the stormwater system or creeks. Gypsum can be applied to muddy (turbid) water to help clay particles settle.						
Construction Fit-out	Sewer (trade waste)	Water pollution	NSW POEO (General) Regulation 1998, clause 55 Sydney Water Act 1994, section 49 Hunter Water Act 1991, section 31 Local Government Act 1993, section 68 (clause 4 of Part C of the Table) Sydney Water 'Consent to Discharge Industrial Trade Wastewater', Special Conditions Schedule 6 paragraphs 1-2	• No paints or other chemical to be poured down drains; • If required, obtain trade waste licence for discharge or local council approval.		S	SM	Visual inspection	Daily Weekly	Diary Site Inspection Checklist
Excavation	Land (acid sulphate soils, contaminated soils, imported fill)	Contaminated waterways Soil contamination	NSW Contaminated Land Management Act 1997, section 60 Contaminated Land Management Regulation 2013 Acid Sulphate Soils Management Advisory Committee	• Potential for **acid sulphate soils** will be assessed based on the sites proximity to low-lying coastal areas, e.g. coastal plains, wetlands and mangroves where the surface elevation is less than five metres above mean sea level; • Stop work if unexpected potentially **contaminated soils** are encountered; • Obtain waste classification from consultant in accordance with DECC Environmental Guidelines: Assessment, Classification & Management of Liquid & Non-Liquid Wastes (June 2004) www.environment.nsw.gov.au/waste/envguidlns/index.htm. • Where required, a Remediation Action Plan will be developed and implemented; • Sign-off by site auditor may be required to validate clean-up; • Any groundwater or ponded rainwater will be tested and classified by consultants prior to disposal; • Check Geotech requirements. Ensure soil classification suitable for land use, i.e. schools, residential, commercial, etc.		S	SM			
Demolition Excavation Construction	Land	Contaminated waterways Soil contamination	NSW Contaminated Land Management Act 1997, section 60; Contaminated Land Management Regulation 2013 POEO Act 1997, section 142A-E ANZECC publication: Organochlorin Pesticides Waste Management Plan (1999)	• If odorous soils (rotten egg gas) or grey/ yellowed mottled soils encountered, stop work; • If suspected, consultant to prepare Acid Sulphate Soil Management Plan (ASSMP); • Excavation and neutralisation to be supervised by consultants as per ASSMP; • The requirements to **import fill** will be minimised by utilising on site cut material wherever possible; • All analysis certificates shall be handed over as part of the completion documents to the client;		S	SM	Visual inspection	Daily Weekly	Diary Site Inspection Checklist

Section D - Environmental aspects

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Activity	Environmental aspect	Environmental impact	Legal requirements	Environmental actions, controls and criteria	Risk rating	Significance	Monitoring required			
							Resp.	Type	Freq.	Record
				• Mark up locations where fill compacted in site plan. Survey if required.						
Design procurement	Resources: water, materials, energy	Resource use Landfill Air pollution		• For 'design and construct' jobs, refer to the design specification for ESD requirements and product choices; • Buy local wherever possible to reduce impacts of transport on environment.		M	SM	Design review	As per review schedule	Design meeting minutes, purchase orders/ contracts
Demolition Excavation Construction	Noise	Community complaints	NSW POEO Act 1997, sections 139, 140	• Refer to DA for noise restrictions and working hours; • Use hoarding or acoustic mats as required. • Situate generators and plant away from sensitive receivers; • Turn off machinery. Maintain equipment and stop noisy plant until repaired; • No early deliveries.		M	SM	Visual inspection	Daily Weekly	Diary Site Inspection Checklist
Demolition Excavation Construction	Vibration	Community complaints, Damage to structures	NSW POEO Act 1997, sections 139, 140	• Conduct Dilapidation Report prior to work starting; • Limit the use of vibratory rollers, rock breakers, impact piling, etc. adjacent to buildings (>7m); • Regenerated noise may also transfer through bedrock and building structures; • Obtain advice if required.		S	SM	Visual inspection	Daily Weekly	Diary Site Inspection Checklist
Demolition Excavation Construction	Community	Community concerns Noise restricted access		• Provide information (e.g. signage, letterbox drops) to community on programmed works; • Provide contact name for inquires; • Advise locals of 'noisy' work; • If required in noise sensitive areas and/ or in response to complaints, engage consultants to undertake monitoring at nominated receivers; • Vehicles will not be permitted to queue outside the site or in residential areas unless a defined area is established which does not adversely impact on neighbours.		M	SM	Visual inspection	Daily	Diary Community Feedback Form Non-Conformance Report
Demolition Excavation Construction	Flora	Destruction of flora Erosion	NSW State Environmental Planning Policy No 14 - Coastal Wetlands, section 7(1, 5), 7A Native Vegetation Act 2003, section 12 Forestry Act 2012, section 27(1) National Parks and Wildlife Act 1974, sections 117(1), 118(1)	• Review planning documentation to determine the presence of any protected, threatened or significant flora. Obtain approvals as required; • Engage arborist to develop tree management plan or refer DA and arborist reports; • Education and training at site toolbox meetings and induction; • Report all sightings to the site manager. • Fence or barricade protected flora at the drip zone. Erect 'Keep Out' signage; • Do not stack materials under or against trees; • The potential for reuse of vegetative wastes by mulching, chipping or on-site placement of trunks or limbs shall be reviewed for each project.		S	SM	Visual inspection	Daily Weekly	Diary Site Inspection Checklist

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Section D - Environmental aspects

E = Significant in emergency situations **S** = Significant in routine operations **M** = Minor significance in routine operations **N** = No significant impact in routine operations

Activity	Environmental aspect	Environmental impact	Legal requirements	Environmental actions, controls and criteria	Risk rating	Significance	Monitoring required			
							Resp.	Type	Freq.	Record
Demolition Excavation Construction	Fauna	Destruction of fauna	NSW Environmental Planning and Assessment Act 1979, sections 5A, 8A, 8B, 79B, 111, 112-112E Threatened Species Conservation Act NSW 1995 National Parks and Wildlife Act 1974, Part 8A	• All native animals protected; • Review planning documentation to determine the presence of any protected, threatened or significant fauna. Obtain approvals as required; • Site rules and induction to include information regarding fauna protection; • For injured animals, call WIRES to relocate.		N	SM	Visual inspection	Daily Weekly	Diary Site Inspection Checklist
Demolition Construction	Waste Litter	Landfill Contamination of waterways Soil contamination	NSW POEO Act 1997, sections 116, 142, 143, 144-146 NSW Waste Avoidance and Resource Recovery Act 2001 Crown Land Management Act 2016 Marine Safety Act 1998 POEO (Waste) Regulation 2014, clause 4,9, 12, 16, 17, 23	• Hazardous materials surveys to be completed; • Materials to be removed prior to demolition; • Registers and waste disposal requirements as per SafeWork NSE and DECC/EPA requirements for removal, storage, transport and disposal. • General site wastes: use one bin system and sort in contractor's yard to produce quantities of material for recycling, reuse, disposal, etc.; • Empty drums are to be taken off-site for disposal; • Do not overfill skip bins and provide plenty for use. Cover where potential for windblown litter.		S	SM	Visual inspection	Daily Weekly	Diary Site Inspection Checklist
Pre-construction	Landfilling	Landfill Contamination of waterways Soil contamination	NSW POEO Act 1997, sections 116, 142	• Reduce, reuse and then dispose. • Dispose of hard construction wastes for recycled gravels and sands; • Do not send soil to landfill until alternatives for beneficial reuse have been explored as per consultants advice; • Consideration should be given to chipping of the vegetation and reuse; • Reuse packaging to protect works.		S	SM	Visual inspection	Daily Weekly	Diary Site Inspection Checklist
Construction	Chemicals	Contamination of waterways Soil contamination Fumes Worker's safety	NSW POEO Act 1997, sections 116,142 NSW Workplace Health and Safety Regulation 2017 Sydney Water 'Consent to Discharge Industrial Trade Wastewater', Special Conditions Schedule 6, paragraphs 1-2	• Chemicals to be **stored** in bunded areas (impervious + 110% of largest container) away from stormwater drains and pits; • Refer to SafeWork NSW Code of Practice for Storage and Handling of Dangerous Goods, DECC Guidelines for Bunding and Spill Management. Appropriate chemicals storage is in conformance with: – AS 1940 The Storage and Handling of Flammable and Combustible Liquids – Storage and Handling of Dangerous Goods SafeWork NSW Code of Practice – DEC requirements • Ponded water within **bunds** will not be discharged to stormwater; • **Fuel and hydraulic leaks** to be cleaned up immediately; • **Drilling muds** to be contained within bunds and reused; • **Liquid paints not to be poured down drains**. Spread on waste cardboard or similar and leave to dry. Paint brushes to be rinsed and paint solids allowed to settle. Container of paint solids to be disposed to liquid waste facility; • Construct **concrete washout** pit for washout, away from stormwater drains. Send back to batch plant where possible;		S	SM	Visual inspection	Daily Weekly	Diary Site Inspection Checklist

Section D - Environmental aspects

E = Significant in emergency situations **S** = Significant in routine operations **M** = Minor significance in routine operations **N** = No significant impact in routine operations

Activity	Environmental aspect	Environmental impact	Legal requirements	Environmental actions, controls and criteria	Risk rating	Significance	Monitoring required			
							Resp.	Type	Freq.	Record
				• **Concrete cuttings** to be contained and wet vac to prevent run-off into stormwater drains; • Storage of **bulk fuels** (>200L) on site is prohibited. All refuelling shall be undertaken by a mobile facility with appropriate spill control and containment control equipment; • SDS must be provided to the foreman prior to a chemical being received on site and by subcontractors using chemicals/ products.						
Demolition Excavation Construction	Traffic	Site access restrictions Community safety Pollution	Local government requirements	• Develop and implement Traffic Management Plans. Submit to local council as required; • Signage and notices regarding disruptions; • Use crushed concrete, mulches, etc. along site access roads; • Install shakers and wheel wash as required; • Organise regular street sweeping; • Haulage routes and rules will be provided to subcontractors prior to commencing on site; • All loads of soil, demolition wastes, general wastes, etc. are to be tarped.		S	SM	Visual inspection	Daily Weekly	Diary Site Inspection Checklist
Demolition Refurbishment	Hazardous materials (lead paint)	Air contamination Contaminated waterways Soil contamination	NSW POEO Act 1997, section 142	• If disturbing or removing dust or paint that could contain lead, wear a respirator or dust mask and protective clothing; • Seal the rooms with plastic; • Do not use open-flame torches on lead paint, as they create lead fumes. If you must use a heat gun, use it on the lower setting to keep the paint temperature below 370 degrees centigrade; • Avoid using dry-sanding techniques: keep the surface wet to minimise dust; • Don't sweep or use a domestic vacuum cleaner to clean up; lead dust will pass right through it. Use a high-efficiency particulate air (HEPA) vacuum cleaner. These can be hired; • When finished, wipe all surfaces with a damp cloth and high-phosphate detergent; • Wash face and hands before eating, drinking or smoking; • Refer to 'Lead Safe: A Renovator's Guide to the Dangers of Lead' and AS4361.2:1998 'Guide to Lead Paint Management: Part 2 Residential and Commercial Buildings'.		N/A	SM			
Demolition Fit-out	Hazardous materials (asbestos)	Workers health Air contamination Contaminated waterways Soil contamination	NSW POEO Act 1997, section 142 NSW PEO (Waste) Regulation 2014, part 7 NSW Code of Practice 'How to Safely Remove Asbestos'	• A licence subcontractor must be used to demolish, remove, repair or disturb asbestos; • A SafeWork NSW asbestos licence is required to remove 10 square metres or more of bonded asbestos; • A SafeWork NSW licence is required to remove, repair or disturb friable asbestos.		N/A	SM			
Demolition Excavation Construction	Aboriginal heritage	Destruction of heritage items	NSW Heritage Act 1977, section 146 National Parks and Wildlife Act 1974, sections 90-91	• Education and training at site toolbox meetings and induction; • **It is illegal to destroy heritage items;** • Review local or regional environmental plans, or the State Heritage Register is to be consulted prior to work starting onsite;		M	SM	Visual inspection	Daily Weekly	Diary Site Inspection Checklist

Section D - Environmental aspects

E = Significant in emergency situations **S** = Significant in routine operations **M** = Minor significance in routine operations **N** = No significant impact in routine operations

Activity	Environmental aspect	Environmental impact	Legal requirements	Environmental actions, controls and criteria	Risk rating	Significance	Monitoring required			
							Resp.	Type	Freq.	Record
				• Obtain excavation permit issued by the Heritage Council of NSW if required; • Any heritage relics or sites discovered during construction shall be reported to the NSW Heritage Office; • Work in the subject area to cease until specialist advice is obtained; • The area will be fenced, and signs erected to restrict access; • Heritage consultants may be required to provide advice on demolition/ construction processes and finishes.						
Demolition Excavation Construction	European heritage	Destruction of heritage items	NSW Heritage Act 1977	• Education and training at site toolbox meetings and induction; • **It is illegal to destroy heritage items.** • Check the DECC Aboriginal Heritage Information Management System (AHIMS); • Also check the register of the National Estate; • Obtain approval from NPWS (Section 90 consent); • Any evidence of Aboriginal relics discovered during construction shall be reported to the National Parks and Wildlife Service; • Local land council representatives may be required to monitor stripping/ excavation; • Work in the subject area to cease until specialist advice is obtained; • The area will be fenced, and signs erected to restrict access.		M	SM	Visual inspection	Daily Weekly	Diary Site Inspection Checklist
Demolition Excavation Construction	Emergency preparedness	Workers health Air contamination Contaminated waterways Soil contamination		• Spill kit on site; • Refer to the SDS for advice and procedures; • All spills must be reported to the site manager and cleaned up. **Complete TCG Accident/ Incident Report;** • Sediment pond pumped out regularly to maintain capacity in case of emergency; • Ensure you know where stormwater drains are and have materials to block them in case of a fire.		M	SM	Inspection	Weekly	Site Inspection Checklist
Demolition Excavation Construction	Notifiable pests - fire ants	Destruction of native species		• Notify a DPI inspector within 24 hours if you see a fire ant (a notifiable pest).		M	SM			

2021

Appendix P Environmental Controls Checklist

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CEMP - Inspection Checklist

Site:

Inspection Completed by:

Date:

Aspect	Compliance Requirements	Compliance Yes	Compliance No	Action Required	Comments
Sedimentation	• Are chemicals, fuels or wastes stored within 50m of any stormwater drainage lines?				
	• Are all stormwater inlets covered with geotextile fabric sediment traps?				
	• Has sediment collected in sediment traps following rain events?				
	• Are the tyres of vehicles leaving the site clean?				
Water Quality	• Are liquids and materials that cause water pollution stored in areas with secondary containment?				
Spill Prevention and Response	• Safety Data Sheets for all the chemicals used or stored during the work are available?				
	• Are spill kits positioned throughout the site?				
Management	• Are all near misses, incidents and complaints recorded in accordance with the Taylor procedure?				
Air quality management	• Are air quality impacts managed as per procedures?				

Appendix Q Hazardous Substance and Dangerous Goods Procedure

SE-OP-01

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TAYLOR

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HAZARDOUS SUBSTANCES AND DANGEROUS GOODS PROCEDURE

SE-OP-01

1. PURPOSE

To provide guidance on management of hazardous substances and dangerous goods to limit the risk of spills, contamination and emergencies resulting from their storage and handling.

2. SCOPE

This procedure relates to all Taylor Construction Group operations.

3. DEFINITIONS

Hazardous substances: include chemicals or other materials that are used or produced and that can harm people or the environment if stored or handled incorrectly.

Dangerous goods: a substance or item which meets the classification criteria of, or listed in, the Australian Dangerous Goods Code. Materials classified as dangerous goods should be marked with a class label which indicates the nature of the hazard, for example, an explosive, a gas, a flammable liquid or solid, an oxidising agent, a poison, or a radioactive or corrosive substance.

Material Safety Data Sheets (MSDS): data sheet providing information on the safe use, storage, spill procedure and disposal of the product. MSDS should be provided by your supplier with every substance you buy, handle or use.

4. LEGAL AND OTHER REQUIREMENTS

- Workplace Health and Safety Regulation 2017
- Protection of the Environment Operations Act 1997 Sections 120, 142 A-E

5.GUIDELINES, PUBLICATIONS AND STANDARDS

- DECCW Publication: Storing and Handling Liquids: Environmental Protection Participants Manual
- SafeWork NSW Code of Practice: Storage and Handling of Dangerous Goods
- SafeWork NSW Code of Practice: Control of Workplace Hazardous Substances
- AS 1940-2004: The storage and handling of flammable and combustible liquids
- SWA NOHSC publication: Approved Criteria for Classifying Hazardous Substances [NOHSC:1008(2004)]3rd Edition

6. ACTIONS

Detailed in Appendix A.

APPENDIX A – HAZARDOUS SUBSTANCES AND DANGEROUS GOODS MANAGEMENT

Step	Essential action	Responsibility	Timing
Risk Assessment and planning – hazardous substances and dangerous goods			
1.	In consultation with the HSE advisor, prepare a Risk Assessment for all dangerous goods and hazardous substances in use on site or substances to be introduced on site. Consider all tasks and areas which involve the use of dangerous goods.	HSE advisor, project manager, site foreman	On project start-up
2.	Prepare and maintain a register of all hazardous substances and dangerous goods held on site. Record on **SE-F-10 Chemical Substances Register**.	Site manager	Initially and ongoing
3.	Ensure that an MSDS is available for each hazardous substance and dangerous goods used, is easily accessible and is the most recent version (ensure MSDSs are < five years old).	Subcontractors, site foreman	At all times

Step	Essential action	Responsibility	Timing
4.	Subcontractors must provide copies of MSDS to the site manager/ foreman and the hazardous substances used must be identified on the SWMS together with the controls.	Subcontractors	When hazardous substances are brought onto site
5.	Containers that hold or are used in the decanting of hazardous substances must be appropriately labelled, ensuring: • Labels clearly identify the hazardous substance. • Labels provide basic health and safety information about the substance, including any risk phases and safety phrases.	Subcontractors, site foreman	At all times
6.	Update risk assessments where new information is received on dangerous goods and hazardous substances or where the use of the substance changes.	HSE advisor, site foreman	When new information or change occurs
7.	Advise all employees/ subcontractors who may be exposed to dangerous goods and hazardous substances of the outcome of the risk assessment.	HSE advisor, site foreman	After Risk Assessment
8.	Control measures for reducing risk from exposure to dangerous goods and hazardous substances shall be selected in the following priority (hierarchy or controls): • Elimination of the substance or hazard; • Substitution by a less hazardous substance; • Segregation of people in time or distance from the hazard; • Containment of the substance; • Engineering controls such as ventilation; • Administrative controls such as improved housekeeping; • PPE (Refer to the Personal Protective Equipment SOP).	HSE advisor, site foreman, subcontractors	Whenever hazardous. substances are introduced or used
9.	Induction and ongoing training/ communications are to be provided to employees and subcontractors who may be exposed to hazardous substances and dangerous goods (in consultation with the HSE coordinator). Training is to include: – Information about hazardous substances, dangerous goods and risk assessments; – Information on the appropriate handling of substances (refer to Personal Protective Equipment SOP); – Information on personal health and safety; – Emergency response procedures and – Incident reporting and investigation procedure.	HSE advisor, site foreman, subcontractors	Ongoing
10.	Records of training and communications must be retained.	Site foreman	At all times
Storage of dangerous goods (general)			
11.	Determine if a dangerous goods licence or notification to SafeWork NSW is required for the site. If required, maintain a copy of the licence or notification on site.	HSE advisor, project manager, site manager	Project start-up, when dangerous goods introduced.
12.	Explosive or flammable goods will generally fall under the category of 'dangerous goods' and as such, must be stored and labelled according to the regulations. The most important precaution required when working in a workplace where explosive/ flammable/ combustible materials are present is to isolate them from heat, sparks or any form of ignition.	Site foreman	Whenever explosive or flammable good held on site.
13.	Dangerous goods must be stored in accordance with applicable codes and regulations, including requirements for: • Placarding of the site and individual storage areas; • Separation of storage areas from other work areas and off-site buildings; • Segregation of incompatible classes of dangerous goods; • Bunding of dangerous goods storage areas • Compatibility of racking and shelving; • Design of bulk storage tanks; • Emergency response equipment;	Site foreman	Whenever dangerous goods stored on site

Step	Essential action	Responsibility	Timing
	• Site manifest and emergency response manual; • Prevention of unauthorised access.		
14.	Integrity of tanks, pipes, bund walls, shelving and dangerous goods containers and emergency responses are be inspected at defined intervals.	Site foreman	At defined intervals
15.	Ensure adequate housekeeping in dangerous goods storages.	Site foreman	At all times
Storage and handling of hazardous liquids			
16.	All liquid hazardous substances must be stored in areas with secondary containment such as bunds, trays, bunded flammable goods cabinets, etc. to contain leaks and prevent spillage onto land or into waterways. Storage and handling areas should be located away from stormwater drains, waterways and sensitive environments.	Site foreman, subcontractors	At all times
17.	Decanting, refuelling, etc. should ideally be undertaken in bunded areas. Where this is not possible, consideration must be given to proximity to waterways, stormwater drains and ability to contain any spills.	Site foreman, operators	
18.	Packages shall be stored so that they cannot fall and cause spillage outside the designated storage area.	Site foreman	
Spills or leaks			
19.	Ensure spill kits are provided and appropriately located and stocked.	Site foreman	At all times
20.	In the event of a spill attempt to stop the source and contain the spill. Ensure spills are cleaned up immediately with spill kit materials. If the spill occurs near a storm water drain or water body, create a barrier with absorbent material. Attempt to divert the spill away from the drain or water body When spill is absorbed, remove absorbent material, temporarily store in an appropriate area/ container and appropriately dispose.	Operator, site foreman	In event of a spill
21.	Key site staff must be trained in the use of spill kits and spill control.	HSE advisor, operators, foreman	Ongoing
22.	All spills of hazardous substances and dangerous goods must be reported to the supervisor and then to the HSE coordinator in accordance with the incident Reporting and Investigation procedure.	Operators, site foreman	At all times

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