PRELIMINARY CONSTRUCTION MANAGEMENT PLAN

MACQUARIE UNIVERSITY ARTS PRECINCT PROJECT

Macquarie University

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1 INTRODUCTION

The Macquarie University Arts Precinct Project (MUAPP) will provide a lifecycle renewal for two existing 50 year-old buildings (Buildings W6A and W6B) located within the Academic core of the Macquarie University Campus. The renewal will include code compliance upgrades, removal of hazardous materials and importantly, will provide a physical environment that enables the Faculty of Arts to achieve its strategic goals and cultural change. A new showcase building is to be built immediately to the south of the W6A Building that will bring together museum and research functions that invites community, student and industry engagement.

There are three approval mechanisms for this project:

1. Works to be procured under Clause 29 and other related clauses/divisions of ISEPP (2007) where a Review of Environmental Factors (REF) is prepared for early works that include internal demolitions, service diversions, tree removals and decanting to other MQU locations
2. Council Development Application (DA) for external demolition works, partial demolition to structure, bulk earthworks and shoring
3. State Significant Development Application (SSD) for main works construction.

This Preliminary Construction Management Plan (PCMP) sets out Macquarie University's requirements for the control and management of the main works construction (i.e. the "Works") associated with MUAPP site.

A final detailed Construction Management Plan (CMP) will be prepared by the Main Works Contractor (the Contractor) who is to be engaged to undertake the Works that will need to comply with the requirements of this PCMP.

A separate Preliminary Demolition Management Plan (PDMP) relating to the control and management of the demolition phase has been prepared to accompany the Council Development Application.

1.1 OVERVIEW OF THE WORKS

The scope of the Works covered under this PCMP, and the general order (staging) of the works, is as follows:

- site establishment and protection of adjoining property where required
- protection, diversion and/or temporary establishment of services and infrastructure as required
- erection of perimeter fencing, hoarding, gantry, scaffolding, site accommodation and signage
- establishment of temporary access and pedestrian arrangements
- detailed excavations
- retaining walls, pilings and footings
- new building structures
- facades, external cladding, external finishes and roofing
- services infrastructure and service rough-in
- new building atrium
- internal fitouts, services fit offs, internal finishes and equipment
- civil works including hard landscaping, stormwater and drainage
- landscaping works

A more detailed description of the Works is included in the Environmental Impact Statement prepared by RobertsDay Pty Ltd.

1.2 OBJECTIVES

This document provides an outline of the procedures and mechanisms that will be employed on this project during construction in order to minimise the impact on the local amenity, to ensure safety of the public and to protect the environment. The PCMP provides guidance to the Main Works Contractor in preparing their final Construction Management Plan (CMP) and for the ongoing management and delivery of the Works.

This PCMP addresses a range of issues associated with the demolition/civil works process including:

- Plant, equipment and materials
- Site establishment & construction zones
- Hoardings, fences and temporary protection
- Cranes
- Site notices and signage
- Contact details
- Hours of work
- Approvals and licenses
- Consultation
- People and Traffic management
- Parking
- Work Health and Safety
- Waste management
- Erosion and sediment control
- Soil and stormwater management
- Air quality management
- Noise and vibration management.

Prior to on-site activities commencing, this plan will be expanded upon by the Contractor to provide a site specific:

- Construction Management Plan
- WH&S Management Plan
- Environmental Management Plan, and
- Construction Traffic Management Plan.

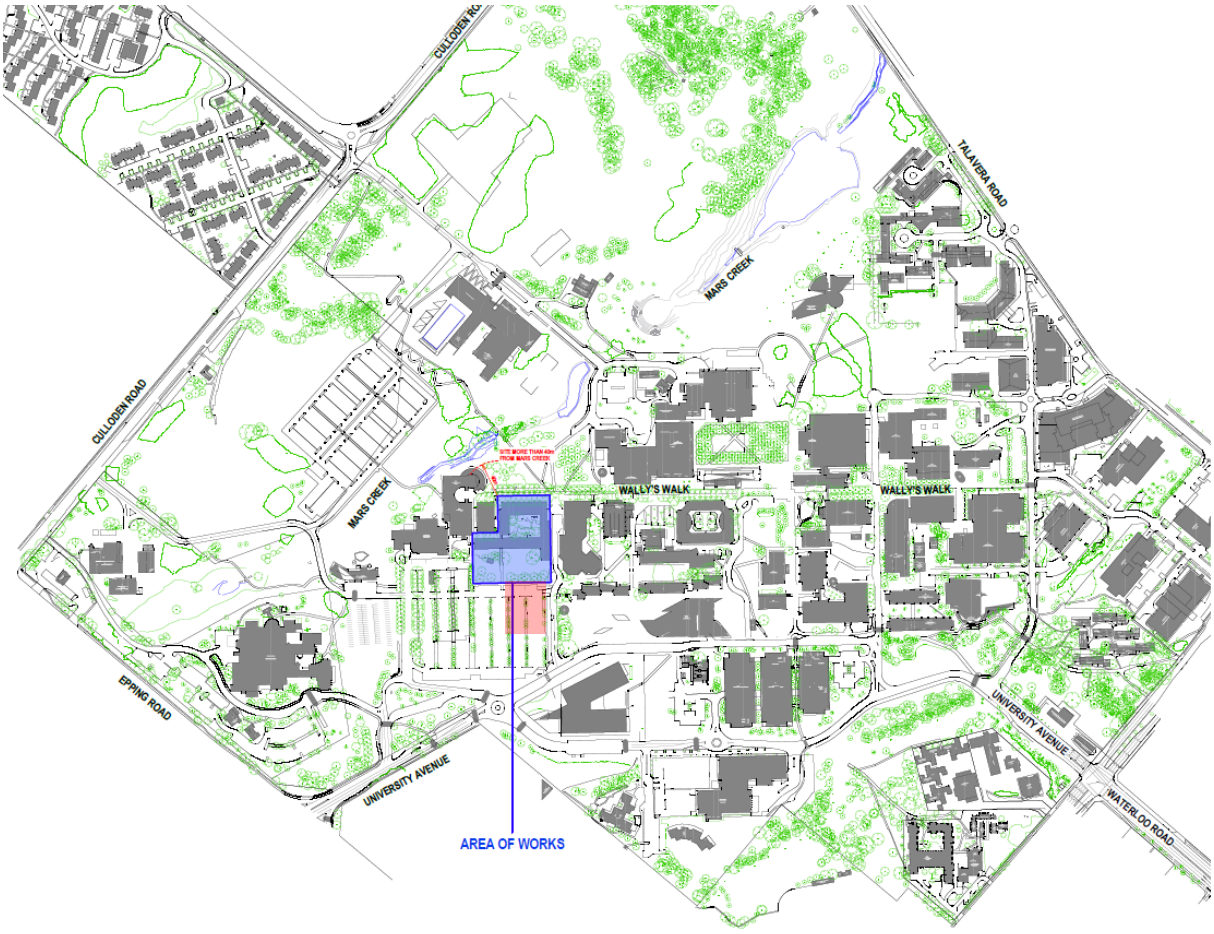
2 SITE SPECIFICS

2.1 SITE DESCRIPTION

The site is located near the western centre of the University at 25 Wally's Walk, in the Arts/Social Sciences precinct. The W6B is bounded by Wally's walk to the north, Lotus Theatre to the west, and W5C to the east. W6A is separated from W6B by a courtyard to the north, X5B to the west, W5C to the east and W4 car park to the south. The site slopes down from south to north by some 7.2 metres and east to west by approximately 5.5metres.

The site is not identified to have heritage significance (refer Heritage Impact Assessment by Tropman and Tropman Architects) nor is a site identified to contain any Aboriginal archaeological sensitivity (refer Aboriginal Cultural Heritage Assessment Report by Mary Dallas Consulting Archaeologist).

Figure 1: Location of works



2.2 SITE ESTABLISHMENT

The proposed site compound incorporates the area of works in blue in Figure 1 as well as 63 existing car spaces immediately adjacent to the site within the W4 car park in the area (hatched in red in Figure 1) and as described in the Preliminary Site Establishment Plan **Attachment 1.**

The Contractor shall provide all necessary accommodation and secure storage for its operations.

The Contractor shall provide and maintain all required construction plant & site amenities including all required equipment, facilities, hoardings and barricades, roads and crossovers, site administration

accommodation, storage sheds and compounds, hoisting and craneage plant, scaffolding, platforms, access ladders, barriers, handrails, and other temporary accommodation.

The location on site of the Contractor's accommodation shall be as agreed with the Superintendent. Contractor's accommodation will consist of a site office, lunch and change facilities, ablution and temporary power facility. The Contractor shall provide and maintain fully provisioned first aid facilities for the use of all workmen employed on the Works. The Contractor shall prepare a Site Amenities Plan clearly noting the location of facilities in compliance with WH&S requirements.

Construction plant & amenities shall comply with the requirements of all relevant authorities and be wholly contained within the hoarded site. The Contractor shall obtain all required permits, pay the applicable fees and comply with all conditions and instructions.

The Contractor shall remove construction plant progressively when no longer required.

The Contractor shall provide chutes and space for demolished or discarded materials including the provision and regular removal from site of waste materials.

The Contractor is required to prepare a site dilapidation report prior to commencement of any work. Damage to surrounding areas shall be immediately made good by and at the expense of the Contractor. Existing trees within the site compound are to be maintained and protected throughout the period of construction until the area is made good to the satisfaction of the Superintendant and returned to the University.

2.3 HOARDINGS & FENCES

Prevention of unauthorised access to the site is a very high priority and will be vigorously managed throughout the construction period. The site will be secured with appropriate barriers and hoardings around the perimeter of the site, in accordance with the requirements of the Work Health and Safety Act, and NSW WorkCover.

The anticipated location of site hoardings, construction zone and amenities is described in the Preliminary Site Establishment Plan at **Attachment 1**. Overhead protection will be required at specific locations to protect and maintain public access to existing buildings as nominated on the plan.

Access to and from the site compound for deliveries will be restricted through the entry and exit points as noted on the plan.

Alternative safe pedestrian routes around the site will be proposed to and agreed with Macquarie University, and are to be maintained and clearly sign posted by the Contractor.

2.4 TEMPORARY PROTECTION

The Contractor is to provide protection to existing building elements potentially impacted by the works, including off form concrete, glazing, balconies, paving, access ways and landscaping. Protection should be in the form of drop sheets (taped as required), hoardings, fencing, tree protection (including mulching and root zone), and the like. All temporary protection is to be installed and maintained to the satisfaction of the Superintendent.

Tree protection

- Trees not approved for removal are to be protected in accordance with Australian Standard AS4970-2009.
- No building materials, builder sheds and the like are permitted to be stored under the canopy of existing trees.

- All trees identified for retention/protection within the subject site are to be clearly identified by signage as protected trees.
- The primary root zone areas of trees identified for protection are to be protected by fencing during the entire construction period except for specific areas directly required to achieve construction works.
- The tree protection fence shall be constructed of galvanised pipe at 2.4 metre spacing and connected by securely attached chain mesh fencing to a minimum height of 1.8 metres prior to work commencing.
- To prevent soil compaction or contamination no storage or mixing of construction materials shall be allowed within the primary root zone area of trees identified for protection.
- Canopy pruning of trees identified for protection which is necessary to accommodate approved building works shall be undertaken by an experienced Horticulturist/ Arborist, with a minimum qualification of the Horticulture Certificate or Tree Surgery Certificate and in accordance with Australian Standard 4373-2007 'Pruning of Amenity Trees'.

Refer also to the specific recommendations in the Arboricultural Impact Assessment Report (Australian Tree Consultants). The trees to be protected include those identified in the report as well as the trees in the W4 car park that are within and immediately adjacent to the site compound.

2.5 CRANES

It is anticipated that a tower crane(s) will be required for the proposed construction work. At this time it is believed the site is of sufficient in size to incorporate a tower crane off Western Road immediately to the south of eastern wing of W6B. It is proposed that material deliveries will be unloaded from within the site compound.

2.6 SITE NOTICES & SIGNAGE BOARD

The contractor shall provide sign-boards as required to comply with WorkCover and W&HS requirements. Contact details of the Contactor's site manager will be posted at each gate to the site in case of emergency and to the hoarding adjacent major thoroughfares (such as Wally's Walk and Western Road).

The Contractor will be permitted to erect a single signage banner to the hoarding at the main entrance point to identify the site. Subcontractor signboards are subject to approval from the Superintendent.

2.7 HOURS OF WORK

The hours of work are anticipated to be:

- Monday to Friday 7.00AM to 5.30PM
- Saturdays 8:00AM to 4:00PM
- Sundays and Public Holidays No Work

No work will occur outside of the hours nominated unless approval has been given by Macquarie University.

Deliveries of heavy machinery may be required out of the proposed hours of operation to conform to the overriding requirements of the Roads & Maritime Services (RMS).

2.8 APPROVALS & LICENSES

The Contractor will obtain all necessary approvals and licenses as required by the relevant authorities.

The Contractor will be required to liaise with and make an application to Council, as appropriate, for:

- Hoarding Plan
- Construction Zone
- Site Amenities Plan
- Construction Traffic Management Plan (CTMP)

2.9 CONSULTATION

The consultation process will be established once the Contractor has been appointed. It is envisaged that this process will consist of advanced notification to the adjoining properties and relevant stakeholders within the University including but not limited to:

- commencement of works
- notification of planned restrictions or changes to existing traffic as a result of the development
- the erection of scaffolding which may be considered as within close proximity of a neighbouring building
- planned disruptions to utility services (including type and duration of disruption and any safety procedures to be followed)
- any necessary out of hours works
- project updates as necessary
- contact details for nominated Contractor's Representative for enquiries and complaints.

The Contractor shall submit a complaints handling procedure addressing project specific impacts (e.g. noise, odour, air quality, silt and stormwater run-offs, etc.) to the Superintendent for approval at least working 10 day prior to commencement of works.

The Contractor shall immediately notify the Superintendent of any complaints received. The complaints handling procedure shall include a register that identifies the nature and location of the complaint, complainant, any prior and current communications issued, contractor's risk assessment and remedial actions undertaken as a result, any residual risk following implementation of actions, follow-up communications to affected parties or improvements required to avoid further future complaints. Refer also the complaint handling procedures in the Construction Noise & Vibration Management Plan prepared by Wood & Grieve.

The Contractor will input and contribute updates to the Project Communications Plan.

3 PEDESTRIAN AND TRAFFIC MANAGEMENT

3.1 CONSTRUCTION TRAFFIC MANAGEMENT PLAN

The Contractor will develop a site specific Construction Traffic Management Plan (CTMP) to ensure that appropriate planning and allocation of resources is available to manage vehicle and pedestrian traffic around the site, ensuring the safety and security all persons moving in proximity of the site; and that vehicle movements to, around and from the site are managed to minimise impacts to local roads and traffic arterials.

The CTMP will align with the requirements of:

- the Macquarie University Property Campus Traffic Management Plan
- the Preliminary Construction Traffic Management Plan as prepared by TDG
- relevant conditions as set out in the development approvals.

Construction traffic will generally be managed in the following way:

- Designated transport routes will be communicated to all personnel, and enforced
- Designated peak hour and non-peak hour delivery vehicle waiting areas
- Strict scheduling of vehicle movement will occur to minimise off site waiting times

The construction site will be delineated by means of concrete jersey kerb with lockable gates at both the entry and departure points.

Construction traffic will enter the Macquarie University Campus via Balaclava Road then proceed to the construction site via Macquarie Drive and then Western Road (at the eastern end of the site). Delivery trucks will enter as per above and park adjacent to the site to be unloaded. The proposed route of construction vehicle access is described in **Attachment 2.** Refer also to the Preliminary Construction Traffic Management Plan as prepared by TDG for specific details.

3.2 PARKING

Dedicated on-site parking spaces will not be provided for construction personnel outside of site compound. It will be the Contractor's responsibility for managing any contractor parking within the site compound.

Site workers will utilise public transport and car sharing wherever possible.

The University operates a Restricted and Paid Parking Area Scheme. The Contractor is responsible for any parking fees incurred as well as any fines issued by the University as result of Contractor and Sub-Contractor infringements.

Contractors shall be responsible for creating safe areas of parking on the Site and pay particular attention to pedestrian access and safety at the entrances All construction related vehicle entering the site will be at the at the Principal Contractor's risk at all times and must be properly insured in accordance with the Contract. The University accepts no responsibility for any damage caused to vehicles while travelling, standing or parked in the University grounds, or the theft neither of any vehicle, motor bike or cycle, nor for any damage to or loss of accessories or contents.

The Contractor, staff and all delivery and associated persons shall at all times observe the safety and traffic control requirements of the University's Traffic and Parking Department and shall obey all reasonable instructions.

3.3 VEHICLE & PEDESTRIAN ACCESS AND SAFETY

The Principal requires safe access for pedestrians moving between the X3 and W4 car parks and the buildings immediately adjacent to building site that will remain occupied throughout the construction of the Arts Precinct Project. These buildings include X5A, X5B Mia Mia Child Care Centre, Buildings W6D (Lotus Theatre) and W5C. Western Road (to the east of the building site) will remain accessible to pedestrians accessing Wally's Walk and for service vehicles, whereas the western edge of the building site must maintain access to Buildings X5A, X5B, W6D and the Mia Mia facility.

At all times, on all roads on University-owned land, the following speed limits will apply:

- University roads 30 km/h;
- Car parks and shared zones 10 km/h ; and

- Pedestrians have right of way excepting on University Avenue and Macquarie Drive.

The contractor will be responsible for posting appropriate site signage including pedestrian / visitor directional signage to ensure safe access around and away from the construction zone as approved by Macquarie University.

4 WORK HEALTH & SAFETY, AMENITY AND SECURITY

The minimum requirements of the Work Health and Safety Act 2011 and the WHS Regulations will be met by all persons working on site. A site specific WHS plan will be developed and will include the following;

- A Policy signed by the principal of the company detailing the company's commitment to WHS and how it intends to manage safety on site;
- A site specific WHS plan that details the risks identified by the Principal Contractor and how it intends to manage those risks including subcontractor responsibilities;
- The development of a site specific site induction that informs the site employees of the requirements of the site including site emergency access and egress, assembly points in case of evacuation, emergency procedures and notifications and site rules and (PPE) requirements;
- SWMS (Safe Work Method Statements) for the key risk activities;
- The method of communication to site employees in relation to WHS matters;
- Equipment and scaffolding registers detailing the serviceability of the equipment for safe operation;
- After hours emergency contact and contact details of emergency services;
- There is a zero tolerance to drug and alcohol use on site;
- Any person found to be under the effects of drugs or alcohol will be removed from site;
- There will be a complaints register on site for action by the site construction manager; and
- The site will be fenced securely and maintained in a suitable condition with secure gates to preclude unauthorised access to the site.

5 ENVIRONMENTAL MANAGEMENT PLAN

Once appointed, the contractor will be required to implement a site specific Environmental Management Plan (EMP). The EMP will incorporate and address the following components:

5.1 WASTE MANAGEMENT PLAN

Macquarie University encourages waste management practices that minimise the amount of construction waste going to disposal. The contractor is required to implement a Waste Management Plan (WMP) in accordance with the ESD specification (refer report by Wood & Grieve). Macquarie University and the main contractor will seek to reduce the volume of waste transferred to landfill through implementation of management processes on site.

These processes will be developed and monitored in accordance with the successful contractor's site management policies. Macquarie University will work in close conjunction with the architect to ensure products selected for the site are not only suitable for use, but also supplied with a view to reducing the volume and type of packaging the goods selected are supplied in. This process extends to ensuring quantities ordered do not generate excessive waste, nor have a negative impact through in-efficient multiple deliveries. Furthermore, a waste contractor will be engaged who is capable of ensuring all waste removed from the site is sorted at the waste depot for recycling / re-use.

The Contractor shall maintain a safe and tidy site, and this principle will be maintained throughout the construction duration. Rubbish bins / skips will be provided at strategic positions around the site, where all subcontractors will be required to clear their rubbish as it accumulates. These bins will then be brought down to the loading zone for removal off-site.

Reports will be requested on a monthly basis from the waste contractor to ensure the re-cycling and re-use targets are being achieved. Waste materials on site will be restricted to the bins provided at all times. At no point on the project will stockpiles of waste materials be permitted. In general bins $9m^3$ – $15m^3$ will be used at the ground level to collect the waste. These larger bins will be fed by smaller bins lifted from the working floors and emptied by crane or forklift on a regular basis. Larger waste bins will be exchanged once full. Full bins are to be covered at all times when they are being transported on the public road network.

5.2 STORMWATER AND WASTEWATER MANAGEMENT PLAN

Stormwater and waste water management will be included in the EMP and the control measures documented in the plan will be implemented during the construction of the project. The purpose of these procedures is to ensure that stormwater and wastewater runoff is managed and that there is no off site environment impact caused by overland stormwater flows.

The EMP will be developed in detail but will include:

- Silt Control on the Roads;
- Water from Dewatering systems;
- Rainwater within the site, during excavation and before final pavements are installed;
- Diversion of clean water;
- Waste Water, from general cleanup of tools and equipment and
- Spills control.

All existing stormwater pits will be protected from silt entering. These protection devices will be inspected on a minimum weekly basis and after a rain event.

An Erosion and Sedimentation Control Plan has been prepared by C&M Engineers. Refer to this plan for specific requirements and as guidance for the Contractor's finalisation/implementation of soil and erosion control measures. A Soil and Water Management Plan (SWMP) is to be documented by the Contractor and approved by the Superintendent prior to commencement of works.

If liquid waste is encountered on site appropriate testing will be carried and disposed of according to EPA and other statutory requirements.

Implemented procedures will be in compliance with the Dept of Environment and Protection, Local Council and Sydney Water requirements.

5.3 AIR QUALITY MANAGEMENT

The construction process can lead to the generation of unacceptably high levels of dust or other air pollution. The EMP will include systems and procedures that are to be implemented during construction to establish air quality management during the development. The EMP controls will include items such as:

- all construction plant, equipment and vehicles are to be properly maintained and operated so as to alleviate excessive exhaust emissions
- good "house keeping" on site with regular removal of loose material

- dust from the works is to be dampened and contained within the site, in accordance with WH&S and WorkCover requirements
- waste loads leaving the site are to be covered at all times
- all dust generating construction activities are to cease during high wind conditions unless operations can be controlled by localized watering or other control means
- the burning of waste materials and the lighting of fires will be strictly prohibited on the site at all times
- continual visual monitoring of the site will be undertaken by site management to ensure that works do not generate unacceptably high levels of dust
- wherever practical, materials and processes that are non-toxic will be employed to minimize possible harmful effects to air quality
- scaffolding to include mesh and shade cloth to reduce wind velocity and also to trap any wind born objects, and
- activities which produce airborne particles are to be done in enclosed spaces e.g. spray painting.

5.4 NOISE & VIBRATION MANAGEMENT

The Contractor shall provide a methodology for the notification of disruptive activities for the approval of the Superintendent, prior commencement of the works. The Contractor shall plan for noisy and disruptive works to be carried out during a period of time as agreed with the Superintendent.

The Contractor shall arrange the programming of the Works so as to prevent, as far as practicable, excessive and nuisance noise and vibration reaching neighbouring buildings. The Noise and Vibration Impact Assessment prepared by Wood and Grieve Acoustics identifies sensitive receivers (Building W6D (Lotus Theatre), W5C, X5B and the Mia Mia Child Care Centre, Hearing Hub and Willandra Village aged care facility) that will remain operational throughout the main construction works. Noise and vibration transfer from the construction process could also potentially have an impact upon W6B (which will continue to be occupied), to adjacent building tenants and the public and surrounding premises.

The Noise and Vibration Impact Assessment identifies relevant noise criteria for the construction works. If works are planned that will exceed the construction noise objective, the sensitive receivers will be notified in writing at least 48hrs prior to the commencement of those works.

The Contractor will review work methodologies and plant selection for each construction phase to determine the most practical and programme-effective solutions for these works that ensure the noise level emanating from the Site during the execution of the Works is kept to a minimum. Control of noise and vibration will be achieved through the use of appropriately licensed and experienced contractors coupled with monitoring. Contractors employed in the Works will utilise best practice of noise suppression on all compressors, jackhammers and other machinery. This active approach will mitigate the potential for human discomfort and noise and vibration disruptions to surrounding key stakeholders.

The Noise and Vibration Impact Assessment identifies potential screening and control measures that could be adopted to minimise noise and vibration impacts.

5.5 HAZARDOUS MATERIALS & DECONTAMINATION

The Contractor is responsible for the identification, control and decontamination of hazardous substances. Handling, use, isolation, removal and disposal of any such substances encountered during the execution of the works, will be undertaken in accordance with statutory requirements.

Previous studies of the site have identified possible locations of hazardous materials in Buildings W6A and W6B (refer to Hazardous Materials Survey by Pickford & Rhyder Pty Ltd). The management and site removal of these products will be done in accordance with Australian Standards.

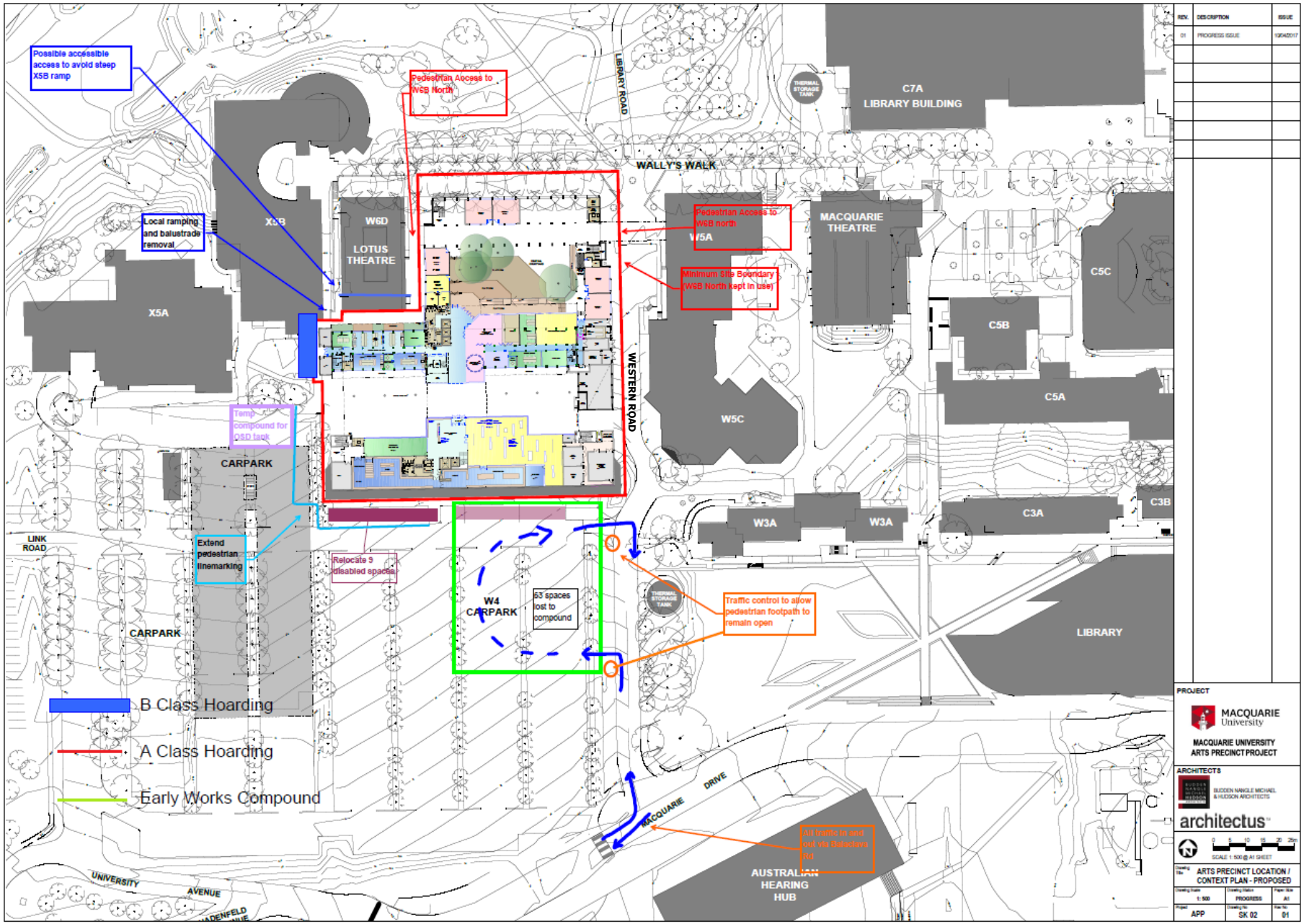
These reports will be used as the basis for identifying and managing the removal of hazardous materials during the Works. 'Unexpected finds' protocols and secure isolation of the site from the general public will also reduce the risk of potential harm to the general public.

The Department of Environment, Climate Change and Water (DECCW) or WSN Environmental Solutions may advise of suitable disposal sites.

6 APPENDICES

Appendices	Title
Appendix 1	Preliminary Site Establishment Plan
Appendix 2	Proposed Construction Traffic route

APPENDIX 1 PRELIMINARY SITE ESTABLISHMENT PLAN



APPENDIX 2 PROPOSED CONSTRUCTION TRAFFIC ROUTE