POWERHOUSE PARRAMATTA
ENVIRONMENTAL IMPACT STATEMENT

APPENDIX R
PRELIMINARY CONSTRUCTION MANAGEMENT PLAN

Aver

NSW GOVERNMENT

Powerhouse Museum
State Significant Development - Construction Management Plan (CMP)

April 20, 2020

Status Document	
Issue Date:	20th April 2020
Revision No:	Rev C (Final Issue)
Prepared by:	Aver Pty Ltd – Project Managers

TABLE OF CONTENTS

1. Background

1.1. Introduction

This report supports a State Significant Development (SSD) Development Application (DA) for the development of the Powerhouse Parramatta at 34-54 & 30B Phillip Street and 338 Church Street, Parramatta. The Powerhouse Parramatta is a museum (information and education facility) that has a capital investment value in excess of $30 million and as such the DA is submitted to the Minister for Planning pursuant to Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

Infrastructure NSW is the proponent of the DA.

1.2. Background

The Powerhouse is Australia's contemporary museum for excellence and innovation in applied arts and sciences. The museum was established in 1879 in the Garden Palace which emerged from a history of 19th Century grand exhibition halls, including the Grand Palais. It currently encompasses the Powerhouse in Ultimo, Sydney Observatory in The Rocks and the Museums Discovery Centre in Castle Hill. The Powerhouse has occupied the Ultimo site since 1988.

Parramatta, in the heart of Western Sydney, is entering a period of rapid growth. It was identified in 2014's *A Plan for Growing Sydney* as the metropolis' emerging second Central Business District, with the provision of supporting social and cultural infrastructure regarded as integral to its success. The strategic importance of Parramatta as an economic and social capital for Sydney has been subsequently reinforced and further emphasised through its designation as the metropolitan centre of the Central City under the Greater Sydney Region Plan.

Powerhouse Parramatta will be the first State cultural institution to be located in Western Sydney – the geographical heart of Sydney. In December 2019, the Government announced the winning design, by Moreau Kusunoki and Genton, for the Powerhouse Parramatta from an international design competition.

Powerhouse Parramatta will establish a new paradigm for museums through the creation of an institution that is innately flexible. It will become a national and international destination renowned for its distinctive programs driven by original research and inspired by its expansive collections. It will be a place of collaboration, a mirror of its communities forever embedded in the contemporary identity of Greater Sydney and NSW.

1.3. Site Description

The site is located at the northern edge of the Parramatta CBD on the southern bank of the Parramatta River. It occupies an area of approximately 2.5 hectares and has extensive frontages to Phillip Street, Wilde Avenue and the Parramatta River. A small portion of the site extends along the foreshore of the Parramatta River to the west, close to the Lennox Street Bridge on Church Street. The site boundary is identified in **Figures 1, 2 and 3**. The site excludes the GE Office Building at 32 Phillip Street.

The site is currently occupied by a number of buildings and structures, including:

- Riverbank Car Park – a four-level public car park
- Willow Grove – a two-storey villa of Victorian Italianate style constructed in the 1870s
- St George's Terrace – a two-storey terrace of seven houses fronting Phillip Street constructed in the 1880s
- 36 Phillip Street – a two-storey building comprising retail and business premises
- 40 Phillip Street – a two-storey building comprising retail and business premises
- 42 Phillip Street – a building set back from the street

The immediate context of the site comprises a range of land uses including office premises, retail premises, hotel, serviced apartments and residential apartments. To the north is the Parramatta River and open space corridor, beyond which are predominately residential uses. The Riverside Theatre is located to the north-west across the Parramatta River.

Figure 1 - Aerial photograph of the site and its context
Source: Mark Merton Photography

Figure 2 - Site boundary, key existing features, and immediate local context
Source: Ethos Urban

1.4. Overview of Proposed Development Works

The Powerhouse was established in 1879, and Powerhouse Parramatta will radically return to its origins through the creation of seven presentation spaces of extraordinary scale that will enable the delivery of an ambitious, constantly changing program that provides new levels of access to Powerhouse Collection. The Powerhouse will set a new international benchmark in experiential learning through the creation of an immensely scaled 360-degree digital space, unique to Australia.

Powerhouse Parramatta will reflect the communities and cultures of one of Australia's fastest growing regions. It will hold First Nations culture at its core and set a new national benchmark in culturally diverse programming. The Powerhouse will be highly connected through multiple transport links, and integrate into the fine grain of the city.

Powerhouse Parramatta will be an active working precinct and include the Powerlab, which will enable researchers, scientists, artists and students from across regional NSW, Australia and around the world to collaborate and participate in Powerhouse programs. The Powerlab will feature digital studios to support music and screen industries alongside co-working spaces, life-long learning and community spaces. Integrated into the Powerlab will be a research kitchen and library that will support a NSW industry development program including archives and oral histories.

This application will deliver an iconic cultural institution for Parramatta in the heart of Sydney's Central City. The SSD DA seeks consent for the delivery of the Powerhouse Parramatta as a single stage, comprising:

- site preparation works, including the termination or relocation of site services and infrastructure, tree removal and the erection of site protection hoardings and fencing;
- demolition of existing buildings including the existing Riverbank Car Park, 'Willow Grove', 'St George's Terrace' and all other existing structures located on the site;
- construction of the Powerhouse Parramatta, including:
    - seven major public presentation spaces for the exhibition of Powerhouse Collection;
    - front and back-of-house spaces;
    - studio, co-working and collaboration spaces comprising the 'Powerlab', supported by 40 residences (serviced apartments) for scientists, researchers, students and artists, and 60 dormitory beds for school students;
    - education and community spaces for staff, researchers and the Powerlab residents, the community, and education and commercial hirers;
    - commercial kitchen comprising the 'Powerlab Kitchen' used for cultural food programs, research, education and events;
    - film, photography, and postproduction studios that will connect communities with industry and content that will interpret the Powerhouse Collection;
    - public facing research library and archive for community, industry, students and researchers to access materials; and
    - a mix of retail spaces including food and drink tenancies with outdoor dining.
- operation and use of the Powerhouse Parramatta including use of the public domain provided on the site to support programs and functions;
- maintenance of the existing vehicular access easement via Dirrabarri Lane, the removal of Oyster Lane and termination of George Khattar Lane, and the provision of a new vehicular access point to Wilde Avenue for loading;
- public domain within the site including new public open space areas, landscaping and tree planting across the site; and
- building identification signage.

The project does not seek consent for the carrying out of works outside of the site boundary, and in particular does not involve any alterations to the existing edge of the formed concrete edge of the Parramatta River or to the waterway itself.

1.5. SEAR's Assessment Requirements

The Department of Planning, Industry and Environment have issued Secretary's Environmental Assessment Requirements (SEARs) to the applicant for the preparation of an Environmental Impact Statement for the proposed development. This report has been prepared having regard to the SEARs as follows:

SEARs (17) Construction The EIS shall include a Construction Pedestrian and Traffic Management Plan addressing:	**Section Addressed**
• details of the peak hour and daily construction and servicing vehicle	*Refer to Transport Impact Assessment by JMT Consulting*
• movements and access arrangements for workers to/from the site, emergency vehicles and service vehicle movements	*Refer to Transport Impact Assessment by JMT Consulting and Section 9.*
• cumulative impacts associated with other construction activities in the area, including impacts associated with the potential overlap with construction of the Parramatta Light Rail and any other State, Local and private development and capital works project	*Refer to Transport Impact Assessment by JMT Consulting*
• assessment of traffic and transport impacts during construction and how these impacts will be mitigated for any associated traffic, pedestrians, cyclists and public transport operations	*Refer to Transport Impact Assessment by JMT Consulting and Section 9.*
• road safety at key intersections and locations subject to heavy vehicle movements and high pedestrian activity	*Refer to Transport Impact Assessment by JMT Consulting*
• details of temporary cycling and pedestrian access during construction	*Refer to Transport Impact Assessment by JMT Consulting*
• potential impacts of the construction on surrounding areas with respect to noise and vibration, air quality and odour impacts, dust and particle emissions, water quality, storm water runoff, groundwater seepage, soil pollution and construction waste	*Refer to Noise Vibration Impact Assessment by Arup and Air Quality Impact Assessment by Wilkinson Murray and Section 8.*
• annual volume of materials to be extracted, processed or stored onsite during construction and how the extracted material will be disposed of or reused.	*Refer to Section 13.7.*
• details of proposed construction methods for the basement levels e.g. shoring of the basement during construction.	*Refer to Section 10, 12 and 13.*

1.6. Construction Management Plan

This Construction Management Plan (CMP) outlines the approach to construction management of the Powerhouse Museum Redevelopment. The CMP will be updated by the appointed Contractor, engaged for the works and prior to works commencing.

All tasks undertaken in relation to the project whether they be physical construction activities, office duties or procedural tasks are to be undertaken in accordance with the following:

1. Suppliers and contractors shall provide assurance of the quality of all goods, materials and services to be provided; and
2. All materials and works are to be undertaken to the manufacturer's specification or industry standards.

Liaison will be established with relevant authorities to co-ordinate the works.

The Client has engaged various consultants to assist in the SSDA process. Those relevant to the CMP may include:

- Noise and Vibration Impact Assessment: Arup
- Construction Pedestrian & Traffic Management Plan: JMT Consulting
- Air Quality: Wilkinson Murray
- Infrastructure Servicing Strategy: Arup
- Archaeological Assessment: Curio Projects
- Aboriginal Cultural Heritage Assessment Report: Curio Projects
- Environmentally Sustainable Design Strategy: Arup
- Heritage Impact Statement: Advisian
- Stormwater and Flooding Assessment: Arup
- Aboricultural Impact Assessment: Tree iQ
- Geotechnical: JK Geotechnics
- Environmental incl Hazardous Material: JBS&G

The Contractor will adhere to the Protection of the Environment Operations Act 1997 (POEO Act). The principles that underpin the POEO Act are:

- To protect, restore and enhance the quality of the environment in New South Wales, having regard for the need to maintain ecologically sustainable development;
- To provide increased opportunities for public involvement and participation in environment protection;
- To ensure that the community has access to relevant and meaningful information about pollution;
- Pollution prevention and cleaner production;
- Reduction to harmless levels of the discharge of substances likely to cause harm to the environment;
- Reduction in the use of materials and the re-use or recycling of materials;
- Making progressive improvements including the reduction of pollution;
- To rationalise, simplify and strengthen the regulatory framework for environment protection;
- To improve the efficiency of administration of the environment protection legislation; and
- To assist in the achievement of the objectives of the Waste Minimisation and Management Act 1995.

Figure 3 – Site Boundary Plan

1.7. Overview of Proposed Works

The site is currently occupied by a multi-storey carpark, at grade carparking, existing low-rise buildings including Willow Grove and the St Georges Terrace.

The site has two partial road frontages and is made up of a number of land parcels, forming an irregularly-shaped site area. It is bounded by the Parramatta River to the north, Wilde Avenue to the east, Phillip Street to the south and residential apartments and a hotel with frontages along Church Street to the west.

The works for the project include site preparation and establishment, service relocations or terminations, tree removal, hazardous material removal, as well as demolition of existing structures and construction of the new museum.

Site Boundary Plan and overview of existing structures to be demolished are illustrated in **Figure 4** below.

Figure 4 – Existing Structures proposed for demolition

2. Legislative Requirements

The works will be undertaken in accordance with the following legislative requirements:

- Protection of the Environment Operations Act 1997 and Regulations.
- Environmentally Hazardous Chemicals Act 1985.
- Protection of the Environment Administration Act and Regulations.
- Occupational Health and Safety Act 2000 and relevant codes of practice and Standards.
- Occupational Health and Safety Regulation 2001 and relevant codes of practice and Standards.
- Australian Standard 2601-2001: Demolition of Structures.
- Code of Practice for the Safe Removal of Asbestos (NOHSC:2002 1998).
- Guide to the Control of Asbestos Hazards in Buildings and Structures (NOHSC:3002 1998).
- Resource and Recovery Act 2001.
- Environmental Planning and Assessment Act 1979 and Regulations.
- Heritage Act 1997.
- Local Government Act 1993.
- State Environmental Planning Policy (Infrastructure) 2007
- State Environmental Planning Policy (State and Regional Development) 2011
- State Environmental Planning Policy No. 55 – Remediation of Land
- Draft State Environmental Planning Policy (Environment) 2017;
- State Environmental Planning Policy No. 64 – Advertising and Signage;
- Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005; and
- Sydney Local Environmental Plan 2012

The works are also required to be consistent with the following legislation where relevant:

- Work Health and Safety Act 2011
- Roads Act 1993
- National Parks and Wildlife Act 1974

3. Hours of Work

All work on site will only occur between:

- 7am to 6pm Monday to Friday and
- 8am to 5pm Saturday
- Unless otherwise approved in writing by Consent Authority due to extenuating circumstances

The extension of works outside of standard hours (i.e. 1pm-5pm Saturday) is proposed in order to:

- Maximise productivity on Saturdays to offset losses in productivity due to the COVID-19 situation, WH&S and social distancing requirements; and
- Take advantage of reduced road traffic on Saturdays for truck routes and deliveries.

In some additional cases, after-hours permits may be sought from the relevant authorities where special requirements exist, for example oversized deliveries such as Museum display items (Locomotives, artworks etc.) and Construction materials.

4. Investigation

4.1. Infrastructure Services

The Contractor will look to address the removal and/or proposed relocations of major site services identified including:

- Wastewater
- Water
- Electricity
- Stormwater
- Telecommunications
- Gas

Any services diversion or removal will need to consider impacts on neighbouring properties.

In general terms the following principles will be adopted when disconnecting services:

- All Service authorities will be consulted prior to works commencing to ascertain lead times and correct termination locations.
- All termination works should be undertaken in accordance with design engineers' specifications and instructions.
- All termination works should be undertaken by suitably licensed contractors.

Any termination works that impact on adjoining owners should be notified and undertaken out of hours to minimise impact.

There will be a number of services (certain sewer, stormwater, gas and electrical connections) which will need to be maintained until new services are online, whereupon they can be disconnected and removed.

4.2. Demolition

Where applicable, an investigation of the structures to be demolished and surrounding environment should be undertaken in accordance with the Australian Standards for Demolition of Structures, AS2601 – 2001.

The observations from the investigation should be broken up into 3 sections and recorded;

1. Investigation of Site
2. Investigation of Structures (incl. Hazardous Material Surveys) and
3. Investigation of Services (including DBYD)

Where practical, services disconnection should be carried out prior to commencing clearing/demolition works. The appropriate authorities should be consulted prior to these works.

The works will involve public protection, hazardous materials removal, demolition of all existing structures and removal of all footings of buildings identified in **Figure 4.**

5. Site Establishment

Prior to commencement of works on site (i.e. decommissioning / demolition), the site will be formally established. This includes addressing the following areas:

- Temporary site fencing to secure areas not already secured by fencing
- On-site storage, compounds, site office etc.
- Connection to temporary services
- Site amenities
- Sediment & erosion control measures
- Identification and marking of trees to be retained and/or removed
- Protection of trees that are to be retained.
- Statutory and contact signage.

The Contractor will ensure the security of all active work areas including the carpark to ensure the safety of the public and protection of the works.

Early site establishment will take approximately 2 weeks and be maintained for the duration of the demolition works. Refer to below Figure 5 below.

Construction personnel will be advised that there will be no vehicle parking on the site.

Figure 5 – Demolition and Early Work Site Establishment

Figure 6 – Phase 1 Site Hoarding during demolition of existing structures and relocation of services.

Site establishment including hoarding installation is likely to take place in multiple phases to limit disruption to adjoining properties. Temporary fencing and usage of movable barricades would be utilized as required for Dirrabarri Lane prior and Public Domain areas in order to facilitate repaving works and minor works as highlighted in Figure 7 below. Phasing of hoarding installation likely to be carried out as follows:

1. Phase 1 – Preliminary site hoarding to be installed in anticipation for demolition and relocation of services to majority of site as captured under **Figure 6** above.
2. Phase 2 – Site hoarding to be extended along riverbank to facilitate Main Construction of structures and majority of landscaping works as noted in **Figure 7** below.
3. Phase 3 – Usage of temporary fencing and movable barricades on Dirrabarri Lane and remaining Public Domain areas. To be installed as required to facilitate upgrade of existing surfaces including repaving/turfing. Refer to **Figure 7** below.

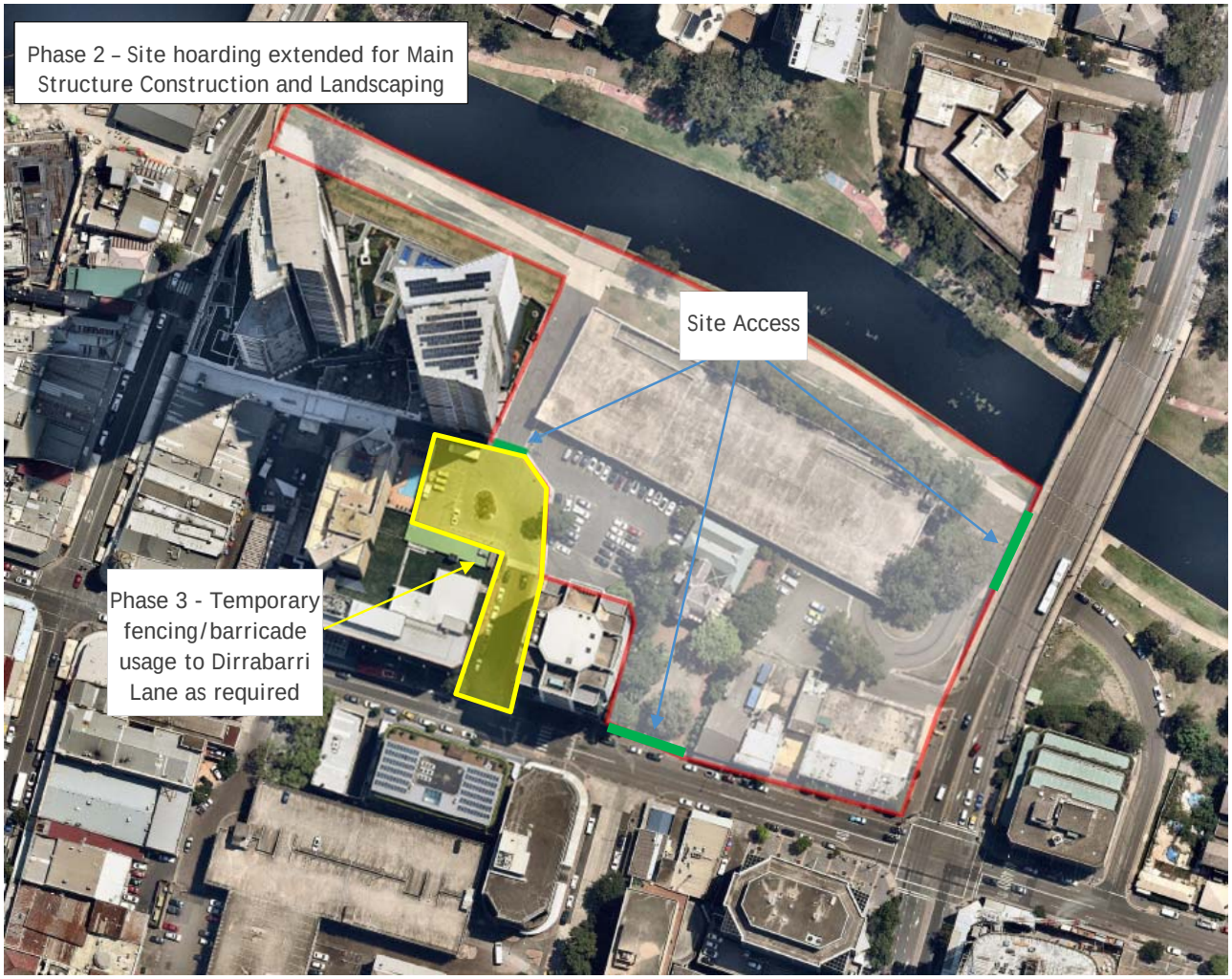


Figure 7 – Phase 2 Site Hoarding and access during Landscaping and Public Domain Works. Phase 3 highlighted in yellow to Dirrabarri Lane.

6. Public & Property Protection

Prior to the commencement of works a dilapidation survey is to be undertaken involving all public and private roadways, adjoining and adjacent paving, structures, buildings and residences. Temporary hoarding and fencing will be installed to delineate the site boundary and protect the general public from activities occurring on the site/s. The building site/s will be kept neat and tidy to maintain public safety and local amenity.

Adequate protective perimeter signage will be installed as required. This signage will be required to identify construction contact points and ensure no unauthorized entry to site.

6.1. Hoardings, Fencing and Barriers

Areas of the site where works will be undertaken should be securely fenced off using best practice methodology in order to protect the public. The following indicative issues will be considered with regard to site hoarding, fencing and barriers:

- Where possible maintain the existing perimeter fencing and attach shade cloth, or erect hoardings, to control views and manage dust;
- The site hoardings, perimeter fencing or other site barrier systems will be kept tidy throughout the programme of works;
- Before and during building work, all excavations below 1m in height will have safety barriers delineating potential fall areas;
- Hoardings, barriers and other perimeter fencing will be suitably lined to limit public viewing to designated viewing areas. This will ensure pedestrian flow is not impeded;
- The hoarding/fences may be adjusted to suite the phases of the development.

The fencing for the construction works for each stage of construction will be defined in a Fencing and Security Plan prepared by the Contractor. The Fencing Plan will look to clearly identify all access points into the site/s.

Vehicular access/egress gates are proposed through access points off Dirrabarri Lane and George Khattar Lane. These gates will be manned by qualified traffic supervisors at the times of major vehicular access and egress to the Site.

These public and property protection measures will be reviewed at the time of commencing works to ensure alignment with proposed preferred methodologies and sequencing developments and to ensure that the safety of the general public is maintained at all times.

Roads, paths and kerbs likely to be damaged by construction or worker traffic are to be protected by temporary overlays and ramps.

The Principal Contractor shall engage a dilapidation consultant to carry out a dilapidation survey prior to commencement of work. The dilapidation survey will cover surrounding buildings, pavements, fences, fixtures and trees within or immediately adjacent to work sites.

6.2. Works in the Public Domain

Works associated with the development/s may take place outside of the main site footprint such as road works and provision of site services. The Contractor will consider the following indicative issues with regards to local authority assets:

- Local authority assets such as roads, kerbing and channels etc., stormwater drains and street furniture will be protected and made good if damaged as a direct result of the building work;
- Priority repair will be given to those areas relied upon by pedestrians, cyclists and motorists' safety; and
- Any services installation such as electrical, drainage that extend over footpaths will be temporarily covered over and pedestrian and disability access facilitated by a ramp until such time as full reinstatement is complete.

6.3. Signage

The following indicative issues will be considered with regards to signage:

- Signs will be displayed in a number of areas around the site advising of the 24hr contact details for the site (the phone number may be for a security company or a communications agency);
- All works related signage (including particularly safety-related signage) will comply with the relevant WorkCover NSW Codes of Practice;

7. Permits

The works will be undertaken under a strict permitting system controlled by the relevant Authorities and the Principal Contractors. During the works, a number of permits will be issued by relevant Authorities to facilitate the construction methodology.

The following indicative permits and approvals may be applicable to the works:

- Permit to erect a gantry, overhead protective awning over the road or footpath (hoarding permit) especially on Philip St and Wilde Ave;
- Permit for a vehicular crossing (permanent or temporary);
- Permit to occupy space on Philip St and Council Footpath areas.
- Permit for a road opening;
- Permit for a road closure;
- Permit for a construction zone;
- Permit to use a mobile crane, travel tower or lift on or above a road;
- Permit for rubbish skips;
- Permit for works in adjoining Council reserves.
- WorkCover permit for demolition; and
- WorkCover permit for asbestos removal (if required).

8. Environmental

Environmental and safety controls shall be installed by the Contractor prior to the commencement of any onsite works.

These will include but not be limited to:

- Security measures (fencing and gate access)
- Occupational health and safety measures (personal protective equipment, first aid supplies, signage and barriers where required; and
- Environmental management measures (spill kits, booms, storm water control, dust control, silt control)

8.1. Noise and vibration principal measures

The following noise and vibration mitigation measures would apply to the Works:

- The Contractor will prepare and implement a final Construction Noise and Vibration Management Plan in accordance with the requirements at Section 3 of the Noise and Vibration Impact Assessment (Arup)
- A Contractor staff member will be appointed as the Responsible Person with respect to noise and vibration.
- Regular training will be conducted with workers and contractors (such as at toolbox talks) in the use of equipment in ways to minimise noise.
- The Contractor will ensure good work practices are adopted to avoid issues such as noise from dropped items and noise from communication radios is kept as low as is practicable.
- The Contractor will avoid the use of radios or stereos outdoors.
- The Contractor will avoid shouting, and minimise talking loudly and slamming vehicle doors.
- The Contractor will check and rectify any defective exhaust systems in trucks and machinery used on site.
- Turn off all vehicles, plant and equipment when not in use.
- The Contractor will ensure that the Responsible Person checks the conditions of the powered equipment used on site daily to ensure plant is properly maintained and that noise is kept as low as practicable.
- The Contractor will ensure that the Responsible Person controls the working hours on site to ensure that work is only done during the acceptable periods (7am to 6pm on weekdays and 8am to 5pm on Saturdays. No work on Sundays or public holidays).
- The Contractor will ensure that intrusive activities such demolition or piling works should be:
    - undertaken after 8am; and
    - only undertaken over continuous periods not exceeding 3 hours with at least a 1-hour respite period in between.
- The Contractor will ensure that the Responsible Person keeps the local community advised on expected activities and coordinates scheduling and locations of noisy works around any critical user events where practicable. This shall include face to face meetings with nearby receivers if requested and a letter box drop, and shall include close liaison with neighbours.
- The Contractor will maintain appropriate records of complaints to include timing, reported issues, actions taken and measures to be included for on-going works. The complaints log will need to be filed with the Responsible Person.
- The Contractor will be responsible for adhering to the construction noise and vibration mitigation measures outlined in the Noise and Vibration Impact Assessment by Arup.

8.2. Monitoring of noise and vibration

Vibration monitoring will be carried out at the nearest sensitive receiver on commencement of significant construction activities. Hand-held noise monitors may be utilised to gauge point source readings frequently by site staff whilst observing works.

Attended noise monitoring will be carried out to verify demolition noise levels and determine effectiveness of noise mitigation strategies.

Noise and vibration monitoring will be considered prior to the commencement of works and include:

- Proximity of the receiver to a worksite
- Sensitivity of the receiver to noise and vibration
- Background noise levels
- Expected duration of the impacts

8.3. Hazardous Material

A preliminary hazardous materials survey has been undertaken which has identified the location and type of hazardous materials on the site. In reviewing the approximate age of the existing buildings some hazardous materials were to be expected.

Subject to further destructive investigation of existing buildings, the Contractor would likely implement an Unexpected Finds Protocol upon commencement onsite.

Refer to Remedial Action Plan by JBS&G.

8.4. Dust and Air control measures

Dust control measures for site preparation which will remain in place for the duration of the Works will include:

- Erection of site fencing to provide appropriate barriers at the site boundary
- Erection of effective screens and barriers around dusty activities. Cleaning of the screens and barriers should be completed as necessary.
- Communication with neighbouring properties prior to undertaking works in proximity to their premises.
- Establishment of a complaints management system to record details of any reason for air quality-based complaints.
- Avoidance of dry sweeping in large areas
- Use of effective water suppression where necessary
- Limit demolition activities that will create dust during times of adverse wind
- Covering of stockpiles
- Trucks to have payload covered
- Wheel washing system for trucks if necessary
- Limiting plant and equipment idling
- Implement speed limits on site.
- Implementation of a Dust Management Plan by the Contractor

Should these measures be undertaken it is expected that dust impacts can be kept at acceptable levels throughout the Works.

Refer to Air Quality Impact Assessment by Wilkinson Murray.

8.5. Monitoring of air quality

Monitoring of air quality can include daily and weekly visual surveillance of dust emissions, dust controls, plant emissions.

Weather and physical parameters such as wind speed, rain, temperature and humidity will be utilized to assist in programming works (impact of rain and wind conditions on site) and recorded or works will not be conducted during periods of rainfall where there is the potential to generate runoff, or where heavy rain is forecast.

Weather data (such as wind direction) will also be used where complaints are received in relation to dust or noise.

8.6. Odour Control

In terms of proposed activity for the Site, odour problems will be minimal. All plant and machinery involved in the Works will be regularly serviced and checked for exhaust emissions.

8.7. Storage of Dangerous Goods

The Works may involve the use of flammable fuels such as petrol, diesel, Oxy-acetylene, oils, etc.

If required, such items will be stored in a lockable compound, within an appropriately bunded area, and with sufficient ventilation in accordance with relevant codes of practice and Standards.

Material safety data sheets (MSDS) on all flammable and potentially harmful liquids will be provided to the Contractor undertaking the Works. Copies of MSDS will be kept in the site office and easily accessible to all construction personnel.

8.8. Erosion and Sediment Control

Appropriate erosion and sediment (ERSED) controls shall be in place before starting Works and maintained throughout construction activities, until the site is landscaped and/or suitably revegetated.

During the works, the existing stormwater infrastructure will be utilised whilst excavation and clearing works are conducted with the addition of an on-site detention tank that will have a pump connection the existing stormwater line.

Only once substantial civil works are complete the new stormwater system will be utilised. The contractor will be required to comply with the erosion and sediment control plans prepared by Arup

The site would be managed in accordance with the protection of the Environment Operations Act 1997 (PoEO Act) by way of implementing appropriate measures to prevent sediment run-off, erosion and excessive dust emanating from the site during construction.

Erosion and sediment control measures will be implemented and maintained throughout the construction period in accordance with the details of the erosion and sediment control details and to the satisfaction of the principal certifying authority. All necessary erosion and sediment control devices will remain in place until the site has been stabilised.

Refer to Arup Erosion and Sediment Erosion Control Plan.

8.9. Flora and Fauna Management

Only trees that have been nominated and approved for removal will be cleared from site. All trees that are to remain on site will be protected accordingly and inspected by an Arborist throughout the project when required.

Works near trees to be retained will be conducted as follows:

- A minimum 1.8m high chain-wire fence is to be erected at least three (3 meters) from the base of each tree and kept in place prior to Works commencing to restrict the following occurring:
    - Stockpiling of materials within the root protection zone;
    - Placement of fill within the root protection zone;
    - Parking of vehicles within the root protection zone;
    - Compaction of soil within the root protection zone.
- All required tree protection measures are to be maintained in good condition for the duration of the construction period.
- All areas within the root protection zone are to be mulched with composted leaf mulch to a depth of no less than 100mm.
- A sign is to be erected indicating the tress to be protected.
- The installation of services within the root protection zone is not to be undertaken without priot consent from the Consent Authority.
- All personnel involved with the development are to ensure no excavation occurs within the Tree Root Zones of any tree to be retained.
- Driveways required for construction must be located sufficiently clear of street trees.

Refer to Arborist Report prepared by Tree iQ

8.10. Flood Mitigation

Flood damage and potential environmental risks caused by flooding shall be minimised by:

- Providing controlled access points across the site;
- Provide water extraction methods (i.e pumps) during heavy rains
- Maintenance of all erosion control measures during the works.

Refer to Stormwater and Flooding Report prepared by Arup.

8.11. Water Quality Management

Control and monitoring measures to be managed and monitored by the Contractor are to include but not be limited to:

- All run-on surface water will be diverted from site where possible and run-off from the worksite captured for treatment or disposal.
- Before pumping any water out an Approval to Discharge or Reuse Water will be obtained
- Quantities of sealants, solvents, oil, and fuels will be stored correctly and bunded.
- All demolition zones/roads will be maintained and cleaned to prevent spoil entering into the stormwater drains/system.
- Temporary bund products such as Plant Nappies or similar product will be used to manage potential spills/leaks and any potential contaminants.
- Surface water generated in the sawing of concrete is to be vacuumed up and disposed of appropriately.
- Temporary check-dams or bunds around stormwater drainage paths near concrete sawing work areas as a secondary measure for capturing polluted water.
- A street sweeper will be in operation to manage sediment tracking onto road surfaces throughout demolition works.
- Maintenance and checking of controls, check machinery daily for any oil or fuel leaks.

- Any water from rainfall onto the work site/s will have to be managed appropriately prior to discharge.
- Located stockpiles of materials away from areas where it could potentially move to waterways or stormwater drains, otherwise surround stockpiles with sediment controls.
- All loads to be covered during demolition excavation removal process to prevent spillage of material and dust being swept into the air.
- All vehicles not to track debris onto public roadways.
- Install sediment controls on stormwater inlets such as sediment traps and barriers where required by the shifting location and the nature of the works.

The quality of surface water discharges from site will be monitored visually during and after rainfall events by the Site and/or Environmental Manager and if required Environmental Consultant to establish if further controls are necessary.

The monitoring frequency shall be determined on a case by case basis by the Environmental Consultant.

9. Traffic Management

A site specific Construction Pedestrian and Traffic Management Plan (CTPMP) will be developed prior to commencement of works.

The overall principles of traffic management during demolition and construction activities include:

- minimising the impact on pedestrian movements;
- maintaining appropriate public transport access;
- minimising the impact to existing traffic on adjacent roads and intersections;
- minimising the loss of on-street parking;
- maintaining access to/ from any adjacent properties;
- restricting construction vehicle movements to designated routes to/ from the site;
- managing and controlling construction vehicle activity in the vicinity of the site;
- ensuring construction activity is carried out in accordance with Council's approved hours of works.

The following are traffic guidelines to be incorporated on site. These guidelines are for streets, roads and lane-ways in the immediate and surrounding areas of the facility. These points outline both restricted and non-restricted access for heavy vehicles and/or machinery accessing the site.

9.1. Construction Vehicle Access / Egress Management

Road occupancy licences will be utilized where interruptions to traffic and pedestrian flow are anticipated in public areas.

It is anticipated that bogie tippers, semi-tippers and truck and trailer type heavy vehicles would be used in undertaking the Works. All trucks will be loaded to their prescribed weight limits, within the site boundary and be covered with a tarp (rubbish loads only) prior to exiting the Site/s.

Vehicles entering and exiting the construction zones will do so in a controlled and planned manner with minimal disruption to local vehicular and pedestrian traffic. To sustain this focus the Contractor will manage construction, pedestrian and vehicular interactions on all public roads with traffic and pedestrian control. At all times the Contractor will be mindful of any work being undertaken by local authorities adjacent to and/or surrounding our site.

9.2. Construction Vehicle Transport Routes

Refer to Construction Pedestrian Traffic Management Plan by JMT Consulting.

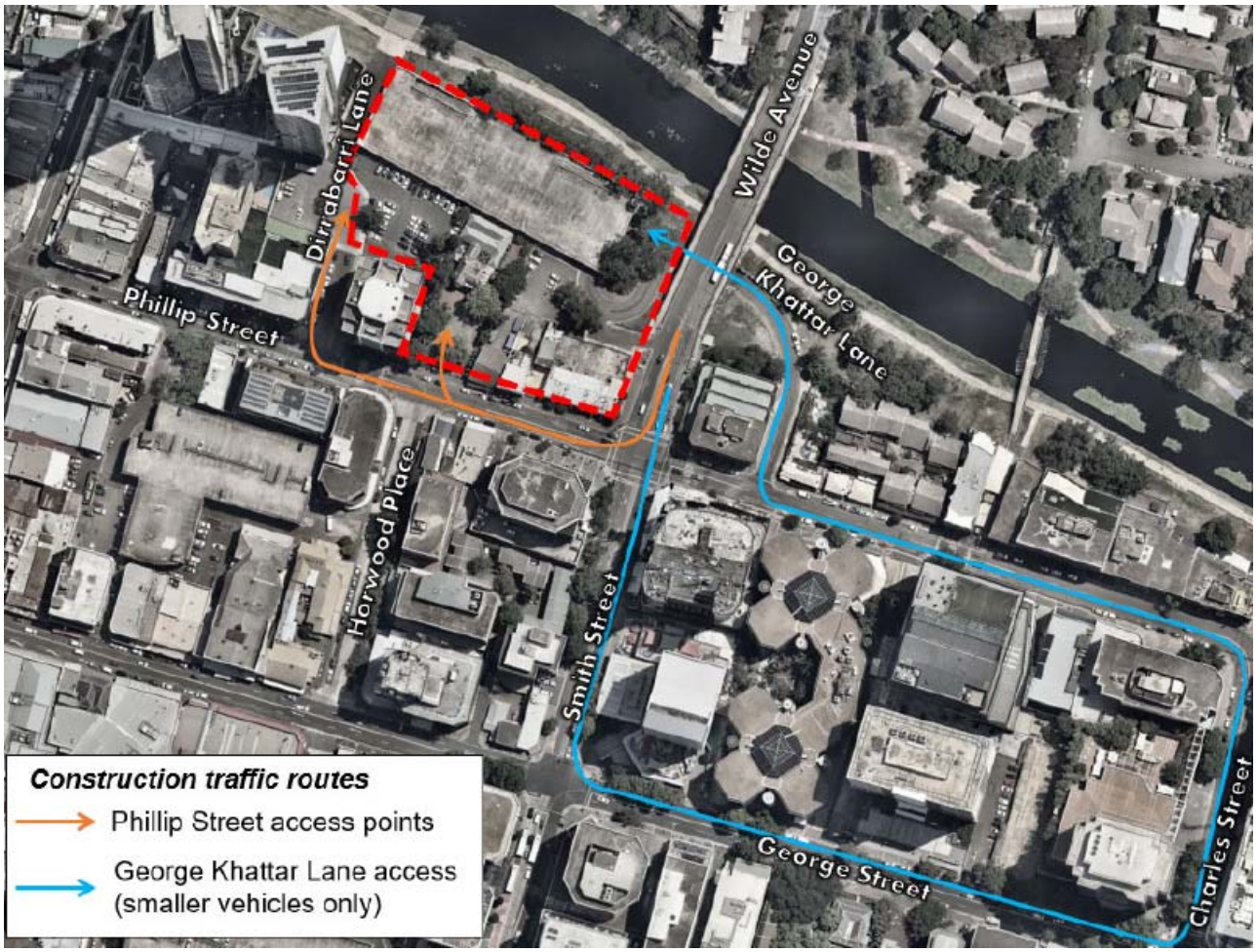


Figure 8 –Inbound Construction Traffic Routes
Source – CPTMP JMT Consulting

10. Demolition Works Management

This CMP Plan also seeks to outline the general principles to be adopted to minimise the impact of the hazardous material removal (if applicable) and demolition works on the surrounding areas.

An investigation of the structures to be demolished and surrounding environment is to be undertaken in accordance with the Australian Standards for Demolition of Structures, AS2601 – 2001.

10.1. Scope of Works

Demolition of existing the River Bank car park, commercial buildings including St George Terrace and Willow Grove sites down to ground level.

10.2. Restricted Areas (exclusion zones)

- Outside of working hours (or when the site is otherwise unoccupied), B Class Hoarding or other measures are to be erected/ installed to restrict public access to the site and building Works, materials and equipment.
- Signs to be erected in clearly identifiable positions stating that unauthorised entry to the site is not permitted. The signs are to include an after-hours contact name and telephone number.
- All exclusion zones, as nominated by the Contractor will be properly demarcated throughout the Works.
- No unauthorised persons shall be permitted into the demolition and work area.
- All personnel and visitors will follow the Site Personnel and Visitor Registration Procedure.

10.3. Description of Structures

- River Bank Car Park – A large multi-storey car park (535 spaces) predominantly made from steel reinforced concrete suspended slabs.
- At grade car park adjacent to Willow Grove consisting of mixture of asphalt and concrete.
- Two storey Willow Grove with rear addition and landscaping
- Two storey commercial building on Philip Street adjoining Willow Grove
- Substation No.16 building predominately consistent of brick and concrete finish.
- St Georges Terrace – Two storey commercial block corner of Philip Street and Wilde Ave

10.4. Hazardous / Contaminated Materials

The Works will be undertaken by a suitably licensed contractor holding "Demolition Class 1 Unrestricted" licence for demolition and "Friable Asbestos Removal" for hazardous material removal. Hazardous materials will be treated separately and will be removed in accordance with "Environmental Guidelines: Assessment, Classification & Management of Liquid and Non-Liquid Wastes" (NSW, EPA 2004).

In the event that hazardous/contaminated materials are present, removal will be undertaken by an appropriately qualified contractor in all areas of site prior to demolition and excavation in those particular areas and in accordance with The Code of Practice for the Safe Removal of Asbestos and OHS Regs-2001.

The Contractor is to prepare reports validating the appropriate removal, remediation and disposal of any identified hazardous materials. On completion of all 'Hazardous Materials Removal' Works, a clearance certificate is to be provided.

The following controls and safeguards are to be implemented for the Works:

- All demolition Works involving the removal and disposal of asbestos (of an area more than 10sqm) must only be undertaken by a licenced asbestos removalist who is licenced to carry out the work.
- Transporters of asbestos waste (of any load over 100kg of asbestos waste or 10 square metres or more of asbestos sheeting) must provide information to the NSW EPA regarding the movement of waste using their WasteLocate online reporting tool www.wastelocate.epa.nsw.gov.au.
- Asbestos removal must be carried out in accordance with the WorkCover, Environment Protection Authority and Office of Environment and Heritage requirements.
- Asbestos to be disposed of must only be transported to waste facilities licenced to accept asbestos.
- No asbestos products are to be reused on the site.
- If unidentified asbestos is encountered during the Works, work will stop in that area immediately and the applicant must immediately notify the certifying authority and Council. A suitably qualified Contractor will seal the area and make safe as appropriate.
- If required, the necessary sampling and identification of the suspect material will take place and the appropriate method of removal implemented.

A final clearance report will be provided by the hygienist which will include the provision of tip dockets from waste centres.

Refer to Detailed Site Investigation and Remedial Action Plan by JBS&G

10.5. Method of Demolition

10.5.1. Demarcation of Site and Definition of Exclusion Zones

A temporary hoarding, fence or awning must be erected between the work site and adjoining public lands before starting work and must be kept in place until completion of the Works if there is a risk that the Works:

- Could cause danger, obstruction or inconvenience to pedestrian or vehicular traffic
- Could cause damage to adjoining lands.
- Involve the enclosure of a public place or part of a public place.

Council will be notified in writing prior to the erection of any structure or other obstruction on public land. Other areas of the site may be demarcated as hazard removal areas only if ACM is identified with the following:

1. Unauthorised Entry Prohibited.
2. Warning Demolition.
3. Warning Asbestos Removal (if required).
4. Contractors Details including Contacts.

10.5.2. Install Environmental Controls

All Stormwater drains will be covered in a geotech material, with geotech lined hay bales placed up stream of the flow to these drains as required.

10.5.3. Soft Strip Structures

The structures will be stripped-out by hand (incl any hazardous materials) with appropriate hand-tools where required, prior to mechanical stripping.

Bounded material such as non-load bearing walls, partitions, and doors that may not be removed by machines will be removed by a combination of hand, picks, crow bars, and other associated tools.

Non-structural elements removal will be undertaken utilising manual labour and small plant including – bobcats, 3-5t excavators and dingo type loaders. The materials will be removed from site using medium & large sized trucks.

10.5.4. Mechanical Demolition

The structures will be demolished using larger plant and equipment including 15-40t hydraulic excavators. These machines may be equipped with rock breakers, pulverisers and the like which would be used in a sequential manner.

Materials handling would likely be completed by mechanical plant (including excavators and bobcats) loaded into trucks (bogie tippers and semi-trailers). Sorting of material into both non-recyclable and recyclable streams will be processed prior to be carted offsite to an approved waste facility or recycling centre respectively.

The final demolition method to be confirmed by the Contractor within an updated Construction Management Plan prior to Works commencing.

Heavy and wide loads will be coordinated with the relevant authorities and stakeholders for approval, so as to minimise traffic impact during work hours.

10.5.5. Removal of Demolished Materials

All trucks will be loaded wholly inside the site boundary and loaded to their prescribed weight limits and be covered with a tarp (rubbish loads only) prior to exiting the Site at all times during the demolition period.

- All trucks are to be held within the construction site for the demolition works, with no queueing on public roads to occur.
- Construction workers / tradespersons will be encouraged to utilise public transport and/or car pool with other construction workers.
- All demolition vehicles are to be contained wholly within the site and vehicles must enter the site before stopping. A construction zone will not be permitted on surrounding public roads.
- Hours of operation are Mondays to Friday 7:00am to 6:00pm and 8:00am to 5:00pm Saturday. No Works on Sundays and Public Holidays and materials would be delivered and spoil removed during standard construction hours (TBC)
- Establishment and enforcement of appropriate on-site vehicle speed limits (20km/h), which would be reviewed depending on weather conditions or safety requirements;
- Neighbouring properties would be notified of construction Works and timing;
- No vehicles will queue on any public roadways including Philip Street, Dirribarri Lane, Wilde Avenue and George Khattar Lane.
- Deliveries would be planned to ensure a consistent and minimal number of trucks arriving at site at any one time.
- Vehicles would arrive to the site in a staged manner that will prevent the need for queuing outside the site.

11. Archaeological

The demolition and excavation works have potential to disturb relics/remains under the existing buildings as identified in the Archaeological and Heritage Reports of the individual development approval submissions.

Information gained from archaeological excavations within the Parramatta CBD indicates that there is likelihood that subsurface Aboriginal archaeological deposits will exist, despite disturbance through urban development.

11.1. Mitigation Measures

An Aboriginal Cultural Heritage Assessment Report (ACHAR) and Archaeological Assessment produced by Curio Projects has been developed to document the process of investigation, consultation and assessment with regards to Aboriginal cultural heritage and archaeology within the newly proposed development area for the Powerhouse Musuem. The aim of the ACHAR report is to confirm if any subsurface Aboriginal objects are present, and to determine the nature and extent of the Aboriginal heritage behind the object. The following mitigation measures are likely to be implemented during Construction:

- An unexpected finds protocol (Section 7.2 – Unexpected Finds Protocol) would likely be utilized in the event unknown Aboriginal objects were found during the course of construction and development of the site.
- Aboriginal heritage interpretation to encourage long term conservation within the new development.
- Preliminary Archaeological Investigations involving test trenches would help inform the Contractor prior to excavation and construction on site.

Refer to both Aboriginal Cultural Heritage Assessment Report (ACHAR) and Archaeological Research Design by Curio Projects.

12. Civil & Infrastructure Works

12.1. Infrastructure Scope of Works

The development will require excavation works to accommodate the extension and relocation of existing services. These services would likely include:

- Sewer
- Stormwater
- Potable Water
- HV and LV electrical works including relocation of existing substations.
- Telecommunications (NBN and Telstra Fibre)
- Gas

Infrastructure works are scheduled to take approximately 4-12 weeks provided all Authority Approvals have been granted. The maximum amount of personnel involved at any one time being 10 to 20 workers. Works may occur prior to demolition of structures (I.e. existing substation building) in order to facilitate safe decommissioning of active services. Sequencing of works will be subject to further review by Contractor at a later date.

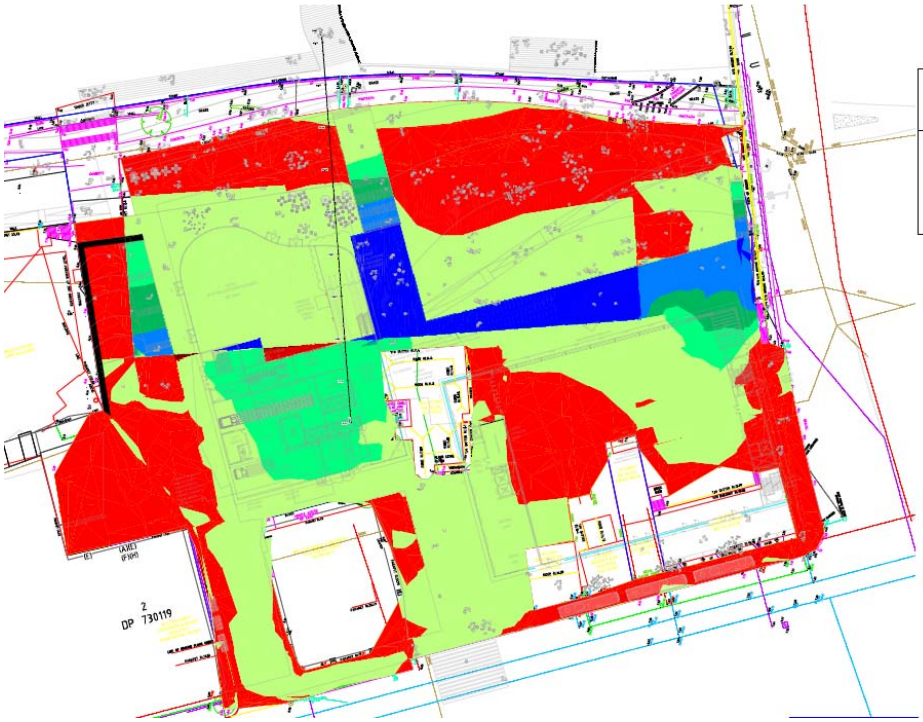
Proposed machinery include 5-45t excavators, bulldozer, graders, compactors, smooth drum rollers, bobcat, trucks, semi-trailers and loaders.

12.2. Bulk Excavation

Bulk Excavation will be as per the civil design documentation including site preparation for building footprint, foundations and piling. The following scope of works would likely take place:

- Scrapping, stockpiling and removal of site topsoil (subject to landscaping design)
- Bulk earthworks cut and fill including excavation in preparation to 'box' out to building footprint.
- Removal and replacement of any soft spot material
- Compaction of material (subject to further Geotechnical testing)
- Preparation of Piling mats
- Benching and grading of site levels to approx. heights prior to detailed site grading.

The majority of the site as noted in **Figure 9** below will require filling of material onsite to raise the grading levels in anticipation for the ground floor slabs and foundations.



SURFACE ANALYSIS: ELEVATION RANGES

	NUMBER	COLOUR	MINIMUM ELEVATION (m)	MAXIMUM ELEVATION (m)
CUT	1		-3.000	-2.000
CUT	2		-2.000	-1.000
CUT	3		-1.000	0.000
FILL	4		0.000	1.000
FILL	5		1.000	2.000
FILL	6		2.000	3.000
FILL	7		3.000	4.000
FILL	8		4.000	5.000

Figure 9 – Site Grading Plan
Source: Arup

Based on the Preliminary Geotechnical investigation (2013) by JK Geotechnics, it is anticipated a number of areas may require excavated materials to be removed from site based on information from underlying soils and borehole logs which indicate poor and moderate strength material. The material is likely to be mixture of Virgin Excavated Natural Material (VENM), Excavated Natural Material (ENM) or General Solid Waste (GSW) which will be subject to further testing by the Contractor.

During bulk excavation works, the required sediment and erosion management controls will be implemented and maintained to mitigate unwanted surface runoff into adjoining properties, public areas, rivers and roadways.

Prior to soils being disposed, the material will be inspected, assessed and classified ex situ (i.e. in stockpile) prior to disposal as not all areas of site could be accessed prior to demolition of structures, particularly within the footprints of existing buildings and beneath extensively paved and vegetated areas.

12.2.1. Detailed Excavation and Shoring

Detailed Excavation will likely consist of the following scope of works:

- Sawing and excavating of natural rock material
- Augers for rock anchors and/or piling
- Excavation of an onsite surface runoff Detention System including provisions for controlled Stormwater channels such as earth bunds.
- In-ground services (Electrical, Hydraulic, Comms etc.)

Where excavation works are required close to the boundary and/or neighbouring buildings further considerations with the zone of influence will be required, it is anticipated a shoring system such as either contiguous piled walls, or soldier pile walls with infill shot-crete panels would be implemented.

12.2.2. Detailed Site Grading

Once the majority of bulk earthworks and excavation works are completed, detailed site grading would take place in preparation for laying the building foundations and footprint. This will include the use of smaller plant equipment utilizing finely tuned survey equipment to adjust the final subgrade levels in anticipation for foundation preparation.

12.2.3. Piling Foundations

Subject to further Geotechnical investigation, foundation design in particular proposed piling type and methodology would be finalized by the Contractor. Based on initial preliminary Geotechnical information from Preliminary Geotechnical investigation (2013) by JK Geotechnics, the proposed piling system would likely be installed and socketed into the existing natural rock layer which varies between 10-20m deep across the site area.

The final piling layout would be constructed in conjunction with the proposed above ground columns and truss system in order to support the main load points including the perimeter of both buildings and central lift shafts. Piling works would commence first to enable construction of capping beam slabs which rest above a number of installed piles. Subsequent connection of column and truss points will commence thereafter.

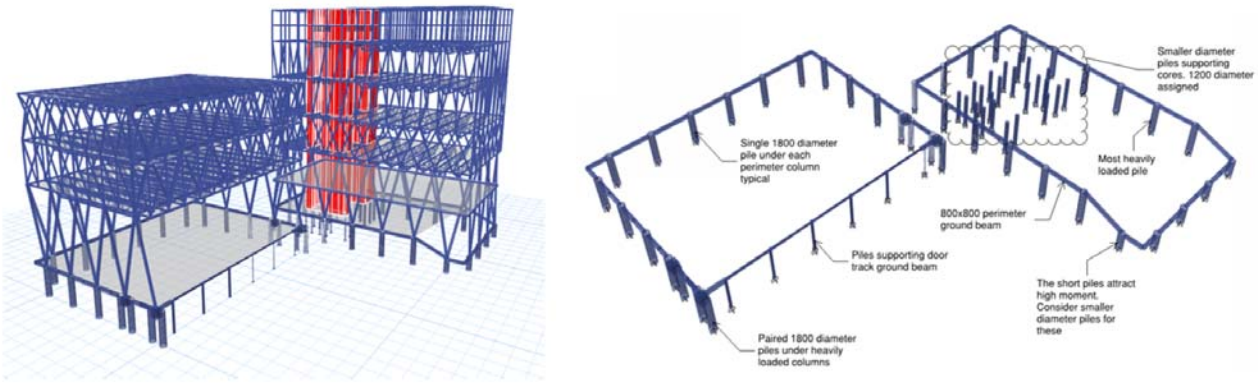


Figure 10 – Pile Concept Design
Source: Arup

13. Construction Works / Management

13.1. Scope of Works

The works are described as follows:

- Site establishment refer to *Section 5 – Site Establishment* and Figures 6 and 7.
- Demolition of all existing structures and relocation of services.
- Construction of new Buildings including (refer to Figure 11 below):
  - Eastern Building – 3 levels of presentation and rooftop garden terrace.
  - Western Building – 4 levels of presentation space, concierge/retail space, back of house facilities and residential and co-working spaces.

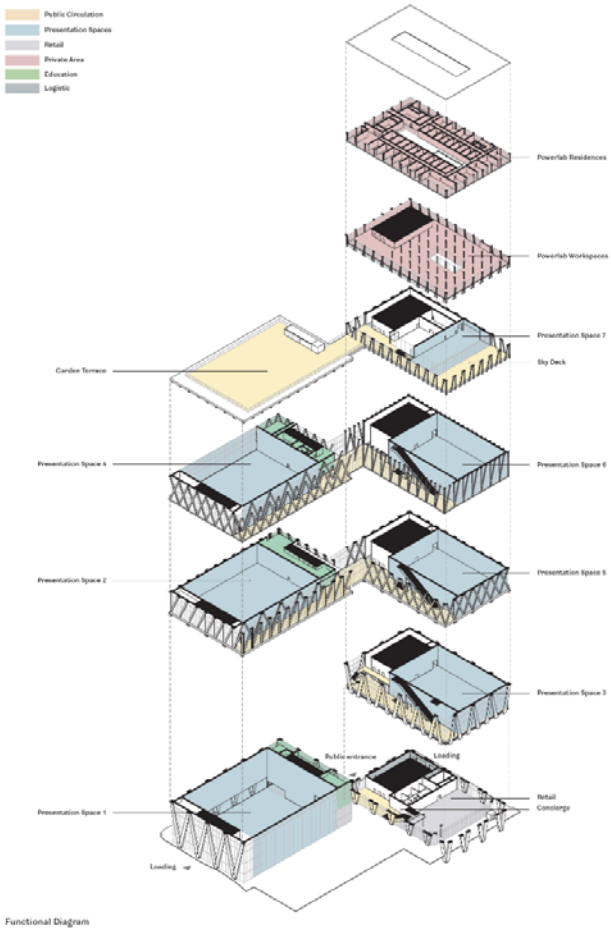


Figure 11 – Eastern Building (left) and Western Building (right)

Source: Moreau Kusunoki - Genton

- Construction of new Public Domain space fronting Parramatta River and interface areas surrounding the new buildings.
- Minor demolition and repaving works to Dirrabarri Lane.
- The construction methodology will involve the use of numerous types of plant & machinery to aid the execution of the construction activities, materials handling, installation and fit-out.

General access to the site will be Philip St and George Khattar Lane with minor use of Dirrabarri Lane. Refer Figure 6-8, CPTMP and supporting plans for indicative construction access locations.

Construction works are scheduled to take approximately 24 – 36 months with the maximum amount of personnel involved at any one time estimated to be around 200 workers. Timing of works for each phase of Construction has been estimated below in Table 1:

Construction Phase	Duration
Site Establishment, Demolition and Relocation of Services	2-3 months
Bulk Earthworks, Detailed Excavation and Piling	4 months
Archaeological investigations	TBC during Construction
Main Structure Construction and Landscaping	24 months
Public Domain Works	2-3 months

Table 1 – Estimated duration of Works (To be confirmed and updated once a Contractor is appointed).

13.2. Site Accommodation & Amenities

Site establishment will include the establishment of site contractor's offices, tea rooms and toilet facilities, vehicle access, vehicle loading and unloading, lay down areas, establishment and maintenance of on-site work areas.

The Contractor will ensure the security of all active work areas including the building to ensure the safety of the public and protection of the works.

Refer to Figure 12 below for indicative site accommodation area during building construction.

13.3. Cranes

It is anticipated that permanent cranes (Favco or Hammer-head type) will be utilised on the site. Subject to further design and construction sequencing by Contractor.

Mobile cranes will be utilised intermittently throughout construction with material hoists being utilised for specific trades.

13.4. Proposed Machinery

Installation of major items such as steel trusses, roof sheeting, concrete, plant and equipment, along with façade metal and glazing elements may be installed via the use of permanent and mobile cranes.

13.5. Materials Handling and Deliveries

It is envisaged that the majority of materials unloading and loading can occur within the site. All other deliveries for access reasons, and to minimize traffic disruptions to Phillip St, Dirrabarri Lane and George Khattar Lane, will be carefully controlled.

Materials will predominantly be delivered via the dedicated site entrances which would be managed by the Contractor and their traffic control systems.

A detailed CTPMP by the Contractor will be prepared prior to construction. Traffic will generally be managed in the following way:

- Designated transport routes will be communicated to all personal and enforced.
- Designated non-peak hour deliveries.
- Strict scheduling of vehicle movement will occur to minimize off site waiting times.
  Minimal on-site parking would be envisaged with site workers encouraged to utilize existing public transport and car sharing wherever possible.
- Vehicle movements will be compliant with Conditions of Consent and broader road-use regulations, particularly with regard to hours of work, materials loading and unloading.
- Stakeholder feedback especially with adjoining neighbours and relevant Authorities.

The predominant means of materials deliveries to the project will be via Philip St, George Khatter Lane (subject to bridge clearance) which would be supervised by Traffic controllers holding appropriate RTA accreditations, OH&S White Card and Traffic Controllers Blue Card.

General deliveries will be via the designated entry to site (refer to Figure 6, 7 & 8).

A manitu and/or all terrain forklift will be available to off-load materials delivered to site, resulting in a cut down on the number of visits from mobile cranes and other heavy vehicles entering the site.

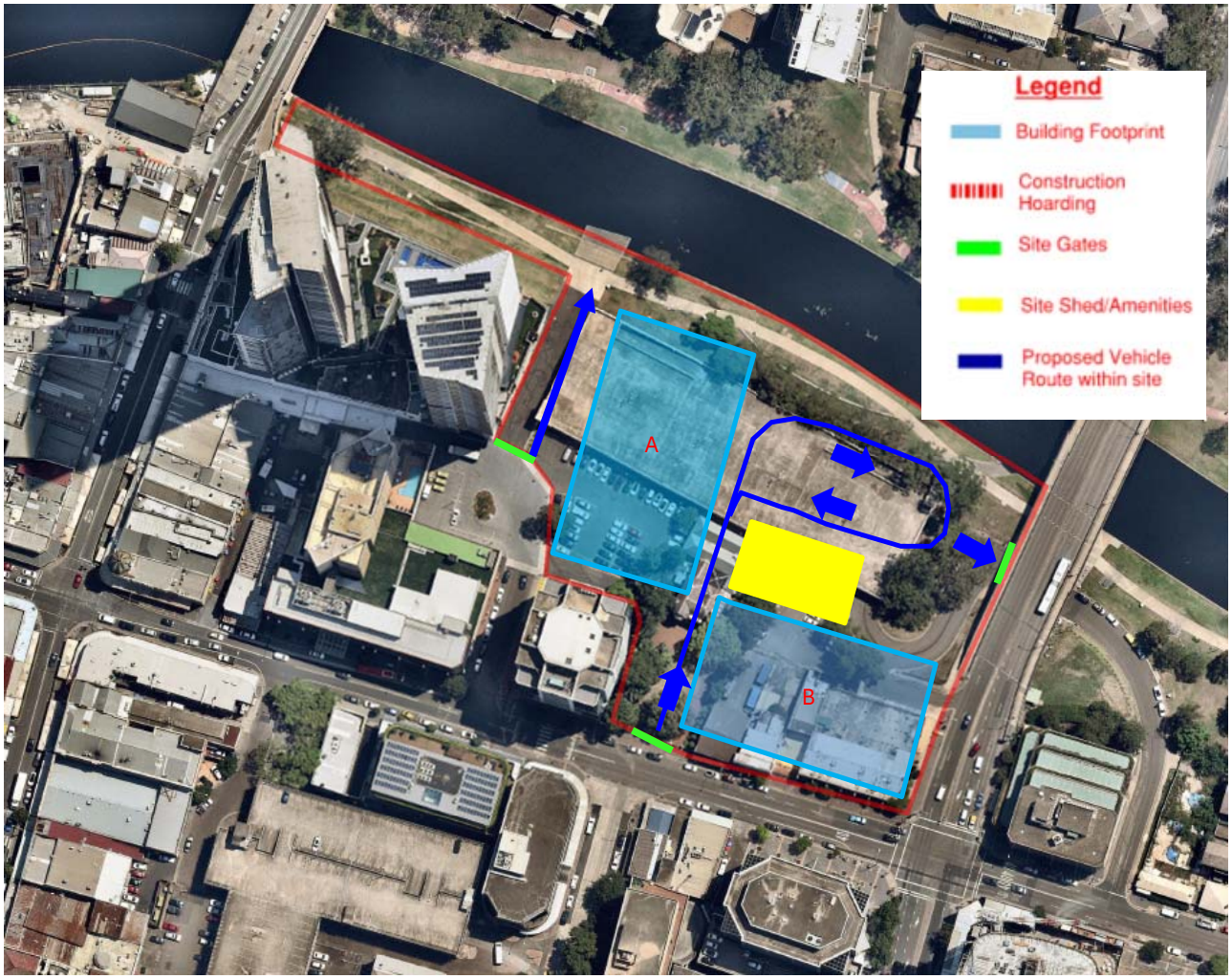


Figure 12 – Site Internal Vehicle Route during Construction

13.6. Concrete Pumping

Mobile concrete boom pumps and associated concrete delivery trucks will frequent the project as required in accordance with the construction program.

Locations for concrete pumps will be determined based on the construction programme however will be positioned within the site at all times in order to suitably service individual buildings as required.

13.7. Waste Minimisation and Management Plan

A Waste Management Plan (WMP) will be prepared prior to construction The WMP will detail expected demolition and construction waste materials and quantities. It defines protocols for the sorting and storage of waste onsite and subsequent disposal.

Construction waste management will be carried out to ensure that all construction activities are carried out in a manner that will minimise landfill and maximise waste material avoidance, reuse and recycling.

All excavated material and construction waste generated will be placed onsite with the final location to be determined by the Principle Contractor and transported to the appropriate recycling and waste facility.

All material from the works will be recycled excluding selected soft demolition materials and hazardous materials such as asbestos.

Once the main structures are in place and internal fitout works commence, a number of bins may be allocated at each building and utilised for general waste removal. The location and number will be determined by the construction requirements. Approximately 1 to 2, 10m^3 bins are proposed for the separation and recycling of timber, metal, concrete and brick/blockwork during general construction works.

Waste categories expected to be generated during construction include:

- Metals
- Concrete
- Masonry & Tiles
- Green Waste (Landscaping)
- Spoil
- Copper
- Sandstone
- Timber
- Glazing
- Plasterboard
- Hazardous and contaminated Material

The appointed Principal Contractor will be responsible for the management and disposal of all waste generated especially during early demolition works and will be required to prepare a detailed WMP prior to commencement.

13.7.1. Waste Storage and Handling

MATERIALS ON-SITE		DESTINATION		
		Re-Use and Recycling		Disposal
Type of Materials	Estimated Approximate Quantity	ON-SITE	OFF-SITE	
Structural & Reinforcement Steel	1,150	N/A	Off-site recycling facility	N/A
Concrete	17,000	N/A	Off-site recycling facility	N/A
Asphalt	<550	N/A	Off-site recycling facility	N/A
Glass	600	N/A	Off-site recycling facility	N/A
Cabling	<10	N/A	Off-site recycling facility	N/A
Fluorescent Light Tubes	<10	N/A	Off-site recycling facility	N/A
Asbestos	<200	N/A	N/A	EPA approved asbestos disposal facility
Fitout Strip Out (including plasterboard, ceilings,	800	N/A	Off-site recycling facility	N/A

services and joinery)				
Green Waste	1,150	Potential reuse within landscaped areas	Off-site recycling facility	N/A

Table 2 - Estimated Waste Generation and Destination

The figures in the table above are estimates and are used as a guide for designing the waste management systems on site. It is anticipated at least 90% of the above waste streams will be recyclable with further implementation and management to be completed by the Contractor. Further validation on the quantities from the above waste streams will be confirmed by the Contractor via the use of waste dockets and recording of truck loads.

13.7.2. Waste Management (Reuse, Recycling, Disposal and Monitoring)

The appointed demolition contractor will identify waste re-use for demolition items. In order to allow maximum re-use waste shall be segregated into individual stockpiles where space is available as determined by the contractor.

Throughout the demolition phase re-use opportunities will be investigated as the first option.

Where practical waste would be collected on site and segregated into separate recyclable and non-recyclable stockpiles before being transferred to the appropriate locations as determined in Table 2 above.

The demolition contractor will be encouraged to re-use and recycle demolition materials. All dockets for removal of materials will be retained for confirmation of waste recycling.

The disposal of waste will be considered only after re-use and recycling are found to be unsuitable. When waste materials are being disposed, all items are to be handled in a manner than causes the least amount of harm to the environment.

General waste produced on site shall be handled as per council requirements. It is recommended that existing local waste management facilities are utilised.

The removal, transportation and disposal of all materials will be undertaken in accordance with the requirements of the relevant authorities. The contractor will supply transportation dockets, disposal points and other relevant documentation which verifies the type, quantity and disposal location of all materials removed from Site.

The contractor is to develop on site waste recording for all waste streams and volumes arising throughout the demolition phase. This information will be used to show the type, volume and rate of waste being generated, re-used and recycled.

Refer to Operational Waste Management Plan by Arup.

13.8. Structure/s

The two proposed structures as referred to within Figure 13 below would likely be built using the following materials:

- Reinforced concrete piles and capping beam foundations
- Reinforced concrete slabs supported by steel main truss members
- Reinforced concrete service cores including lift shafts and staircases
- Mixture of glass (inc ground floor glass operable wall) and cementitious façade material.

Both eastern and western building construction would likely be undertaken within the same sequence broken into separate working spaces and streams.

Once piling foundations have been poured and allowed to set, steel truss assembling and installation would take place onsite, continuing until the roof structure is reached and completed. Conventional formwork, reinforcement and concrete would likely be used for slabs and main service core areas. Additional bracing may also be used to provide support whilst the main steel truss members are being positioned and installed into place. All steel members including truss fixtures and columns will be pre-fabricated offsite and delivered to site for on-site assembly and installation via crane.

Figure 13 – Building Footprint

13.9. Scaffolding

Scaffolding is likely to be erected to the perimeter of all buildings for the staged erection of the typical floor structures and façade elements. The extent and time at which it is erected will be at the discretion of the Construction Manager.

Scaffolding will provide access, fall protection and working platforms for the erection and completion of walls, facades, roofing and fitoff.

13.10. Services

13.10.1. Water

To sufficiently supply potable water to the proposed development a connection to SWC water mains will be required.

A formal Section 73 application to Sydney Water will need to be submitted to assess the detailed servicing requirements for the site.

13.10.2. Wastewater

A formal Section 73 application to Sydney Water will need to be submitted to assess the detailed servicing requirements for the site.

As part of the works, sections of the existing wastewater network will need to be relocated to allow for the excavation and construction of the building footprint.

13.10.3. Power

The site will require the relocation of existing and construction of a new substations.

Design and construction details will be prepared and formal applications made to AusGrid following receipt of DA consent.

13.10.4. Gas

Design and construction details will be prepared and formal applications made to Jemena following receipt of DA consent.

13.10.5. Telecommunications

Design and construction details will be prepared and formal applications made to the appropriate carrier/s following receipt of DA consent.

13.10.6. Completion

Completion of the works will include but not be limited to:

- Removal of all Plant, Machinery, Equipment, Storage, Amenities etc
- Removal of temporary Stormwater Management Controls
- Removal of temporary Fencing, shade-cloth and signage
- Make-good of any damaged Public or Private Infrastructure as a result of the works
- Obtain Occupation Certificate
- Landscaping (both internal and Public Domain areas)

14. Other Specific Management Plan Principles

14.1. Work Occupational Health & Safety Management Principles

A site-specific Plan will be developed and will be tailored to meet the project requirements.

The Plan will look to cover induction and training, safe work method statements (SWMS), risk management, injury management, incident management, training, inspections, audits and performance reporting.

The OHS management system shall, as a minimum, demonstrate compliance with all duties of an employer specified in the *Occupational Health and Safety Act 2000*.

The site-specific Safety Management Plan shall consider and respond to the specific WHS hazards and issues relevant to the Works and shall document the systems and methods to be implemented for the term of the Contract.

14.2. Environmental Management Principles

The Plan will be developed and used to identify Environmental Aspects, Impacts and to control Environmental Risk and document the processes to manage those risks during the demolition and construction of the Project.

The general outcomes for the project are:

- That the construction work complies with all relevant legislation;
- That the Works be undertaken such that all environmental and construction objectives are achieved; and
- Compliance with the criteria and safeguards as specified in the various planning and approval documents; and
- The environmental parameters set in the Developments Conditions of Approval and regulatory agencies requirements are adhered to.

14.3. Quality Management Principles

The plan will be developed to focus not only on product/service quality, but also the means to which it is achieved.

Planning for quality management can reduce the risk of project failure attributable to inadequate project management processes that result in outputs failing to meet defined and agreed standards.

15. Conclusion

This Construction Management Plan (CMP) has been produced for Infrastructure New South Wales to support the State Significant Development (SSD) and outline the general approach to Construction Management of the Powerhouse Museum Redevelopment. The CMP will be updated by the appointed Contractor upon inception and prior to works commencing.

Subject to Authority and community consultation, all tasks undertaken in relation to the project whether they be physical construction activities, office duties or procedural tasks are to be undertaken in accordance and with relevance to the following reports:

- Noise and Vibration Impact Assessment: Arup
- Construction Pedestrian & Traffic Management Plan: JMT Consulting
- Air Quality: Wilkinson Murray
- Infrastructure Servicing Strategy: Arup
- Archaeological Assessment: Curio Projects
- Aboriginal Cultural Heritage Assessment Report: Curio Projects
- Environmentally Sustainable Design Strategy: Arup
- Heritage Impact Statement: Advisian
- Stormwater and Flooding Assessment: Arup
- Aboricultural Impact Assessment: Tree iQ
- Geotechnical: JK Geotechnics
- Environmental incl Hazardous Material: JBS&G

In conjunction with the above reports and the below proposed mitigation measures in Section 16, the CMP will assist the Contractor to effectively manage and address Construction management issues on the project.

16. Mitigation Measures

PROPOSED MEASURE	TIMING
Prepare and record Dilapidation Surveys of all existing assets adjoining site boundary.	Prior and post construction
Install safety fencing around all areas of excavation within the site.	Prior and during construction
Prepare and implement a Construction Noise and Vibration Management Plan	Prior to construction
Undertake attended noise monitoring during construction	During construction
Install erosion and sediment control measures	Prior to construction
Prepare and implement a Construction Pedestrian and Traffic Management Plan	Prior to construction
Prepare and implement a Construction Waste Management Plan	Prior to construction
Prepare and implement a Unexpected Finds Protocol for both potential hazardous materials and archeological finds.	Prior to construction
Prepare and implement a Soil and Water Management Plan	Prior to construction