POWERHOUSE PARRAMATTA

ENVIRONMENTAL IMPACT STATEMENT

NSW GOVERNMENT

ETHOS
URBAN

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Version No.	Date of Issue	Revision By	Approved By
Version 1 – Test of Adequacy	27 April 2020	LR / AN	MO
Version 2 – Exhibition	4 May 2020	AN	MO
Version 3 – Minor changes (formatting etc)	2 June 2020	AN	MO

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Development Application Details	
Applicant name	Infrastructure NSW
Applicant address	Lvl 15, 167 Macquarie Street, Sydney NSW 2000
Land to be developed	34-54 & 30B Phillip Street and 338 Church Street, Parramatta
Proposed development	New information and education facility as described in Section 4.0 of this Environmental Impact Statement
Prepared by	
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Qualifications	Bachelor of Planning (Hons 1) UNSW, Master of Environmental Law (University of Sydney)
Address	173 Sussex Street, Sydney
In respect of	State Significant Development - Development Application
Certification	
	I certify that I have prepared the content of this EIS and to the best of my knowledge: • it is in accordance with Schedule 2 of the Environmental Planning and Assessment Regulation 2000; • all available information that is relevant to the environmental assessment of the development to which the statement relates; and • the information contained in the statement is neither false nor misleading.
Signature	
Name	Anna Nowland & Michael Oliver
Date	2/06/2020

Executive summary

Purpose of this report

This submission to the Department of Planning, Industry and Environment (DPIE) comprises an Environmental Impact Statement (EIS) for a State Significant Development Application under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). It relates to the construction of the Powerhouse Parramatta, a contemporary facility for excellence and innovation in applied arts and sciences, which will be an iconic cultural institution for Parramatta and NSW in the heart of Sydney's Central River City.

Development for the purposes of an information and education facility that has a capital investment value in excess of $30 million is identified as development that is State Significant Development (SSD) in Schedule 1 of State Environmental Planning Policy (State and Regional Development) 2011. As the proposed development has a capital investment value of greater than $30 million, it is SSD for the purposes of EP&A Act.

A request for the issue of Secretary's Environmental Assessment Requirements (SEARs) was made and the SEARs were issued on 10 February 2020. This submission is in accordance with the Department's guidelines for SSD applications lodged under Part 4 of the EP&A Act, and addresses the matters raised in the SEARs.

The site

The site is located at 34-54 and 30B Phillip Street and 338 Church Street, Parramatta. It is located on the northern edge of the Parramatta CBD on the southern bank of the Parramatta River, and occupies an area of approximately 2.5 hectares with extensive frontages to Phillip Street, Wilde Avenue and the Parramatta River. It comprises the Riverbank Carpark, a number of two-storey buildings formerly used for retail and commercial purposes, a substation, two local heritage items being Willow Grove and St George's Terrace, and a number of existing laneways including George Khattar Lane, Oyster Lane and Dirrabarri Lane. The site also incorporates the foreshore to the Parramatta River extending between the Lennox Bride and Barry Wilde Bridge.

The site benefits from excellent proximity to existing and planned public transport services and is located at the intersection of a number of key urban connections. These include the Parramatta River foreshore, key roads through the CBD, and Council's planned Civic Link that will connect Parramatta Square to the river via Horwood Place and the site. It is also strategically located to contribute to Parramatta's developing culture and arts precinct, complementing a range of existing civic uses within the CBD and along the foreshore including the Riverside Theatre, Roxy Theatre and Western Sydney Stadium.

Background and strategic need

The Powerhouse is internationally renowned as Australia's only contemporary museum for excellence and innovation in the applied arts and sciences. Hosting a significant collection of over 500,000 items spanning history, science, technology, industry, decorative arts, music, and transport, the Powerhouse is home to the material heritage and stories of Australian culture, history and lifestyle. It currently encompasses the Powerhouse in Ultimo, the Observatory in Millers Points and Powerhouse 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*.

In the *State Infrastructure Strategy Update 2014*, Infrastructure NSW proposed the development of a Parramatta Cultural Precinct and recommended that, before any further public investment was made in the Powerhouse at Ultimo, urgent consideration should be given to Powerhouse's potential relocation to the Parramatta Cultural Precinct. This was later reinforced in the NSW Government's *Cultural Infrastructure Strategy 2016*, in which Infrastructure NSW commented that the proposed relocation presented "an opportunity to develop a vibrant creative and cultural precinct" in the heart of Parramatta.

In February 2015, the then NSW Premier and Deputy Premier released the *Create in NSW: NSW Arts and Cultural Policy Framework* and announced the NSW Government's decision to investigate the creation of Powerhouse Parramatta. Following that announcement, Create Infrastructure NSW initiated and led the development of the planning framework for Powerhouse Parramatta. This included site selection assessment which concluded that the Riverbank site in Parramatta was the preferred site for the new museum. The Government confirmed this decision and announced its choice of the Riverbank site in April 2016. The Riverbank site was acquired by the NSW Government to facilitate the delivery of the project in early-2019.

In April 2018, the NSW Government published a business case summary for the development of Powerhouse Parramatta within Western Sydney. This business case supported the development of the new institution, which contributes to the future of Parramatta as the metropolitan centre of the Central River City and locates for the first time a major NSW Cultural Institution in Western Sydney.

These documents highlight the key strategic need and benefits of the development as a hub for culture, science, innovation and the arts:

- A new institution will deliver world-class opportunities for education and research, alongside museum exhibition space, and space for social and digital interaction and exchange. This significant investment in education, culture improvements will ensure Parramatta's role as Sydney's second CBD and the heart of the Central River City.
- Investment in the establishment of Powerhouse Parramatta will generate opportunities to participate in arts and culture within Western Sydney, balancing opportunities and the level of investment between the Eastern Harbour City and other areas, recognising that investment in arts and culture has been historically focussed within the traditional Sydney centre and surrounds.
- Creative industries comprise a core element of an innovative economy and, therefore, play a significant role in the productivity of an area with creativity, entrepreneurship, technical ability and collaboration being essential skills for the future workplace.
- A new state cultural institution will attract visitors to NSW from interstate and internationally, which generates economic benefits for local business through visitor spend on food and accommodation among other items. This leads to increased economic activity and employment opportunities for the local community, with the visitor economy highlighted as a key component of Sydney's standing as a global city.

Overview of the project

This SSD DA seeks consent for the design, construction and operation of Powerhouse Parramatta at 34-54 and 30B Phillip Street and 338 Church Street, Parramatta. The application seeks to provide a world-class museum and an innovation and creative industries precinct in Western Sydney, focused on science and innovation, that will meet the needs and aspirations of the community and deliver an exciting new cultural destination for the people of NSW and beyond.

The application seeks approval for:

- site preparation works, including the termination or relocation of site services and infrastructure, tree removal, earthworks and remediation, and the erection of site protection hoardings and fencing;
- demolition of existing buildings including the existing Riverbank Carpark, 'Willow Grove', 'St George's Terrace' and all other existing structures located on the site;
- construction of Powerhouse Parramatta, including:
  - front and back-of-house spaces;
  - seven major public presentation spaces;
  - studio, co-working and collaboration spaces comprising the 'Powerlab', supported by residences (serviced apartments) for artists, students, researchers and scientists, and 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 research and product development, and as a destination, education and event space;

  - film, photography, and postproduction studio 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.
- construction and establishment of the public domain within the site, comprising:
  - hard and soft landscaping works;
  - publicly accessible event and operational areas;
  - provision of pedestrian and cycling facilities.
- operation and use of 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;
- extension and augmentation of utilities and infrastructure as required; and
- three (3) business identification signage zones.

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 formed concrete edge of the Parramatta River or to the waterway itself.

Figure 1 Indicative photomontages of the proposed Powerhouse Parramatta

Source: Moreau Kusunoki and Genton

Planning context

This EIS has been prepared in accordance with the requirements of the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation), and **Section 5.4** of the EIS considers all applicable legislation in detail.

Pursuant to Clause 8A of SEPP SRD, the Minister for Planning is the consent authority for a SSD DA made by or on behalf of a public authority. This application is made by Infrastructure NSW, who are a public authority.

The *Parramatta Local Environment Plan 2011* (Parramatta LEP) applies to the site, with the proposed development being permissible with consent and consistent within the B4 Mixed Use zone and RE1 Public Recreation zone. The proposed development is compliant with the maximum building height and floor space ratio development standards applying to the site. The proposed development has also been the subject of an extensive competitive design

process and has been assessed against the relevant criteria in Clause 7.10 of the Parramatta LEP, confirming that the proposed development achieves design excellence.

This SSD DA is not a staged application in the meaning of 4.22 of the EP&A Act. The Parramatta LEP does not require the preparation of a development control plan to guide development on this site.

Environmental impacts and Mitigation Measures

This EIS provides an assessment of the environmental impacts of the project in accordance with the SEARs and sets out the undertakings made by Infrastructure NSW to manage and minimise potential impacts arising from the development. The key environmental matters identified include:

- urban design, built form, and the achievement of design excellence;
- public domain and landscaping;
- flooding and stormwater management;
- impacts on heritage and archaeology;
- visual and view impacts;
- noise impacts and noise management;
- access and egress to the site during construction and operational phases;
- construction works;
- the overarching social and economic impacts and benefits; and
- sustainability.

The proposed development has been assessed in each of these instances by technical experts across a range of disciplines as guided by the SEARs and industry best-practice. This confirms that there will be potential impacts resulting from the significant change to the existing conditions of the site, requiring the demolition of locally listed items and other physical changes. This is however balanced by achieving the project objectives and providing a new world-class Museum in Western Sydney that will outweigh the identified impacts and provide a number of transformative social and economic benefits for the local Parramatta and broader Sydney community. On-balance the proposed development is considered to be in the public interest and will not result in any unacceptable social, economic or environmental impacts that cannot be appropriately managed through the identified mitigation measures and conditions of consent.

Conclusion and justification

This proposal provides for the construction of Powerhouse Parramatta, a contemporary museum precinct for excellence and innovation in applied arts and sciences, which will be an iconic cultural institution for Parramatta as the heart of Sydney's Central River City.

This Environmental Impact Statement has been undertaken in accordance with the SEARs and confirms that the project is consistent with all statutory requirements and that the potential impacts of the development are acceptable and are able to be managed through compliance with the identified mitigation measures. Given the planning merits of the proposal, the proposed development warrants approval by the Minister for Planning and Public Spaces.

1.0 Introduction

This Environmental Impact Statement (EIS) is submitted to the Department of Planning, Industry and Environment (DPIE) pursuant to Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) in support of an application for State Significant Development (SSD).

Development for the purposes of a museum (information and education facility) that has a capital investment value in excess of $30 million, is identified as development that is SSD in Schedule 1 of the State Environmental Planning Policy (State and Regional Development) 2011. As the proposed development has a capital investment value of greater than $30 million, it is SSD for the purposes of EP&A Act.

The report has been prepared by Ethos Urban on behalf of Infrastructure NSW, and is based on the Architectural Plans provided by Moreau Kusunoki and Genton (see **Appendix B**) and other supporting technical information appended to the report (see Table of Contents).

This EIS has been prepared in accordance with the requirements of Part 4 of the EP&A Act, Schedule 2 of the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation), and the SEARs for the preparation of the EIS, which are included at **Appendix A.** This EIS should be read in conjunction with the supporting technical information and plans appended to and accompanying this report.

1.1 Overview of proposed development

This SSD DA seeks consent for the construction and use of the Powerhouse Parramatta at 34-54 & 30B Phillip Street and 338 Church Street, Parramatta, and is not staged development in the meaning of Section 4.22 of the EP&A Act. The application seeks approval for the following development:
The application seeks approval for:

- site preparation works, including the termination or relocation of site services and infrastructure, tree removal, earthworks and remediation, and the erection of site protection hoardings and fencing;
- demolition of existing buildings including the existing Riverbank Carpark, 'Willow Grove', 'St George's Terrace' and all other existing structures located on the site;
- construction of the Powerhouse Parramatta, including:
  - front and back-of-house spaces;
  - seven major public presentation spaces;
  - studio, co-working and collaboration spaces comprising the 'Powerlab', supported by residences (serviced apartments) for artists, students, researchers and scientists, and 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 research and product development, and as a destination, education and event space;
  - film, photography, and postproduction studio 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.
- construction and establishment of the public domain within the site, comprising:
  - hard and soft landscaping works;
  - publicly accessible event and operational areas;
  - provision of pedestrian and cycling facilities.
- 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;
- extension and augmentation of utilities and infrastructure as required; and
- three (3) business identification signage zones.

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 formed concrete edge of the Parramatta River or to the waterway itself.

1.2 Background and strategic need

The Powerhouse is internationally renowned as Australia's only contemporary museum for excellence and innovation in the applied arts and sciences. Hosting a significant collection of over 500,000 items spanning history, science, technology, industry, decorative arts, music, and transport, the Powerhouse is home to the material heritage and stories of Australian culture, history and lifestyle. It currently encompasses the Powerhouse in Ultimo, the Observatory in Millers Points and Powerhouse 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 western Central Business District, with the provision of supporting social and cultural infrastructure regarded as integral to its future 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* and having equal strategic importance as the existing Sydney CBD.

In the *State Infrastructure Strategy Update 2014*, Infrastructure NSW proposed the development of a Parramatta Cultural Precinct and recommended that, before any further public investment was made in the Powerhouse at Ultimo, urgent consideration should be given to Powerhouse's potential relocation to the Parramatta Cultural Precinct. This was later reinforced in the NSW Government's *Cultural Infrastructure Strategy 2016*, in which Infrastructure NSW commented that the proposed relocation presented "an opportunity to develop a vibrant creative and cultural precinct" in the heart of Parramatta.

In February 2015, the then NSW Premier and Deputy Premier released the *Create in NSW: NSW Arts and Cultural Policy Framework* and announced the Government's decision to investigate the creation of Powerhouse Parramatta. Following that announcement, Create Infrastructure NSW initiated and led the development of the planning framework for Powerhouse Parramatta. This included site selection assessment which concluded that the Riverbank site in Parramatta was the preferred site for the new museum. The Government confirmed this decision and announced its choice of the Riverbank site in April 2016. The Riverbank site was acquired by the NSW Government to facilitate the delivery of the project in early-2019.

In April 2018, the NSW Government published a business case summary for the development of Powerhouse Parramatta within Western Sydney. This business case ultimately supported the development of the new institution, which contributes to the future of Parramatta as the metropolitan centre of the Central River City and Western Sydney more broadly.

These documents highlight the key strategic need and benefits of the development as a hub for culture, science, innovation and the arts including:

- A new institution will deliver world-class opportunities for education and research, alongside museum exhibition space, and space for social and digital interaction and exchange. This significant investment in education, culture and entertainment improvements will ensure Parramatta's role as Sydney's second CBD and the heart of the Central River City form part of the positive transformational change occurring in the area. Policy-makers around the world have embraced culture and cultural infrastructure as having a central role in delivering urban renewal and regional development.
- That investment in a new institution will generate opportunities to participate in world class cultural programs within Western Sydney, balancing opportunities and the level of investment between the Eastern Harbour City and other areas, recognising that investment in arts and culture has been historically focussed within the traditional Sydney CBD and surrounds. It has the potential to improve lives through enhanced access to education, as well as strengthening the character of communities and the neighbourhoods in which they live.

- That creative industries comprise a core element of an innovative economy and, therefore, play a significant role in the productivity of an area with creativity, entrepreneurship, technical ability and collaboration being essential skills for the future workplace.
- That a new state cultural institution will attract visitors to NSW from interstate and internationally, which generates economic benefits for local business, through visitor spend on food and accommodation among other items. This leads to increased economic activity and employment opportunities for the local community, with the visitor economy highlighted as a key component of Sydney's standing as a global city.

1.3 Objectives of the development

The objectives of the development are to:

- Create a world class new museum for the communities of NSW that enables the delivery of an ambitious, dynamic and constantly changing program that provides new levels of access to Powerhouse Collections
- Support the delivery of a dynamic and active museum precinct, that will present multiple concurrent activities including exhibitions, events, and community and education programs. Each space is to play a distinct role in the precinct, and when working together, create a 24-hour precinct embedded into the City.
- Ensure the development is agile and adaptable, providing flexible consolidated facilities across both back of house and public facing areas that permit changes in the daily program and allow for the multiple uses of space.
- Provide a precinct that has multiple entry points and can be approached and connected from all sides, so that visitors and local communities will be encouraged to walk through.
- Create 24/7 pedestrian movement from Phillip Street through to the Parramatta River foreshore. As part of this, a centralised circulation corridor is to be emphasised for intuitive wayfinding and visual activation at the termination of Parramatta's 'Civic Link'.
- Produce a design that is engaging and relevant to diverse communities including spaces that support diverse abilities and Australian Aboriginal and Torres Strait Islander connections and continuing practices in applied arts and sciences.
- Provide operational efficiency for high levels of production and to maximise public facing programming, including total acoustic and light isolation of each space to support high levels of concurrent activity.
- Provide public domain areas that support gathering, dwelling and cultural events across a range of scales, from informal passive recreation to site-wide precinct events.
- Promote sustainable design principles including energy conservation, reduction of waste, water usage reduction, and materials from sustainable sources.
- Take advantage of the site's highly accessible location by prioritising active and sustainable modes of transport and ensuring that pedestrian activity across the whole of the precinct is prioritised.

1.4 Analysis of alternatives

Three (3) primary options have been considered in responding to the identified strategic need and objectives of the project. The options outlined below are generally aligned with those described in the Business Case Summary published by Infrastructure NSW on their website, as well as other significant research and development that has informed the proposed development.

Option 1 – The 'do nothing' scenario

The 'do nothing' scenario considers retaining the existing site in situ and electing not to construct the proposed Powerhouse Parramatta. Whilst this outcome would retain all existing buildings including local heritage on the site, this outcome would also fail to realise the strategic need for the proposal, as discussed above, and would be inconsistent with the NSW Government's strategic planning policies. It would also negatively impact the ongoing operation of the Powerhouse, which has been increasingly straining to meet its obligations to display, conserve, maintain, secure and operationally manage its collections. The Business Case Summary argues that, without fundamental change, this position is expected to deteriorate further.

The proposed development represents the opportunity to provide increased access to the Powerhouse Collection with a purpose-built facility that can address the challenges and constraints provided by existing facilities. It has the

potential to deliver world-class opportunities for education and research, alongside exhibition space, and space for social and digital interaction and exchange. It will generate a range of regional and local benefits that cannot be achieved through continuing to utilise the site for the purposes of carparking and disused or underutilised retail and commercial buildings. This scenario would represent a missed opportunity, and as such electing to do nothing is not a preferred or supportable option.

Option 2 – Alternative location

Option 2 considers whether the proposed new institution could be delivered in an alternative location. The riverside site has been found to be the best and most appropriate location for the delivery of the Powerhouse Parramatta both at a regional and local scale and was ultimately selected as the favoured location with the NSW Government announcing its acquisition from City of Parramatta Council in April 2016.

Powerhouse Parramatta will be the first major, world class cultural institution to be established in Western Sydney. It will provide unprecedented access to the Powerhouse Collection alongside cultural, science and lifelong learning programs setting a new benchmark in cultural participation by the diverse and growing communities of Western Sydney. It signifies substantial investment in the Parramatta CBD that is the economic anchor to the GPOP economic corridor and the wider development of the Central River City that is fundamental to Sydney's metropolitan planning future. At a local scale, it is also a key fixture of the developing culture and arts precinct within the Parramatta centre and will generate a range of localised benefits including activating the river frontage and supporting the growth of the night-time economy through increased expenditure outside of typical work hours. The site is uniquely positioned in a central point of the Parramatta CBD's interface with the Parramatta River, providing an opportunity for the new facility to act as the focal point for community interaction and culture in a landmark position. It benefits from excellent proximity to existing and planned public transport services and as well as enhanced pedestrian access via Parramatta's new Civic Link. This site is, therefore, strategically located to maximise regional and local benefits and achieve key strategies for the development of Sydney a metropolis of three cities, which would not be realised in an alternative location.

Option 3 – The Powerhouse Parramatta (the project)

The proposed development is the outcome of a two-stage international design competition, whereby both local and global architectural and landscape architecture firms critically analysed the design alternatives for the Powerhouse Parramatta and surrounding public domain. The Stage 1 competition attracted 74 expressions of interest involving 529 individual firms from 20 countries. Stage 2 was an intensive design period for the six shortlisted teams:

- AL_A (UK) and Architectus (Australia)
- Bernardes Architecture (Brazil) and Scale Architecture (Australia)
- BVN Architecture (Australia) and Carlo Ratti Associati (Italy)
- CHROFI (Australia) with Reko Rennie (Australia)
- Moreau Kusunoki (France) and Genton (Australia)
- Steven Holl Architects (United States) and Conrad Gargett (Australia)

The competition was run in accordance with the procurement requirements of the NSW Government and was formally endorsed by the Australian Institute of Architects. The competition brief informing the shortlisted teams requested that design teams consider aspects of heritage and cultural significance within their submissions, including local heritage items. Other considerations included the activation of transport and pedestrian access consistent with the City of Parramatta Council's vision for a Parramatta Civic Link, and the design excellence requirements of the Parramatta LEP.

The Stage 2 entries were critically analysed by a Jury comprised of members with experience in architecture, urban design, museum design, business and cultural institutions operation, and included government representatives as well as a representative from City of Parramatta Council. The Jury was unanimous in its decision on the final chosen concept and recognised that the Stage 2 concept design made clear that it was not possible to achieve the design ambitions and connectivity while retaining local heritage items. Whilst the retention of heritage was considered carefully during the jury process, it was ultimately confirmed that the winning design would reflect and engage with the multiple histories of the site including its Indigenous histories and that the proposed design represented the best possible outcome for the site and for the delivery of Powerhouse Parramatta.

For these reasons, the redevelopment of the site in line with the design scheme prepared by Moreau Kusunoki and Genton with McGregor Coxall is considered to be the best possible, and preferred option.

1.5 Secretary's Requirements

In accordance with Section 4.39 of the EP&A Act, the Secretary of the Department of Planning, Industry and Environment issued the requirements for the preparation of the EIS on 10 February 2020. A copy of the Secretary's Environmental Assessment Requirements (SEARs) is included at **Appendix A.**

Table 1 provides a detailed summary of the individual matters listed in the SEARs and identifies where each of these requirements has been addressed in this report and the accompanying technical studies.

Table 1 Secretary's Requirements

Requirement	**Location in Environmental Assessment**
General	
The Environmental Impact Statement (EIS) must address the *Environmental Planning and Assessment Act 1979* and meet the minimum form and content requirements in clauses 6 and 7 of Schedule 2 the Environmental Planning and Assessment Regulation 2000. Notwithstanding the key issues specified below, the EIS must include an environmental risk assessment to identify the potential environmental impacts associated with the development. Where relevant, the assessment of key issues below, and any other significant issues identified in the risk assessment, must include: • adequate baseline data • consideration of the potential cumulative impacts due to other developments in the vicinity (completed, underway or proposed) • measures to avoid, minimise and if necessary, offset predicted impacts, including detailed contingency plans for managing any significant risks to the environment • justification of impacts. The EIS must also be accompanied by: • high quality files of maps and figures of the subject site and proposal; and • a report from a qualified quantity surveyor providing: – a detailed calculation of the capital investment value (CIV) (as defined in clause 3 of the Regulation) of the proposal, including details of all assumptions and components from which the CIV calculation is derived. The report shall be prepared on company letterhead and indicate applicable GST component of the CIV; – an estimate of jobs that will be created during the construction and operational phases of the proposed development; and – certification that the information provided is accurate at the date of preparation.	Environmental Impact Statement

Key Issues	**Report / EIS**	**Technical Study**
1. Statutory and Strategic Context The EIS shall address the statutory provisions applying to the development contained in all relevant environmental planning instruments, including: • State Environmental Planning Policy (State & Regional Development) 2011 • State Environmental Planning Policy (Infrastructure) 2007 • State Environmental Planning Policy No. 55 – Remediation of Land (SEPP 55) • Draft Remediation of Land SEPP • State Environmental Planning Policy No 64—Advertising and Signage (and associated guidelines) • Draft State Environmental Planning Policy (Environment)	Section 5.4	- Appendix F Appendix L & M Appendix FF

Requirement	Location in Environmental Assessment	
• Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005 • State Environmental Planning Policy No 65 – Design Quality of Residential Apartment Development (if residential development is proposed) • State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004 (if residential development is proposed) • Parramatta Local Environmental Plan 2011.		Appendix B
Permissibility • Detail the nature and extent of any prohibitions that apply to the development.	Section 5.4	
Development Standards • Identify compliance with the development standards applying to the site and provide justification for any contravention of the development standards.	Section 5.4	Appendix B
2. Design excellence The EIS shall include a design excellence strategy prepared in consultation with the Government Architect NSW and City of Parramatta Council. The Strategy shall demonstrate how the development, including the public domain, achieves design excellence, in accordance with PLEP 2011. The Strategy shall document how the proposal has been subject to a competitive design process and include the endorsed design competition brief, jury conclusions report and proposal for a design integrity process.	Section 5.5	Appendix D
3. Built form, heritage and urban design The EIS shall:		
• outline the design process which informed the proposal including justification and analysis of the benefits and impacts of the proposal and any alternative schemes considered, including any designs which could have retained Willow Grove and the St George's Terrace	Sections 1.4 and 6.2	Appendix D & G
• address and respond to the height, bulk and scale of the proposed development within the context, streetscape and visual and physical character of the locality	Section 6.1	Appendix B & C
• give specific consideration to the overall site layout, open spaces, interface with the public domain (including River Square, Civic Link and River foreshore), through site links, laneways, street interfaces, facades, massing, setbacks, building articulation, solar access and overshadowing, materials, colours, signage or signage envelopes	Sections 4.4, 4.5, 4.6, and 6.1	Appendix B & C
• include a table identifying the proposed land uses, including a floor by floor breakdown of gross floor area (GFA), total GFA and FSR		Appendix B
• provide an analysis of the proposed built form against the applicable development standards and controls	Section 5.4	Appendix B
• address Crime Prevention Through Environmental Design Principles (CPTED).	Section 6.9	Appendix AA
4. Integration with surrounding area The EIS shall demonstrate how the proposal:		
• will be designed and staged to integrate with the future development of surrounding sites and the wider redevelopment of Parramatta including Civic Link, River Square, River foreshore and the future laneway to Church Street	Sections 4.4, 4.5, and 6.1	Appendix B & C
• will address public accessibility, connectivity and major events at Civic Link, River Square and the River foreshore	Section 6.1 and 6.4	Appendix B, C & F
• addresses amenity impacts, visual and view impacts, servicing and loading arrangements, pedestrian connectivity and activation of public spaces.		
5. Public domain The EIS shall:	Sections 4.5, 4.7, 4.8, 6.1 and 6.4	Appendix B, C & F
• identify how ground level (both the street and river frontage) uses are configured to provide safe and active street frontages and provide visual interest and activation to the public domain		
• identify improvements to the public domain, including clear definition of any private, semi private or public open space, pedestrian movement patterns, street trees and associated landscaping, street furniture, public amenities, lighting and linkages to other public domain spaces		

Requirement	Location in Environmental Assessment	
• address how the public domain responds and contributes to existing and planned future public spaces in Parramatta, including Civic Link, River foreshore and River Square and supports pedestrian and cycle movements in, around and through the site • address access and egress along the City River foreshore including pedestrian, cycle, events use, maintenance and interface with the existing footbridge crossing the river • address universal access between the river level, Powerhouse Parramatta, and street level • address ongoing maintenance, management and operation of the public domain upon completion of the development, inclusive of emergency and event access to the river foreshore within the block • address how access to the site will be secured at various times of the day, including land ownership arrangements.		
6. Heritage and Archaeology The EIS shall include: • a Statement of Heritage Impact (SOHI), prepared by a suitably qualified heritage consultant in accordance with the guidelines in the NSW Heritage Manual. The SOHI is to address the impacts of the proposal on the heritage significance of the site and adjacent areas, and is to: – identify all heritage items (state and local and potential) and conservation areas within and near the site, including built heritage, landscapes and archaeology, include detailed mapping of these items and an assessment of why the items and site(s) are of heritage significance – assess the impacts of the proposal on the heritage significance of these items and conservation areas, including visual and physical impacts, vibration, demolition, archaeological disturbance, altered historical arrangements and access, visual amenity, landscape and vistas, setting, and curtilage (as relevant) – address compliance with any relevant Conservation Management Plan, addressing any proposed adaptive reuse and measures to minimise impacts on the building – demonstrate attempts to avoid and/or mitigate the impact on the heritage significance or cultural heritage values of the site and the surrounding heritage items heritage conservation areas – demonstrate engagement with appropriate local stakeholders. • a Historical Archaeological Assessment (HAA) prepared by a suitably qualified archaeologist in accordance with the guidelines Archaeological Assessment (1996) and Assessing Significance for Historical Archaeological Sites and Relics (2009). The HAA is to: – identify what relics, if any, are likely to be present, assess their significance and consider the impacts from the proposal on this potential archaeological resource. Where harm is likely to occur, it is recommended that the significance of the relics be considered in determining an appropriate mitigation strategy. If harm cannot be avoided in whole or part, an appropriate Research Design and Excavation Methodology should also be prepared to guide any proposed excavations or salvage programme – discuss the potential significance of the site and the impact of the proposed works, including analysis of the following Archaeological Management Units (AMUs) of the Parramatta Historical and Archaeological Landscape Management Study (PHALMS) which the site encompasses: – AMU 2882. 42-56 Phillip Street, Parramatta – AMU 3083. Church Street, Parramatta – AMU 3092. Church Street, Parramatta.	Section 6.2	Appendices G, H & I
7. Aboriginal cultural heritage The EIS shall: • identify and describe Aboriginal cultural heritage values that exist across the whole area that will be affected by the development and document these in an Aboriginal Cultural Heritage Assessment Report (ACHAR)	Section 6.2	Appendices H & I

Requirement	Location in Environmental Assessment	
• ensure consultation has taken place with Aboriginal people and is documented in accordance with the Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW) • assess impacts on Aboriginal cultural heritage values and document them in the ACHAR. This must demonstrate attempts to avoid impacts, identify any conservation outcomes and measures to mitigate impacts.		
8. Social The EIS shall include a social impact assessment, which: • identifies, analyses, and proposes responses to any likely social impacts, including concerns or aspirations that people may have about how the proposal might affect their surroundings, way of life, health and wellbeing, community, culture, or their access to and use of infrastructure, services, and facilities • considers social impacts (positive and negative) from the points of view of community stakeholders and how they expect to experience the proposal (i.e. using primary research and outcomes of engagement) • investigates whether any group in the community may disproportionately benefit or experience negative impacts, and proposes commensurate responses consistent with socially equitable outcomes • considers social impacts for all stages of the project lifecycle, i.e. site preparation, demolition, construction, operation, and how different people and groups may be affected differently at each phase • considers all remaining feasible alternatives and comparatively analyses their respective social impacts and benefits • investigates the cumulative impact of the loss of heritage within the Parramatta area from the point of view of the local communities.	Section 6.6	Appendix Y
9. Environmental Amenity The EIS shall: • include a visual impact assessment, including photomontages comparing the current site context, future development context, and site in the context of the future development of the wider precinct, showing views from key locations, vistas and view corridors from the public domain • include an analysis and assessment of any potential view loss impacts to surrounding residential buildings • address solar access and overshadowing impacts on surrounding (and known future) public spaces, public domain areas and any affected residential developments • include a wind impact assessment, including wind tunnel testing, to demonstrate that the wind environment in the public domain will be comfortable for its intended use • include a noise and vibration assessment prepared in accordance with the relevant EPA guidelines, detailing operational noise impacts on nearby noise sensitive receivers and outline proposed noise and vibration mitigation and monitoring procedures • address potential air quality and odour impacts during construction and operation of the development and identify appropriate mitigation measures • include a reflectivity analysis identifying potential adverse glare conditions affecting, motorists, pedestrians and occupants of neighbouring buildings.	Section 6.3.1 Section 6.3.2 Section 6.3.3 Section 6.7 Section 6.13 Section 6.3.4	Appendix V Appendix B Appendix W Appendix Z Appendix T Appendix X
10. Ecologically Sustainable Development (ESD) The EIS shall: • identify how principles (as defined in Clause 7(4) of Schedule 2 of the Regulation) will be incorporated in the design, construction and ongoing operation phases of the development, and include innovative and best practice proposals for environmental building performance • include a framework for how the proposal will be designed to consider and reflect best practice sustainable building principles to improve environmental performance and reduce ecological impact. This should be based on a materiality assessment and include waste reduction design measures, future proofing, use of sustainable and low-carbon materials, energy and water efficient design and technology (including water	Sections 2.1.4, 4.9 and 6.8	Appendix U

Requirement	Location in Environmental Assessment	
sensitive urban design) and use of renewable energy • use the climate change projections developed by CSIRO for the Sydney Metropolitan area to inform the building design and asset life of the project and address strategies to mitigate climate change impacts including: – increased frequency of extreme heatdays – extended heatwave events – more extreme (intense) rainfall events – gustier wind conditions. • demonstrate strategies to minimise climate change drivers (including renewable energy use, reduced urban heat island and water sensitive urban design) • address how the proposal will support the City's long-term strategy to improve water quality and public engagement with the Parramatta River		
11. Transport, traffic, parking and access (operation) The EIS shall include a Traffic and Transport Impact Assessment that includes the following: • accurate details of the current and likely estimated future daily and peak hour vehicle, public transport network, point to point transport, taxis, pedestrian and bicycle movements to/ from the site • traffic modelling and analysis of the future daily and peak hour vehicle, public transport, pedestrian and bicycle movements likely to be generated by the proposed development and assessment of the impacts on the local road network, including key intersection capacity and any potential need for upgrading or road works (if required) • traffic modelling and analysis of precinct events, and assessment of pedestrian, bicycle and vehicle facilities and their ability to accommodate event movement through the precinct as well as to and from the development • an assessment of the need for any road network improvements that may be required to support the development • an assessment of the operation of existing and future transport networks including rail, bus, ferries, Parramatta Light Rail, Sydney Metro West, pedestrian and bicycle networks and point-to-point transport and coach facilities and their ability to accommodate the forecast number of trips to and from the development • details of existing and proposed vehicular access arrangements, parking and servicing including compliance with the requirements of the relevant Australian Standards (i.e. turn paths, sight distance requirements, aisle widths, etc.) and an assessment of any potential impacts, considering various design and staging options and impacts for the development of the site • details of the proposed vehicle, motorcycle, taxi, bus and coach parking, including justification for the level of parking on the site • tails of the provision and access to bicycle parking facilities (and end of trip facilities) in secure, convenient, accessible areas close to main entrances incorporating lighting and passive surveillance • details of emergency vehicle access arrangements and a response to flood evacuation (up to and including the probable maximum flood) for pedestrians, cyclists and vehicles • details of any road and pedestrian safety measures required adjacent to the proposed development • initiatives and strategies to encourage employees, guests and visitors to make sustainable travel choices, such as walking, cycling and public transport that support the achievement of State Plan targets • assessment of loading and servicing demand and details of the existing and proposed loading and servicing facilities, including safe and efficient access to loading, deliveries and servicing of the development.	Sections 2.1.3, 4.8 and 6.4	Appendix F
12. Flooding, drainage and stormwater The EIS shall include: • an assessment and proposed management of the stormwater, drainage, flooding and groundwater issues associated with the site, environs and the proposed development, including:	Sections 2.1.7, 4.12, and 6.5	Appendix O

Requirement	Location in Environmental Assessment	
• stormwater and drainage infrastructure, including a stormwater management plan, water sensitive urban design, roof gardens, green walls, and MUSIC link model (for water quality) • assessment of flood risk in accordance with the guideline contained in the NSW Floodplain Development Manual 2005, including potential effects of climate change, sea level rise and an increase in rainfall intensity and integration with Council's wider flood risk management planning and flood modelling • the potential impact of the development on groundwater levels, rates of flow, flow paths and quality. • an integrated water management strategy that incorporates waste water, • rainwater and stormwater runoff. The strategy must outline opportunities for the use of integrated water cycle management practice and principle, and demonstrate water sensitive urban design and any other water conservation measures • consideration as to how the proposal responds to City River and Civic Link precinct access and egress requirements, including evacuation in flood.		
13. Servicing and Waste The EIS shall: • identify, quantify and classify the likely waste streams to be generated during construction and operation of the development and describe the measures to be implemented to minimise, manage, reuse, recycle and safely dispose of this waste with reference to relevant guidelines • identify appropriate servicing arrangements (including but not limited to, waste management, loading zones and mechanical plant) for the site.	Sections 4.11 and 6.12 Sections 4.8.1, 6.7.3, and 6.13	Appendix BB Appendix F & Z
14. Utilities The EIS shall: • address the existing capacity and future requirements of the development for the provision of utilities, including staging of infrastructure in consultation with relevant agencies • detail impacts to any existing infrastructure assets of utility stakeholders during demolition/construction and any augmentation of infrastructure that may be required to accommodate the proposed development • demonstrate coordination with the City of Parramatta and other agencies for an integrated approach that considers broader City River public domain outcomes.	Sections 2.1.8, 0, and 6.14 Section 3.0	Appendix P Appendix Q
15. Contamination and remediation The EIS shall: • demonstrate compliance with the requirements of SEPP 55 and if remediation works are required include a Remedial Action Plan • identify geotechnical issues (including Acid Sulfate Soils) associated with the construction of the development. A Preliminary Site Investigation Study if needed, and/or further information as required by SEPP55 including an Acid Sulphate Soils Management Plan.	Sections 2.1.6, 4.10 and 6.10	Appendix L, M & N
16. Biodiversity • The EIS shall include an assessment of the proposal's biodiversity impacts in accordance with section 7.9 of the Biodiversity Conservation Act 2016, including the preparation of a Biodiversity Development Assessment Report where required under the Act except where a waiver for preparation of a BDAR has been granted.	Sections 6.11	Appendix K
17. Construction The EIS shall include a Construction Pedestrian and Traffic Management Plan addressing: • details of the peak hour and daily construction and servicing vehicle • movements and access arrangements for workers to/from the site, emergency vehicles and service vehicle movements • 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 projects	Sections 4.14 and 6.4.2	Appendix F & R

Requirement	Location in Environmental Assessment	
• 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 • road safety at key intersections and locations subject to heavy vehicle movements and high pedestrian activity • details of temporary cycling and pedestrian access during construction • 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 • annual volume of materials to be extracted, processed or stored onsite during construction and how the extracted material will be disposed of or reused. • river foreshore events and activation in coordination with the City of Parramatta Council • details of proposed construction methods for the basement levels e.g. shoring of the basement during construction.		
18. Staging The EIS shall provide details regarding the staging of the proposed development (if proposed).	Section 5.2	-
19. Public Benefits and Contributions The EIS shall provide confirmation of the public benefit to be derived from the proposal.	Section 6.22	-
Plans and Documents		
The EIS must include all relevant plans, architectural drawings, diagrams and relevant documentation required under Schedule 1 of the *Environmental Planning and Assessment Regulation 2000*. These are to be provided as part of the EIS (as appendices) rather than as separate documents In addition, the EIS must include the following: • architectural drawings (to a useable scale at A3): – showing key dimensions, RLs, scale bar and north point – plans, sections and elevations of the proposal – illustrated materials schedule and photomontages. • site title diagrams and survey plan, showing existing levels, location and heights of existing and adjacent structures/ building • locality/context plan, including significant local features, such as heritage items • site analysis plan • schedule of proposed land uses, including a floor by floor breakdown of gross floor area (GFA), total GFA and FSR • architectural and urban design statement	Appendix B	
• design excellence strategy, including the endorsed competition brief, jury conclusions report and design integrity process	Appendix D	
• landscape and public domain plans • landscape sections including details of the built form interface • landscape and public domain statement	Appendix C	
• arborist report	Appendix J	
• CPTED assessment	Appendix AA	
• visual impact assessment and view impact assessment, including verified views and photomontages	Appendix V	
• solar access analysis report and diagrams	Appendix B	
• wind impact assessment (including a wind tunnel study)	Appendix W	
• noise and vibration assessment and management plans	Appendix Z	
• reflectivity analysis	Appendix X	

Requirement	Location in Environmental Assessment	
• heritage impact assessment	Appendix G	
• historical archaeological assessment	Appendix I	
• Aboriginal cultural heritage assessment	Appendix H	
• traffic and transport impact assessment	Appendix F	
• social impact statement	Appendix Y	
• ESD statement (incorporating a sustainability framework)	Appendix U	
• draft construction management plan, including pedestrian and traffic management	Appendix F & R	
• waste management plan	Appendix BB	
• assessment of the stormwater, drainage, flooding, groundwater and wastewater impacts	Appendix O	
• biodiversity assessment (or waiver)	Appendix K	
• soil and contamination report, and remedial action plan	Appendix L & M	
• acid sulfate soils management plan	Appendix N	
• geotechnical statement	Appendix S	
• construction air quality assessment	Appendix T	
• access / DDA impact statement	Appendix CC	
• BCA Report	Appendix DD, EE & GG	
• signage details	Appendix B, FF	
• pre-submission consultation report.	Appendix Q	
Consultation		
During the preparation of the EIS, you must consult with the relevant local, State or Commonwealth Government authorities, service providers, community groups, local cultural organisations and affected landowners. In particular, you must consult with: • The City of Parramatta Council • Government Architect NSW • Transport for NSW • Sydney Water • NSW Aboriginal Land Council The EIS must describe the consultation process and the issues raised and identify where the design of the development has been amended in response to these issues. Where amendments have not been made to address an issue, a short explanation should be provided. The EIS must also describe the ongoing engagement and consultation process that will be applied throughout the project.	Section 3	Appendix Q

Requirement	Location in Environmental Assessment	
Strategic policy and technical guidelines		
• Greater Sydney Region Plan and Central City District Plan	Section 5.3	-
• Greater Parramatta Olympic Peninsula (GPOP) economic corridor (Central City District Plan)		-
• A City Supported by Infrastructure: Place-based Infrastructure Compact Pilot (Greater Sydney Commission, 2019)		-
• Greater Parramatta and the Olympic Peninsula (GPOP) Vision (Greater Sydney Commission, 2017)		-
• Greater Parramatta Interim Land Use and Infrastructure Implementation Plan (DPIE, 2017)		-
• Parramatta River Catchment Group – Our Living River project and Masterplan		-
• Parramatta Ways Walking Strategy		Appendix F
• City of Parramatta Council draft LSPS		Appendix V
• City of Parramatta draft Heritage Interpretation Guidelines 2017		Appendix G
• City of Parramatta Interim Public Art Guidelines for Developers 2017		-
• City of Parramatta Public Domain Guidelines (latest)		Appendix C
• Culture and Our City: A Cultural Plan for Parramatta's CBD 2017-2022		Appendix Y
• Civic Link Framework Plan 2017		Appendix B
• Draft Community Infrastructure Strategy 2020		Appendix Y
• Draft Parramatta DCP Section 4.3 Strategic Precincts 4.3.3.7 Civic Link Precinct DCP 2018		"
• Socially Sustainable Parramatta Framework 2017		- Appendix Y
• Parramatta City River Strategy 2015		Appendix B & C
• Parramatta City Centre Lanes Policy 2011		"
• Parramatta City Centre Lanes Strategy 2010		"
• Parramatta CBD Pedestrian Strategy 2017		Appendix F
• Parramatta Design Series (OS)		Appendix C
• Technical Standards (latest)		Appendix B & C
• Parramatta Bike Plan 2017		Appendix F
• Better Placed – an integrated design policy for the built environment of NSW		Appendix D
• Better Placed – Design Guide for Heritage		Appendix G
• Healthy Urban Development Checklist 2009		-
• Future Transport Strategy 2056 (and supporting plans)		Appendix F
• Development near rail corridors and busy roads (Roads and Maritime Services)		Appendix Z
• Guide to Traffic Generating Developments (Roads and Maritime Services)		Appendix F
• Guide to Traffic Management – Part 12: Traffic Impacts of Development (AUSTROADS)		"
• Guidelines for controlled activities on waterfront land		Appendix O
• NSW Planning Guidelines for Walking and Cycling		Appendix F
• Sydney's Rail Future		"
• Sydney's Bus Future		"
• Sydney's Ferry Future		"
• Interim Construction Noise Guidelines (DECCW, 2009)		Appendix Z
• Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW (DECCW, 2011)		Appendix H
• Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010		"
• Aboriginal Heritage Management Strategy 2018-2021		"
• Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW 2010		"
• Crime Prevention Through Environmental Design Principles		Appendix AA
• NSW and ACT Government Regional Climate Modelling (NARCliM)		Appendix U
• OEH (2015) Urban Green Cover in NSW Technical Guidelines		-

Requirement	Location in Environmental Assessment	
• Heritage Division, Office of Environment and Heritage Guidelines Archaeological Assessment (1996) • Assessing Significance for Historical Archaeological Sites and Relics (2009)		Appendix I “
• Australian Guidelines for Water Recycling: Managing Health and Environmental Risks (phase 1) 2006		Appendix O

2.0 Site analysis

Powerhouse Parramatta is located at 34-54 and 30B Phillip Street and 338 Church Street, Parramatta within the City of Parramatta Local Government Area (LGA). The site is located within the Parramatta CBD – a centre that performs key economic, social and cultural roles that are expected to increase as Western Sydney's population grows and regional transport infrastructure improves connections to the CBD. The CBD is in the process of undergoing urban renewal and change, and is characterised by a range of uses and development of different style, age and scale.

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 Bridge on Church Street.

The site's locational context is shown at **Figure 1** and discussed further in the following sections.

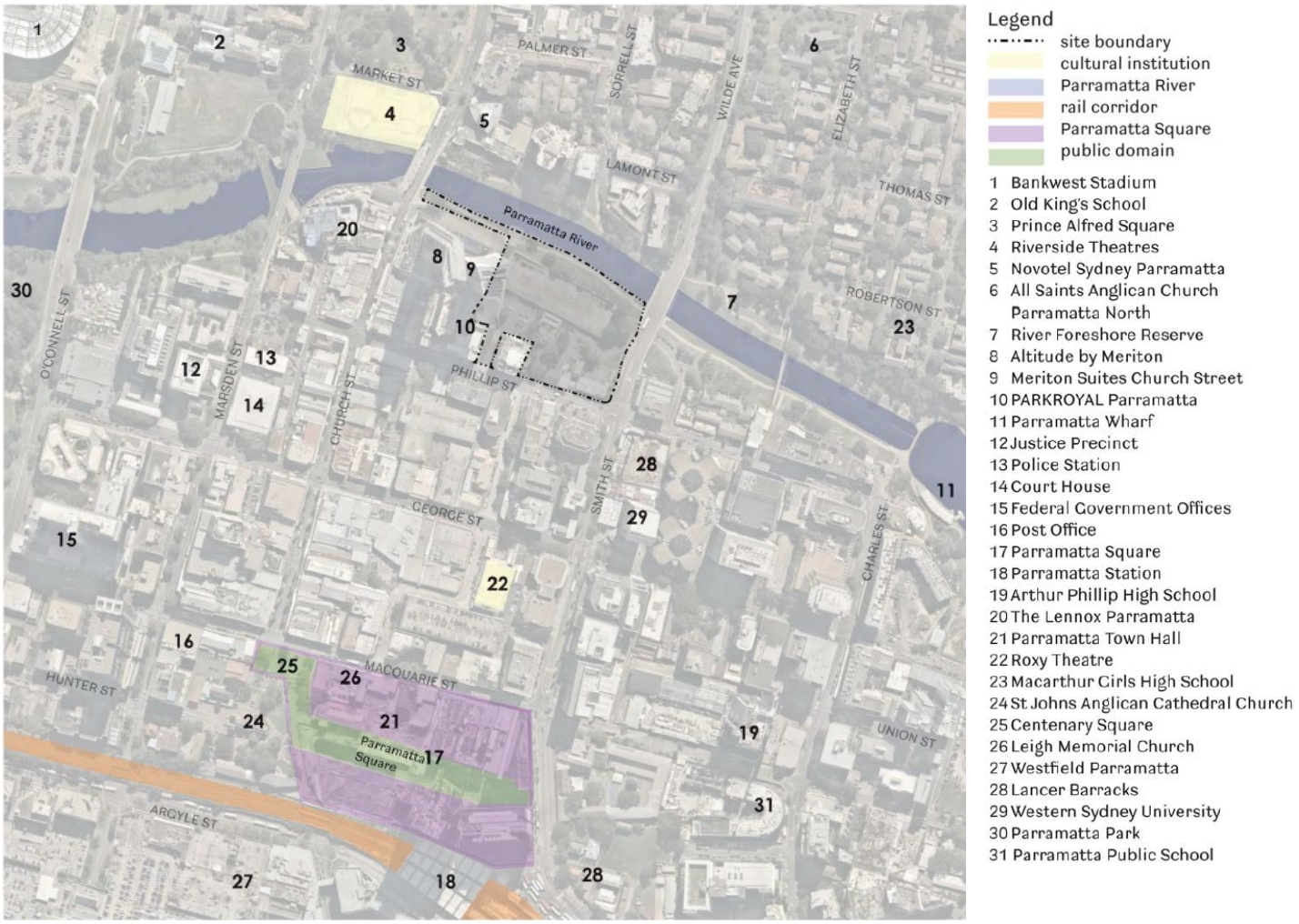


Figure 2 Locational context

Source: Moreau Kusunoki and Genton

Legal description and ownership

The site comprises a number of allotments all of which are owned by the Planning Ministerial Corporation. These encompass the following:

Table 2 List of properties comprising the site

Address	Lot	DP	Description of existing use
42 Phillip Street	1	128474	Substation
30B, 34, 40, and 44-54 Phillip Street	2	1247122	Main site
338 Church Street	1	1247122	Riverfront lot

Figure 3 illustrates the site boundary for the Development Application. A site survey plan has been prepared by LTS Lockley and is located at **Appendix E**.

Figure 3 Site boundaries

Source: Nearmap & Ethos Urban

2.1 Site analysis

2.1.1 Existing development

The Powerhouse Parramatta site currently comprises a number of different buildings, spaces and land uses. These include the:

- Riverbank Carpark – a four-level public carpark.
- Willow Grove – a two-storey villa of Victorian Italianate style constructed in the 1870s, which is a locally-listed heritage item (I737) (discussed further in **Section 2.1.4** below).
- St George's Terrace – a two-storey terrace of seven houses fronting Phillip Street constructed in the 1880s, which are locally listed heritage items (I1738) (discussed further in **Section 2.1.4** below).
- 36 Philip Street – a two-storey building comprising retail and business premises.
- 40 Philip Street – a two-storey building comprising retail and business premises.
- 42 Philips Street – a two-storey substation building setback from the street.

There are also a number of existing laneways on the site including George Khattar Lane, Oyster Lane and Dirrabarri Lane, which provide vehicular access to these buildings and adjacent properties.

The site excludes the adjoining GE Office Building located at 32 Phillip Street, Parramatta.

Images of the existing buildings and site conditions are included at **Figure 4** to **Figure 13** below.

Figure 4 Riverfront carpark building (riverfront side)

Figure 5 Riverfront carpark building

Figure 6 Willow Grove

Figure 7 At-grade carparking in the centre of the site

Figure 8 St Georges Terrace

Figure 9 Substation building (42 Phillip St)

Figure 10 Retail building at 40 Phillip Street

Figure 11 Retail building at 36 Phillip Street

Figure 12 Rear of St Georges Terrace and other retail buildings

Figure 13 Riverfront portion of the site extending to Church Street

2.1.2 Topography

The southern portion of the site just north of Phillip Street is relatively flat. Approximately halfway between Phillip Street and the Parramatta river, the site begins to slope down towards the bank of the river, falling approximately 5m to 6m across the remaining length of the site. A key feature of the site's topography is the man-made cutting at RL3.4 and long east-west retaining wall this creates to achieve the Riverbank Carpark.

2.1.3 Transport and access

Being located within the Parramatta CBD, the site benefits from a range of existing and planned transport options as discussed the sections following and outlined in **Figure 14** below.

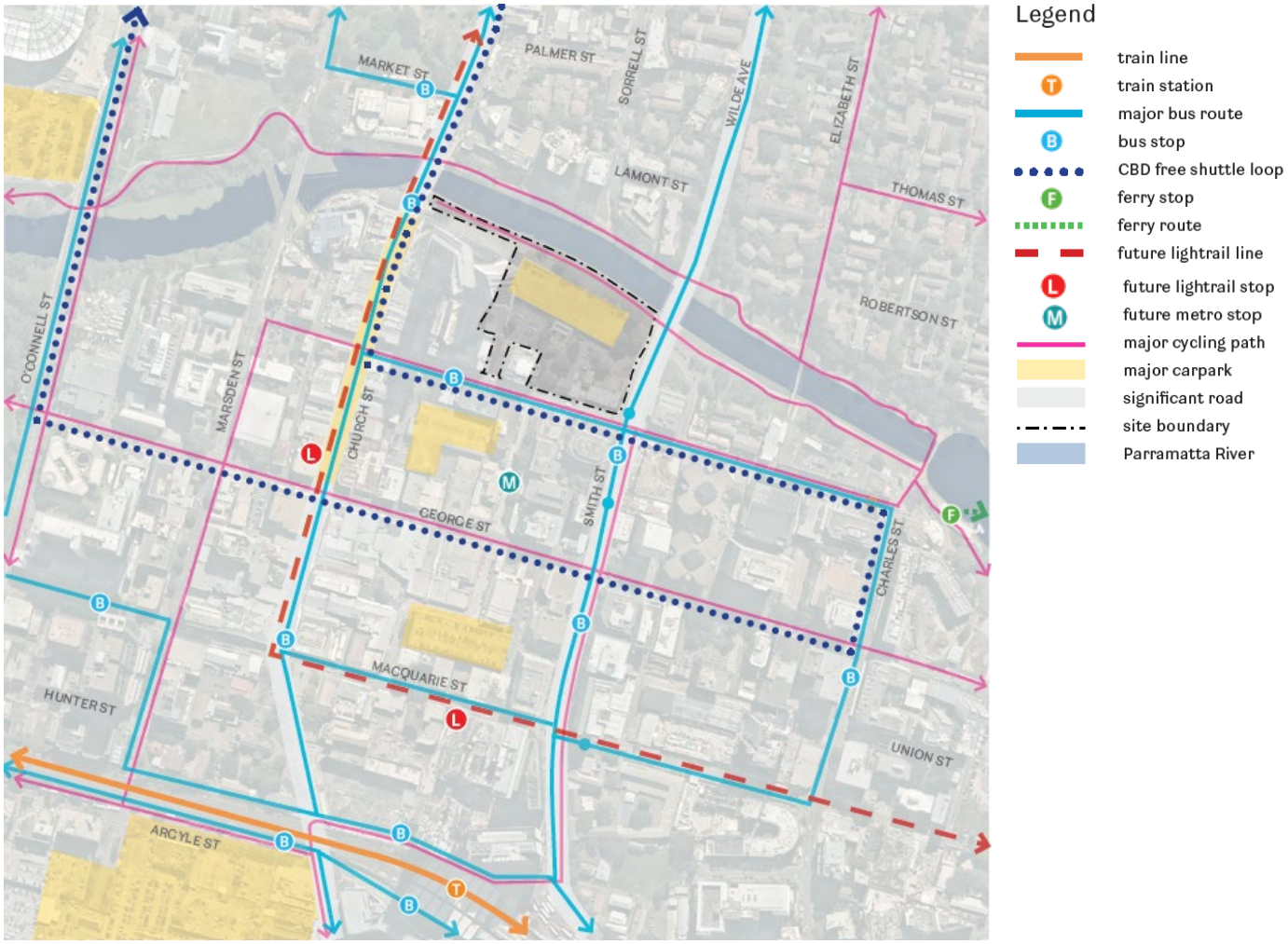


Figure 14 Planned and existing public transport

Source: Moreau Kusunoki and Genton

Heavy rail

Parramatta Railway Station is located approximately 600m south of the site and accessible via major walking routes along Church Street and Smith Street. This station is connected to a number of intercity lines as well as the Blue Mountains Line. Trains run between Parramatta Station and Central Station roughly every five minutes during peak times and every ten minutes out of peak periods.

Buses

The site is serviced by regular bus services along Phillip Street that connect to the surrounding area. Parramatta Railway Station is also a major bus interchange, connecting to various suburbs throughout Sydney including Bankstown, Fairfield, Liverpool, Epping, Blacktown, Rouse Hill and the Sydney CBD.

City of Parramatta Council also offers a free shuttle bus that provides connections to the major hubs in the Parramatta CBD. It runs every ten minutes and has a stop on Phillip Street, adjacent to the site.

Ferry

The Parramatta Ferry Wharf is located approximately 470m east of the site, with clear and accessible pedestrian pathways directly linking the site to the Wharf. The ferry service connects to Circular Quay and Milsons Point via the F3 service.

Pedestrian

The main pedestrian thoroughfares in the Parramatta CBD include Church Street, George Street, Argyle Street and Phillip Street. This pedestrian network connects the site with surrounding localities including Parramatta Park, Westfield Parramatta, Western Sydney Stadium, the Riverside Theatre and the local eateries along Church Street.

Further, pedestrian connection to the site and the surrounding localities will be enhanced by the future delivery of the Civic Link by Council. The Civic Link comprises converting Horwood Place to a landscaped pedestrian and cycle only link, which will ultimately connect through to Parramatta Square and Parramatta Railway Station. The link is approximately 490m long and will directly connect Parramatta CBD's civic and commercial district and major transport nodes with riverfront spaces and the Parramatta River foreshore, terminating at the site.

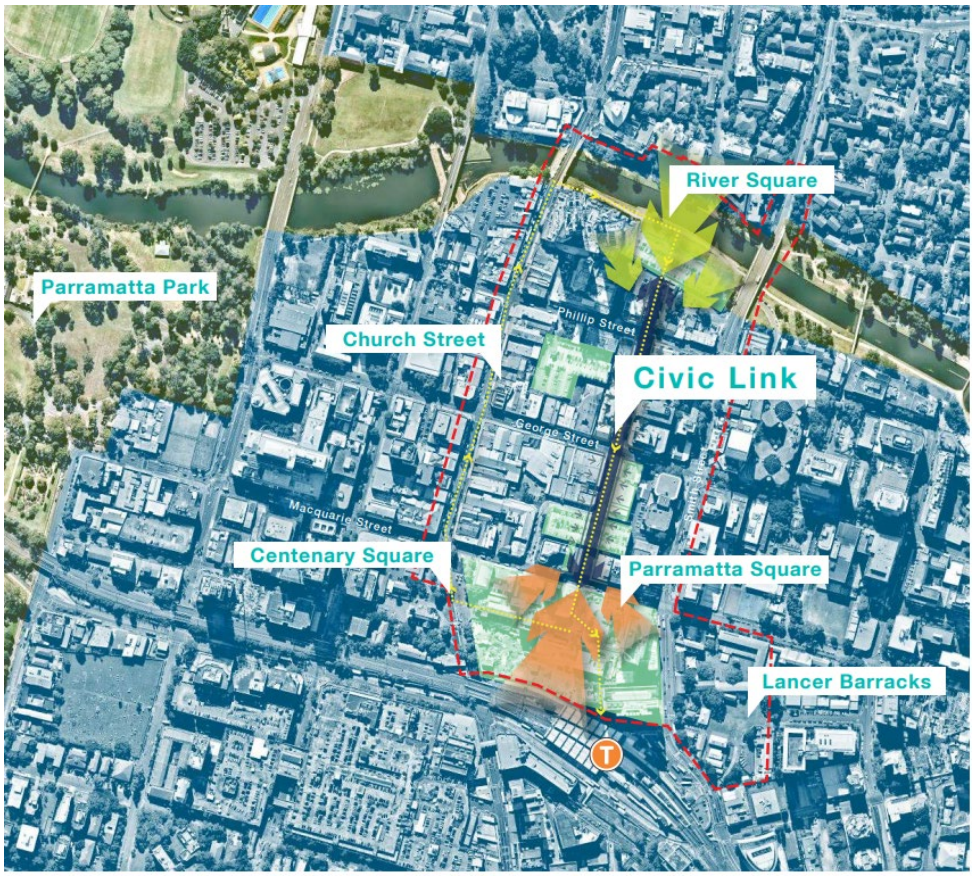


Figure 15 Future Parramatta Civic Link through the CBD

Source: Civic Link Framework Plan 2017

Light rail

Whilst there is no existing connection to the site via light rail, the site will benefit from the completion of the Parramatta Light Rail project. Stage 1 of the project, which is currently under construction, will connect the Parramatta CBD through to Westmead, North Parramatta, Camelia, Rydalmere, Dundas, Telopea and Carlingford via a 12km track that is currently under construction. The nearest stops are located on Church Street and Macquarie Street outside Parramatta Square, which are both within a short walking distance of the site. This will operate on a turn-up-and-go service of every 7.5 minutes during peak periods.

Stage 2 of the Light Rail project is in the planning phase and is expected to extend the network to Sydney Olympic Park, Wentworth Point, Ermington and Melrose Park via a 9km route.

Bicycle parking and access

The site is highly accessible by bicycle via the existing road network and river foreshore shared path. There is no bicycle parking on site, however, secure bicycle parking is available at Parramatta Wharf and Parramatta Station, as well as Erby Carpark and Horwood Carpark, both of which are within a 5-minute walk from the site.

More broadly, Parramatta has an extensive bicycle network which connects the Parramatta CBD to nearby localities and to an outer ring of suburbs. These include:

- the Parramatta Valley Cycleway that connects Parramatta Park to Ryde and Sydney Olympic Park;
- the North-West and the Liverpool T-Way which both include shared pedestrian and cycle paths;
- M4 Motorway Viaduct Route that links Auburn, Granville, Holroyd and the Parramatta CBD; and
- the Parramatta to Liverpool Rail Trail that run parallel to the railway line through Merrylands, Yennora and Fairfield to Liverpool.

Vehicle access and parking

The Parramatta CBD accommodates a number of existing multi-level carparks that are under the control of City of Parramatta Council in close proximity to the site, which provide nearly 4,000 parking spaces for public use. The site is occupied by the Riverbank Carpark that accommodates 504 of these spaces, as well as at-grade parking areas associated with the operation of the retail and commercial buildings.

There is free 15-minute parking along Phillip Street and along other CBD streets. Free motorcycle parking is at Erby Place, the corner of Horwood Place and Macquarie Lane, Erby Lane off Horwood Place, and Fire Horse Lane.

The site is accessed via Dirrabarri Lane, with exits onto Dirrabarri Lane or George Khattar and Oyster Lane.

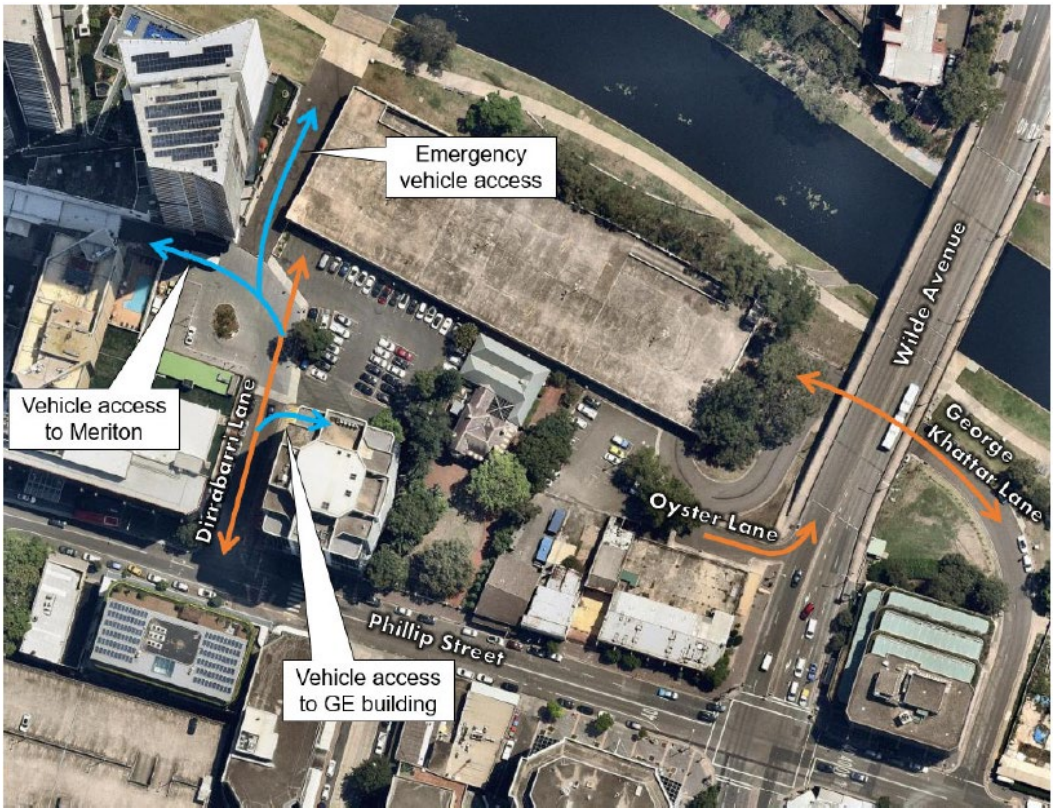


Figure 16 Existing vehicle site access points

Source: JMT

Taxi and rideshare service

There is an existing taxi rank on Phillip Street and set down and drop off areas on George Khattar Lane, George Street and Phillip Street. Taxi and rideshare drop off and pick-ups also usually occur informally in the surrounding road network.

Figure 17 Existing point to point transport arrangements

Source: JMT

Sydney Metro West

Access to the site would be further improved by the delivery of a new metro station within the Parramatta CBD as part of the Sydney Metro West project. Sydney Metro West comprises a new metro line connecting the Sydney CBD with Westmead, including providing five (5) new stations to be operational by 2030. One of the new Metro Stations is to be located in the Parramatta CBD, within easy walking distance of the site (see **Figure 18** below).

Sydney Metro West will effectively double the rail capacity between Parramatta and the Sydney CBD, ultimately being able to move more than 40,000 people an hour in each direction. It will complement the existing suburban and intercity services between Parramatta and the Sydney CBD.

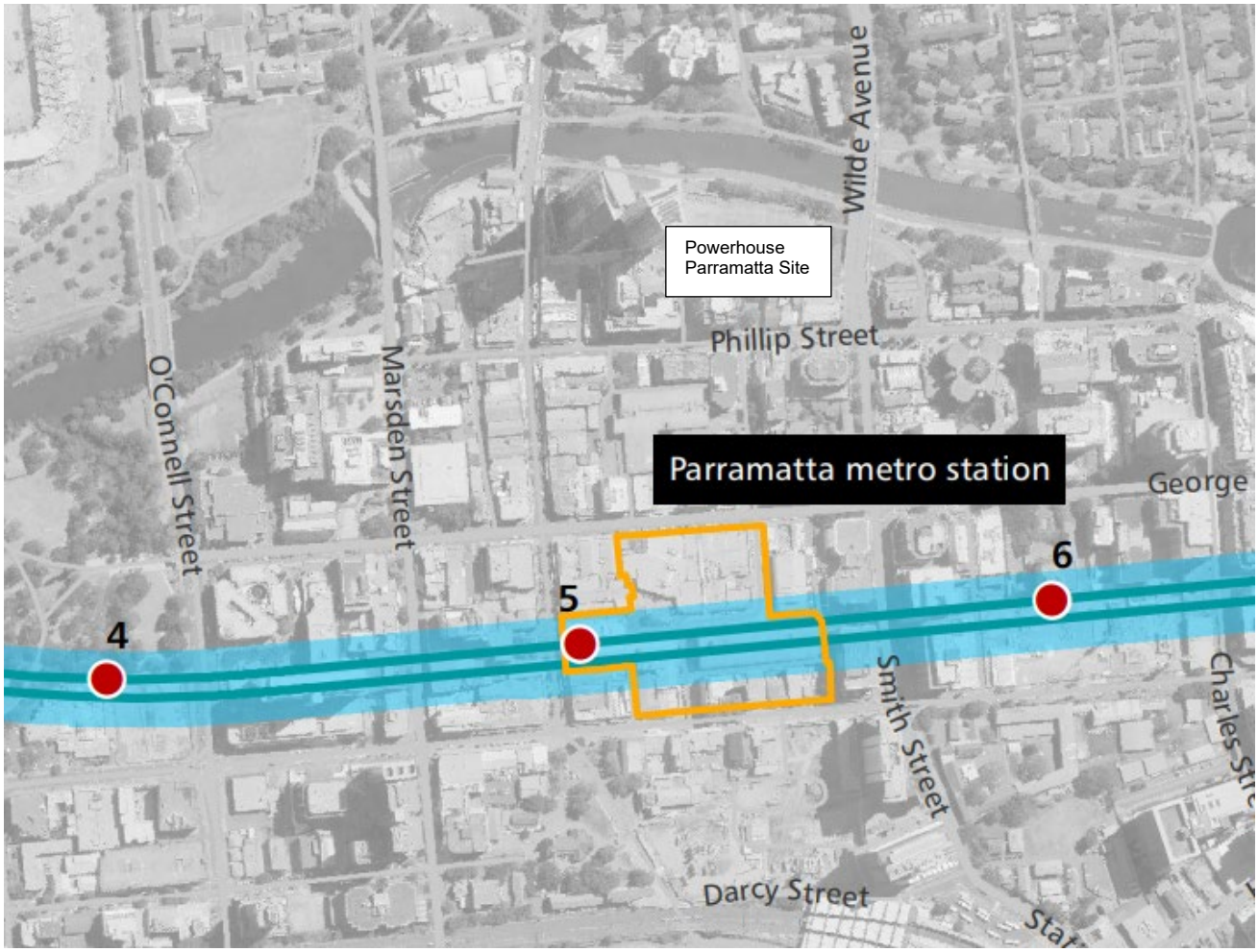


Figure 18 Proposed location of the Parramatta Metro Station

Source: Sydney Metro

2.1.4 Heritage context

There are several items of heritage and archaeological significance on the site and in the surrounding area. The site is not located on or in the vicinity of any heritage conservation areas, any heritage landscape, or any site subject to an Interim Heritage Order. The heritage context of the site is detailed in the Statement of Heritage Impact prepared by Advisian (**Appendix G**) and Aboriginal Cultural Heritage Assessment by Curio Projects (**Appendix H**). The location of statutorily-listed heritage items is summarised in **Figure 18** below.

Aboriginal Heritage

Prior to European occupation of the region Aboriginal people had inhabited the wider region of the Sydney basin for thousands of years. The Dharug, the traditional owners of the Parramatta area, are part of a language group that originally extended from the eastern suburbs of Sydney as far south as La Perouse, west as far as Bathurst and north as far as the Hawkesbury River. The wider Dharug language group comprised a number of sub-groups often referred to as 'clans'. The clan that occupied the area now known as Parramatta were the Burramattugal, from which Parramatta derives its name, who lived within the Parramatta area for more than 30,000 years prior to the arrival of Europeans.

The traditional lifestyle of Parramatta Aboriginal people was significantly impacted by European colonial settlement, with the local people being some of Australia's first traditional owners to experience detrimental impacts, social dislocation and disturbance as a result of European arrival and establishment of the second European settlement at Parramatta in 1788. The population in the area decreased as the community came into conflict with the settlers and were displaced and forced to move into territories of other Aboriginal clans to access resources. Effects of European occupation of Parramatta would have been keenly felt by the local Parramatta population, including loss of access to traditional lands, disease, starvation, intertribal conflict and the breakdown of traditional cultural and social practices.

Willow Grove

Willow Grove is an item of local significance for historical, aesthetic and representative reasons. It was built in the 1870s as a private villa and later became a maternity hospital called Estella. Willow Grove is one of four remaining buildings of its type in the Parramatta Council area. It is a good example of a Victorian Italianate two-storey villa, readily identifiable as part of historic building stock and strongly contributing to the streetscape in spite of its large setback, partly through its notable fence. It has been subject to alterations at the rear of the house which include the introduction of an auditorium and enclosed courtyard. Mature trees on the Willow Grove site are also considered to have local heritage significance in association with the building.

St George's Terrace

The St George's Terrace is located on the site and comprises a row of seven two-storey terrace houses built from 1881. They are recognised as significant at a local level for historical and aesthetic reasons and are the only remaining two-storey terrace group in Parramatta. St George's Terrace is highly modified having undergone substantial alterations and additions to the front and rear elevations as part of the conversion of these dwellings for commercial and retail purposes.

Lennox Bridge

Lennox Bridge is located within close vicinity of the site and is an item of State Heritage significance (SHR # 00750). It is a road and pedestrian crossing of the Parramatta River at Church Street and is one of the earliest bridges in NSW and Australia. It is considered an example of early Colonial engineering works.

Archaeological Management Units (AMU)

There are three AMUs which are located across the site and hold historic heritage significance to the development of Parramatta, dating back to convict and colonial periods, which have the potential to contain relics and artefacts of early settlement and Aboriginal occupation.

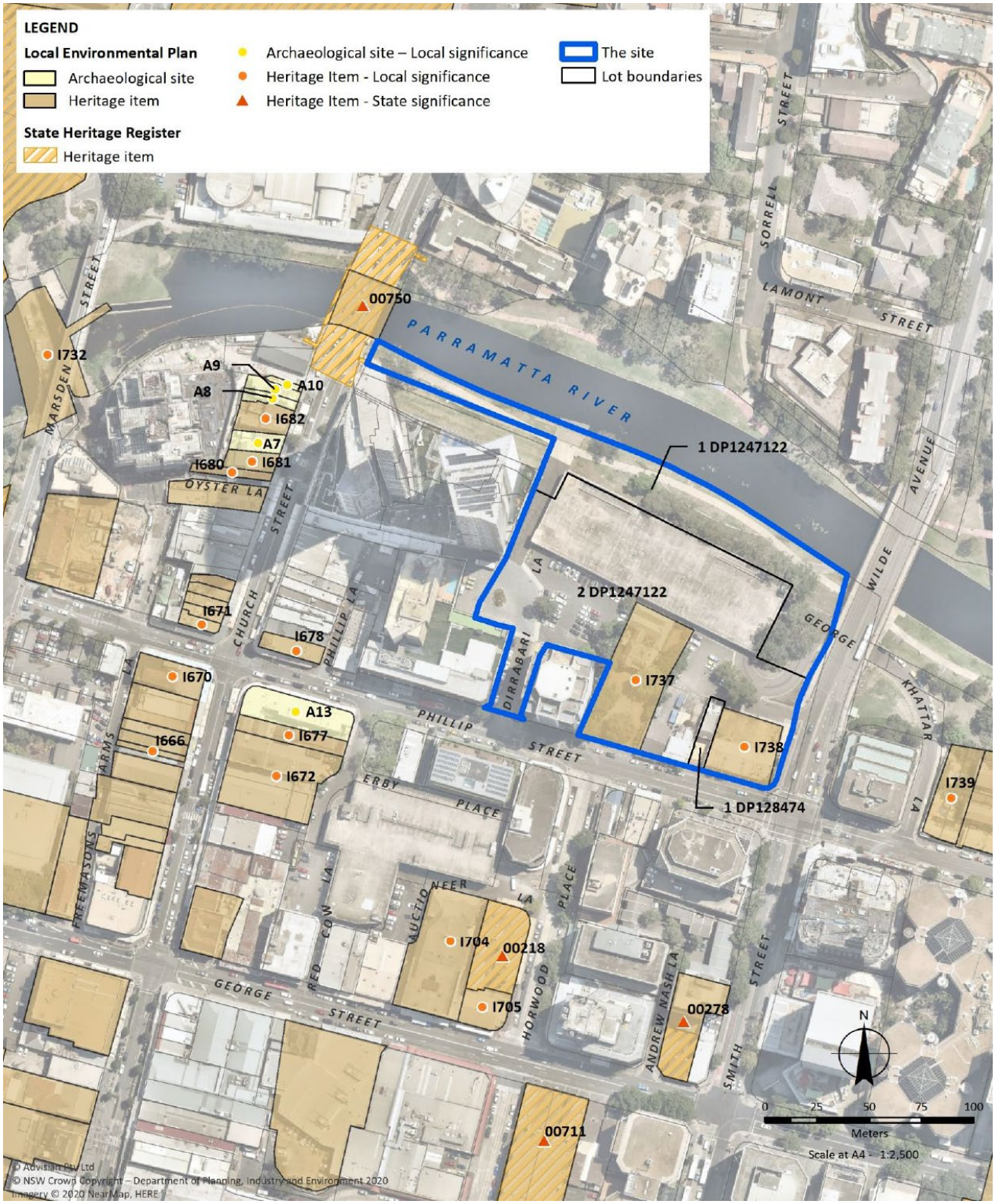


Figure 19 Heritage context of the site

Source: Advisian

2.1.5 Vegetation

Vegetation on site is characterised by a variety of landscaped plantings and grassed areas, as seen in **Figure 20** and **Figure 21**. Grassed areas are typically contained to the riverfront area and the landscaped curtilage of Willow Grove. There are 58 existing mature trees, of both native and exotic species, planted throughout the site. Of these, four (4) trees were allocated Priority for Retention, twenty-four (24) trees were allocated Consider for Retention, twenty-one (21) trees were allocated Consider for Removal and nine (9) trees were allocated Priority for Removal in the Arboricultural Impact Assessment prepared by TreeIQ (**Appendix J**).

Figure 20 Typical vegetation along the Riverfront

Source: Jacobs

Figure 21 Typical vegetation within the site

Source: Jacobs

2.1.6 Subsurface conditions

Soil and geotechnical conditions

A review of the 1:100 000 scale Sydney geological sheet series indicates that the site is underlain by the Winanamatta Group Shale – consisting of shale, carbonaceous claystone, laminate and fine to medium grade lithic sandstone. In addition, the site is located on the Birrong Soil Group which is characterised as saline subsoil with very low soil fertility and seasonal waterlogging. This presents a high soil erosion hazard and land prone to flooding. The site's geotechnical conditions are further detailed in the Detailed Site Investigation Report by JBS&G (**Appendix** L).

The Detailed Site Investigation Report by JBS&G (**Appendix** L) indicates that groundwater flows from south to north, towards the Parramatta River.

Acid sulfate soils

The Acid Sulfate Management Plan (**Appendix N**) indicates that the site is located within an area of disturbed terrain. The nearby Parramatta River comprises an area of high probability of acid sulfate soil occurrence in bottom sediments. There is the potential for both Acid Sulfate Soils and Potential Acid Sulfate Soils on the site at depths greater than 2m.

Contamination

The site has been subject to extensive site investigations and testing to confirm the existing conditions of the site, including:

- Preliminary Environmental Site Assessment for Proposed Mixed Use Development at Riverbank Square, 30B Phillip Street, Parramatta, 28 October 2013, Environmental Investigation Services Pty Ltd, (EIS 2013);
- Preliminary and Detailed Site investigation, 42 Phillip Street, Parramatta, NSW, Endeavour Energy, 4 May 2016, JBS&G Australia Pty Ltd (JBS&G 2016a);
- Preliminary Site Investigation, Proposed Museum of Applied Arts & Sciences, Parramatta, NSW, Pells Sullivan Meynink, 1 September 2016, JBS&G Australia Pty Ltd (JBS&G 2016b); and
- Detailed Site Investigation (JBS&G 2020) (**Appendix L**).

These investigations concluded that there were locations on the site where elevated levels of soil contaminants occurred above the adopted assessment criteria. These comprise elevated levels of benzo(a)pyrene (TEQ) at variable depths across the northern, north western, and central portions of the site, as well as elevated levels of benzo(a)pyrene near the surface associated with fill materials in the eastern portion of the site, and elevated levels of lead, benzo(a)pyrene and PCBs and a localised hot-spot of asbestos fines in the south eastern corner of the site.

2.1.7 Flooding

The site borders the Parramatta River, and is located within the Upper Parramatta River Catchment meaning it is subject to mainstream flooding. The existing Riverbank Carpark basement level and landscape areas north of the carpark are exposed to flooding up to the 1% AEP (100 year) event. The site is also affected by overland flow paths originating from the Parramatta CBD Catchment that converge on Phillip Street and subsequently flow into Dirrabarri Lane and east of the existing GE Building to discharge into the Parramatta River.

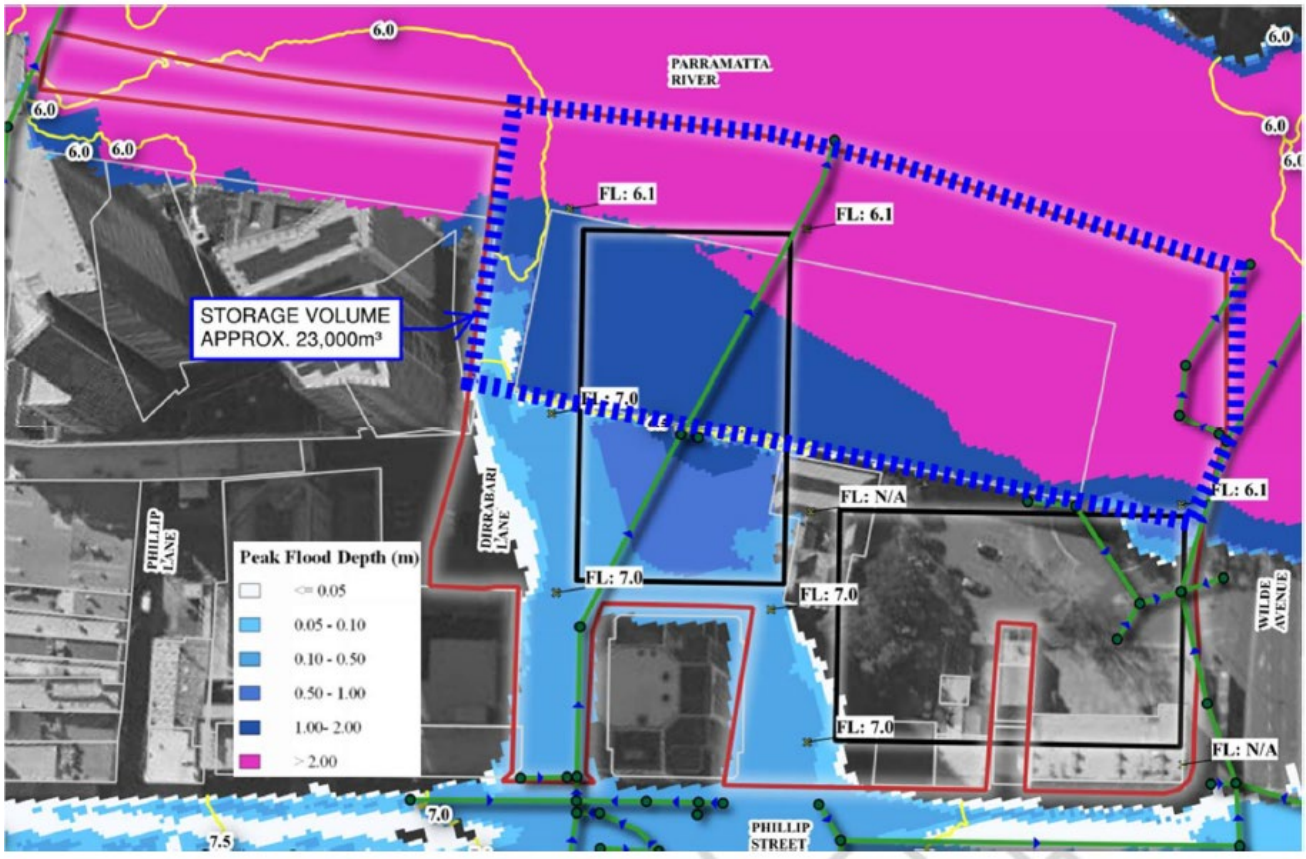


Figure 22 Flood depths during a 1% AEP (100 year) flood event

Source: Arup

2.1.8 Infrastructure and services

An Infrastructure Services Strategy has been prepared for the site (**Appendix** P) detailing the existing services and utilities within vicinity of the site. The infrastructure identified below has been found to have existing connections to the site:

- **Electricity** – both high voltage (HV) and low voltage (LV) services are currently available on Phillip Street and Wilde Avenue adjacent the site. There is also an existing substation that is located on the development site at 42 Phillip Street.
- **Telecommunications** – there are multiple telecommunication carriers with assets in the area to service the site. This includes NBN, Telstra, Optus and AAPT.
- **Gas** – Jemena Gas infrastructure is supplied to the site by a network of 6 gas mains. Two on Church Street, three along Phillip Street and one along Dirrabarri Lane.

- **Mains Water** – the existing water infrastructure comprises four water mains location on Church Street and Lennox Bridge, and Phillip Street. The water mains are all encased in concrete.
- **Sewer** – there are several sewer mains which traverse the site in an east/west and north/south direction. The largest sewer main runs along the Parramatta Riverbank from Church Street to Wilde Avenue in a 525mm vitrified clay trunk.

2.2 Surrounding development

The site is located in the Parramatta CBD and as such the immediate surrounding area is characterised by a range of uses and development of varied scale and form. This includes an existing network of public and civic venues positioned within the Parramatta CBD and along the Parramatta River, including Riverside Theatres, Western Sydney Stadium and the Roxy Theatre.

The northern boundary of the site follows the Parramatta River, with a portion of the Parramatta River foreshore shared path and open space between the Lennox Bridge and the Barry Wilde Bridge forming part of the site. Development on the northern side of Parramatta River comprises residential flat buildings and Riverside Theatres.

Bordering the site to the north west is a mixed-use development comprising a 36-storey tower of serviced apartments (Meriton) and a 53 storey tower of residential apartments behind to the west, set over a shared podium with a childcare centre and food and drink tenancies overlooking the river. Vehicle access to the Meriton development is via Dirrabarri Lane and a right of carriageway easement set over a portion of the site's western shared boundary with the Meriton development.

To the south west of the site is the Park Royal Hotel, comprising two buildings with a combined 200+ hotel rooms. The hotel is accessed from Phillip Street and presents as a blank street wall to the site, with the tourist and visitor accommodation setback from the shared boundary.

Further west is Church Street, a bustling retail and dining strip designated as Paramatta's 'Eat Street', that is characterised by food and beverage tenancies with outdoor dining. Access to Church Street from the site is presently only available via the river foreshore or Phillip Street, owing to the physical barriers created by existing development to the west. Vehicular access to Church Street is presently limited due to the construction of the Parramatta Light Rail.

Bordering the site to the south is the GE Office Building and Phillip Street, which is a major east/west road through the Parramatta CBD. On the southern side of Phillip Street is primarily retail and commercial buildings of varied ages, heights and architectural design. To the south east, at the corner of Phillip Street and Smith Street, is a new 28 storey commercial office tower under construction with ground floor retail and podium level carparking.

To the east is Smith Street/Wilde Avenue which continues to Barry Wilde Bridge. Development on the eastern side of Wilde Avenue is retail and commercial buildings of varied ages, heights and architectural design.

Photos of the development that inform the immediate context of the site are provided at **Figure 23** to **Figure 34** below.

Figure 23 Parramatta River

Figure 24 Residential development on the northern side of the Parramatta River

Figure 25 Lennox St Bridge and the Riverside Theatre behind

Figure 26 Meriton development as viewed from Phillip Street

Figure 27 Meriton development as viewed from Church Street

Figure 28 Meriton podium (right) at the north western boundary of the site

Figure 29 Park Royal Hotel

Figure 30 Park Royal Hotel, as viewed from Phillip Street

Figure 31 GE Office Building

Figure 32 Construction site at the corner of Smith and Phillip Street

Figure 33 Barry Wilde Bridge, and pedestrian bridge beneath

Figure 34 Commercial offices on the western side of Wilde Avenue / Smith Street

3.0 Consultation

INSW in partnership with the Powerhouse has undertaken a range of community and stakeholder engagement activities to inform the preparation of Powerhouse Parramatta and this EIS. The consultation program included engagement with the local community, neighbours, key stakeholders, and government authorities and agencies to present an overview of the proposed development and gather feedback during the preparation of the SSD DA. In undertaking this consultation, full consideration has been given to the SEARs.

The consultation completed prior to the lodgement of this SSD DA is detailed in the Consultation Outcomes Report prepared by Aurecon and INSW (**Appendix Q**). It addresses all consultation activities, the key issues discussed, the feedback received, and whether there have been any associated amendments to the proposal.

It identifies the proactive and strategic approach to communications and stakeholder engagement undertaken for this project. In delivering this approach, the transparent and comprehensive engagement was timely, genuine and constructive, broad reaching, and engaging. Each consultation exercise was undertaken in coordination with INSW and the relevant technical experts that have been contributing to developing and refining the proposed development.

The overall objectives of the consultation were to:

- facilitate collaboration with all stakeholders and government authorities;
- ensure that audiences are broadly reached;
- minimise opportunity for speculation and misinformation;
- improve stakeholder relationships, particularly with key local resident action groups; and
- promote confidence in the project and decision makers.

The Consultation Outcomes Report confirms that in seeking feedback from the community and key stakeholders, INSW and the Powerhouse engaged with 224 stakeholders and 1,718 community members and received 3,707 comments. A range of methods were employed including webinar briefings (recognising that in-person briefings were not possible at the time of writing due to Covid-19), one-on-one meetings including via email, inquiries through the project webpage, a print advertisement campaign, establishing a hotline for inquiries, an online survey, letterbox drop, phone calls to local businesses, social media updates, digital banners and advertisements, and google advertisements.

Figure 35 Snapshot of consultation completed

Source: Aurecon

4.0 Description of the development

This SSD DA seeks consent for the design, construction and operation of Powerhouse Parramatta at 34-54 and 30B Phillip Street and 338 Church Street, Parramatta. The application seeks approval for the following:
The application seeks approval for:

- site preparation works, including the termination or relocation of site services and infrastructure, tree removal, earthworks and remediation, and the erection of site protection hoardings and fencing;
- demolition of existing buildings including the existing Riverbank Carpark, 'Willow Grove', 'St George's Terrace' and all other existing structures located on the site;
- construction of the Powerhouse Parramatta, including:
  - front and back-of-house spaces;
  - seven major public presentation spaces;
  - studio, co-working and collaboration spaces comprising the 'Powerlab', supported by residences (serviced apartments) for artists, students, researchers and scientists, and 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 research and product development, and as a destination, education and event space;
  - film, photography, and postproduction studio 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.
- construction and establishment of the public domain within the site, comprising:
  - hard and soft landscaping works;
  - publicly accessible event and operational areas;
  - provision of pedestrian and cycling facilities.
- operation and use of 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;
- extension and augmentation of utilities and infrastructure as required; and
- three (3) business identification signage zones.

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.

Figure 36 Indicative photomontage of the proposed Powerhouse Parramatta, looking south west into the CBD

Source: Moreau Kusunoki + Genton

Figure 37 Indicative photomontage of the proposed Powerhouse Parramatta as viewed from Horwood Place (future Civic Link)

Source: Moreau Kusunoki + Genton

Figure 38 Indicative photomontage of the proposed Powerhouse Parramatta as viewed from the northern side of Parramatta River

Source: Moreau Kusunoki + Genton

4.1 Design principles

The proposed development ultimately seeks to provide a world-class contemporary museum in Western Sydney, focused on science and innovation, that will meet the needs and aspirations of the community and deliver an exciting new cultural destination for the people of NSW and beyond.

The planning and design principles adopted for the proposed development of the site are to:

- Create a museum that will support the delivery of an ambitious, dynamic, constantly changing program that provides new levels of access to Powerhouse Collections.
- Support the delivery of an active precinct that will host multiple concurrent activities including exhibitions, events, and community and education programs. Each space is to play a distinct role in the precinct, and when working together, create an active 24-hour precinct.
- Ensure the development is agile and adaptable, providing flexible consolidated facilities across both back of house and public facing areas that permit changes in the daily program and allow for the multiple uses of space.
- Provide a precinct that has multiple entry points and can be approached and connected from all sides, so that visitors and local communities will be encouraged to walk through the precinct.
- Create 24/7 pedestrian movement from Phillip Street through to the Parramatta River foreshore. As part of this, a centralised circulation corridor is to be emphasised for intuitive wayfinding and visual activation at the termination of Parramatta's 'Civic Link'.
- Produce a design that is engaging and relevant to diverse communities including spaces that support diverse abilities and Australian Aboriginal and Torres Strait Islander connections and continuing practices in applied arts and sciences.
- Provide operational efficiency for high levels of production and to maximise public facing programming, including total acoustic and light isolation of each space to support high levels of concurrent activity.
- Provide public domain areas that support gathering, dwelling and cultural events across a range of scales, from informal passive recreation to site-wide precinct events.
- Promote sustainable design principles including energy conservation, reduction of waste, water usage reduction, and materials from sustainable sources.
- Take advantage of the sites highly accessible location by prioritising active and sustainable modes of transport, and ensuring that pedestrian activity across the whole of the precinct is prioritised.

The proposed Architectural Plans and Design Statement prepared by Moreau Kusunoki and Genton (**Appendix B**) and landscape plans and Landscape and Public Domain Statement prepared by McGregor Coxall (**Appendix C**) provide greater detail on how the proposed development has responded to the site and the unique opportunities and requirements associated with the delivery of the Powerhouse Parramatta.

4.2 Numerical Overview

The table below provides an overview of the key numerical parameters relating to the proposed development.

Table 3 Key development information

Component	Proposal
Site area	19,438m^2
GFA	27,667m^2
FSR	1.5:1
Maximum height	• East building – RL 63.6m (60.1m) • West building – RL 79.2m (75.7m)
Setbacks	• North (Parramatta River) – minimum 23m, being the distance between the lot boundary and the retail terrace • East (Wilde Avenue) – minimum 2m, being the distance between the lot boundary and building line of the eastern building

Component	Proposal
	• South (Phillip Street) – minimum 9.5m, being the distance between the lot boundary and building line of the eastern building • West (Meriton development) – minimum 21.3m, being the distance between the lot boundary and building line of the western building It is noted that the development has variable setbacks influenced by irregular lot boundaries and the stepped built form from the two connected buildings proposed.
Car spaces	No parking is to be provided on site as part of the proposed development.
Bicycle parking	40 spaces are to be provided in a partially enclosed area on the site for use by visitors at any time. A further 30 spaces will be provided in a secure space also within the enclosed area adjacent to the river for use by staff and official personnel.
Loading spaces	2 loading docks are provided in the south western corner of the western building, which are capable of accommodating between 3 and 6 vehicles at any one time (depending on the size and configuration of the vehicles).
Public domain and open space	Powerhouse Parramatta will be nestled within generous open space and public domain areas that support the function and civic character of the proposed development.
Trees	54 trees will be removed on the site, 1 tree will be retained and protected, with substantial new tree planting proposed as part of the landscaping scheme.

4.3 Land use

This application seeks consent for the redevelopment of the site primarily for the purposes of an 'information and education facility', which includes museum exhibition and education spaces. This primary function will be supported by a range of ancillary and related uses which contribute to the operation of Powerhouse Parramatta as a new day-to-night cultural and arts destination, including:

- Office and co-working spaces for use by staff as well as scientists, researchers, artists and students associated with programs at Powerhouse Parramatta, and partners and stakeholders for external meetings. The offices are designed as an open-plan space with the potential to be partitioned to create meeting rooms, a conference room, research rooms, and/or break-out spaces. These spaces will typically operate between business hours.
- Serviced apartments, known as the 'Powerlab Residences', to be used by scientists, researchers, artists and students to collaborate, create and research in conjunction with the activities of the museum whilst residing on-site for up to 3 months. These residences will be associated with exhibitions, programs, workshops and lectures presented at Powerhouse Parramatta. The residences will include a range of studios, one bedroom and two bedrooms units, with either internal or communal kitchen and laundry facilities. They are not for the purposes of permanent residential accommodation or resale and are fully integrated within the design and operation of Powerhouse Parramatta. These residences will operate 24 hours / 7 days a week.
- Dormitory-style accommodation, known as 'The Academy', which will be used to engage school and university students in science education programs as an ancillary function to the operation of the museum. The Academy will have a strategic focus on regional NSW and Western Sydney and host both secondary and tertiary students and school holiday programs. The Academy will also utilise the shared facilities provided as part of the Powerlab Residences and are fully integrated with the design and operation of the Powerhouse Parramatta. The Academy will operate 24 hours / 7 days a week.
- Internal and external-facing retail spaces, to be used for services related to the purpose and functions of the Powerhouse Parramatta including food and beverage tenancies. The external retail space at the ground floor of the western building may also accommodate outdoor dining on the terrace to contribute to the visitor experience and activate the site. The detailed fit-out and use of these spaces will be subject to separate and future approval. The intended operation of these spaces will generally align with the operational hours for the museum's presentation and education spaces.

The intended operation of Powerhouse Parramatta incorporating these diverse uses into a single active and collaborative precinct is discussed further in **Section 4.7** below.

4.4 Built form and urban design

Powerhouse Parramatta has been designed to combine practicality and architecture into a single active working precinct. It is influenced by the functional parameters of accommodating a range of interconnected uses and flexible and adaptable spaces, as well as the site's relationship to the Parramatta River, future Civic Link, and the surrounding CBD that is undergoing a period of rapid change as the heart of the Central River City. It comprises two separate buildings of 17 storeys (western building) and 12 storeys (eastern building) in height that are divided by the Civic Link, and connected by elevated pedestrian bridges across three levels. The two buildings have been stepped and orientated to create a new open space area adjoining the Parramatta River whilst still providing a strong building line and architectural presence to the street frontages of Phillip Street and Wilde Avenue. There is the potential for the western building to connect to the podium of the adjoining Meriton development, creating a new integrated retail destination known as 'The Powerline'.

A detailed description of Powerhouse Parramatta is provided in the table below and discussed in the Design Report at **Appendix B**.

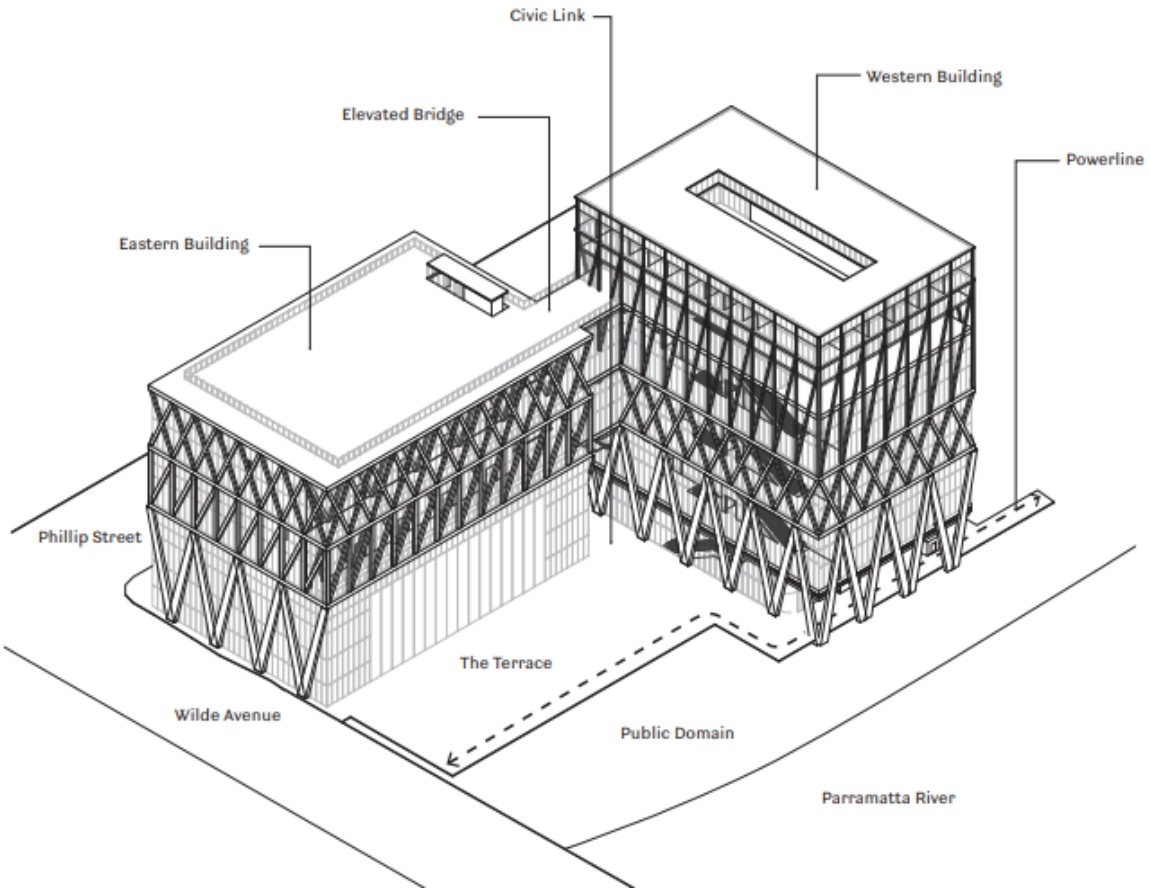


Figure 39 Proposed buildings that comprise Powerhouse Paramatta

Source: Moreau Kusunoki and Genton

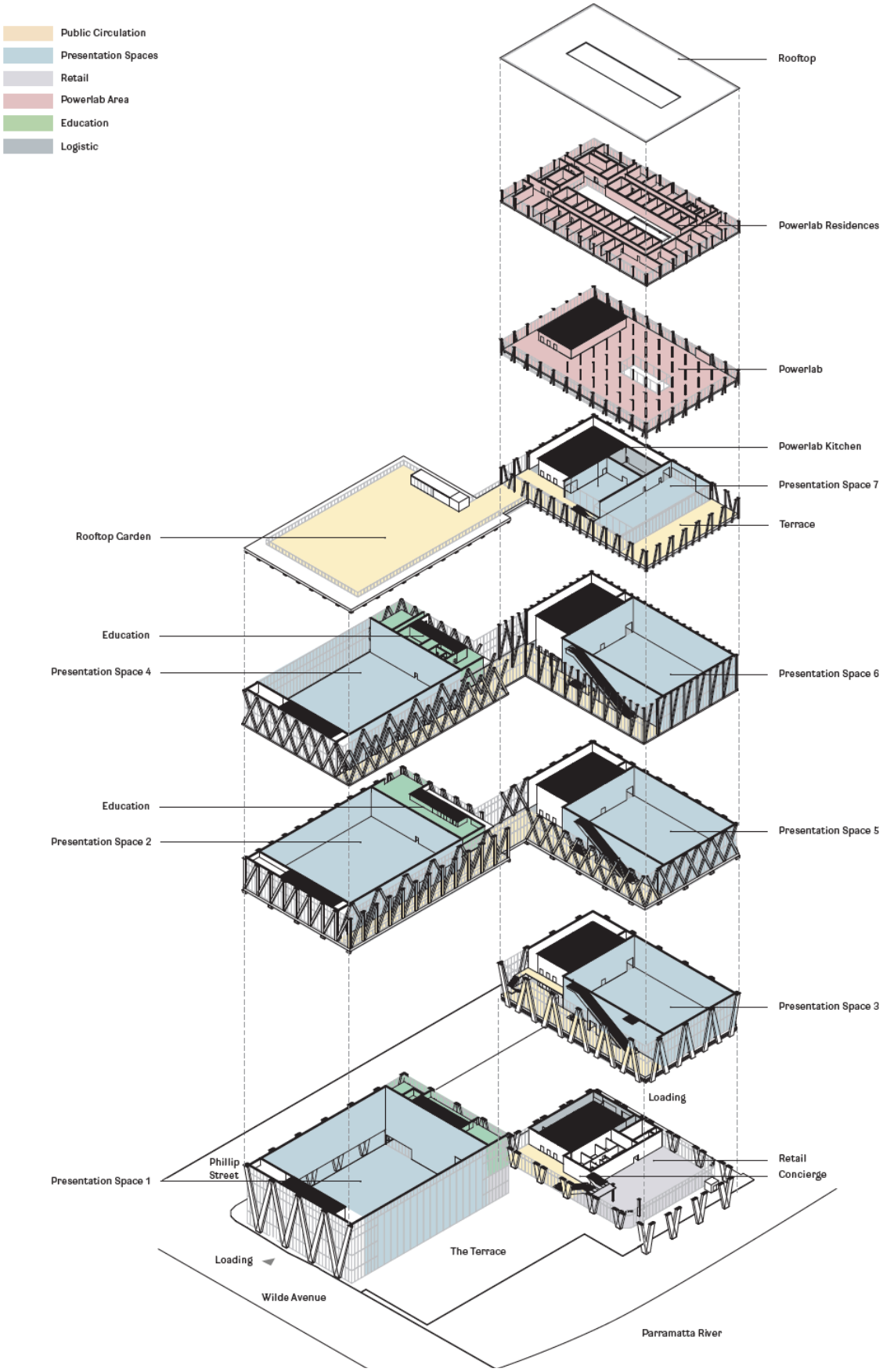


Figure 40 Breakdown of the spaces and uses that comprise Powerhouse Parramatta

Source: Moreau Kusunoki and Genton

Table 4 Design description of the proposed built form

Lower ground floor

A partial lower ground level is created beneath the two buildings, where the topography of the site steps down towards the Parramatta River. This area is semi-enclosed and used for bicycle parking and as a flexible and programmable recreation space. It is designed to be floodable and is accessed from the foreshore or via a lift to the ground floor of the western building.

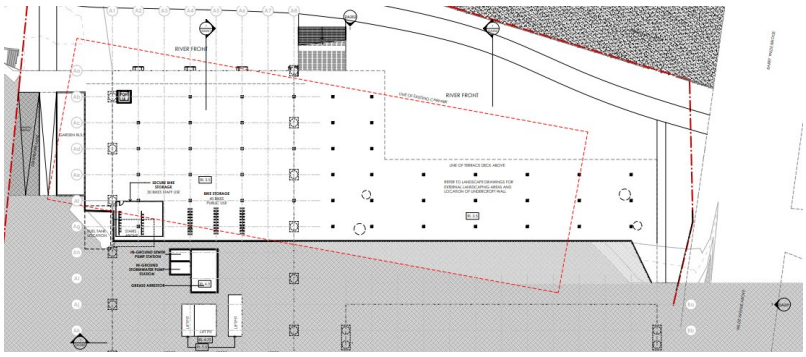


Figure 41 Lower ground floor undercroft space fronting Parramatta River
Source: Moreau Kusunoki and Genton

Ground floor

- The eastern and western building footprints are divided by the continuation of the Civic Link through the site at the ground floor level.
- Retail tenancies and front of house uses have been provided either side of the Civic Link to activate the ground plane and this central spine connecting the site to the CBD.
- The main building entrance, or 'concierge', for Powerhouse Parramatta is located in the south eastern corner of the western building and is accessed from the Civic Link.
- Loading and back of house areas are concentrated in the south western corner of the western building, and are accessed from Dirrabarri Lane.
- The remainder of the ground floor of the western building is occupied by an open-plan retail area overlooking the Parramatta River.
- The ground floor of the eastern building is largely occupied by 'Presentation Space 1', which is designed to accommodate large-scale exhibitions and events. The southern façade has large openable doors to provide views from Phillip Street into the presentation space, and the northern façade is fully operable so that this space can be opened to the public domain and Parramatta River. Given its loading capacity, it will be utilised to display very large objects from the Powerhouse Collection.

Figure 42 Ground floor of the eastern and western buildings
Source: Moreau Kusunoki and Genton

Mezzanine

- Two mezzanine levels are provided in the eastern building, either side of the void space for Presentation Space 1. These levels accommodate circulation areas, amenities and BOH operations, as well as the Powerhouse library, archives and education space.
- The mezzanine level for the western building accommodates back of house areas, circulation, and mechanical plant for the retail below.

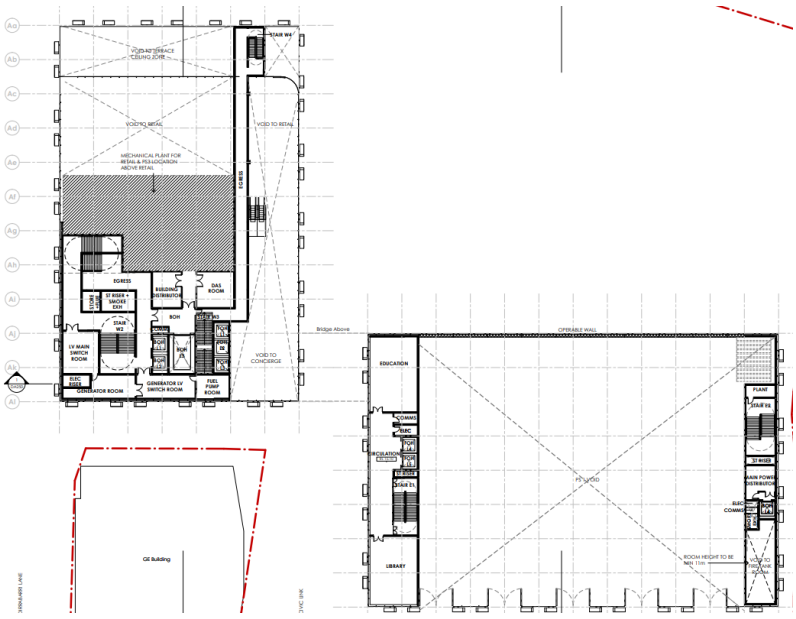


Figure 43 Mezzanine; plant and education spaces

Source: Moreau Kusunoki and Genton

Level one

- Presentation Space 3 is provided in the western building and will act as a presentation spaces for exhibitions. It will have a specific focus on acoustic design, and a flexible seating configuration for secondary uses such as public talks and performances.
- The Academy (dormitory style accommodation) is located along the western edge of void space for Presentation Space 1 in the eastern building, inclusive of a lobby area and amenities.

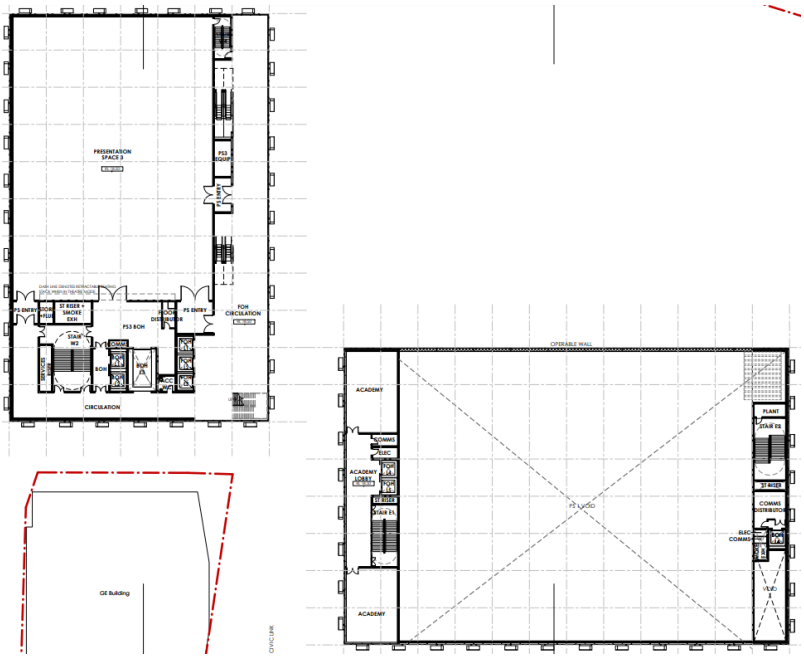


Figure 44 Level one; presentation and education spaces

Source: Moreau Kusunoki and Genton

Level two

- This floor accommodates the first elevated bridge that links the eastern and western building.
- Presentation Space 2 is provided in the eastern building.The adjacent circulation space can be opened on the northern façade to a terrace space that overlooks the riverfront
- Presentation Space 5 is provided in the western building.
- Education and community spaces are provided in the south west corner of the eastern building, adjoining the void space created for Presentation Space 2.

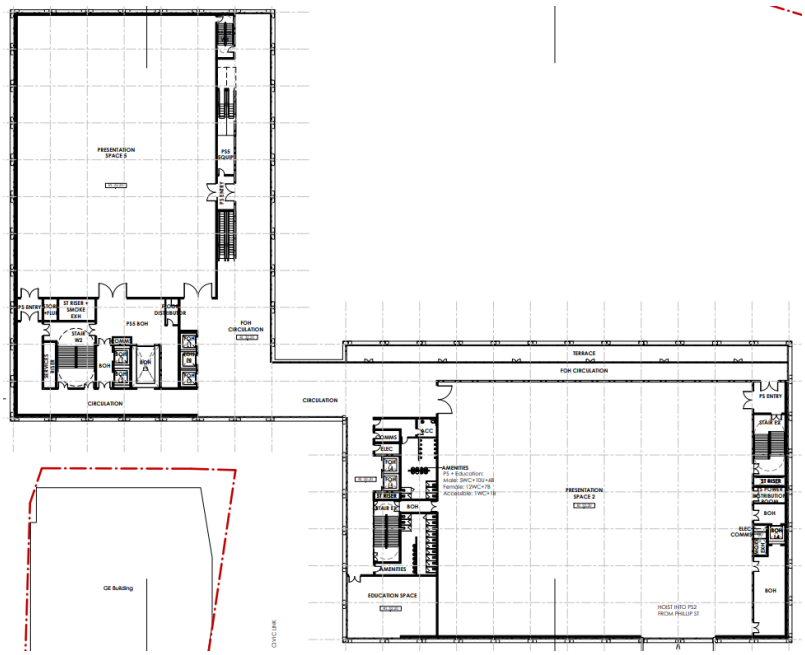


Figure 45 Level two; presentation spaces and education spaces

Source: Moreau Kusunoki and Genton

Level three

- Presentation Space 4 is provided in the eastern building.
- Presentation Space 6 is provided in the western building. It incorporates high acoustic and light insulation to support its primary function as an exhibition space for digital and immersive works.
- The western edge of the eastern building will contain an education space on Level 3, a digital studio and education space on Level 3.1 and a cinema on Level 3.2, adjoining the void space for Presentation Space 4.
- Patrons are able to move between buildings via a bridge on this level.

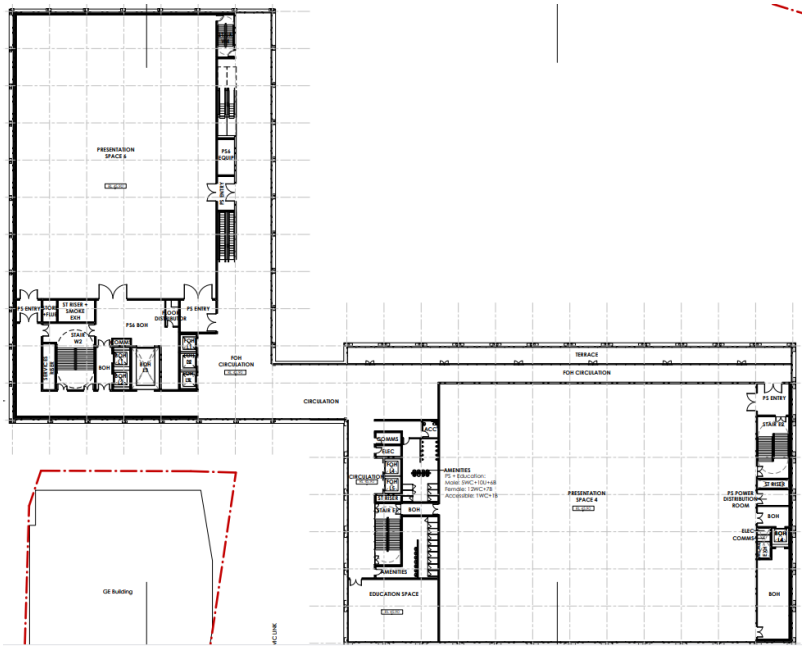


Figure 46 Level three; presentation spaces and education spaces

Source: Moreau Kusunoki and Genton

Level four

- Presentation Space 7 is provided in the western building and comprises a transparent box that can be opened out onto a terrace on the northern and eastern edges of this building.
- The rooftop of the eastern building is used as a landscaped terrace for Powerhouse programs and includes seasonal productive gardens to support the Powerlab Kitchen, located in the western building on this level.
- Patrons are able to move between buildings via a bridge on this level.

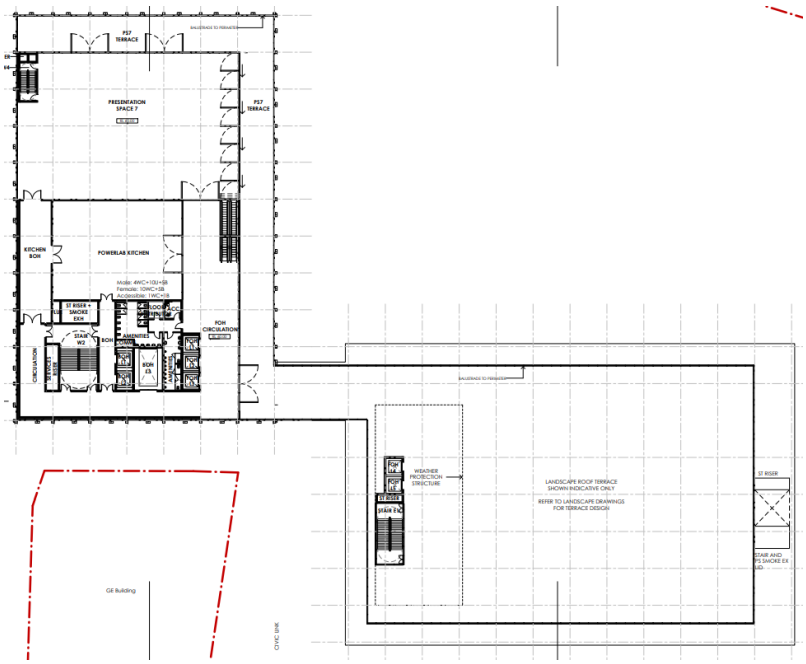


Figure 47 Level four; presentation spaces, roof terrace and Powerlab Kitchen

Source: Moreau Kusunoki and Genton

Level five

The western building will accommodate a collaborative working space that forms part of the 'Powerlab'. It is intended to bring together Powerhouse employees, researchers, artists in residence, industry partners and members of the community into one collaborative working space.

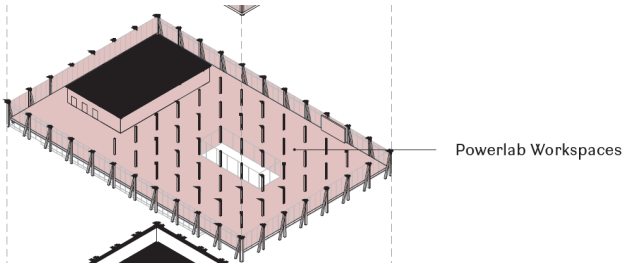


Figure 48 Level five; Powerlab workspace

Source: Moreau Kusunoki and Genton

Level six

The western building provides the Powerlab residences at this level, comprising 40 rooms or units orientated to the edges of the building or facing an internal light void and garden. The residences provide temporary accommodation for visiting scientists, researchers and artists. These residences, along with the facilities of the Powerlab Workspaces, provide comprehensive and critical infrastructure to support Powerhouse Parramatta's outreach activity.

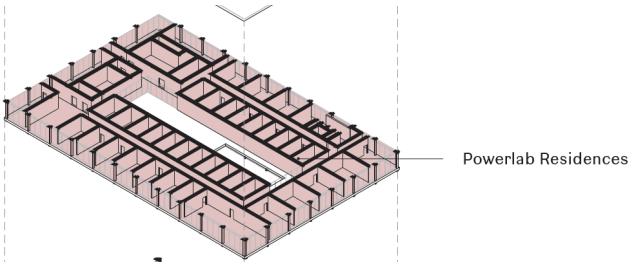


Figure 49 Level six; Powerlab residences

Source: Moreau Kusunoki and Genton

Facades

- The development is designed so that the superstructure is a celebrated architectural feature that is used to articulate the building facades. The buildings are designed with three types of steel lattices as an exoskeleton that layer the massing of the buildings.
- Behind the latticework, the facades materially exist in two forms - clear glass for maximum visual permeability or solid opaque walls for the enclosure of light–sensitive functions of the presentation spaces.

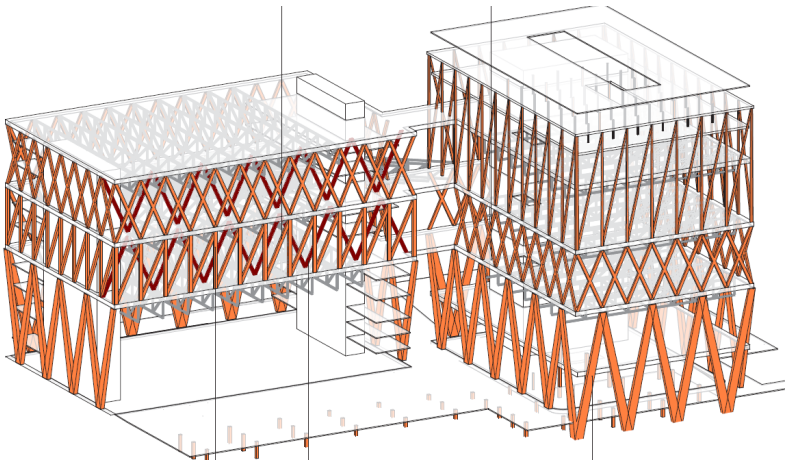


Figure 50 Layers of latticework on the building facades

Source: Moreau Kusunoki and Genton

- The northern elevations of both the eastern and western buildings at key levels are glazed so that pedestrian circulation areas have access to natural sunlight whilst the presentation spaces within can be made light separated supporting versatile exhibition programming.

Figure 51 Enclosed presentation spaces framed by circulation with access to natural daylight

Source: Moreau Kusunoki and Genton

Materials and finishes

The materials and finishes are intended to form an earthy, grounded and muted backdrop to the vast range of programs housed within Powerhouse Parramatta. They comprise glazed curtain walls, opaque cementitious panels in a warm neutral tone, concrete in a light grey tone, powder coated aluminous screen mesh, and white intumescent paint.

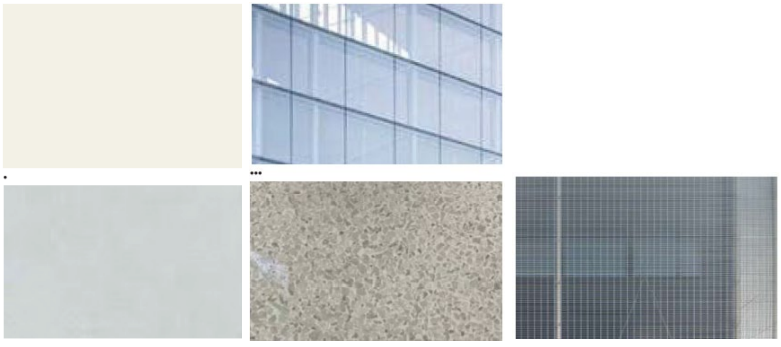


Figure 52 Materials and finishes

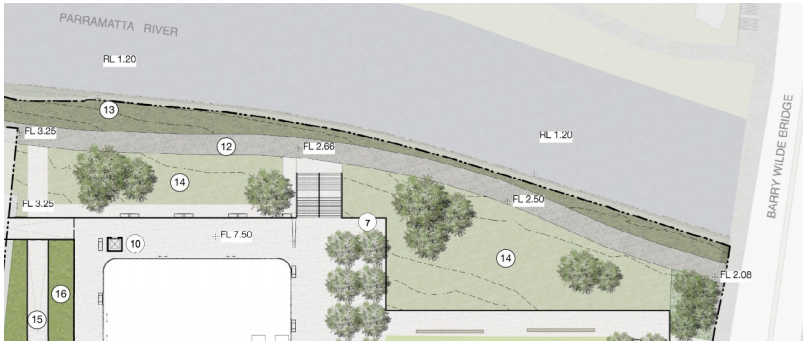
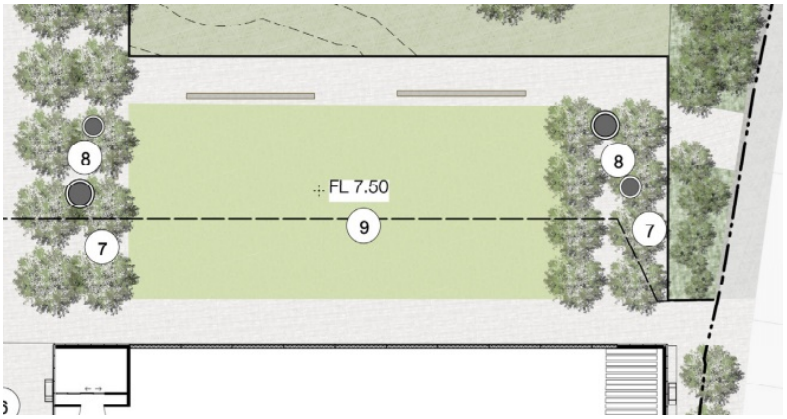
Source: Moreau Kusunoki and Genton

4.5 Public domain

The public domain areas within the site have been designed to be porous, accessible, and adaptable, to support the functions of Powerhouse Parramatta whilst also creating a new welcoming destination within the Parramatta CBD. Powerhouse Parramatta's ground plane serves as a seamless continuation of the surrounding streetscape and public domain, grounding the built form in its setting to facilitate a stronger connection between the city and the river in recognition of its significant location at the termination of the Civic Link. A number of new spaces will be provided on the site that contribute to the use of the site both during the day and at night.

The design of the public domain has been developed by McGregor Coxall and is detailed in the Landscape Plans and Landscape Report located at **Appendix C**. A detailed description of the proposed public domain and landscaping on site is also provided in the table below.

Table 5 Design description of the proposed public domain

River frontage The turfed portion of the site bordering the foreshore leading to the Lennox Bridge will be maintained. The existing shared path will be reinstated and tied into the new pedestrian pathways being provided on and through the site. A new open space area is also provided beneath The Terrace, adjoining the river foreshore. This space has been designed as a continuation of the landscaped foreshore and comprises lawn with less structured tree planting.	 **Figure 53 River frontage** *Source: McGregor Coxall*
The Terrace A new generous open space area is provided adjoining Presentation Space 1 and overlooking the river foreshore. The space has excellent natural daylighting and views, and is designed to support informal recreation and gatherings as well as events. It is turfed and lined with trees, and includes light wells to support natural daylight penetration into the Riverfront space created beneath.	 **Figure 54 The Terrace** *Source: McGregor Coxall*

Dirrabarri Lane

The paved area interfacing between Powerhouse Parramatta and the Meriton development will continue to be used as a flexible space and service zone. It will include a new access ramp to the foreshore that enables pedestrians as well as emergency vehicles to access the river frontage. Rain gardens are provided either side of the access ramp.

There is the potential to provide a future laneway link between Dirrabarri Square and Church Street, as well as the Powerline bridge connection to the Meriton building podium above the emergency vehicle access ramp.

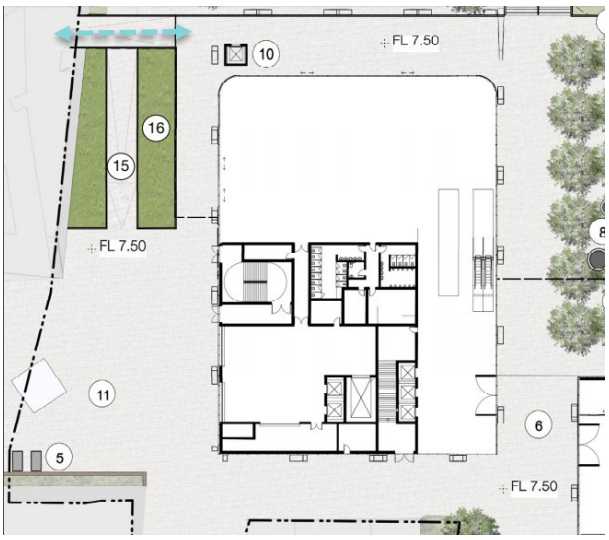


Figure 55 Dirrabarri Lane

Source: McGregor Coxall

Phillip Street frontage

The Phillip Street frontage of the site accommodates the primary drop off zone servicing Powerhouse Parramatta. It comprises a generous footpath area forming an entrance square with a coach drop off zone (discussed further in **Section 4.8**), tree planting and an all-weather structure to shelter patrons, bench seating that can be removed when required for site servicing, and a loading area allowing for hoisting items into the presentation spaces.

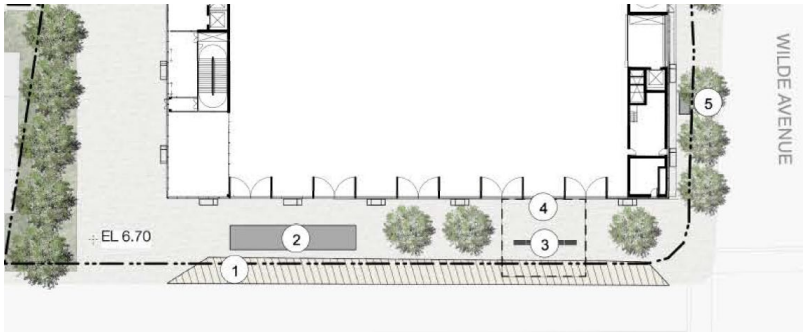


Figure 56 Phillip Street frontage

Source: McGregor Coxall

Civic Link integration

The site has been designed to contribute to the delivery of the future Civic Link that connects the heart of the Parramatta CBD to the river. The Civic Link on the site comprises a paved linear pedestrian pathway that funnels activity into the centre of the site, and to the Terrace and Riverfront that form the northern anchor of the Civic Link. Tree planting will be provided adjacent to the GE Office Building to frame the entrance to the Civic Link.

Wilde Avenue frontage

Wilde Avenue is primarily elevated where it interfaces with the site, leading into the Barry Wilde Bridge. The street frontage will be paved and accommodate tree planting in the road reserve.

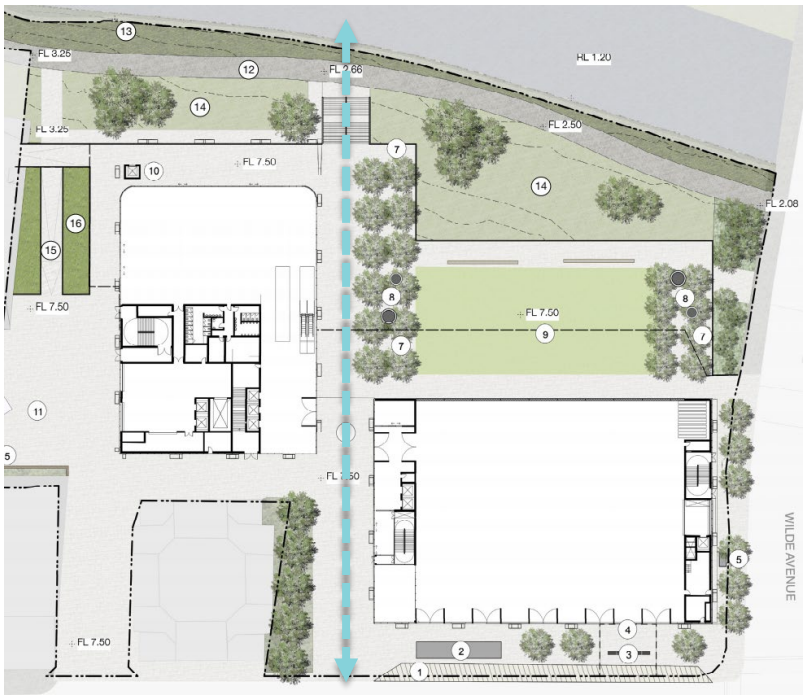


Figure 57 Civic Link and Wilde Avenue frontage

Source: McGregor Coxall

Roof terrace

The roof of the eastern building will be used as a landscaped terrace comprising an all-weather structure, lawn space and seating on the roof top garden that connects visitors to a variety of plants including indigenous, productive, seasonal and local species. The production gardens will support education and learning for visitors. The space can act as an extension of Presentation Space 7 and be utilised as an event space.

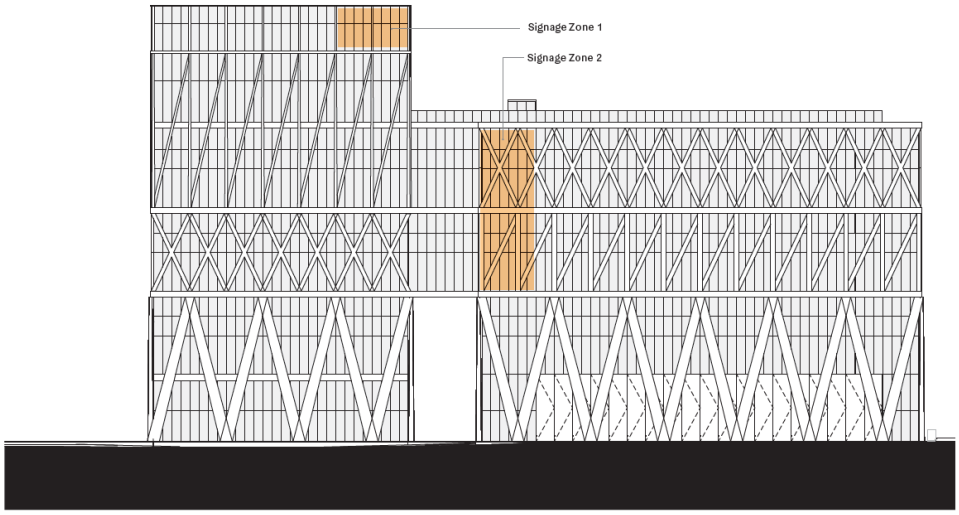
Figure 58 Roof terrace
Source: McGregor Coxall

4.6 Signage

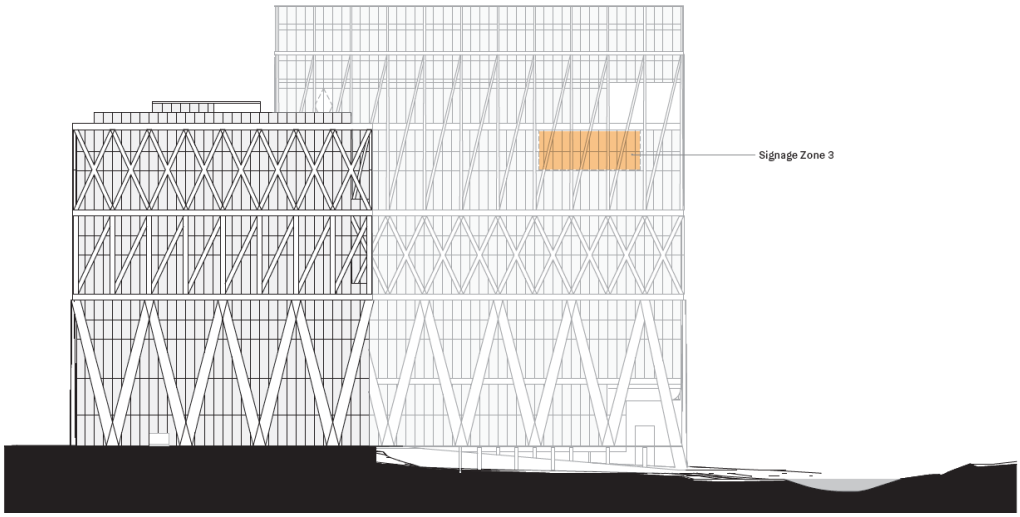
Three (3) signage zones are proposed on the building facades for the purposes of business identification (see **Figure 59**). These signs will identify Powerhouse Parramatta and are significant for wayfinding within the Parramatta CBD.

The zones define the location and maximum extent of signs to be mounted on the facade (refer to the elevations within the Architectural Drawings at **Appendix B**). Details of the exact content, materiality, and illumination of signs within these zones will be the subject of further detailed design to Powerhouse branding. It is proposed that the detailed signage design would be submitted to the Secretary prior to the issue of the relevant Construction Certificate, with the detail provided regarding the zones being sufficient for the planning assessment phase.

Other tenant and business identification signage associated with ancillary uses on the site, such as the retail tenancies and spaces, do not form part of this application and will be subject to separate future approval, as required, as part of the detailed fit out of these spaces.



Southern elevation



Eastern elevation

Figure 59 Proposed signage zones (orange) integrated into the building facades

Source: Moreau Kusunoki and Genton

4.7 Site operation

A key objective of the development is to be agile and adaptable, providing flexible consolidated facilities for the exhibition of the Powerhouse Collection across both public-facing and back of house areas that permit changes in the exhibition program and allow for the multiple uses of space. This will future-proof the institution and give it the ability to constantly evolve and expand its program in response to the needs of Sydney's growing diverse communities.

Powerhouse Parramatta has, therefore, been designed to support various programs and concurrent activities across the mixed living, working and cultural precinct. It is assumed that each of the different exhibition, presentation and research facilities will offer programs and operate concurrently with the working, retail, and temporary accommodation. People attending these diverse offerings will arrive and depart at different times, depending on the purpose of their visit.

In addition to the use of the proposed building, the public domain areas within the site have been designed to be porous and accessible as a new public space for the people of Parramatta. Because access is not controlled at the site boundaries, it is expected there will be concurrent pedestrian and recreational activities taking place at the same time as the programs within the Powerhouse Parramatta building. This activates the publicly accessible open space, provides access to the foreshore, and recreation areas within the Parramatta CBD, and will not be restricted on any typical day. During day to day operations uses within the public domain would typically be from visitors congregating, socialising, and recreating as well as patrons moving through the site and between the buildings.

The public domain areas are also intended to support temporary community activities and events. These could include live performances, temporary public art, public lectures, film/cinema pop-ups, cultural events such as Diwali, Eid, or Parramasala, and events which engage communities and contribute to the cultural calendar of Sydney and NSW. The majority of activities/events hosted on the site will be ephemeral smaller civic, community and cultural functions that can occur concurrently with other activities and exhibitions and are non-transactional (i.e. no purchased tickets).

Events hosted in the public domain outside of the typical day to day operations of Powerhouse Parramatta will be subject to separate and future approval. These could comprise activities hosted by the Powerhouse or other parties such as City of Parramatta Council, and will consider emergency and event access to the river foreshore within the site and how access to the site will be secured, if required.

4.8 Parking, access and movement

Powerhouse Parramatta will prioritise active and sustainable modes of transport, whilst also balancing the necessary operational requirements for the new cultural precinct.

4.8.1 Parking

Vehicle parking

No vehicle parking for general patrons, staff or visitors will be provided on the site as part of this development. Those that drive to the site will be required to park in surrounding streets or other existing public parking stations within the Parramatta CBD.

Bicycle parking

Dedicated bicycle parking for staff and patrons will be provided on site to promote increased active travel to Powerhouse Parramatta. This comprises 40 spaces for patrons that have been integrated into the Riverfront (lower ground level) area provided on site, which will be publicly accessible at all times. A further 30 spaces will be provided in a secure space for staff and authorised personnel also in the Riverfront area. This parking will be accessed via swipe cards and will be complemented by showers, changerooms, and lockers as end of trip facilities within the building.

Loading and servicing

Loading and servicing will primarily occur from Dirrabarri Lane and the two dedicated on-site loading docks provided in the south western corner at the ground floor of the western building. These comprise:

- An internal loading dock that will exclusively accommodate deliveries of the Powerhouse collection or exhibition items and can accommodate up to one 19m long vehicle or two 12.5m heavy rigid vehicle simultaneously.
- A second internal loading dock that will service the retail, catering and waste collection services, ensuring they are separate to the high value exhibition deliveries accommodated in the separate loading dock. This dock can accommodate a 10m medium rigid vehicle.

These loading docks have been designed so that all service vehicles will enter and exit the site in a forward direction at all times, with no vehicles required to reverse over public footpaths.

Two other areas are also identified for loading and servicing during the day. These comprise:

- the three (3) short-term parking spaces existing on the western side of Dirrabarri Lane; and
- within the coach drop off / pick up layby zone, between the hours of 6am- 9am when this area is not required for coaches (up to 10 spaces).

In addition, infrequent loading is proposed to occur from Wilde Avenue to enable direct access to Presentation Spaces 1 and 2 for large (19m long) vehicles. This would only be utilised when changing over large exhibitions in these spaces and would be scheduled to occur outside of peak times so as not to impact the operation of the transport network.

Loading and servicing will be managed via an on-site dock manager and dock management system that enables delivery times to be scheduled within the allocated areas.

4.8.2 Access

Pedestrians

A key design principle for the proposed development is to provide multiple entry points so that site can be approached and connected from all sides and visitors and local communities will be encouraged to walk through the precinct. The development has been designed so that the site remains accessible from both the Phillip Street and Wilde Avenue street frontages, the river foreshore, and via Dirrabarri Lane.

The primary entrance to the site for pedestrians will be from Phillip Street and the centralised circulation corridor that aligns with the future Civic Link. This central corridor funnels pedestrian movements through the heart of the site and assists with intuitive wayfinding from the Parramatta CBD.

There is the potential to enhance pedestrian connectivity in the future through provision of a laneway between the site and Church Street, and by providing a pedestrian ramp to the Lennox Bridge. These identified improvements would enhance the integration of the site to its surrounds, however, are not critical to or proposed as part of this development and would be subject to separate and future approvals by others.

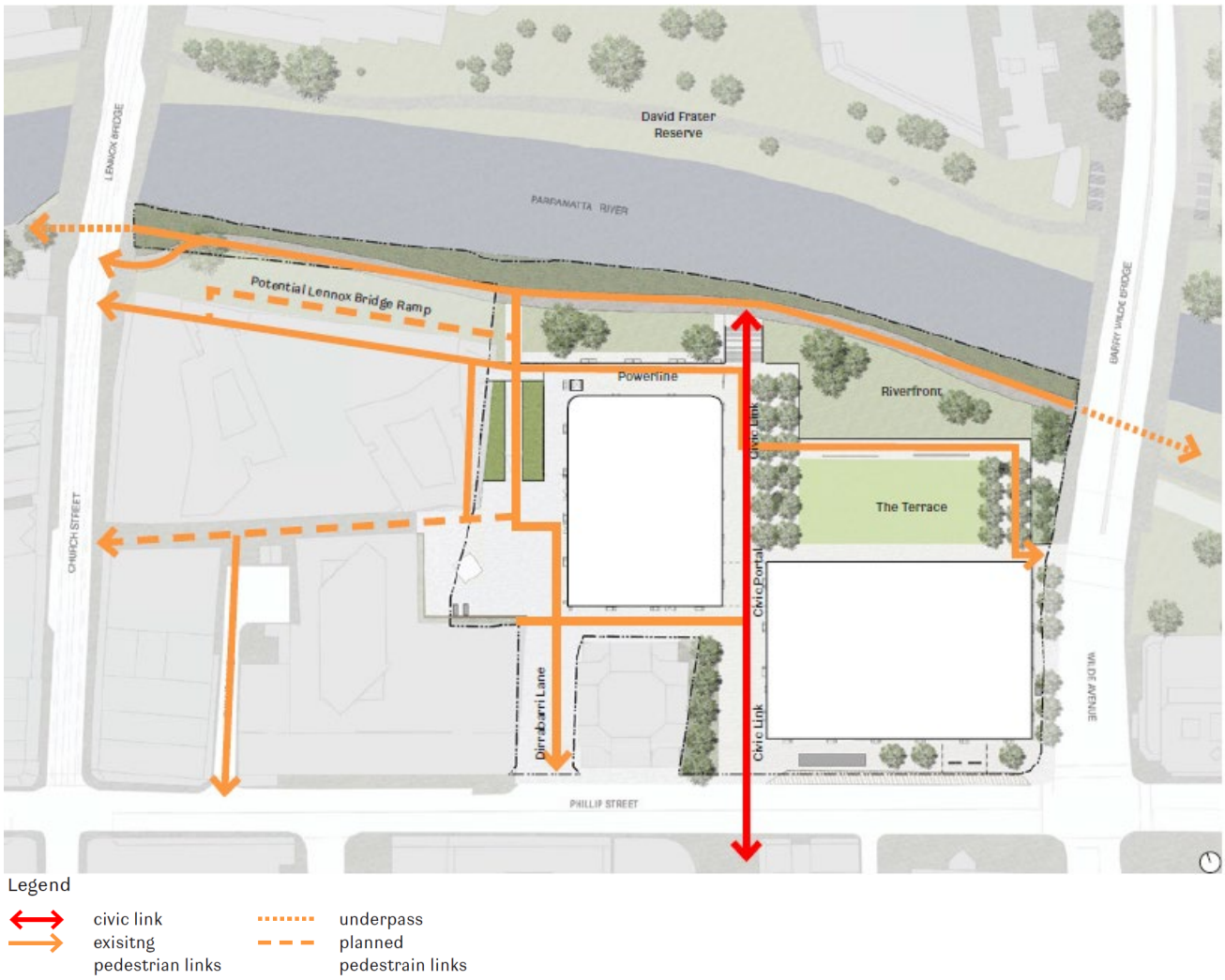


Figure 60 Pedestrian connections

Source: Moreau Kusunoki and Genton

Coaches

It is proposed to provide a coach pick-up and drop-off area on the northern side of Phillip Street bordering the south eastern corner of the site, with capacity for 3 coaches at one time. These kerbside spaces are to operate between 9:30am and 4pm, outside of the peak morning and evening commuter period, and will provide patrons (particularly school children) with safe and convenient access to the site. Coaches would be required to park off-site in nearby designated areas after dropping off visitors.

Vehicles

Owing to the constraints of the site, the desire to reduce congestion within the Parramatta CBD and to promote sustainable and active transport options, no on-site parking or point-to-point transfer spaces are provided on site and as such no vehicles will access the proposed development other than authorised loading and servicing vehicles.

Vehicle access to the Meriton development will be maintained via Dirrabarri Lane. No change is required to the existing easement facilitating access to the Meriton development through the western boundary of the site.

Emergency vehicle access to the precinct, and to Parramatta River, is facilitated via Dirrabarri Lane and the proposed ramp to the foreshore. There is also the option to use the central pedestrian spine (Civic Link) in certain circumstances and via George Khattar Lane to the rear of the site for vehicles less than 3.5m in height.

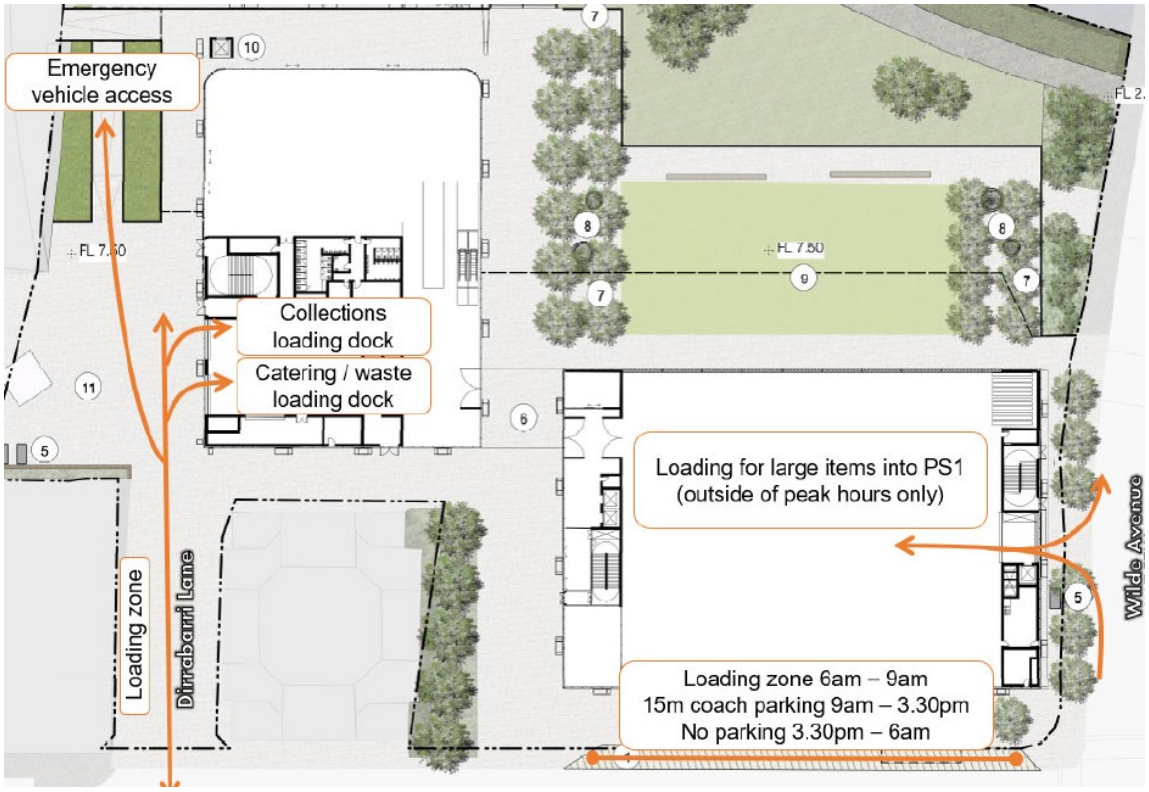


Figure 61 Vehicle access and loading and servicing on the site

Source: JMT Consulting

4.9 Sustainability

The proposed development has been designed to promote sustainable design principles including energy conservation, reduction of waste, water usage reduction, and materials from sustainable sources. The proposed development will utilise the Green Star for New Buildings rating tool, which includes targets that directly address the UN Sustainable Development Goals and encourages ambitious building design to significantly reduce the impact the built environment has on aggravating climate change. The proposed development will utilise this tool, as well as targeting Green Star 5 star minimum rating using the current Green Star Design & As Built rating tool. Whilst formal certification cannot be achieved until after the construction phase is completed, the ESD report prepared by Arup (**Appendix U**) outlines how the development will target this rating.

4.10 Site preparation works

Demolition

To facilitate Powerhouse Parramatta it is proposed to demolish the existing buildings including the de-commissioning of utility infrastructure servicing to these buildings and any diversions/relocations required to ensure that utility supply to surrounding facilities and building are retained and not disrupted. This includes demolition of the Riverbank Carpark, Willow Grove, St George's Terrace, and the substation and commercial buildings fronting Phillip Street, as well as the existing at-grade parking areas, footpaths and all other general site improvements.

An extract of the demolition plan prepared by Moreau Kusunoki and Genton is provided at **Figure 62** below.

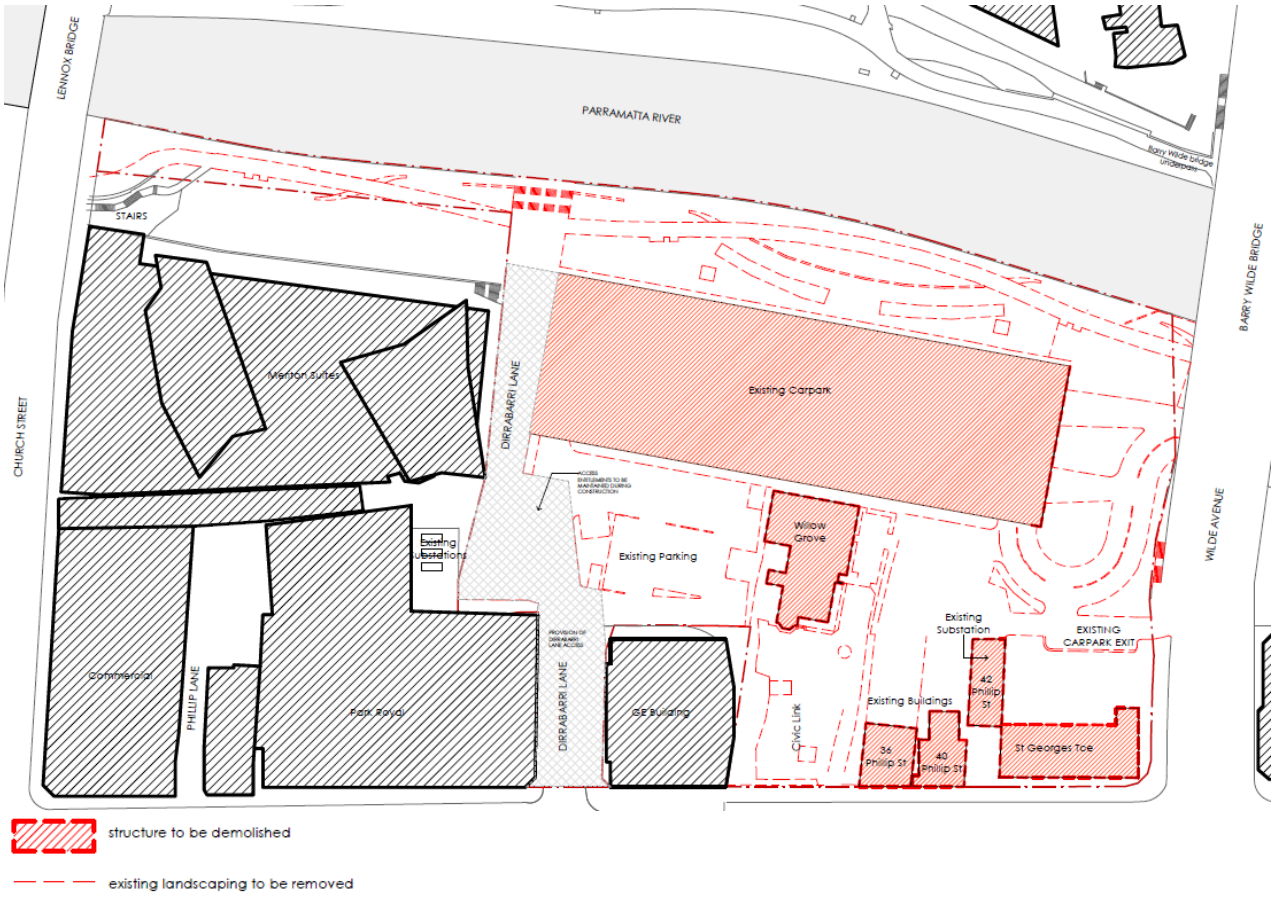


Figure 62 Extract of demolition plan

Source: Moreau Kusunoki and Genton

Remediation

On the basis of investigations completed for the site to date, areas of the site will be remediated to address elevated levels of soil contaminants exceeding the adopted assessment criteria in certain locations. The impacted areas of the site as shown in **Figure 63** below and comprise area of approximately of 300m^2 with impacted fill-based soils to a depth of 0.5m in the centre of the site, an area of approximately of 250m^2 with impacted fill based soils to a depth of 0.4m in the east of the site, an area of 1,500m^2 and to a typical depth of 0.5m in the south eastern portion of the site. No remediation is required in the north or north western areas of the site as exceedances were at a depth that did not present a risk to recreational or ecological exposures, there was no evidence of ecological stress, or specialised growing media is to be imported into these areas to support landscaping.

The contaminated soil in the three (3) identified locations for remediation will be excavated, stockpiled, and transported to an approved waste facility, and the soil replaced with clean fill where needed. This includes the initial excavation of friable asbestos or asbestos fine impacted soils in the south eastern corner of the site. Notification of remediation works will be given to Council at least 30 days prior to commencement, and within 30 days from the completion of remediation works.

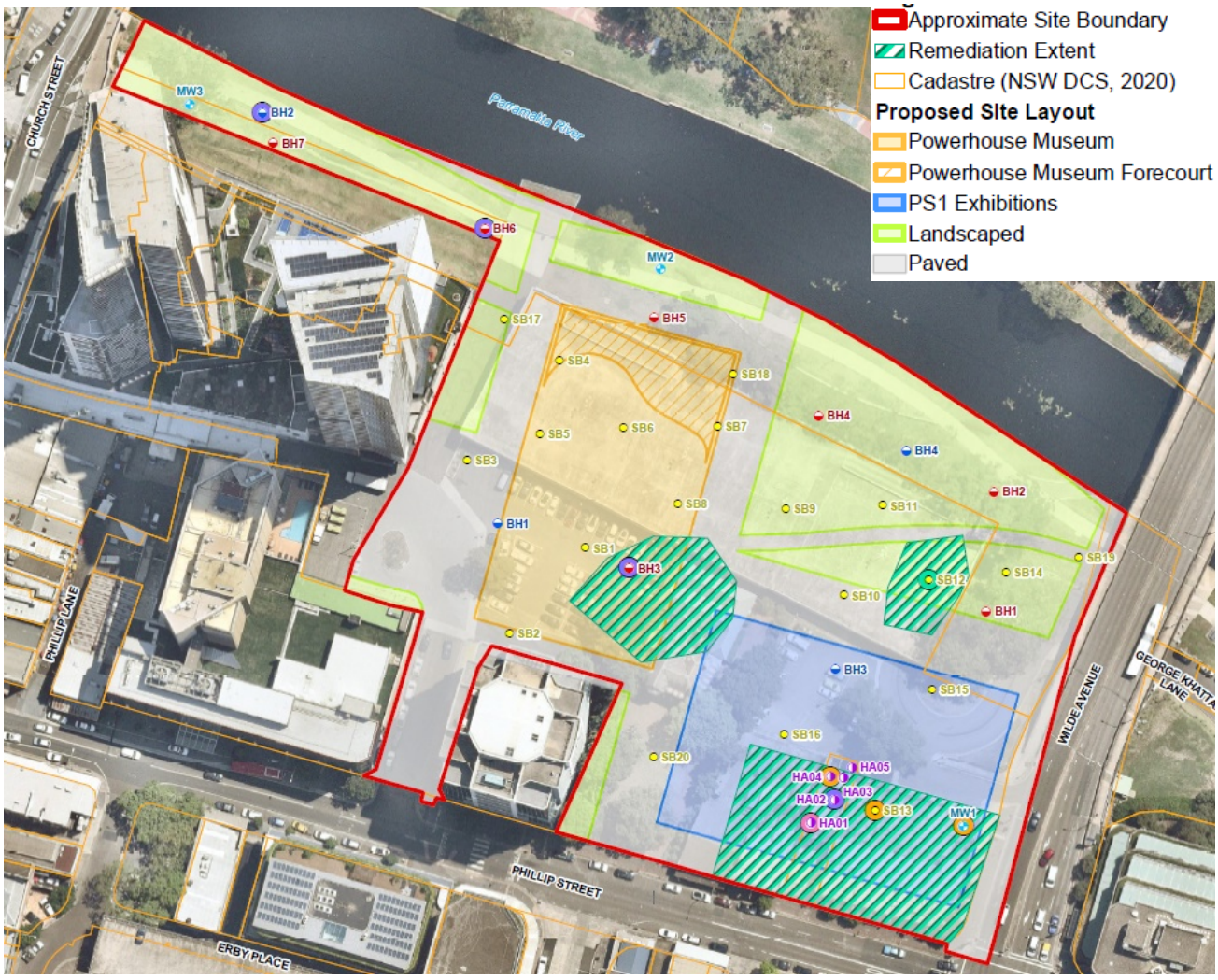


Figure 63 Extent of remediation works

Source: JBS&G

Earthworks

In addition to the remediation works described above, it is proposed to undertake bulk earthworks to prepare the site for the proposed buildings including foundations and piling and the proposed public domain areas. The majority of the site will require minor filling (1-2m) to raise the grading levels in anticipation of floor slabs, with a portion in the centre of the site to be raised to a maximum 5m (see **Figure 64** below). Areas of soils may also be removed and replaced where the Preliminary Geotechnical Investigation prepared by JK Geotechnics (**Appendix S**) has indicated that the underlying soils could have poor and moderate strength material.

Figure 64 Proposed earthworks

Source: Aver

Tree removal

The proposed development will necessitate the removal of 54 trees as identified in the Arboricultural Impact Assessment prepared by TreeIQ (**Appendix J**). Those trees to be removed are located within the footprint of proposed works for Powerhouse Parramatta or will obstruct the construction of buildings or permanent circulation through the site and as such cannot be retained, or are identified as being in poor condition and are a priority for removal.

One (1) tree will be retained and protected on site including an existing mature tree on the southern riverbank adjacent to Lennox Bridge (Tree 1). The Arboricultural Impact Assessment outlines the tree protection measures which are to be put in place for the duration of the demolition and construction phases.

Figure 65 Trees to be removed and retained (outlined blue) on site

Source: McGregor Coxall

4.11 Waste management

The operational waste generated by the ongoing use of the proposed development will be managed in accordance with the Operational Waste Management Plan prepared by Arup (**Appendix BB**). Waste generated during operation will be collected, transported via the goods lift to a central waste room in the loading dock area on the ground level of the western building. The central waste room will be compliant with BCA and all relevant Australian Standards and will not be visible from the exterior of the building. Waste collection is likely to occur three times per week for recycling and general waste, and as arranged for hazardous and sanitary waste and for less frequent waste streams such as e-waste or bulky waste.

4.12 Water cycle management

The Flood Risk and Stormwater Management assessment prepared by Arup (**Appendix O**) details the proposed water cycle and management works to support the proposed development. These include:

- Employing a range of water quality treatment works including providing gross pollutant traps, filters and litter baskets to manage the quality of stormwater leaving the site.
- Undertaking both civil and stormwater drainage solutions including regarding the surface elevation along Dirrabarri Lane to maintain the Phillip Street overland flow path, upgrading/ augmenting the existing trunk drainage to convey additional flows, and providing a new drainage line to convey flows east and connect with the trunk drainage under Wilde Avenue Bridge.

No on-site detention is proposed. There is the potential to install a future rainwater tank.

4.13 Utilities and services

In order to support the operation of the development it is proposed to relocate, alter or augment infrastructure for the site including stormwater, sewer, water, gas and communications, which will be subject to further discussions and approval from the relevant asset owners and authorities. The Infrastructure Management Plan at **Appendix P** identify the following works at this preliminary stage:

- **Electricity** – provision of power to the site is expected to be an extension of 11kV network from Phillip Street or Wilde Avenue to a new pad mount substation. The existing substation on site will be removed or relocated to an agreed location with Endeavour Energy.
- **Telecommunications** – diverse lead-in's will be required with the connection points located on Wilde Avenue and Phillip Street. Specific details of proposed telecommunication works will be dependent on the development's carrier of choice.
- **Main Water** – it is envisaged that a new water connection will be via the 150mm water main at Phillip Street, with the potential to amplify this main to 200mm to service the demand of the site. There is also future plans for a municipality recycled mains water reticulation within the area that could serve the Powerhouse Precinct, however plans have not been finalised.
- **Sewer** – sewer connections to existing buildings on site will be disconnected and removed as part of early works and site preparation. New sewer connections will be made through an existing junction within the 525mm sewer main that runs parallel to the Parramatta River. Various correspondence with Sydney Water suggests that amplification of the 525mm sewer main may be required.
- **Gas** – a new gas connection is proposed using the medium pressure main on Phillip Street. At this stage, the full extent of gas demand for the site is unknown.

4.14 Construction management

A Preliminary Construction Management Plan has been prepared by Aver (**Appendix R**), which is intended to establish the overarching principles and practices for the management of construction activities. The Plan establishes site management principles that are to inform the preparation of a detailed Construction Environmental Management Plan which would be required to be prepared by the appointed contractor prior to the commencement of works and adhered to for the duration of construction.

Hours of work

All work on the site will occur between the following hours:

- 7am and 6pm Monday to Friday.
- 8am and 5pm Saturday.
- No works on Sundays or public holidays.
- Other times outside of the above hours only where approved in writing by the NSW Department of Planning, Industry and Environment due to extenuating circumstances (e.g. erecting and dismantling tower cranes, services connections and other works that would unduly interfere with the surrounding area or road network during normal daytime hours and should therefore be completed out of hours).

Works between 1pm and 5pm on Saturday are to be undertaken in accordance with the *Environmental Planning and Assessment (COVID-19 Development – Construction Workdays) Order 2020*.

It is intended that heavy vehicle movements such as the delivery of machinery would occur outside of peak periods.

Site protection

Fencing will be constructed around the perimeter of the site to control access to the construction site and to protect pedestrians and cyclists using Phillip Street, Wilde Avenue and the shared path along the Parramatta River foreshore. The proposed fencing ensures existing pathways (including emergency vehicle access to the foreshore) are maintained (see **Figure 66**) where possible during the construction process.

There may be temporary interruptions to the link along the Parramatta River during the construction process, at which time diversions will be put in place so that pedestrians and cyclists can continue to travel along the southern bank of the Parramatta River.

Figure 66 Site protection

Source: Aver

Waste management

All excavated material and construction waste generated will be placed onsite with the final location to be determined by the contractor and transported to the appropriate recycling and waste facility. The central construction compound area identified in **Figure 66** above may be used for waste processing activities including the separation of waste streams, storage and processing to enable re-use of materials on-site, or recycling and disposing of materials where this is not possible in the construction phase.

All material from the works will be recycled excluding selected soft demolition materials and hazardous materials such as asbestos, which will be transported to the appropriate recycling and waste facility. 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.

Air quality controls

Whilst odour problems are not associated with this type of construction work and are expected to be negligible/ minimal, dust emissions are expected to occur as a result of the proposed construction works. Mitigation measures will be implemented to avoid dust generation, including both on-site practices such as limiting or ceasing crushing activities or enacting other dust suppression measures when there are high winds (>30 km/h). Physical measures will also be employed such as erecting screens and barriers around dusty activities. No concrete crushing will occur on site.

Work zones

A work zone is proposed to be established in the northern side of Phillip Street, to allow for the delivery and use of large items such as cranes. Hoarding will be installed adjacent to the work zone to provide protection to pedestrians walking along Phillip Street, with the Phillip Street footpath will remain open at all times during the construction period.

This work zone will require the temporary removal of five on-street parking spaces during the nominated construction hours. Whilst these spaces may then be used as normal outside of construction hours, the spaces will be permanently removed at the conclusion of construction in order to facilitate the proposed coach pick-up and drop-off zone.

Vehicle access and parking

Three (3) vehicle access points will be used during the construction process, comprising the existing vehicle entries of Dirrabarri Lane and George Khattar Lane and a new entry location from Phillip Street (see **Figure 67**). The vehicle height clearance for George Khattar Lane is 3.5m and as such this location will only be used for smaller construction vehicles and general deliveries. Wilde Avenue will be used as the egress route for all vehicles.

It is expected that during a busy construction day, the number of heavy vehicles will include 40-60 trucks during the demolition phase and 100-120 trucks during the construction phase. There are expected to be 7 vehicles arriving to the site during the demolition phase and 65 vehicles during the construction phase, which will typically occur prior the 7am start time and outside of the peak AM period.

Construction traffic will travel to and from the site using main roads only in order to access the regional road network. Within the immediate vicinity of the site, this will involve the M4 Motorway, James Ruse Drive, Pennant Hills Road and Victoria Road to avoid travelling through the Parramatta CBD and impacting adjacent construction projects including Stage 1 of the Parramatta Light Rail. No queuing or marshalling of construction vehicle will be permitted on public roads. Vehicular access to the neighbouring Meriton development will be maintained throughout.

Owing to the extent of works occurring on the site, no on-site carparking will be provided for construction workers. Workers will instead be required to arrive by public transport or park in nearby parking stations.

No road closures are identified as being necessary for the redevelopment of the site.

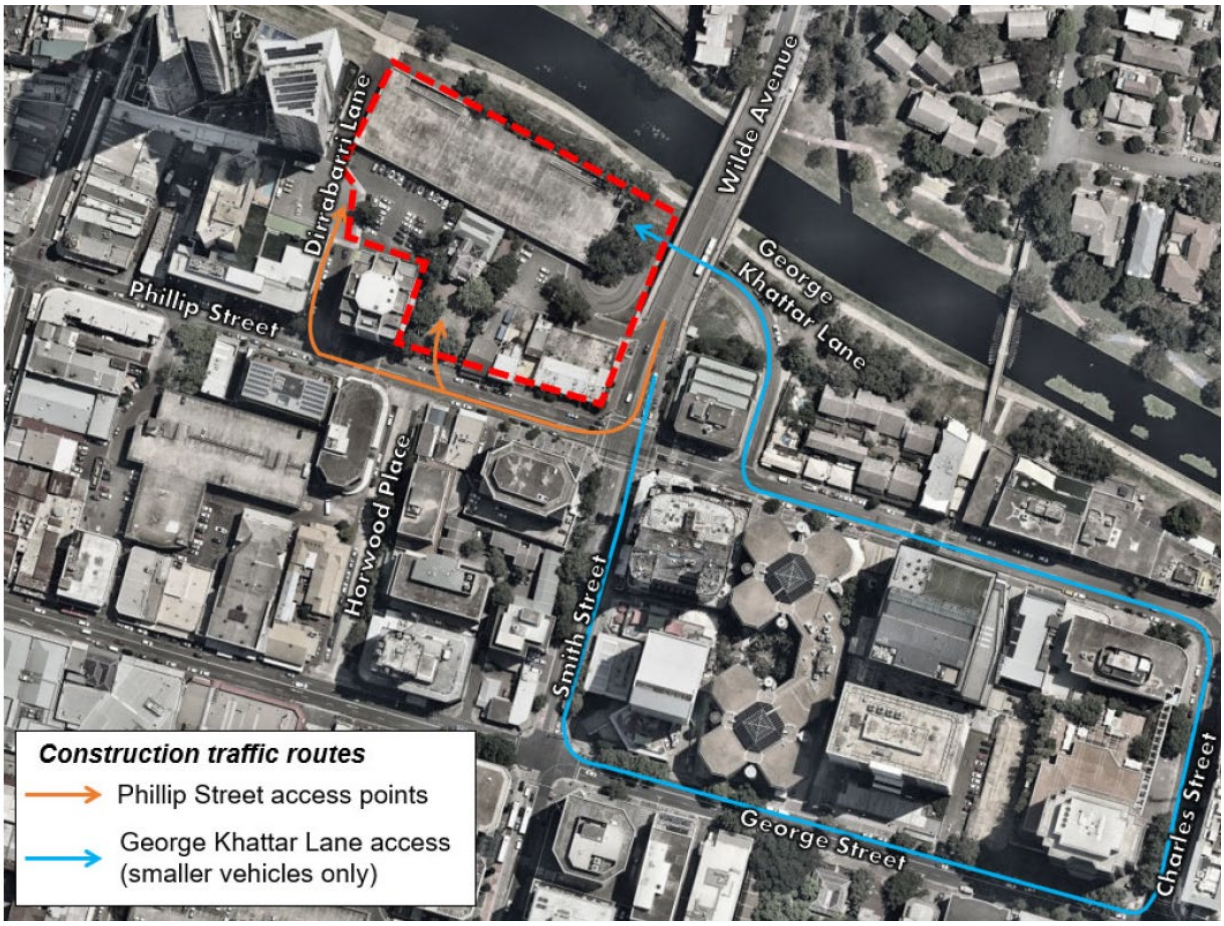


Figure 67 Construction vehicle access points

Source: JMT

Construction staging

It is envisaged that the proposed construction process will take three (3) years to complete, commencing in early to mid-2021. As the project is in the preliminary planning stage, the following timeframes outline in the table below may vary.

Table 6 Indicative construction program

Activity	Duration
Sites establishment and demolition	2-3 months
Bulk and detailed excavation and piling	4 months
Archaeological investigations	During the construction process
Construction	24 months

5.0 Legislation, policies and requirements

This section of the report assesses and responds to the environmental impacts of the proposed DA. It addresses the matters for consideration set out in the SEARs (see **Section 1.5**). The Mitigation Measures at **Section 8.0** complement the findings of this section.

5.1 Secretary's Environmental Requirements

Table 1 in **Section 1.5** provides a summary of the individual matters listed in the SEARs and identifies where each of these requirements has been addressed in this EIS and the accompanying technical studies.

5.2 Environmental Planning and Assessment Act 1979 & Regulation 2000

The EP&A Act establishes a specific assessment system to consider projects classed as State Significant Development (SSD). SSD is development deemed to be of State significance and includes for example projects of a certain value that are being completed on sites regarded as important to the NSW Government, such as the Sydney Opera House, or for a particular purpose such as a new museum. As noted, the proposed development that is the subject of this DA is categorised as SSD.

This EIS has examined and taken into account all possible matters affecting or that are likely to affect the environment by reason of the proposed development. **Table 7** provides an assessment of the proposed development against the objects of the EP&A Act.

The proposed development is consistent with Division 4.1 of the EP&A Act, particularly for the following reasons:

- the development has been declared to have state significance;
- the development is not prohibited by an environmental planning instrument; and
- the development has been evaluated and assessed against the relevant heads of consideration under Section 4.15(1).

In addition to the above, the EIS has addressed the criteria within Clause 6 and Clause 7 of Schedule 2 of the EP&A Regulation. Similarly, the EIS has addressed the principles of ecologically sustainable development through the precautionary principle (and other considerations), which assesses the threats of any serious or irreversible environmental damage (see **Section 6.20**).

Table 7 Objects of the EP&A Act

Object	Comment
Section 1.3: (a) to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources,	The proposal has the potential to provide a range of social and economic benefits and has been carefully designed and tested, and will be monitored through the delivery and operational period, to ensure that it does not result in any adverse cultural or environmental impacts. This is detailed further in **Section 6.0** and the Mitigation Measures in **Section 8.0** of this EIS.
(b) to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment,	The principles of ESD, as set out in Schedule 2 of the EP&A Regulation 2000, as well as other relevant economic, environmental and social considerations have been addressed in this EIS and the accompanying information. **Section 6.20** of the EIS demonstrates how such factors have been considered in the detailed design and development of the development.
(c) to promote the orderly and economic use and development of land,	The proposed development will facilitate the renewal of the site from a commercial carpark and smaller mixed-use developments to a new museum destination incorporating exhibition, research, community and civic spaces. It represents the highest and best use of the site, delivering significant public benefits in terms of access to arts, culture, education and research facilities. Powerhouse Parramatta will be the first major, world class cultural institution to be established in Western Sydney.

Object	Comment
(d) to promote the delivery and maintenance of affordable housing,	The proposed development is primarily for the purposes of an information and education facility, however, limited accommodation is to be provided on site to support the operation of the Powerhouse Parramatta. These comprise the Powerlab Residences and The Academy which will provide short-stay accommodation for artists, students, researchers and scientists to collaborate, create, research and live. The persons staying in the accommodation will be associated with exhibitions, programs, workshops and lectures hosted on the site, or students engaging in science education.
(e) to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats,	The proposed development takes place in a modified and disturbed environment, which does not impact on biodiversity values. The site is not considered to have habitat suitable for any threatened flora and fauna. A waiver request was made to the Department and OEH confirming that a Biodiversity Development Assessment Report is not needed for this proposal, and the waiver was granted on 14 May 2020.
(f) to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage),	Powerhouse Parramatta will have a significant focus on showcasing Aboriginal cultural heritage, science and art through the programming of exhibits and educational programs, with direct connections to the Aboriginal history of the occupation of the Parramatta area which dates back over 30,000 years. Whilst the demolition of Willow Grove and St George's Terrace will have a negative heritage impact, the loss of these items is unavoidable given the unique opportunity to create a significant and important cultural institution at the northern terminus of the Civic Link on the banks of the Parramatta River. Mitigation measures will be implemented to record and interpret the presence of these items. Powerhouse Parramatta will itself represent a significant item of built and cultural heritage for the existing and future communities of Parramatta, the Central River City, NSW and Australia as a world-leading cultural institution. Accordingly, the proposed development is considered to represent an appropriate management approach to built and cultural heritage.
(g) to promote good design and amenity of the built environment,	Powerhouse Parramatta is the result of a two-stage international design competition, with the winning scheme promoting good design and amenity and exhibiting design excellence in accordance with the Parramatta LEP. An assessment of the proposed Powerhouse Parramatta and associated public domain is provided in **Section 6.0** of this EIS and in the appended technical assessments including the Design Excellence Report at **Appendix D**.
(h) to promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants,	The Powerhouse Parramatta has been designed as an accessible, inclusive and world-class destination within Sydney. It will meet the relevant design standards and has been carefully designed to ensure it is adaptable and will continue to be fit for purpose into the future.
(i) to promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State,	Consultation has been undertaken with various levels of government and government agencies during the preparation of this Development Application as outlined in **Section 3.0**, and all agencies will be afforded the opportunity for further input into the development process during the public exhibition process.
(j) to provide increased opportunity for community participation in environmental planning and assessment.	Community consultation and participation to date has informed the proposed design and operation of the development, as detailed in **Section 3.0** of the EIS. Further consultation will be carried out during the exhibition of the application, during the design development phase of the project, and throughout construction in accordance with best practice.

As required by Clause 7(1)(d)(v) of Schedule 2 of the EP&A Regulation, the following additional approvals set out in **Table 8** are either not required by virtue of the fact that the project is SSD, or because they are not required in order to permit the proposed development to occur.

Table 8 Other legislation which does and does not apply

Act	Approval Applicable/ Required?
Approvals that do not apply to State Significant Development	
Coastal Protection Act 1979	N/A
Fisheries Management Act 1994	N/A
Heritage Act 1977	N/A
National Parks and Wildlife Act 1974	N/A

Act	Approval Applicable/ Required?
Native Vegetation Act 2003	N/A
Rural Fires Act 1997	N/A
Water Management Act 2000	N/A[1]
Legislation that must be applied consistently	
Fisheries Management Act 1994	No
Mine Subsidence Compensation Act 1961	No
Mining Act 1992	No
Petroleum (Onshore) Act 1991	No
Protection of the Environment Operations Act 1997	No
Roads Act 1993	No
Pipelines Act 1967	No

5.3 Compliance with strategic planning framework

The proposed development is generally consistent with the provisions of the relevant planning policies identified in the SEARs, as detailed in the following sections and other supporting technical information appended to the report.

5.3.1 Greater Sydney Region Plan – A Metropolis of Three Cities

The *Greater Sydney Region Plan* is the overarching strategy for growing and shaping the Greater Sydney Area. It sets a 40-year vision (to 2056) and establishes a 20-year plan to manage growth and change for Greater Sydney in the context of social, economic and environmental matters.

The plan was adopted in March 2018 and seeks to reposition Sydney as a metropolis of three cities – the Western Parkland City, Central River City, and the Eastern Harbour City. In the same vein as the former *A Plan for Growing Sydney*, the Plan provides 10 high level policy directions supported by 40 objectives that inform the District Plans, Local Plans and Planning Proposals which follow in the planning hierarchy.

Under the Plan, the site is located in the Central River City within the Greater Parramatta and the Olympic Peninsula (GPOP) Economic Corridor. The Central City is expected to grow substantially as it capitalises on its location close to the geographic centre of Greater Sydney and unprecedented public and private investment in infrastructure, including the Parramatta Light Rail and Sydney Metro West. Powerhouse Parramatta is in the Parramatta CBD which is set to become Sydney's second CBD.

[1] As the proposed development is within 40 metres of a natural water course it would, but for the project being SSD, require an activity approval under section 91 of the *Water Management Act 2000*.

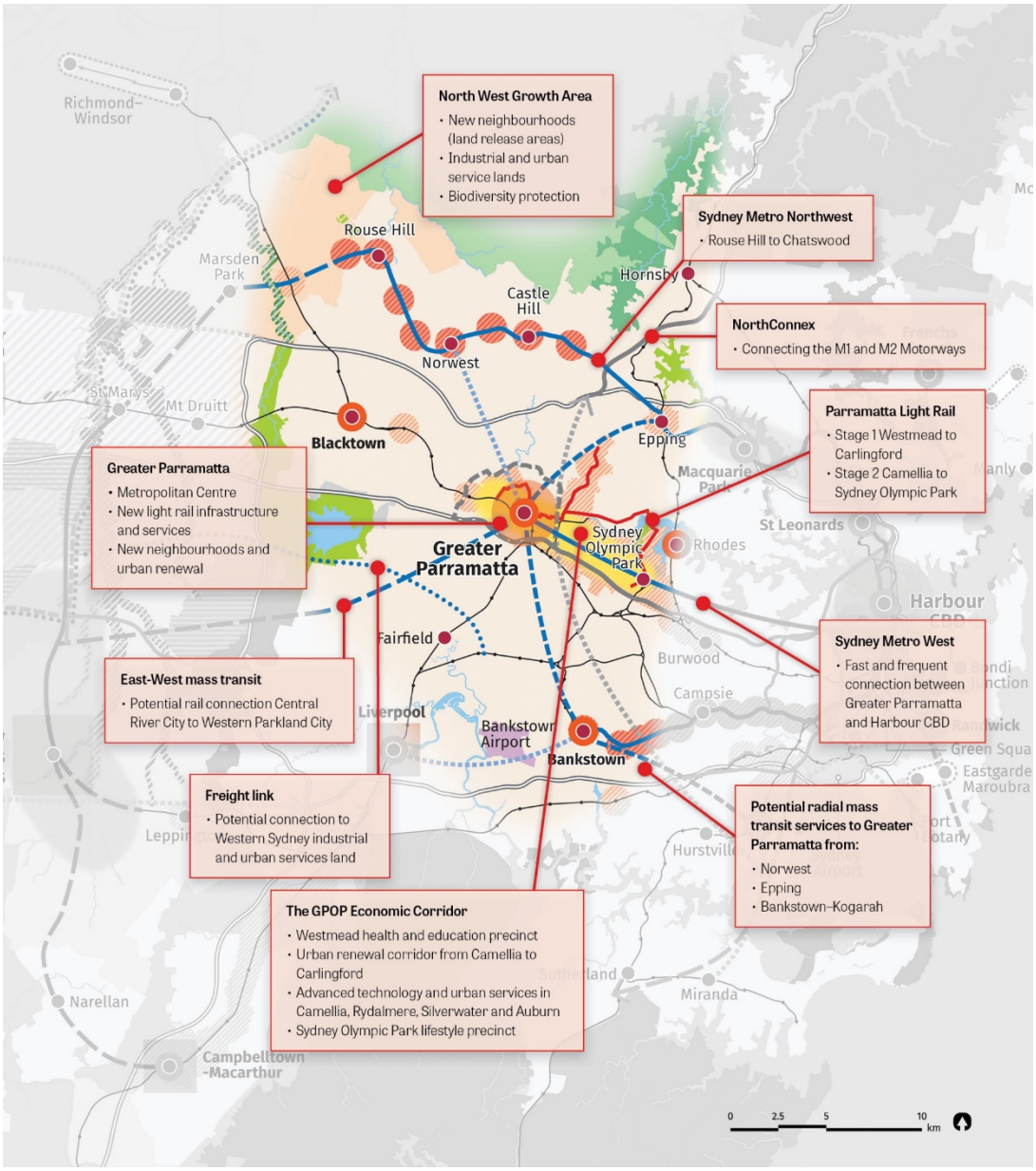


Figure 68 Features of the Central City

Source: Greater Sydney Region Plan

The proposal is consistent with the strategic directions for the growth and development of Sydney as follows:

A city supported by infrastructure

- The development of Powerhouse Parramatta will support the attraction of Sydney to domestic and international visitors and the ability to hold and attract major events.
- The Powerhouse benefits from existing and planned public transport infrastructure, including the new Parramatta Light Rail and Sydney Metro West. This infrastructure will ensure that the Powerhouse is supported by adequate transport capacity and with improved accessibility.

A collaborative city

This direction acknowledges that managing the competing needs of the city requires all levels of government, industry and the community to work together:

- Whilst Powerhouse Parramatta is not identified as being within a 'collaboration area' in the Regional Plan, the Parramatta CBD is being transformed as a key area for arts and culture. Powerhouse Parramatta will act as a flexible and inclusive space for exhibitions, performances, creating, making and learning.

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- Powerhouse Parramatta will be supported by, and will support, existing and future arts and cultural facilities including existing Parramatta Riverside Theatres and the Parramatta North Heritage Core. This has the potential to provide synergies in the arts and cultural sector and promote collaboration.
- The Powerhouse Parramatta remains consistent with the existing and long-term strategic vision for the GPOP area.

A city for people

- The proposed development will dramatically improve the usability of the site. This includes the provision of social infrastructure and the enhancement of public open space.
- Powerhouse Parramatta has been designed to meet best-practice standards in universal design and compliance with the applicable Building Code of Australia provisions and Australian Standards.
- Powerhouse Parramatta will contribute to the provision of an arts and cultural precinct within the CBD to benefit Western Sydney, and NSW more broadly.
- Powerhouse Parramatta will support a social dynamic that will build a community that is 'strong, healthy and well connected'. It has been designed as a new destination that supports social interactions and community knowledge sharing, as well as active and sustainable transport and recreation.
- The development of the Powerhouse Parramatta will provide an enjoyable experience to people of different ages, backgrounds and socio-economic statuses.

Housing the city

- The proposed development will not provide permanent housing. The proposed serviced apartments will create a unique work-live collaboration space for artists and researchers to enmesh themselves within the operations of the Powerhouse.
- The proposed development envisages the use of the site as a cultural, arts, education, research and recreation precinct. Specialist temporary accommodation is provided on site, and integrated with Powerhouse Parramatta, which will complement the program of exhibitions, research, teaching, collaboration and events on the site.

A city of great places

- Powerhouse Parramatta is located in proximity of concentrated employment uses, as well as retail, education and entertainment opportunities, and offers 'more than just new homes and jobs'. The development provides a new unique mixed use precinct that complements the surrounding diversity of uses and the growing prominence of the Parramatta CBD as Sydney's second CBD.
- The development will create a new destination and contribute to the activation of the surrounding area, making a positive contribution to the quality of place within the local area and enhancing the value of the Parramatta CBD as an arts and culture precinct.

A well-connected city

- Powerhouse Parramatta is located in the heart of the Central City District and the GPOP Economic Corridor, with close access to surrounding jobs, schools, services and surrounding strategic centres. The proposed development embodies the objectives for this corridor, as addressed further in **Section 5.3.3** below.
- Powerhouse Parramatta will also benefit from and leverage off existing and planned transport connections, including the Parramatta Light Rail and Sydney Metro West.

Jobs and skills for the city

- The proposal directly benefits job creation and more widely contributes to local hospitality, arts and culture, education, science and entertainment industries and the global presence of Western Sydney.
- The improved arts and culture facilities are assets that will contribute to the visitor economy in Western Sydney and NSW more generally. The development of Powerhouse Parramatta will directly contribute to the long-term strength of the visitor economy by providing new facilities with the ability to attract new exhibitions and major events, and accommodate new programs, research and collaboration.

A city in its landscape

- The proposal provides the retention of 1 tree and the provision of a significant number of new trees and soft landscaping that is appropriate to the climate and local context.
- The proposed landscaping will contribute to an increase in the urban canopy and the landscaped setting on site
- The proposal does not affect any protected biodiversity or remnant or significant vegetation.

An efficient city

- The proposed development will follow a sustainability strategy that will contribute to resilience and longevity.
- Powerhouse Parramatta will achieve 5 Star Green Star rating and undertake a number of initiatives over and above this certification.

- Powerhouse Parramatta will follow a Zero Carbon Transition Plan to the support the delivery of various global, national and state sustainability policy objectives.

A resilient city

- The proposal minimises exposure to natural hazards by ensuring that the future development overall climate adaption and resilience as outlined in **Appendix U.**
- The environmental initiatives implemented through the development contribute to enhanced environmental outcomes and seek to mitigate impacts related to climate change.
- Increasing tree canopy to reduce urban heat island effect and provide shaded areas for patrons and the general public.

5.3.2 Central City District Plan

The *Central City District Plan* underpins the *Greater Sydney Region Plan* and sets the 20-year vision for the District through 'Planning Priorities' that are linked to the Regional Plan. The proposal is consistent with a number of these priorities, as follows:

- **Infrastructure and Collaboration:** Powerhouse Parramatta delivers a key piece of cultural infrastructure that supports the ongoing attraction of Sydney. It is being constructed in an area that is well integrated with existing and planned public transport infrastructure, including the Parramatta Light Rail and the Sydney Metro West. The proposal supports the ongoing attraction to Sydney of domestic and international visitors.
- **Liveability:** The proposed development will be accessible and inclusive. Powerhouse Parramatta will directly reflect the culturally diverse population of the Greater Parramatta Region through its culturally inclusive approach to the built environment and the establishment of a culturally diverse workforce. Additionally, Powerhouse Parramatta recognises the importance and value of preserving, revitalising and strengthening the history, cultures and achievements of Australian Aboriginal and Torres Strait Islanders. This will be done through the continuing practices in applied arts and sciences and the establishment of personal connections with the Indigenous community. Further, the design of the Powerhouse will ensure that it is accessible by all abilities ages and characteristics, creating a more inclusive development and social dynamic that will build a community that is 'strong, healthy and well connected'
- **Productivity:** Powerhouse Parramatta directly contributes to the long-term strength and productivity of the visitor economy. The development will deliver world-class opportunities for education and research, alongside exhibition space, and space for social and digital interaction and exchange in Western Sydney, which will further support local identity and innovation. This will attract both domestic and international exhibitions and events resulting in increased domestic and international tourism. It supports broader economic growth in the region, as a direct benefit of the increased tourism and activity.
- **Sustainability:** The removal of existing landscaping will be replaced with a number of trees and soft landscaping throughout the site. The development will target a minimum 5 Star Green Star rating and zero carbon emissions. Powerhouse Parramatta will meet various global, national and state sustainable policy standards through the generation of renewable energy, on site recycling and treatment facilities and encouraging the use of active transport.

The site is identified as being in the heart of the Central River City and within the GPOP Economic Corridor and the Parramatta CBD. Powerhouse Parramatta is identified as a major contributor to tourism and visitation in the Central City, and the growing prominence of Parramatta as Sydney's second CBD. Powerhouse Parramatta will utilise and support major investment in transport infrastructure, including the Parramatta Light Rail and Sydney Metro West.

Renewing and diversifying the use of the site fulfils long term goals for the Central City District in regard to infrastructure and collaboration, liveability, productivity and sustainability. It will support the visitor economy and the attraction of local, national and international guests to Western Sydney, and NSW more generally.

5.3.3 Greater Parramatta and the Olympic Peninsula (GPOP) Vision

The *Greater Parramatta and the Olympic Peninsula (GPOP) Vision* sets out a city shaping vision for the 'true centre of Sydney.' The plan states that through collaboration and co-creation, the GPOP corridor can realise its potential to be an engine of the economy and a centre of creativity and innovation by 2036 and beyond.

The GPOP Vision identifies the Parramatta CBD as the commercial and civic centre of this economic corridor (**Figure 69**). The Parramatta CBD will be a thriving, accessible and inclusive civic heart with its own rich history and

diverse cultures. The relocation of the Powerhouse from the Eastern Harbour City to the Parramatta CBD acts as a precedent for future art and culture facilities to be located within the GPOP Peninsula. The Powerhouse Parramatta will fulfil two Key Directions within the GPOP Vision:

- *Direction 1: Maintain strong investment momentum in the principal economic anchors of Parramatta CBD-Westmead and Olympic Park*
  Powerhouse Parramatta represents the single largest investment in culture and arts in Western Sydney to date, embodying a significant commitment to the ongoing strength and viability of the Parramatta CBD as a principal anchor in Greater Sydney and the GPOP economic corridor.
- *Direction 4: Cultivate world-class sports, entertainment, cultural and arts destinations across Parramatta CBD, Rosehill and Olympic Park*
  Powerhouse Parramatta will directly achieve this directive in providing a significant cultural destination within the Parramatta CBD. This development will contribute to balancing the opportunities and investment in arts and culture for Western Sydney, which has historically focussed within the Eastern Harbour City.
- *Direction 10: Stimulate engagement with Parramatta's rich history and development of cultural assets, and celebrate the extraordinary diversity of people in our city's central heart*.
  This will be achieved through a celebration and acknowledgement of Indigenous and Non-Indigenous history and culture. Powerhouse Parramatta will also reflect the diversity of character and needs that is evident within the GPOP corridor and the wider Western Sydney region.
- *Direction 12: Shape attractive and effective built environments and public spaces that reflect a focus on great urban design and environmental excellence*.
  The proposed development has been the subject of a two stage international design competitions, resulting in a site-specific and purpose-built design outcome for the new museum and public domain areas. The Powerhouse Parramatta achieves excellence in architectural and landscape design (see **Section 5.4** below) and will contribute to the prominence of the Parramatta CBD.

The development of Powerhouse Parramatta will enrich the innovation, science, education and cultural sector within the Parramatta CBD and the GPOP corridor. It will place GPOP at the forefront of cultural infrastructure in the Greater Sydney Region, attracting local, national and international visitors.

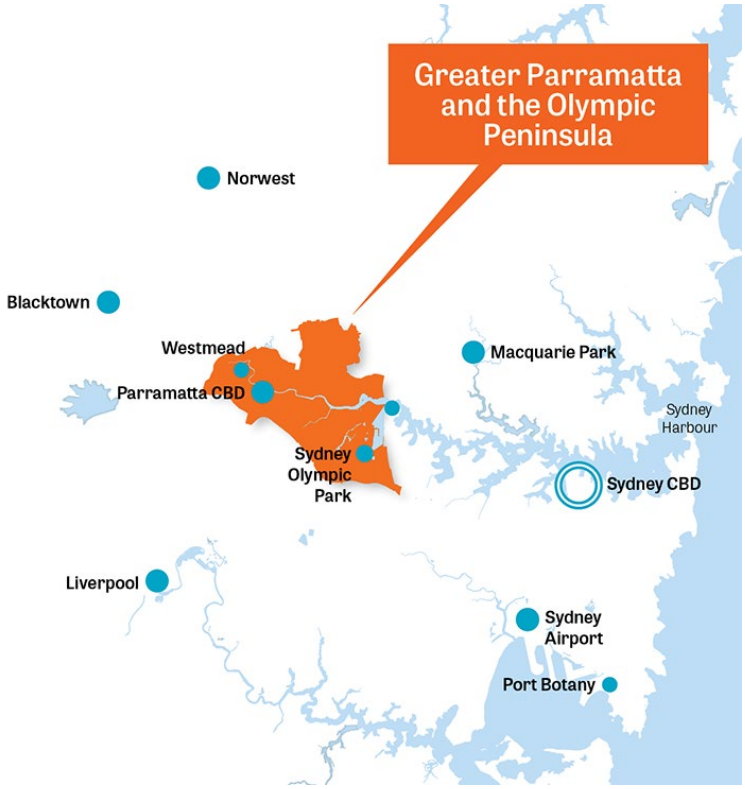


Figure 69 GPOP Location

Source: Greater Sydney Commission

5.3.4 A City Supported by Infrastructure: Place-based Infrastructure Compact Pilot

The Place-based Infrastructure Compact (PIC) is a strategic planning model that looks holistically at a place to better align growth with the provision of infrastructure. This PIC model has been used to analyse the GPOP corridor, with a Summary Paper released in November 2019.

Whilst the Summary Paper does not directly identify Powerhouse Parramatta as an infrastructure priority to support the GPOP in the next 5-10 years, it confirms that it is pragmatic to grow precincts now that are already well serviced by major infrastructure, such as the Parramatta Light Rail, and focus on job creation. Powerhouse Parramatta achieves this being located within one of the 11 identified priority precincts, being well serviced by existing and future planned infrastructure, and significantly contributing to jobs and economic development within the Parramatta CBD. The proposed development represents a significant investment in cultural infrastructure that can be appropriately accommodated on the site as discussed further in the following sections.

5.3.5 Greater Parramatta Interim Land Use and Infrastructure Implementation Plan

The *Greater Parramatta Interim Land Use and Infrastructure Implementation Plan* identifies the land use framework to guide future development in Greater Parramatta over the next 20 years. The plan recognises the strengths of the Parramatta CBD for its dynamic combination as a commercial core, civic heart, employment, education and research hub. The development of Powerhouse Parramatta within the Parramatta CBD will benefit the local and wider community by attracting human talent, investment, creative and innovative activities.

In addition, the development will directly and indirectly achieve several key actions of the plan. The site will promote activity and connectivity along the river foreshore through private and public events, the provision of retail spaces and eateries; and updated pedestrian/cycle paths. Powerhouse Parramatta will provide no parking and instead will encourage the use of public transport. This will be enhanced by existing and future transport infrastructure projects such as the Parramatta Light Rail and Sydney Metro West. The development of Powerhouse Parramatta will also assist in the provision of jobs, both during construction and in operation. This will assist the plan in reaching its employment targets for the region.

5.3.6 City of Parramatta Council's Draft Local Strategic Planning Statement

The *Local Strategic Planning Statement (LSPS)* is Council's 20 year vision (2016-2036) for land use planning for the City of Parramatta local government area (LGA). The Final LSPS was endorsed by Council on 9 March 2020. The LSPS summarises issues and opportunities for the LGA in relation to land use, community infrastructure, heritage, access for local and strategic centres, job access and employment areas, Greater Parramatta's role as the Central City for Greater Sydney, and the management of the 'green grid' (trees and open space) and the 'blue grid' (waterways, creeks and rivers).

For Parramatta to succeed as Greater Sydney's second city, it needs to offer a diverse range of services and experiences to make it an attractive place to live, work and play. Providing improved cultural and recreation opportunities is fundamental to attracting knowledge intensive businesses to Parramatta, differentiating it from the business parks and other commercial centres of Greater Sydney as a true CBD that integrates business and civic functions.

Powerhouse Parramatta directly contributes to the vision of the LSPS through the provision of a key piece of cultural infrastructure. This acts to redress the imbalance between Greater Western Sydney and the Eastern Harbour City and will act as a precedent for future cultural and arts infrastructure within Parramatta. Powerhouse Parramatta will also enhance the emerging night time economy within the Parramatta CBD and encourage the use of existing and future public transport links. Further, the development will create jobs, directly through the employment of people to assist in the everyday functioning of the Powerhouse; and indirectly through the creation of construction jobs, temporary employment of entertainers, artists and researchers and workers within the retail spaces along the riverfront. Overall, the proposed development aligns itself with the LSPS vision, contributing to sustainability, liveability and productivity of the Greater Parramatta region.

The LSPS makes specific reference to the proposal, noting that the relocation of the Museum of Applied Arts and Sciences (MAAS - the Powerhouse Museum) to the Parramatta CBD represents the first of many needed cultural infrastructure projects that are redressing the historic geographical imbalance in cultural infrastructure distribution that are required if Parramatta is to achieve rounded growth.

5.3.7 Civic Link Framework Plan

The *Civic Link Framework Plan* underpins the long-term aspirations, strategies, design ideas and recommendations for new open space in Parramatta. It provides the vision for converting Horwood Place to a landscaped pedestrian and cycle only link, which will ultimately connect through to Parramatta Square and Parramatta Railway Station. The link is approximately 490m long and will directly connect Parramatta CBD's civic and commercial district and major transport nodes with riverfront spaces and the Parramatta River foreshore, terminating at the site. Powerhouse Parramatta contributes to the Civic Link through providing a central pedestrian spine through the site to the foreshore, providing a new open space area, removing vehicle parking from the site to support the active transport vision, and providing improved landscaping and public domain areas. The design of Powerhouse Parramatta is bold and identifiable which helps create a strong mental image and supports intuitive wayfinding. Hence, the design, location and use of the proposed development aligns itself with the overarching objectives of the Framework.

5.3.8 Additional relevant strategies and plans

In addition to the above, the proposal remains consistent with the key additional planning policies, guidelines, and strategies identified in the SEARs as outlined in **Table 9** below.

Table 9 Summary of consistency with additional strategies and plans

Document	Comment
Parramatta Night City Framework 2020-2024	The *Night City Framework* seeks to transition Parramatta to a 24-hour city centred on the Parramatta CBD, through championing late night business, good universal design and accessibility, diverse and safe placed, and creativity and culture as its core. The Framework recognises that Powerhouse Parramatta will be a flagship anchor to Parramatta's arts and cultural precinct and will serve as the central hub for residents and visitors across Sydney to interact with state-of-the-art exhibitions and creative expressions. Beyond expanding the cultural richness of the city, Powerhouse Parramatta will also unlock the economic opportunities of Parramatta at night through increased tourism and visitation.
Parramatta River Catchment Group – Our Living River project and Masterplan	The overarching goal of the *Our Living River Project and Masterplan* is to make the Parramatta River swimmable by 2025. Although the foreshore of the Powerhouse has not been selected as a future swimming site, the development has been designed with consideration of relevant water quality targets in support of this scheme.
Parramatta Ways Walking Strategy	*Parramatta Ways Walking Strategy* is a plan to improve walkability across Parramatta. The provision of the Civic Link acts as an important link from the centre of the Parramatta CBD to the Parramatta River via the Powerhouse. The pedestrian routes to the site will be safe, comfortable and interesting, in keeping with this Strategy.
City of Parramatta draft Heritage Interpretation Guidelines 2017	An Interpretation Plan will be prepared and implemented at the site to identify and interpret the key heritage conservation values of the heritage items to be demolished in accordance with the recommendations in the Statement of Heritage Impact (**Appendix G**) and these Guidelines. This has been captured in the mitigation measures nomimated in **Section 8.0**.
City of Parramatta Interim Public Art Guidelines for Developers 2015	Powerhouse Parramatta represents a substantial investment in the development of culture and arts within a new world class facility. The proposed development will be used as a gallery, library, and space for the exhibition and display of items, as well as supporting live performances, temporary public art, public lectures, film/cinema pop-ups, cultural events such as Diwali, Eid, or Parramasala, and events which engage communities and contribute to the cultural calendar of Sydney and NSW. The evolving Powerhouse Program will exceed typical public art requirements considered in this Guideline.
City of Parramatta Public Domain Guidelines	The purpose of the *Public Domain Guidelines* is to provide design strategies and guidelines for streets and public places in Parramatta. Key design principles include distinctiveness, universally accessible, sustainable and lively. The design of the Powerhouse fulfils each of these design principles in the private and public domain.
Culture and Our City: A Cultural Plan for Parramatta's CBD 2017-2022	*A Cultural Plan for Parramatta's CBD 2017-2022* aims to meet the demands of a prosperous, innovative and socially inclusive place, while celebrating and growing from the richness of our past. The Powerhouse Parramatta integrates with the goals for this plan by acting as a place for gathering, welcoming diversity, celebrating creativity and incubating industry and knowledge.

Document	Comment
Draft Community Infrastructure Strategy 2020	The *Draft Community Infrastructure Strategy 2020* focuses on a long-term direction for the provision of community infrastructure. In order to deliver the best outcomes for people into the future, community infrastructure must use an innovative approach. The proposed development is innovative in its design and use, providing arts, culture, education, recreation and research facilities, supporting the availability of public infrastructure.
Draft Parramatta DCP Section 4.3 Strategic Precincts 4.3.3.7	The Draft DCP provides for the provision of the Civic Link between Parramatta Square and the Parramatta River foreshore. The proposed development achieves the intent of these draft controls by contributing to the delivery of the future Civic Link that funnels activity into the centre of the site, and to the Terrace and Riverfront spaces that form the northern anchor of the Civic Link. The proposed development also: • orientates the site so that the river foreshore becomes a focal point for public activities and events; • supports the Civic Link as a people-oriented space with amenity, cultural uses and activity day and night that also enhance amenity and safety along the riverfront; • has been designed with consideration of environmental outcomes, including flooding, urban heat, energy use and the City's long-term strategy to improve water quality and public engagement with the Parramatta River; and • provides a new destination within the Parramatta CBD that is permeable, accessible and inviting to foster positive connections between people and place, and is accessible, affordable and welcoming for people of all ages and backgrounds within the community.
Draft Civic Link Precinct DCP 2018	*The Draft Civic Link Precinct DCP 2018* refines the *Civic Link Framework Plan* by describing how future buildings will define the shape of the Civic Link and how surrounding movement will work. The proposed development is in line with this framework, acting as a key destination and component of the Civic Link.
Socially Sustainable Parramatta Framework 2017	The *Socially Sustainable Parramatta Framework* is the City of Parramatta Council's draft framework for advancing social sustainability in the local government area. The key success factors that underpin this framework include accessibility, good urban design and the preservation of local characteristics. The proposed development supports the attainment of these factors.
Parramatta City River Strategy 2015	The *Parramatta City River Strategy* positions the Parramatta River at the front and centre of the Parramatta City Centre as redevelopment occurs. The Strategy is consistent with the proposed development in that it seeks to activate the foreshore, will provide cultural landmark building and enable the use of active and public transport.
Parramatta City Centre Lanes Policy 2011	City of Parramatta acknowledges the importance of the servicing and access function of lanes. This policy aims to ensure that *Parramatta City Centre Lanes* are retained and enhanced from 2011 to 2021. The proposed development has been designed to enable the future delivery of Powerhouse Laneway connecting to Church Street, which would be subject to separate and future approval and coordination with neighbouring landowners. The proposed development therefore provides for the futue implementation of this policy.
Parramatta City Centre Lanes Strategy 2010	The *Parramatta City Centre Lanes Strategy 2010* was superseded by the *2011 Lanes Policy*.
Parramatta CBD Pedestrian Strategy 2017	The City of Parramatta has identified the need to plan and prepare for an attractive, safe and walkable centre as the CBD undergoes significant redevelopment and growth. The *Pedestrian Strategy* provides clear direction for improvements in policy, infrastructure and travel behaviour so that Council's vision for a healthy, liveable and sustainable city can be realised. The strategy recognises the Civic Link as a key outcome in the delivery walkability in the Parramatta CBD. The Powerhouse Parramatta supports this plan by encouraging walking to the site and delivering a key component of the Civic Link.
Parramatta Bike Plan 2017	The *Parramatta Bike Plan 2017 – 2037* supports the City of Parramatta's broader vision to be a sustainable, liveable, and productivity Central City. The plan sets out a list of aspirations to encourage cycling as a mode of transport, decrease bottlenecks and increase network capacity. While the Powerhouse is not in direct connection to any existing cycle network, bicycle access to the site will be aided by the future Civic Link and the shared path along the foreshore. Additionally, the site will provide bicycle parking to patrons and staff and end of trip facilities for staff to further encourage cycling.
Better Placed – an integrated design policy for the built environment of NSW	*Better Placed* provides clarity in relation to what is meant by good design and the process to achieve it. A recognition of this framework was used by the architects in the design of the Powerhouse. **Section 5.5** outlines compliance with design excellence principles.

Document	Comment
Better Placed – Design Guide for Heritage	The Design Guide for Heritage builds on legislative framework and *Better Placed* to guide design work in heritage places in NSW. The Design Guide recognises that heritage items can outlive their functional life, because the building use is outdated or because the building no longer meets the current requirements. Whilst the Powerhouse proposes the removal of heritage places, it will maintain an understanding and appreciation of heritage as per the Design Guide for Heritage requirements.
Healthy Urban Development Checklist 2009	The development of the Healthy Urban Development Checklist is intended to address population growth and health inequities through urban planning and development processes. The Checklist is generally designated for master plans or large housing developments, however, the proposed development satisfies its criteria through the provision of public open space, encouraging the use of active and public transport and the use of CPTED principles.
Future Transport Strategy 2056	The Strategy is the 2017 update of the *NSW Long Term Transport Master Plan*, and sets out six state-wide outcomes to guide investment, policy and reform and the provision of services. Whilst a number of these outcomes relate to integrating technological advancements with services and providing regional connections, the proposal is consistent with the desire to encourage active and sustainable options and provide more seamless customer experiences.
Development near rail corridors and busy roads	The Powerhouse Parramatta site is not located in proximity to a busy road or rail corridor (within the meanings prescribed to these terms under State Environmental Planning Policy (Infrastructure) 2007) and accordingly this policy is not applicable to the proposal.
Guide to Traffic Generating Developments	The proposed development will not generate more than 200 vehicle movements per hour, and as such it is not defined as traffic generating development requiring consultation with Transport for NSW (RMS) under Clause 104 of the SEPP. Accordingly the *Guide to Traffic Generating Developments* does not apply. Notwithstanding this, this EIS is accompanied by a Transport Impact Assessment prepared by JMT Consulting (**Appendix F**) which addresses the demand for parking and traffic generated by the proposal as discussed in **Section 6.4**.
Guide to Traffic Management – Part 12: Traffic Impacts of Development	An assessment of the potential traffic generated by the proposed development during the operation and construction phases of the development is detailed in the Transport Impact Assessment prepared by JMT Consulting (**Appendix F**), discussed in **Section 6.4** below.
Guidelines for controlled activities on waterfront land	As an approval is not required under the *Water Management Act 2000*, the *Guidelines for controlled activities on waterfront land* do not apply. The existing foreshore to the Parramatta River is highly modified and plays a highly important role in meeting the recreational and active transport needs of the community, and as such it is not appropriate to apply these guidelines in this location, particularly not in the context of a single site within the broader CBD-River interface. This DA does not seek to alter the existing river embankment.
NSW Planning Guidelines for Walking and Cycling	The *NSW Planning Guidelines for Walking and Cycling*, released in 2004, aims to assist land-use planners and related professionals in planning for walking and cycling. The proposed development will also support the objectives of this Guidelines in encouraging walking and cycling through the delivery of bicycle parking spaces, end of trip facilities for staff and residents, and the creation of the Civic Link that enables pedestrians to walk through the site.
Sydney's Rail Future	*Sydney's Rail Future 2012* is the NSW Government's long-term plan to increase the capacity of rail network in Sydney through investment in new services and upgrades to existing infrastructure. *Sydney's Rail Future 2012* was released prior to the announcement of Sydney Metro West, which will include a new metro station in Parramatta. However, the underlying objective of improving access to rail infrastructure is supported by the proposed development, which encourages the use of the rail network to staff and visitors.
Sydney's Bus Future	*Sydney's Bus Future 2013* is the NSW Government's long-term plan to redesign the city's bus network to meet customer needs now and into the future. Whilst the specific projects identified in the Plan do not directly relate to the proposal, the proposal is consistent with Plan's objective to encourage use of the Sydney bus network by commuters. Bus network options will be advertised to patrons of the Powerhouse to encourage the use of public transport.

Document	Comment
Sydney's Ferry Future	*Sydney's Ferry Future 2013* is the NSW Government's long-term plan to strengthen the ferry network and to integrate the network with other transport services to meet customer demands. Although the plan does not directly relate to the proposed development, the Powerhouse will encourage the use of public and active transport, including the ferry network.
Interim Construction Noise Guidelines	This *Interim Construction Noise Guideline* has been considered in Section 3 of the Noise and Vibration Impact Assessment prepared by Arup (**Appendix Z**). This is discussed further in **Section 6.7** below.
Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW	The Aboriginal Cultural Heritage Assessment Report prepared by Curio Projects (**Appendix H**) has been prepared in accordance with the requirements of the *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW*.
Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010	As detailed in Section 2 of the Aboriginal Cultural Heritage Assessment (**Appendix H**), Aboriginal community consultation in accordance with these requirements will be undertaken by Curio Projects.
Aboriginal Heritage Management Strategy 2018-2021	The Aboriginal Cultural Heritage Assessment Report prepared by Curio (**Appendix H**) addresses Aboriginal Heritage Information Management System and identifies mitigation strategies to address areas where there will be unavoidable impacts.
Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW 2010	The Aboriginal Cultural Heritage Assessment Report prepared by Curio Projects (**Appendix H**) has also been prepared in accordance with the requirements of the Code of Practice for archaeological investigations of Aboriginal objects in NSW.
Crime Prevention Through Environmental Design (CPTED) Principles	The CPTED Principles have been considered when developing the design for the Powerhouse Parramatta, and addressed in the CPTED Report prepared by Arup (Appendix AA) and discussed in **Section 6.9** of the EIS.
NSW and ACT Government Regional Climate Modelling	The NSW and ACT Government Regional Climate Modelling identifies a number of climate change projections, including more hot days and fewer cold nights, increase in the number of heatwave events and changes in rainfall patterns. The proposed development responds to the projects through design initiatives that will mitigate the effect of future climate change while maximising efficiency in energy, water and material usage. This is detailed in the Environmentally Sustainable Development Strategy at **Appendix U**.
OEH (2015) Urban Green Cover in NSW Technical Guidelines	The *Urban Green Cover Guidelines* will increase resilience to future extreme events and natural hazards and help communities prepare for a changing climate. The redevelopment of the site will provide significant areas of landscaping including tree planting to contribute to the urban tree canopy, and has been designed to celebrate and facilitate access to the Parramatta River to combat heat vulnerability. The proposed development will be further designed and development with consideration of resilience against climate change as confirmed in the ESD Report prepared by Arup (**Appendix U**).
Heritage Division, Office of Environment and Heritage Guidelines Archaeological Assessment (1996)	The Archaeological Research Design prepared by Curio Projects (**Appendix I**) has been prepared in accordance these guidelines.
Assessing Significance for Historical Archaeological Sites and Relics (2009)	The Archaeological Research Design prepared by Curio Projects (**Appendix I**) has been also prepared in accordance this assessment framework as addressed in Section 5 of the ARD.
Australian Guidelines for Water Recycling: Managing Health and Environmental Risks (phase 1) 2006	The *Australian Guidelines for Water Recycling* is an authoritative reference for the supply, use and regulation of recycled water schemes. The Floor Risk and Stormwater Report prepared by Arup (**Appendix O**) confirms that the report forms the basis of addressing stormwater and flooding and will be further refined at the design development phase with consideration of these guidelines.

5.4 Compliance with legislation and environmental planning instruments

The relevant strategies, environmental planning instruments, policies and guidelines as set out in the SEARs are addressed in the table below.

Table 10 Compliance with legislation and environmental planning instruments

Document	Comment
Legislation	
Biodiversity Conservation Act 2016	In accordance with this Act, an assessment of any State Significant proposal's biodiversity impacts must be undertaken as part of the provision of any SSD DA, including the provision of a Biodiversity Development Assessment Report (BDAR) in instances where it is required. An application was lodged prior to the lodgement of this DA requesting that the Department, in consultation with OEH, waive the requirement to prepare a BDAR on the grounds of the development being unlikely to impact biodiversity values in accordance with Clause 1.5 of the *Biodiversity Conservation Act 2016* and Clause 1.4 of the *Biodiversity Conservation Regulation 2017*.
Other Acts	Refer to **Section 5.2** in relation to the requirement for approvals under other legislation.
Environmental planning instruments	
State Environmental Planning Policy (State & Regional Development) 2011	The proposal is development for the purposes of a 'information and education facility' with a capital investment value (CIV) of more than $30 million. Accordingly, the proposal is declared to be SSD for the purposes of the EP&A Act under Schedule 1 Clause 13 and Schedule 2 Clause 7 of the SEPP, respectively. This EIS has accordingly been prepared in support of the SSD DA. The Minister for Planning is the consent authority for SSD where the application to carry out the development is made by or on behalf of a public authority (Clause 8A of SEPP SRD). Infrastructure NSW is a public authority, and therefore the Development Application will be assessed by DPIE and determined by the Minister.
State Environmental Planning Policy (Infrastructure) 2007	The proposed development will not generate more than 200 vehicle movements per hour, and as such it is not defined as traffic generating development requiring consultation with Transport for NSW (RMS) under Clause 104 of the SEPP. The proposed development also does not comprise any development on a classified road, or adjacent to a rail corridor or interim rail corridor. Notwithstanding, the development of the Transport Impact Assessment at **Appendix F** has been conducted in consultation with TfNSW.
State Environmental Planning Policy No. 55 – Remediation of Land (SEPP 55)	An assessment of the conditions of the site has been completed by JBS&G (**Appendix L**), which confirms that the site can be made suitable for its intended use, provided that the recommendations of the Remedial Action Plan (**Appendix M**) are enacted and any unexpected finds are managed during the construction phase of the project. This assessment satisfies the requirements in Cl. 7 of SEPP 55. The site is also not listed as being significantly contaminated in accordance with the *Contaminated Land Management Act 1997*.
DRAFT SEPP – Remediation of Land	The above discussion of the existing provisions of SEPP 55 and technical assessment provided at **Appendix L** are considered to satisfy the provisions of the Draft SEPP 55.
State Environmental Planning Policy No 64—Advertising and Signage (and associated guidelines)	Signage zones are proposed for building and business identification purposes on the building as well as within the public domain. These zones will be subject to separate future detailed design as the branding for the Powerhouse Parramatta and the supporting retail tenancies are confirmed. An assessment against the provisions of SEPP 64 is provided at **Appendix FF**.
Draft State Environmental Planning Policy (Environment)	The Draft SEPP Environment was released for public exhibition in October 2017 and aims to repeal and replace a number of SEPPs and SREPs that currently apply in NSW. Under the Draft SEPP, the site is identified as being within an area of 'Urban Bushland' and as such would be subject to controls relating to the protection of land that is reserved for public open space. No development is proposed for that part of the site zoned for open space, and as such the provisions of the Draft SEPP do not apply. It is also noted that this Draft SEPP will also encompass the provisions of the Sydney Harbour Catchment REP. This SREP is discussed further below in the context of the proposal.

Document	Comment
Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005	The site is located within the boundaries of the Sydney Harbour Catchment SREP. The precinct is not 'zoned' under this plan nor is it located within the 'Foreshores and Waterways Area', where the majority of the SREP's provisions apply. The key matter for consideration is, therefore, the visibility of the proposed development from Sydney Harbour. The proposal will not result in any adverse impacts on views and is, therefore, consistent with the considerations outlined in the SREP.
State Environmental Planning Policy No. 65 – Design Quality of Residential Apartment Development	The proposed development does not seek consent for residential accommodation. The proposed Powerlab Residences and The Academy are defined as serviced apartments which are a form of tourist and visitor accommodation, and as such are not subject to the provisions of SEPP 65 or the Apartment Design Guide. This proposed specialist accommodation will be ancillary to and support the operation of the Powerhouse Parramatta and the creation of a world-class culture and arts precinct.
State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004	No part of the proposal is defined as 'residential accommodation', and as such a BASIX Certificate is not required.
Parramatta Local Environment Plan 2011 (Parramatta LEP) 1.2 Aims of the plan	This proposed development for the delivery of Powerhouse Parramatta supports the aims of the Parramatta LEP as follows: • The proposal delivers an active precinct with the potential to host multiple concurrent activities including exhibitions, events, and community and education programs to cater to the needs of existing and future residents, workers and visitors to Parramatta. • The development has been designed with consideration of the environmental, social, economic and physical impacts of development as explored through this EIS, and to mitigate and manage the identified impacts wherever possible, as well as supporting and enhancing the positive implications of the Powerhouse Parramatta. • Whilst the proposal will necessitate the removal of heritage items, the proposal represents a significant opportunity and investment in cultural infrastructure, education and research that will directly benefit Parramatta's identity, prosperity, liveability and social development. • The development will remove existing carparking and provide a new sustainable facility that promotes the use of sustainable and active transport. • The proposed development has been designed with consideration of the constraints of the site and will provide a safe destination addressing flooding extent and risk attributed to development on the Parramatta River foreshore. • The proposal will utilise the Green Star for New Buildings rating tool and is targeting a Green Star 5 Star minimum rating, and has been designed with consideration of the principles of ecologically sustainable development. • The development will enhance the amenity and activation of spaces along the Parramatta River foreshore through providing new open space areas that complement and respect the natural values of this space. • The proposed development will not adversely impact the amenity of existing residences to the north and west of the site, as outlined in **Section 6.0** of this EIS. • The proposed development directly supports the economic viability of the Parramatta CBD through contributing to jobs growth, productive uses, and the tourism and visitor economy with significant flow on effects. The development represents the orderly and economic development of land. • The proposal also directly supports the enhancement of the viability, identity and diversity of the Parramatta CBD and its pre-eminent centre in the Greater Metropolitan Region. It signifies substantial investment in the growth and prominence of Parramatta, cognisant with its role as the economic anchor to the GPOP economic corridor and the heart of the Central River City that is fundamental to Sydney's metropolitan planning future.
1.6 Consent authority	The Minister for Planning and Public Spaces is the consent authority.
2.1 Land Use	The site is zoned B4 Mixed Use and RE1 Public Recreation. The Powerhouse Parramatta built form is located within the B4 zone, which permits information and education facilities as well as serviced apartments, offices, retail, and community facilities with consent. The proposed enhancements to the public domain and Parramatta River foreshore are also permitted with consent within the RE1 zone.
2.7 Demolition	Consent for demolition is sought as part of this application.

Document	Comment
4.3 Height of buildings	The site is identified as having a maximum building height of 80m aligning with the B4 Mixed Use areas and no maximum height limit for the RE1 Public Recreation areas. The eastern building has a maximum height of RL 63.6m (60.1m) and the western building has a maximum height of RL 79.2m (75.7m), in compliance with this provision.
4.4 & 7.2 Floor space ratio	The site is identified as having a maximum floor space ratio of 6:1 for the B4 Mixed Use-zoned areas and no maximum FSR for the RE1 Public Recreation areas. The proposed development accommodates 27,667m^2 on the substantial 19,438m^2 site, and as such is significantly less than the permitted maximum. A floor by floor breakdown of GFA attributed to each of the interconnected uses on the site is provided at **Appendix B**.
5.10 Heritage conservation	There are several items of heritage and archaeological significance on the site and in the surrounding area. The site is not located on or in the vicinity of any heritage conservation areas, any heritage landscape, or any site subject to an Interim Heritage Order. An assessment of the heritage significance of the site and the potential impacts of development is provided at **Appendix G** and **Appendix H** and discussed in **Section 6.2** below.
6.1 Acid sulfate soils	The site is identified as having the potential for Acid Sulfate Soils and Potential Acid Sulfate Soils, and as such an Acid Sulfate Soils Management Plan has been developed by JBS&G (**Appendix N**) and is discussed in the **Section 6.10.1** below.
6.2 Earthworks	Earthworks are proposed as part of the development, in order to provide the necessary grades, building platforms, installation of services, lift pits and piling. These works are assessed in the following sections of the EIS that confirm these works do not result in adverse impacts.
6.3 Flood planning	The site is identified as being flood prone land, and has been assessed by Arup in the Flood Risk and Stormwater Management Plan at **Appendix O** and discussed in **Section 6.5** below.
6.18 Development requiring the preparation of a development control plan	The site is not identified as land that is subject to this provision, and as such there is no requirement to prepare a DCP or a Concept Proposal. The proposed development will be delivered as a single stage.
7.3 Carparking	No carparking is provided on site, and as such the proposed development is consistent with this provision that nominates maximum carparking rates.
7.4 Sun access	The site is not identified as being subject to a sun access plane. It will not result in any overshadowing of Parramatta Square, Lancer Barracks or Jubilee Park.
7.5 Serviced apartments	The Powerlab Residences are to be used by approved personnel in conjunction with the activities of the museum. It is not proposed to strata subdivide these serviced apartments, which will remain fully integrated within the design and operation of Powerhouse Parramatta.
7.10 Design excellence – Parramatta City Centre	A competitive design process has been undertaken for the proposed development, and the proposed development achieves design excellence. Refer to the discussion in **Section 5.5** below for further discussion.

5.5 Design excellence

This section of the EIS describes the process by which Powerhouse Parramatta including public domain areas have been designed to achieve 'design excellence' in the meaning of Clause 7.10 of the Parramatta LEP.

5.5.1 Competitive design process

The New Museum Design Excellence Strategy was approved by the (then) Department of Planning and Environment in December 2018 and endorsed by the NSW Government Architect and City of Parramatta Council. The Strategy was developed with reference to the requirements of the Parramatta LEP and outlined the proposed competitive design process to be undertaken and the requirements for the achievement of design excellence.

The process undertaken in accordance with the approved and endorsed strategy comprised a two-stage competition:

1. Expression of interest – the first stage of the competition commenced in January 2019 and was open to all international and domestic firms where meeting certain criteria. These comprised firms needing to have demonstrated capability in projects valued of at least $200 million or projects of a comparable complexity and program, and the firms that formed part of a collaboration had to include an architectural practice registered in Australia. This first stage of the competition was intended to gage interest and understand the technically capabilities of available teams, in order to determine who would progress to the second stage. This phase of the project attracted a significant 74 expressions of interest involving 529 individual firms from 20 countries.
2. Design concept – the second stage of the competition comprised an intensive design period for six shortlisted teams. The shortlisted teams were provided with a detailed design brief and required to submit a concept design that was assessed by a Jury of experts, as informed by a technical panel. The Jury met in November 2019 to interview the shortlisted teams, and chose the team led by Moreau Kusunoki and Genton as the winner of the competition. The winning design was announced in December 2019.

Moreau Kusunoki and Genton were supported by McGregor Coxall in the design of the public domain, with all designers subsequently engaged following the decision of the Jury to develop and document the winning scheme for Powerhouse Parramatta.

5.5.2 Achievement of design excellence

The Powerhouse Parramatta: Design Excellence Report at **Appendix D** details the conclusions of the Jury and their assessment of the winning design against Clause 7.10 of the Parramatta LEP. The Jury comprised members with experience in architecture, urban design, museum design, business and cultural institutions operation, and included government representatives as well as a representative from City of Parramatta Council.

The Jury concluded that the proposal stood out for its simple and elegant solution, with a strong identity derived from the building's architecture and structure. The generosity of space, transparency and lightness of the structure created a 'sense of joy' that encapsulates the ambitions of Powerhouse Parramatta. The public realm was also considered to be generous and welcoming, incorporating a clear continuation of the Civic Link and providing exceptional open space for Parramatta. The design proposed to include Indigenous elements with a specific focus on teaching and learning, celebrating the sophistication of Indigenous knowledge from this place, through time.

The Jury considered the proposal against the criteria for design excellence in accordance with the Parramatta LEP, which found that the design scheme achieved each of the criteria and, therefore, design excellence. The findings are summarised in Section 8 of the Powerhouse Parramatta: Design Excellence Report at **Appendix D**.

5.5.3 Design integrity

The New Museum Design Excellence Strategy has also developed a process to safeguard the integrity of the winning design scheme for the site. This process ensures that the development ultimately aligns with the design presented during the competition process and that the achievement of design excellence is maintained throughout the life of project documentation and construction. This process is outlined in Section 10 of the Report at **Appendix D**, and involves:

- appointing Moreau Kusunoki and Genton in collaboration with McGregor Coxall as the design team who will be responsible for design development through to construction; and
- establishing a Design Integrity Panel comprising members of the Jury to provide assurance at regular milestones that design integrity is being maintained, including reviews at stages of the development such as prior to the DA, prior to the lodgement of any modification to the design, prior to construction, prior to occupation.

This design development and review process is an appropriate mechanism to ensure the continued integrity and design excellence of the winning design.

6.0 Environmental assessment

This chapter of the EIS contains our assessment of the environmental effects of the proposed development as described in the preceding chapters of this report.

Under Section 4.15 (1) of the EP&A Act, in determining a development application the consent authority has to take into account a range of matters relevant to the development, including the provisions of environmental planning instruments; impacts of the built and natural environment, the social and economic impacts of the development; the suitability of the site; and whether the public interest would be served by the development. The assessment includes only those key matters under Section 4.15(1) that are relevant to the proposal.

6.1 Built form and urban design

Powerhouse Parramatta has been developed with consideration of the constraints and opportunities of the site and surrounds and an understanding of the functional requirements of the new culture and arts destination. It has been the subject of two-stage international competitive design process and has been developed with consideration of the design excellence criteria nominated in the Parramatta LEP.

Overall, the proposed development delivers a built form that is a sensitive and intelligent response to the features of the site and surrounding area that will deliver a high-quality architectural and landscape outcome for the site. This is detailed further in the following sections and in the Architecture and Landscape Architecture Reports provided at **Appendices B** and **C** respectively.

6.1.1 Height, bulk and scale

Powerhouse Parramatta has been designed to combine practicality and architecture into a single active working precinct. It is influenced by the functional parameters of accommodating a range of interconnected uses and flexible and adaptable spaces, as well as the site's relationship to the Parramatta River, future Civic Link, and the surrounding CBD.

The proposed building massing, scale and site layout has been informed by four key design moves (see **Figure 70**):

1. The floor space has been split between two built form volumes on the site. These two buildings are physically divided and defined by the continuation of the Civic Link through the centre of the site in alignment with Horwood Place to the south. This creates a strong central spine and focal point for activity on the site, as well as breaking up the building massing to improve the visual and physical scale of the development.
2. The two volumes have been staggered on the site, with the eastern building further south to align with the Phillip Street and Wilde Avenue frontages and the western building sitting further north to address the rear building line of the adjacent Meriton development. This provides a strong building line and architectural presence to the street frontages, creates a series of interconnecting laneways on the site, appropriately transitions the massing to the Meriton foreshore setback, and enables the delivery of significant new public open space in the north east of the site. The buildings have also been sited so that there is a sufficient curtilage to the Meriton development including the continued use of Dirrabarri Lane and existing emergency vehicle access to the river.
3. The two volumes have also been separated vertically, so that the western building is five storeys taller than the eastern building. This references the inclined height plane created by existing adjacent development to the west and creates a gradual transition in scale. It contributes to breaking up the building massing as well as enhancing the visual interest of the development when viewed in the round.
4. Architectural detailing and materiality has been used to articulate the buildings in place of upper level or variable setbacks. This massing intentionally differentiates the development from the typical podium and tower form within the CBD and distinguishes the site as being a vastly different use and level of public importance. It reinforces the civic nature of the development, supporting intuitive wayfinding from the Parramatta CBD, whilst still delivering a light, articulated built form (see **Section 6.1.2**) and permeable ground plane (see **Section 6.1.3**).

These developed strategies have successfully managed the bulk and scale of the proposed development without compromising on the delivery of monumental, functional and flexible presentation spaces that have defined the physical parameters of these buildings. They ensure that each building provides the necessary uses and areas to support the functionality of Powerhouse Parramatta, whilst also responding to the built form context of the site and providing significant new open space areas. It is further emphasised that the design outcome remains well within the maximum permitted height and floor space parameters, meaning it is within the planned capacity for the site.

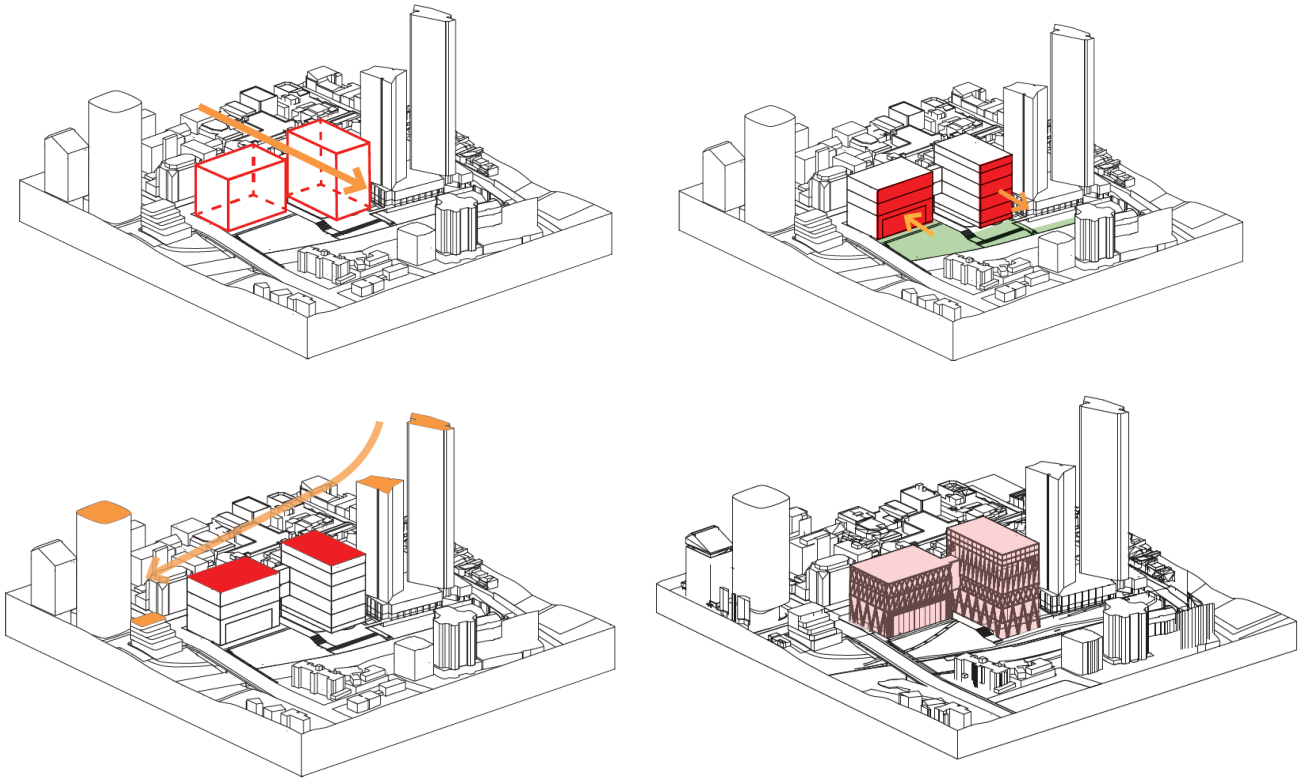


Figure 70 Key design moves informing the building scale and massing and site layout

Source: Moreau Kusunoki and Genton

6.1.2 Detailing and materiality

The development is designed so that the superstructure is a celebrated architectural feature used to articulate the building facades. The buildings are defined by the light coloured steel latticework which envelope the building massing and create layers to the facades. These layers distinguish the levels of the building and become lighter with height, having the effect of reducing the vertical massing of the building and creating a subtlety to the overall structure.

Behind this latticework, the facade materially exist in two forms - clear glass for maximum visual permeability or solid opaque walls for the enclosure of light–sensitive functions and presentation spaces. The areas of glazing offer glimpses of activity within Powerhouse Parramatta and maximise natural daylight penetration into select presentation, education and working spaces. The opaque walls act as a counterpoint to the lightness of the glazed façades and act as a muted backdrop to the activities housed within.

The layering of the lattices with sections of glazed and opaque facades creates a visually interesting built form and contributes to transparency of the structure so that, despite the volume, it is an ultimately lighter-feeling development.

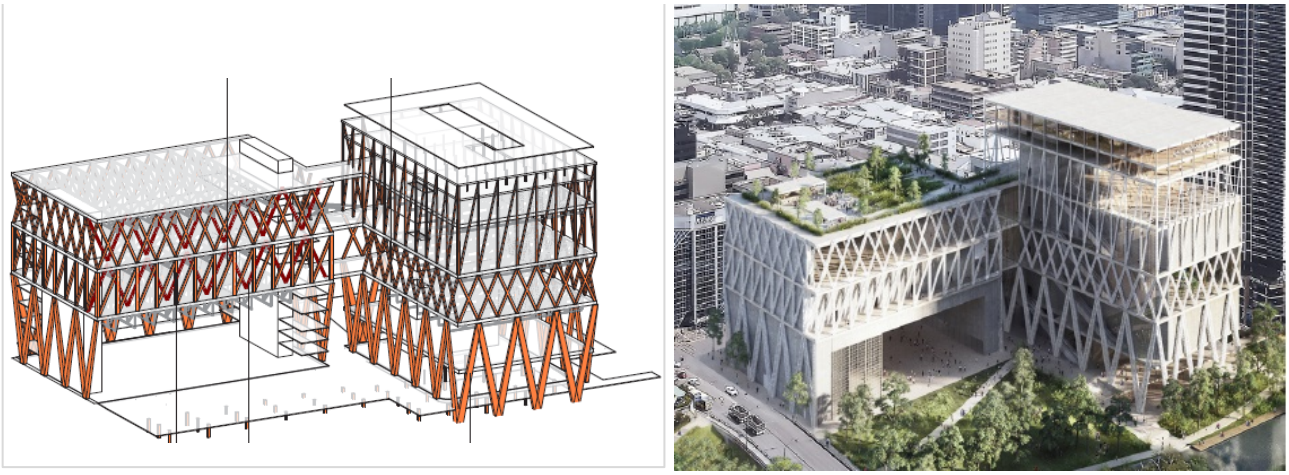


Figure 71 Detailing and materiality

Source: Moreau Kusunoki and Genton

6.1.3 Connectivity and activation

Powerhouse Parramatta has also been designed as a porous and accessible destination within the Parramatta CBD that serves as a seamless continuation of the surrounding streetscape and public domain. It integrates with its surroundings from all approaches and has been designed with consideration of both existing and potential future connections:

- **Civic Link** –the planned Civic Link connecting the Parramatta CBD to Parramatta River has been a key influence in the layout of the site and design of the built form. The Civic Link continues through and terminates at the site, ensuring the proposed development delivers a key component of this new pedestrianised and landscaped connection.
- **River foreshore** – the development protects and enhances the foreshore to the Parramatta River. It has been designed to retain the shared path and turfed connection along the southern shore of the river, whilst also providing a public domain that expands on the available areas of open space and provides new areas for sitting, socialising, and recreating as well as hosting events and activities associated with the Powerhouse Program.
- **Laneways** – the ground plane of the site supports a series of interconnected laneways through the site, as well as planning for future connections to surrounding land. In accordance with Council's strategy for pedestrian connectivity, the development makes provision for the potential future connection between Church Street and the site. It also seeks to tie-in the retail terrace on the ground floor of the western building with the existing food and drink podium of the Meriton development. Whilst this would ultimately be subject to separate and future approval with consideration of the neighbouring land, it demonstrates a conscious integration with the surrounding area.
- **Street frontages** – the development has been designed with defined street edges and a generous footpath along the Phillip Street frontage that is the primary entrance to the building. This supports the arrival experience for pedestrians and those using the coach drop off area and enhances the legibility of the development as a civic and cultural building. The Phillip Street and Wilde Avenue street frontages will be finished to ensure a seamless transition with the existing public domain.
- **Activation** – the proposed development significantly enhances the activation of the site. The ground plane has been layered with retail and front-of-house areas to support activity, with Presentation Space 1 and the major retail space in the western building also being designed to open up and integrate with the surrounding public domain. This ensures activity spills between the private and public spaces on the site, including the foreshore and Phillip Street frontage.

Powerhouse Parramatta is tightly interwoven with the existing network of pedestrian routes. This physical permeability dissolves any boundary between Powerhouse Parramatta and the broader public domain network, which also enables Powerhouse Parramatta to host events linked to city-wide celebrations and festivals in a highly integrated manner. This further supports the prominence of the development as a new destination within the Parramatta CBD and active precinct both during the day and at night. However, such events hosted in the public domain outside of the typical day to day operations including activities in partnership with Council and will be subject to separate future approval.

Figure 72 Connection with and activation of the surrounding area

Source: Moreau Kusunoki and Genton

6.1.4 Public domain landscaping

The detailed design and landscaping of the public domain has sought to balance the functional requirements of accommodating significant pedestrian circulation and habitation with the aesthetic and amenity requirements of creating green and welcoming spaces. The design responds to the project objectives and vision for the site and results in an overall high quality public realm, including providing:

- Significant tree planting along key walking routes of the site for natural shade and shelter and to assist with intuitive wayfinding. These trees will contribute to key views of the development along the Phillip Street and Wilde Avenue frontages, through the Civic Link, and along the Parramatta River foreshore to create a green, landscaped foreground to the buildings. The trees are predominantly native endemic species and will contribute to the urban tree canopy.
- Resting spaces including benches and lawn areas along the riverfront, podium level and Phillip Street. These spaces are designed to be flexible to enable a range of uses and high levels of pedestrian activity, as well as a destination for pause and reflection, and acting as a continuation of the riparian corridor and the riverfront promenade to connect the site to Parramatta Wharf, Western Sydney Stadium and parklands to the west. They support passive recreation and invite users to interact with the river landscape.
- A rain garden to support urban cooling and soften the pedestrian walking experience on the approach to the Parramatta River foreshore. This improves the otherwise sterile, paved pedestrian experience currently afforded in this location without compromising on access for emergency vehicles.
- A landscaped rooftop terrace that draws green landscape elements up into the built form. The terrace will act as a landscaped crown for the eastern building, improving the outlook of surrounding towers with views of the site as well as from the Civic Link. It will also serve an important research and educational function connecting visitors to a variety of plants including indigenous, productive, seasonal and local species.

The detailed landscaping strategy for the site delivers a range of improvements through providing new areas of public open space that are both welcoming and functional, support legible and comfortable pedestrian environments, and create a landscaped foundation to the buildings on the site. The proposed landscaping benefits views of the site both at the ground plane and from surrounding development and overall improves the amenity and public experience of the site. No further study or refinement is required, and no specific mitigation measure has been nominated in this instance.

6.1.5 Tree removal

The proposed development necessitates the removal of 54 existing trees that are either located within the footprint of works for Powerhouse Parramatta, will obstruct the construction of buildings or the circulation through the site, or which are identified as being in poor condition and are a priority for removal. These trees have been assessed by Tree IQ (**Appendix J**) who confirms that of these 54 trees, 3 are a priority for retention, 24 are considered for retention, 18 are considered for removal, and 9 are a priority for removal. Whilst this does represent the loss of some healthy mature vegetation on the site, the proposed removal of trees will be mitigated through significant supplementary landscaping and tree planting and through retaining and protecting one (1) existing tree.

Recommendation

The proposed development necessitates the removal of several existing mature trees across the site, with half of these identified as being in poor condition, nearing the end of their lifespan, or exotic species that are supported for removal. Those remaining trees to be removed will be replaced with supplementary landscaping and tree planting, contributing to the urban tree canopy and appropriately offsetting the loss of vegetation on the site. One (1) tree will be retained on foreshore frontage of the site, including Tree 1 that is identified as being a priority for retention and informs the setting of the State heritage listed Lennox Bridge.

It is recommended that a Tree Protection Plan be prepared by the Project Arborist to further assess the degree of impact to any TPZs and tailor the recommended mitigation measures when the detailed construction plans have been finalised.

Mitigation measure	Indicative timing
A Tree Protection Plan is to be prepared by the Project Arborist which assesses the degree of impact to any Tree Protection Zones and provides strategies and mitigation measures for how to minimise or mitigate these impacts. Consideration should be afforded to the recommendations in the Arboricultural Impact Assessment prepared by Tree IQ (April 2020).	Prior to works commencing on site.

6.2 Heritage and archaeology

Advisian has prepared a Statement of Heritage Impact (SOHI) (**Appendix G**), which examines the potential impact of the proposed development on heritage items on the site as well as archaeological sites and any heritage conservation areas, heritage landscapes and potential heritage items located on the site and in surrounding areas, as identified under the Parramatta LEP, the *Heritage Act 1977* (NSW) and other statutory registers. The SOHI is also supported by an Aboriginal Cultural Heritage Assessment Report and Archaeological Research Design prepared by Curio Projects (**Appendix I**) and addressed further in **Section 6.2.3.**

6.2.1 Aboriginal cultural heritage

Curio Projects has prepared an Aboriginal Cultural Heritage Assessment Report (ACHAR) (**Appendix H**) in consultation with the indigenous community in accordance with the 'Aboriginal cultural heritage consultation requirements for proponents' guidelines (OEH 2010). The ACHAR documents the process that has been undertaken for consulting with local Aboriginal stakeholders, investigating and assessing Aboriginal cultural heritage associated with the site and surrounds. The ACHAR outlines that the proposed development is assessed as having the following potential impacts on indigenous history:

- Cultural, social and spiritual values – the site is considered likely to have a high social and spiritual significance to the local Aboriginal community owing to its relationship to the Parramatta River and other sites that have physical evidenced of continued occupation. If archaeological deposits are uncovered on the site, this would represent a tangible and meaningful connection, and is to be further investigated and confirmed through review and testing.

- Historic values – the site holds potential to be of historical value and significance to local Aboriginal people because of early interactions with European colonists within Parramatta. This is to be further investigated and confirmed through further review and consultation with Registered Aboriginal Parties.
- Scientific values – the site has high research potential, but this will depend on the nature, extent, type and condition of any deposit uncovered on the site. Should a deposit be uncovered, this would have a high scientific significance for its ability to contribute to knowledge of Aboriginal occupation in this area. This will be confirmed through the proposed program of archaeological investigation.
- Aesthetic values – the study area may have aesthetic value to the local Aboriginal community for its topography and location on the Parramatta River foreshore, as well as its relationship to the wider Aboriginal landscape. Any archaeological deposits located on the site may have aesthetics value and significance.

Recommendations

Curio Projects confirm that the site is considered likely to have high social and spiritual significance to the local Aboriginal community. Accordingly, Curio Projects recommend that the Aboriginal Cultural Heritage Assessment Report is to be provided to Registered Aboriginal Parties for review in accordance with the 'Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW'.

Mitigation measure	Indicative timing
• The Aboriginal Cultural Heritage Assessment Report is to be provided to Registered Aboriginal Parties for review in accordance with the 'Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW'.	Prior to issue of consent

6.2.2 Post-settlement heritage

As identified in **Section 2.1.4**, there are several items of heritage and archaeological significance on the site and in the surrounding area. The site is not located on or in the vicinity of any heritage conservation areas, any heritage landscape, or any site subject to an Interim Heritage Order.

Heritage on the site

The site for the Powerhouse Parramatta was selected because of its unique location occupying a central and prominent area of foreshore on the Parramatta River at the northern edge of the CBD, positioned as the terminus of the Civic Link. Powerhouse Parramatta has been the subject of a two-stage international design competition, in which the competition brief requested that design teams consider aspects of heritage and cultural significance within their submissions, including local heritage items, whilst achieving the functional brief required to be delivered on this important site. Other considerations included the activation of transport and pedestrian access consistent with Council's vision for the Civic Link. The competition was run in accordance with the procurement requirements of the NSW Government and was formally endorsed by the Australian Institute of Architects. In addition, the competition was managed by independent competition specialists Malcolm Reading Consultants.

The submitted concept designs made clear that it was not possible to deliver on the design ambitions of the brief and deliver connectivity, whilst also retaining local heritage items. The retention of heritage was considered carefully during the judging process, however, ultimately the Jury were unanimous in their decision on the final chosen concept by Moreau Kusunoki and Genton.

Accordingly, the delivery of Powerhouse Parramatta necessitates the demolition of two local heritage items, Willow Grove and St George's Terrace, as well as the partial excavation of the site that has the potential to impact or uncover archaeological remains (discussed further in **Section 6.2** below). The assessment by Advisian confirms the following:

- The demolition of Willow Grove and St George's Terrace would have a significant physical and visual impact on the heritage significance of the heritage items, resulting in a total irreversible loss of the conservation values including significant fabric and the visual setting.
- The removal of vegetation on the site within the within the Willow Grove curtilage will also impact the cultural significance of this place and its garden setting.

- When considered against its context, Willow Grove is the only one of its kind within the core of the Parramatta CBD, meaning its demolition would have a significant impact on representation of this architectural style in this particular location. St George's Terrace, as a collective group, is also the only remaining example of this style located in the Parramatta CBD, recognising that whilst there are other examples in the Parramatta CBD these are typically single storey terraces or are attached rather than a complete row.
- Elements of Willow Grove and St George's Terrace are identified as being movable heritage, meaning that significant fabric from the demolished heritage items can be salvaged, archived, reused and/or interpreted on the site and will not be lost as a result of the development.

Whilst some fabric can be salvaged and reinterpreted, the proposed development will require the statutory delisting of Willow Grove and St George's Terrace which is identified as having a significant impact on heritage significance as well as the community's connection to heritage. The cumulative impact of this loss, as well as nominated mitigation strategies in response to this impact, are discussed in the following sections.

Surrounding heritage

In addition to the heritage items occurring on the site, Powerhouse Parramatta is located in proximity of a number of surrounding heritage items.

Of particular importance is Old Government House that is a heritage item of World and National value. The site is located outside of the buffer for this item, but is identified as being within a 'sensitive' surrounding area. Advisian confirm that the development will not significantly impact the heritage values of this item as the proposed development would generally be obscured by the taller Meriton development to the west, it satisfies the guidelines for developing within this precinct of the CBD, and the site is not identified as being 'highly sensitive'.

The Lennox Bridge is also an item of particular importance in relation to the site, and is identified as having State heritage significance. The subject site extends to adjoin the Lennox Bridge but does not propose any direct physical works to this heritage item, but rather seeks to reinstate the shared path and landscaping along the foreshore. The proposal will, therefore, also not significantly impact this heritage item and all intensive physical works are to occur at a greater distance from the site than the minimum working distances nominated by Arup in the Noise and Vibration Impact Assessment (see **Section 6.7** below).

Heritage interpretation

Heritage interpretation is identified as a key positive outcome and contribution for Powerhouse Parramatta. It is recognised that the Powerhouse is uniquely placed to undertake programmatic interpretation and connect people to local histories, which will recognise the significant and changing relationships between people and place within the urban and cultural landscapes. It will assist in addressing the potential community sense of loss and loss of social and cultural connections between people and place as a result of the demolition of the heritage items, as well as more broadly addressing the multiple histories of the site pre and post-contact. There is no potential for the adaptive reuse of the heritage items.

It is recommended that a detailed Heritage Interpretation Plan be prepared and implemented at the site to identify and interpret the key heritage conservation values of the heritage items to be demolished, as well as other aspects of the history of the site. This Plan will be prepared with consideration of the City of Parramatta draft Heritage Interpretation Guidelines 2017 and may include the following strategies as identified by Advisian in the SOHI:

- Engagement of a Powerhouse Parramatta historian-in-residence as part of the Powerhouse research library and archive, to work directly with local stakeholders of these local heritage items, including commissioning two major documentary works, via video, film or immersive technology, created in tandem with the above form, which would recognise these heritage items and become part of the Powerhouse Collection including a period of immediate display.
- Undertaking an ongoing interpretation program as part of the Powerlab Residencies.
- Developing an ongoing visual and oral history archive of the site to connect community with Aboriginal and Post-Contact histories, and link with broader heritage interpretation across Parramatta. This could have a potentially positive impact on Aboriginal cultural heritage through interpretative art and other elements, to celebrate and communicate the significance of the site and landscape by the Darug people, and local Aboriginal community.

- Developing and presenting Museum exhibition programs that tell and interpret local Parramatta histories within a broader national historical narrative.
- Exploring the potential acquisition of significant fabric from demolished heritage items into the Powerhouse Collection, for future research, interpretation and display.

Heritage interpretation would continue during the operation of Powerhouse Parramatta through the ongoing commissioning of new works, cultural programs and community consultation. This is addressed in the mitigation measures.

Cumulative impacts

Advisian has also considered the impact of the proposed demolition of heritage items on the site in the context of other existing and planned projects in the surrounding area to understand the cumulative impact. It notes that the construction of the Parramatta Light Rail would have physical, visual and vibration impacts for heritage items located in the Parramatta CBD and directly requires the demolition of the Royal Oak Hotel and Stables on the corner of Ross and Church Streets in the North Parramatta precinct, as well as two individually listed bridges (Camellia Bridge and Carlingford Bridge). The future Sydney Metro West and Civic Link projects would also have the potential to contribute to the cumulative impacts on heritage items in the Parramatta area.

Advisian confirms that the proposal will have a minimal cumulative impact on the loss of heritage items in the Parramatta CBD with consideration of the nature and scale of the proposal, the potential impact to heritage by other current and future development, and the perspective of local communities.

Recommendations

The SOHI prepared by Advisian assess the potential impacts of the construction and operation of Powerhouse Parramatta on the heritage significance of heritage items, and archaeological sites and any heritage conservation areas, heritage landscapes and potential heritage items located on the site and in adjacent areas. It determines that proposed development necessitates the removal of two local heritage items on the site, which will have a significant impact on heritage significance and as well as the community's connection to heritage. The proposed development will not adversely impact surrounding heritage items, including Old Government House, and is considered to have a minimal cumulative impact on the loss of heritage items.

It is identified that Powerhouse Parramatta will become a landmark development, responding to its context and setting, and incorporating a practical resolution to heritage, architectural and landscape design matters. The development has unparalleled capacity to undertake programmatic interpretation of the heritage on the site and connect people to local histories, as well as more broadly addressing the multiple histories of the site pre and post-contact. The salvage of movable heritage on the site and the implementation of a comprehensive Heritage Interpretation Plan will assist in minimising and mitigating the identified impacts.

The following mitigation measures are recommended with reference to Advisian's findings. Further mitigation measures are identified in **Section 6.2.3** below for managing archaeological heritage.

Mitigation measure	Indicative timing
Prepare a Heritage Interpretation Plan focussing on programmatic interpretation strategies, and may include physical installations and visual and oral history archives, that include the multiple histories of the site pre and post-contact, developed in collaboration with relevant stakeholders to identify and interpret the key heritage conservation values of the "Willow Grove and potential archaeological site)" and the "St Georges Terrace (and potential archaeological site)". The Plan is to have reference to: • The conservation policies for interpretation for the "Willow Grove (and potential archaeological site)"; and • The City of Parramatta draft Heritage Interpretation Guidelines 2017, unless superseded.	Heritage interpretative elements are to be determined/ implemented prior to occupation
Prior to any demolition, an archival photographic record will be prepared in accordance with the relevant requirements of the NSW Heritage Office's How to Prepare Archival Records of Heritage Items (2003) and Photographic Recording of Heritage Items Using Film or Digital Capture (2006) guidelines.	Prior to demolition commencing
The Contractor(s) must salvage significant fabric from the "Willow Grove (and potential archaeological site)" and the "St George's Terrace (and potential archaeological site)" for the purposes of re-use and interpretation at the site, including:	During demolition

Mitigation measure	Indicative timing
• Significant internal and external elements at the "Willow Grove (and potential archaeological site)" graded as exceptional, high and moderate significance in the CMP19 prepared for the heritage item. • Significant brick fabric at the "St George's Terrace (and potential archaeological site)", including parapet brickwork with the façade inscription "St. George's Terrace 1881", where possible. • Internal elements of the "St George's Terrace (and potential archaeological site)" which may be of heritage significance, to be identified by a qualified heritage consultant. Where practical, heritage specialists and/or a heritage engineer will provide construction support.	
Salvaged significant fabric including contents, fixtures and objects must be made available, through a process to be developed by INSW in consultation with the City of Parramatta Council and/or local stakeholders	Post construction

6.2.3 Archaeology

In addition to the SOHI, Curio Projects has prepared an Archaeological Research Design (**Appendix I**) which has been undertaken for consulting, investigating and assessing Aboriginal cultural heritage and Aboriginal archaeology within the site.

Aboriginal archaeology

A search of the Aboriginal Heritage Information Management System (AHIMS) database confirms that there is also a site within the study area identified as a potential archaeological deposit, and a number of other registered sites within close proximity of the site. These sites are not an actual representation of the archaeological potential of the search area, but rather represent a starting point for further research and investigation. The potential archaeological deposit registered on the site is also as a result of a 2015 assessment that confirmed there may be materials present in a portion of the site where ground disturbance did not extend more than 2m below the surface.

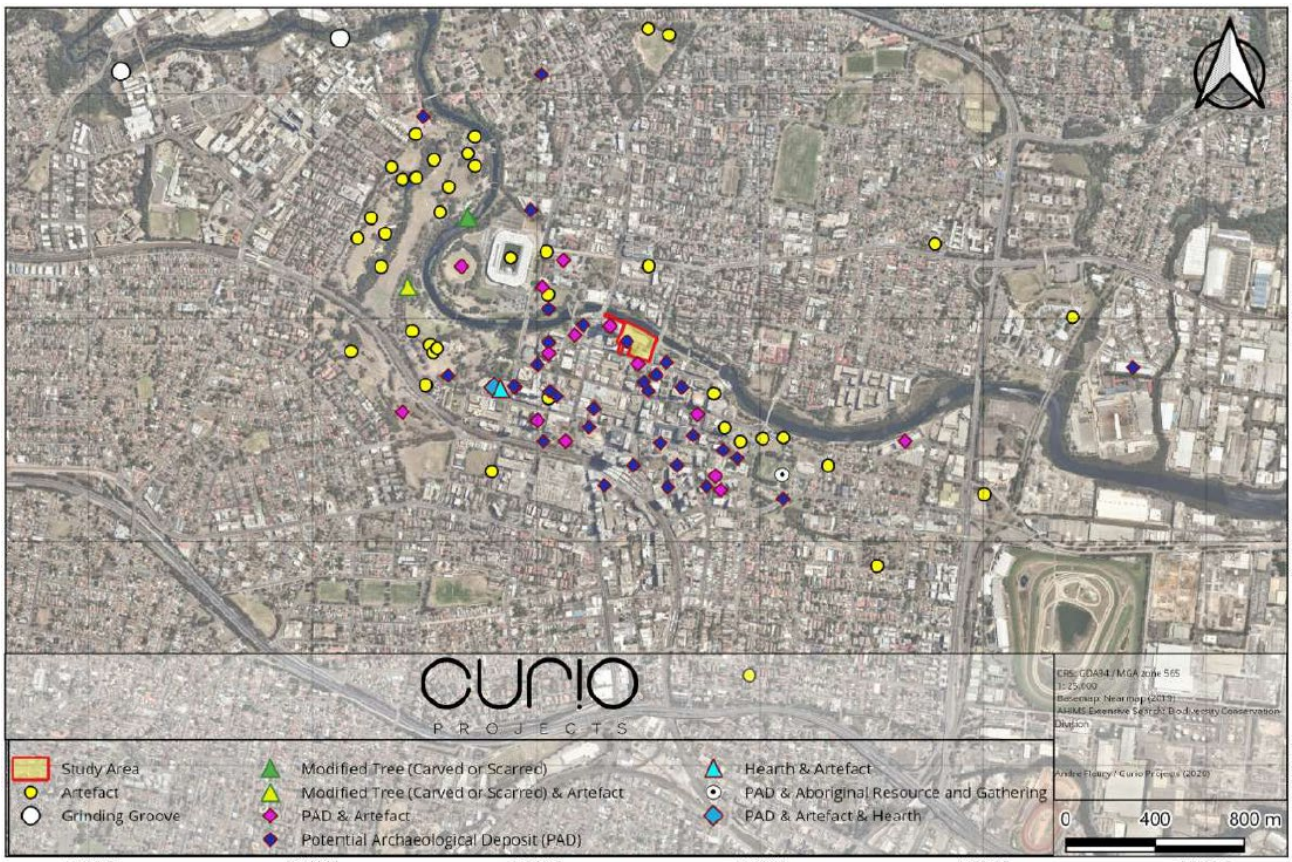


Figure 73 Aboriginal heritage sites within and surrounding the site

Source: Curio Projects

With consideration of the above, a review of other assessments undertaken in the area, and consideration of original landform, possible levels of disturbance across the site, and original resource zones that would have been favourable to Aboriginal populations, Curio Projects has determined that there is a nil to high level of Aboriginal archaeological potential in areas across the site (see **Figure 74**). The archaeological potential is summarised as being:

- nil to low sensitivity in the footprint of the existing Riverside Carpark because of the excavation completed when constructing the carpark that removed the natural soil profiles in this location;
- nil to very low sensitivity along the river foreshore as flooding and scouring activities, flood mitigation activities, and other significant landscaping works impacts the archaeological potential in this location;
- low sensitivity in a portion of the northern edge of the site where disturbance has not exceeded more than 2m below the current surface level; and
- high sensitivity in the centre of the site where the at-grade parking areas have protected the Parramatta Sand Sheet soils that has been shown to retain significant archaeological, environmental and geological evidence.

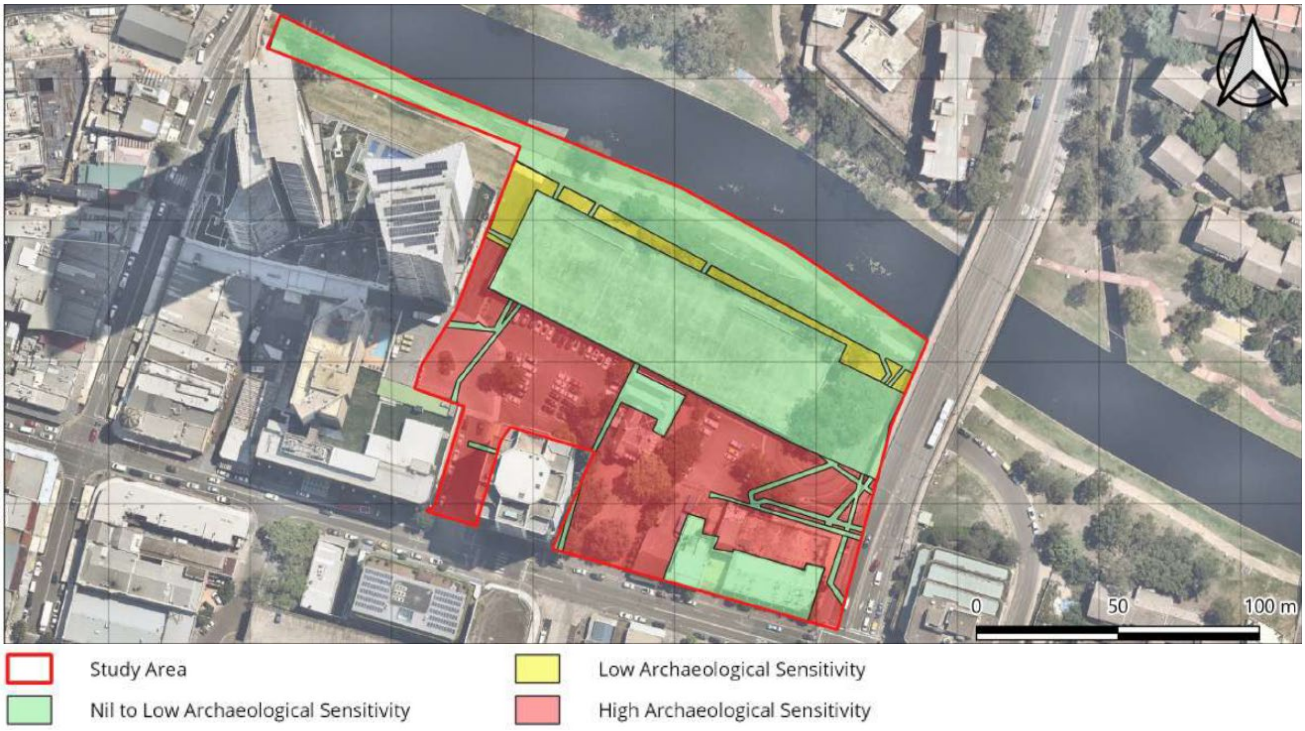


Figure 74 Aboriginal archaeological sensitivity

Source: Curio Projects

Post-settlement heritage

Three Archaeological Management Units are identified on the site attached to Willow Grove, St George's Terrace, and the river foreshore along the northern boundary, and are each identified as being of local significance. These deposits have the potential to contribute to knowledge of the initial establishment and development of Australia's second colony settlement, and provide evidence relating to the nineteenth century occupation of the study area.

Curio Projects confirm that the site has a moderate to high potential to contain archaeological evidence associated with phases of previous occupation of the study area, some of them from the early township (see **Figure 75**). The south eastern corner of the site may contain remains of structure and occupation from this town development phase, with substantial and extensive remains from this period likely to be of State significance.

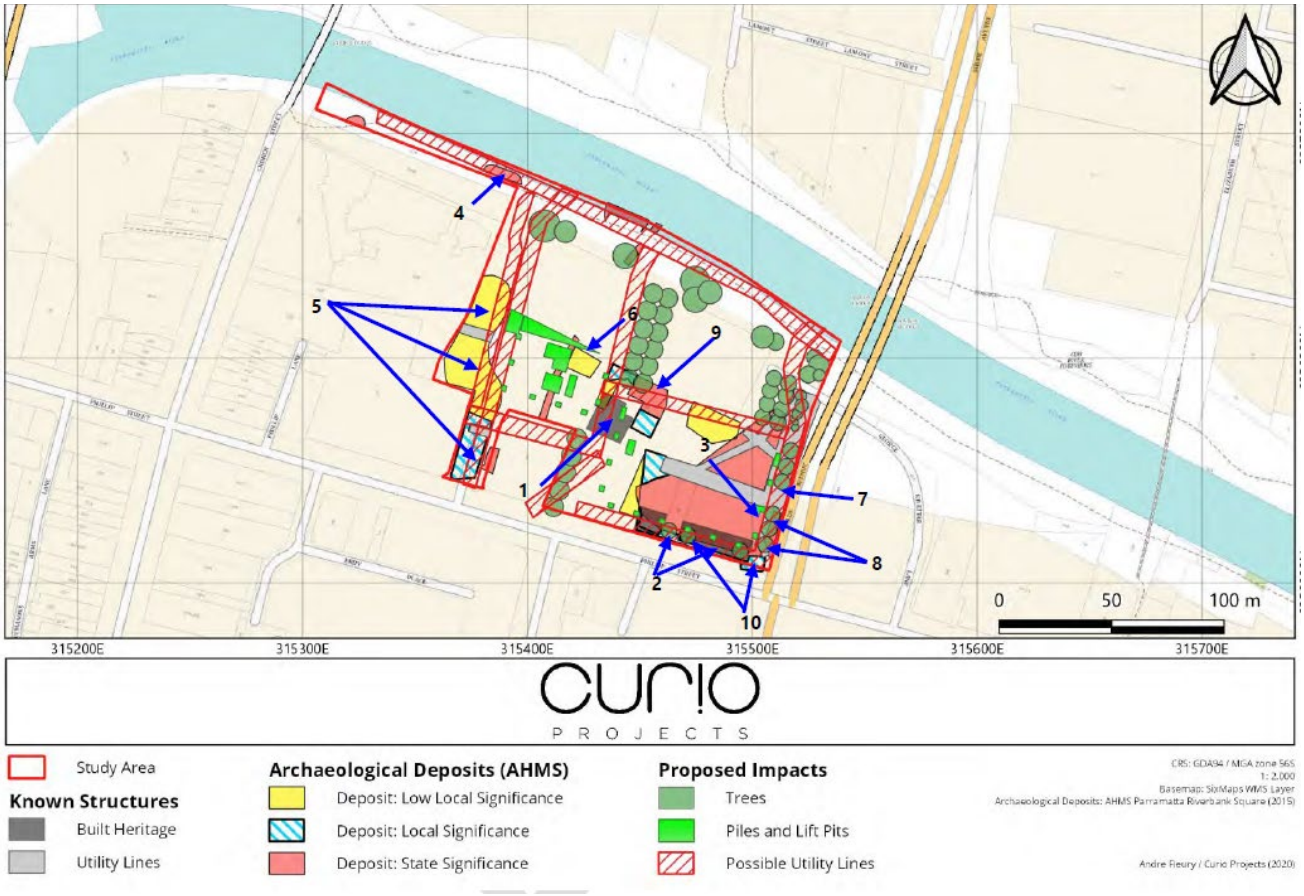


Figure 75 Potential archaeological deposits

Source: Curio Projects

Impact on archaeology

The Archaeological Research Design (**Appendix I**) confirms whilst the proposed development has been designed to minimise excavation and potential impacts on archaeology where possible, there is the potential for it to impact possible archaeological deposits and relics. The Research Design develops an investigation and conservation methodology for the site.

It proposes to undertake test trenches to investigate the nature and extent of any archaeological remains. Should this testing indicate the presence of intact and significant archaeological features and deposits then the excavations will be expanded into open area excavations. These areas will be excavated in their entirety and any deposits recorded and removed by hand or machine. Where the test trenches indicate substantial disturbance or removal of archaeological deposits, then these areas will not be subject to comprehensive salvage. An excavation report will then be prepared detailing the results of the investigations and any artefacts uncovered, including the potential to house artefacts on the site as part of the Powerhouse Collection.

In addition, an unexpected finds protocol will be developed and implemented during the construction process to safeguard any unforeseen deposits.

Recommendations

Curio Projects confirm that the site has an overall high social and spiritual significance and that there are areas of nil to high archaeological potential on the site with regard to indigenous Archaeology, and that should archaeological deposits be uncovered these would have high scientific significance. There are also identified Archaeological Management Units identified on the site, of local and State significance.

The proposed redevelopment of the site has been designed to minimise disturbances where possible, but mitigation strategies are required to address areas where there will be unavoidable impacts. This includes undertaking a series of test trenches excavated across the site to investigate the potential for archaeological remains, as well as a program of open excavation if deposits and features in the area are exposed and recorded, in accordance with the Research Design. A salvage and recording program will be implemented where relics are disturbed or removed by works during the development, and all findings recorded and analysed by the appropriate specialists.

The following mitigation measures are proposed with consideration of the recommendations of Curio Projects.

Mitigation measure	Indicative timing
Archaeological excavation works within the study area should be undertaken in accordance with the research design detailed in the Historical Archaeological Research Design Report prepared by Curio Projects (April 2020), and any findings from review by Registered Aboriginal Parties.	Prior to the commencement of construction works.
Prepare and educate all on site contractors on an Unexpected Heritage Finds Protocol and Unexpected Aboriginal Finds Policy. Should any suspected archaeological resource/relic be encountered, a stop works would be required in the area of the find, and the project archaeologist contacted.	Prior to commencement of works and during construction

6.3 Environmental amenity

6.3.1 Visual and view impacts

A Visual Impact Assessment (VIA) has been prepared by Ethos Urban (**Appendix V**), to identify, describe and assess the significance and appropriateness of the potential visual impacts of the Powerhouse Parramatta. To gain an understanding of the existing visual experience and potential visual impacts, 18 viewpoints in the public and private domains were selected for study as part of this VIA (see **Figure 76**) with consideration of input from Council. The Guidelines for Landscape and Visual Impact Assessment 3 (GLVIA3) have been the adopted methodology to assess the level of impact.

Public views

The methodology used for assessing the impact is as follows:

1. Visual Character – what is the character of the proposal's visual catchment
2. Planning Framework – identification of relevant planning instruments against which visual impact is to be assessed
3. Visual Effect – assessment of the nature and scale of the proposal on the existing visual catchment
4. Visual Impact – assessment of the impact of the visual effect following application ofother, relevant considerations
5. Acceptability of Visual Impact – assessment of the visual impact against the planning framework, which have been derived into six criteria to assess the impact on scenic and cultural landscapes, height, bulk and scale, heritage, amenity, view sharing, significant views and view corridors.
6. Mitigation – what measures are needed to ensure acceptability of impact.
7. Recommendation – can the proposal be supported in its current form based on a balance of considerations relevant to visual impact.

Each location assessment is supported by site photos informed by survey data, and photomontages and imagery produced and certified by Orbit Solutions in accordance with the NSW Land and Environment Court's policy for photomontages.

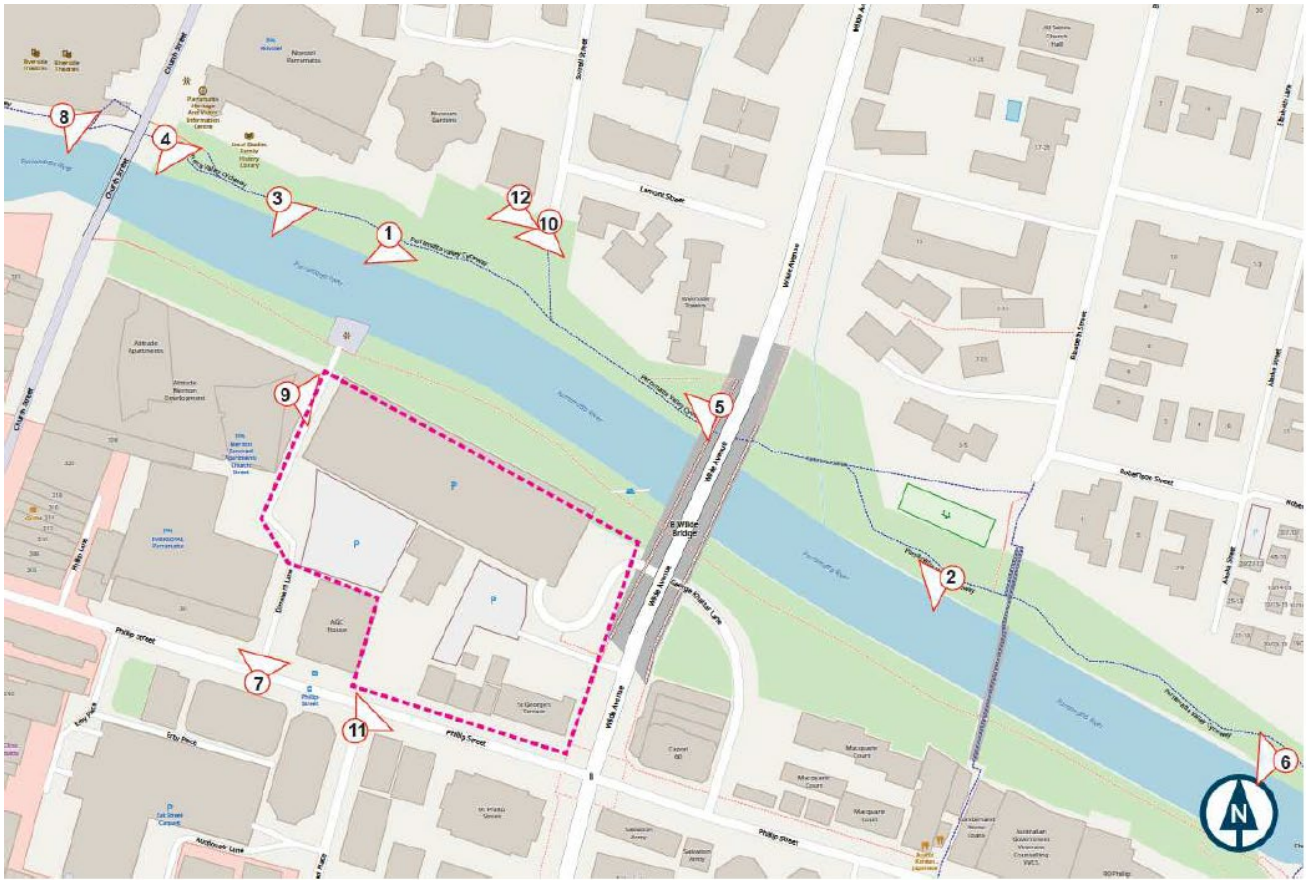


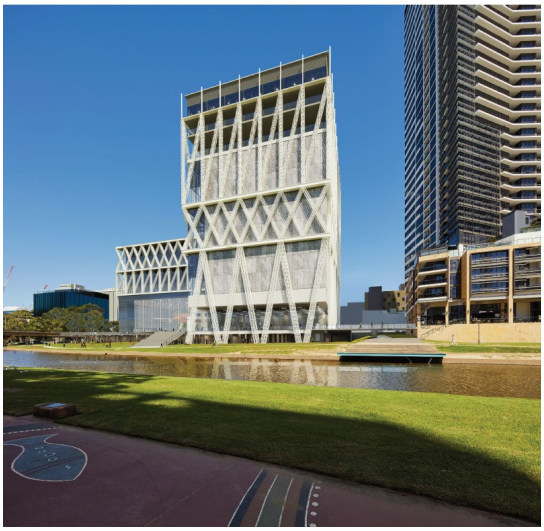
Figure 76 Public viewpoints assessed in the VIA

Source: Orbit Solutions

The assessment of the 10 viewpoints in the public domain surrounding the site confirms there is a predominantly moderate to low impact on views by the proposed Powerhouse Parramatta, when compared to existing development on site. A summary of the assessment of each location including the ultimate level of impact is provided in **Table 11**.

It is noted that viewpoints 9 and 12 in **Figure 76** above are contained in private land along the northern and southern banks of the Parramatta River, and as such are addressed in the following section on private views.

Table 11 Summary of impacts to public views

No.	Description	Magnitude of change	Assessment summary	Overall impact (significance)
1	Northbank (centre)	Considerable	The proposal will replace lower scale development existing on the site and will become the new focal landmark in the view, with the exoskeleton being highly noticeable. The character of the view will change to resemble a distinct metropolitan centre, rather than a lower order activity centre.	Moderate impact
	 *Existing*		 *Proposed*	
2	Northbank (east)	Noticeable	The proposal will obstruct the existing full view of the Meriton residential and hotel building in view, but rather will become the new feature in view. The proposed development will not obstruct views of Barry Wilde Bridge, Parramatta River and its associated linear parklands, or the fore or mid grounds.	Low impact
	 *Existing*		 *Proposed*	

No.	Description	Magnitude of change	Assessment summary	Overall impact (significance)
3	Northbank (west)	Noticeable	The proposal will become a new focal landmark in the view, with emphasis on the northern and western elevations of the western building. The view will show little separation between the development and the Meriton building.	Moderate impact
	 *Existing*		 *Proposed*	
4	Lennox Bridge	Noticeable	The combination of distance and the elevated nature of the Viewpoint, as well as the presence of the Meriton building in its entirety including its two towers closer to the viewer than the proposal, will function to reduce its prominence compared to viewpoint further to the west.	Low impact
	 *Existing*		 *Proposed*	

No.	Description	Magnitude of change	Assessment summary	Overall impact (significance)
5	Barry Wilde Bridge	Considerable	Apart from removal of the screening vegetation, the proposal will not directly affect the Parramatta River and its associated linear parklands, or the fore or mid grounds.	Moderate impact
	 *Existing*		 *Proposed*	
6	Northbank (east at weir)	Perceptible	The proposal will become a new element in the view, enabling an appreciation of the eastern elevation. Due to the effect of distance and the presence of other more immediately noticeable elements and features, it will not be prominent.	Low impact
	 *Existing*		 *Proposed*	

No.	Description	Magnitude of change	Assessment summary	Overall impact (significance)
7	Phillip Street at Dirrabarri Lane	Noticeable	While the western most part of the southern elevation can be seen from this view, it will be predominantly screened by the GE Building. It will result in minor obstruction to the waterfront residential building in the far background.	Low impact
	 *Existing*		 *Proposed*	
8	Riverside Theatres	Noticeable	Compared to the scale of the adjoining Meriton complex, while noticeable, the proposed development will appear of substantially lesser scale. Only the northern and part of the western elevations of the western building are visible.	Moderate impact
	 *Existing*		 *Proposed*	

No.	Description	Magnitude of change	Assessment summary	Overall impact (significance)
9	Rotary Park	Considerable	The proposed development will be the central viewpoint from this view, with the entirety of the northern elevation visible. The proposed Civic Link and public domain elements will also be visible.	Moderate impact
	 *Existing*		 *Proposed*	
10	Intersection of Phillip Street and Horwood Place	Considerable	The proposal will fundamentally change the nature of the view. The finer grain, low rise northern Phillip Street streetscape will be replaced with a substantial, CBD scale development. Overall, the character of the view is changed from that of a lower order activity centre to that of a metropolitan centre. It is considered reasonable in its context and is mitigated by the well-considered architectural design and tree planting.	High impact
	 *Proposed*			

Recommendation

The VIA states that, in essence, the proposal defines itself as a landmark within the surrounding context of the Parramatta CBD. It confirms that the detailed design scheme has an acceptable visual impact, with regard to the Parramatta River and its associated linear parkland. When considered against the planning framework, including its compliance with FSR and height controls in the LEP, its promotion of the overall intent of strategic plans of growing

the Parramatta CBD and better connecting it to the Parramatta River, visual impact as assessed at the selected viewpoints in the public domain are appropriate.

As this VIA has found that the visual impact of the proposal is acceptable when considered against the planning framework, no mitigation measures are recommended or considered necessary to reduce visual impact to an appropriate level.

Private views

The VIA at **Appendix V** also considers and addresses the potential impact on private views. The key residential private views were selected based on their proximity to the development site and their ability to be potentially impacted by the proposed development. One private view (location 9) is an overlay of a photograph taken from this location, whilst the remaining 6 views are either simulated or computer modelled. These assessment methods were undertaken as a result of the constraints on accessing private residences at this time, meaning photography has not been possible from these private locations. The assessment remains consistent with best-practice and addresses the planning principles enunciated by the NSW Land and Environment Court in *Tenacity Consulting v Warringah Council* [2004] NSWLEC 140 (Tenacity) where appropriate.

A summary of the extent of the impact is as follows:

- 330 Church Street (Altitude residential tower) – the proposed development will remove the carpark and obstruct the continuous view of the Parramatta River and parklands but will not impact the main value of this view as an expansive regional views.
- 346 Church Street – the proposed development will reduce the depth of the view into the Parramatta CBD through replacing the lower scale Riverside Carpark. It does not impact enjoyment of the Parramatta River and foreshore open space as well as the Lennox Bridge and reinforces the northern edge of the CBD that has been set in place by the adjoining Meriton development.
- 3 Sorrel Street and 1 Sorrel Street (lower and upper levels) – the proposal will reduce the depth of views into the Parramatta CBD available over the Riverside Carpark, but the setback for Dirrabarri Lane that is maintained by the proposed development will retain and focus the existing view into the CBD. The proposal reinforces the northern edge of the CBD that has been set in place by the adjoining Meriton development.
- 16 Lamont Street – the proposal will reduce the depth of views into the Parramatta CBD available over the Riverside Carpark, but maintains a focussed view to the CBD along the Barry Wilde Bridge with the proposed development reinforcing this street edge as well as the northern edge of the CBD that has been set in place by the adjoining Meriton development.

Recommendation

The VIA supports that the proposed development will have a reasonable impact on private views with consideration of residences to the north and west of the site with consideration of Tenacity and Roseth SC. The VIA confirms that:

- The extent of the impact to those residences located on the northern side of the Parramatta River are generally the same (or less due to the impact of greater elevation) as that those viewpoints analysed in the public domain in similar locations. In each instance, it was confirmed that there would be a definite change to the view through the redevelopment of the site, but that the ultimate outcome would be acceptable in providing a new landmark development that is commensurate with the nature and scale of the growing CBD. Accordingly, rather than potentially obstructing view of a highly desirable feature, the proposal represents the insertion a new feature that has been designed with intent to be a landmark to reflect its community function and to reinforce the perception of Parramatta as the Central City's metropolitan centre.
- While some views of the Parramatta CBD available over the existing Riverside Carpark will be reduced, this CBD vista will likely be retuned in some form by the future development of tall towers in the field of vision as allowed under the LEP.
- The development remains appropriate and reasonable as it complies with planning controls for FSR and height under the Parramatta LEP and represents skilful design that has been the subject of an international design competition.

On this basis, the VIA confirms that the selected viewpoints in the private domain are considered reasonable and no mitigation measures are recommended or considered necessary to reduce visual impact to an appropriate level.

6.3.2 Overshadowing

Overshadowing plans have been prepared by Moreau Kusunoki and Genton (**Appendix B**) and replicated at **Figure 77**, illustrating the shadow cast by the proposed development during the winter solstice (21 June), being the time of year when there is the greatest potential for overshadowing, as well as the summer solstice (21 December) and the March equinox (21 March). The plans demonstrate that:

- No shadow will be cast on the significant public open space areas provided along the Parramatta River foreshore at any time or period of the year. The new open space areas created on the site, including the Terrace and Riverfront spaces, will also have excellent solar access with overshadowing only occurring in the afternoons.
- The proposed development will not cast any additional shadow on surrounding residential development, comprising the apartment buildings on the northern side of the Parramatta River and the Meriton residential apartments fronting Church Street at any time or period of the year.
- Additional shadows will be cast on the lower levels of the Meriton serviced apartment tower to the west of the site, however, these are short-lived only occurring in the mornings of the summer solstice (21 December) and March equinox (21 March), and not during the winter solstice (21 June). This will not adversely impact access to direct sunlight and will not result in any non-compliance as serviced apartments are not subject to SEPP 65 or the Apartment Design Guide.
- All remaining shadows are cast on the Phillip Street and Wilde Avenue road reserves and non-residential development within the Parramatta CBD.

Accordingly, it is clear that the proposed works will not give rise to any unacceptable overshadowing impacts, including on the amenity of surrounding residences and open space areas.

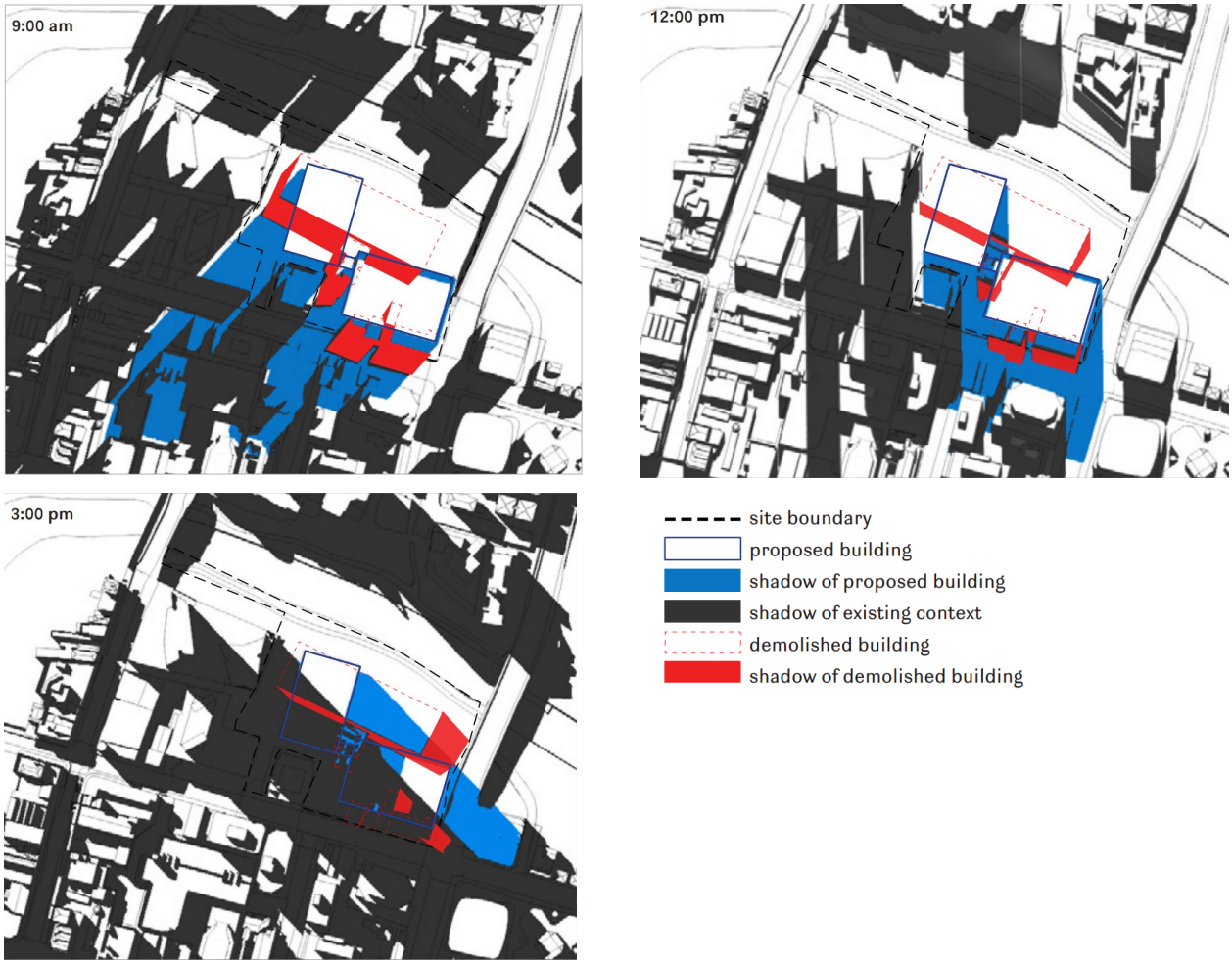


Figure 77 Solar access and overshadowing during the winter solstice

Source: Moreau Kusunoki and Genton

Recommendation

The assessment confirms that the proposed development does not result in any significant or adverse overshadowing, and as such no further study or refinement is required and no specific mitigation measure has been nominated in this instance.

6.3.3 Wind environment

Arup has undertaken detailed wind modelling to quantify the potential impacts of the proposed development on the pedestrian environment (**Appendix W**). The Wind Impact Assessment applies the Lawson Criteria to determine the pedestrian comfort and safety in the public domain surrounding the site. This criteria is considered to be the applicable means of assessing the site as it determines the regular wind conditions of a site, rather than the maximum wind conditions without duration or probability of their occurrence.

The Assessment confirms that all locations around the proposed Powerhouse Parramatta would pass the safety criterion, with some locations becoming windier, and others calmer depending on the incident wind direction. The majority of locations within vicinity of the site at ground level would be classified as suitable for sitting type activities and other regions (below the Riverfront, the Civic Link and on the connecting bridge) be suitable for standing. This is shown in **Figure 78** below.

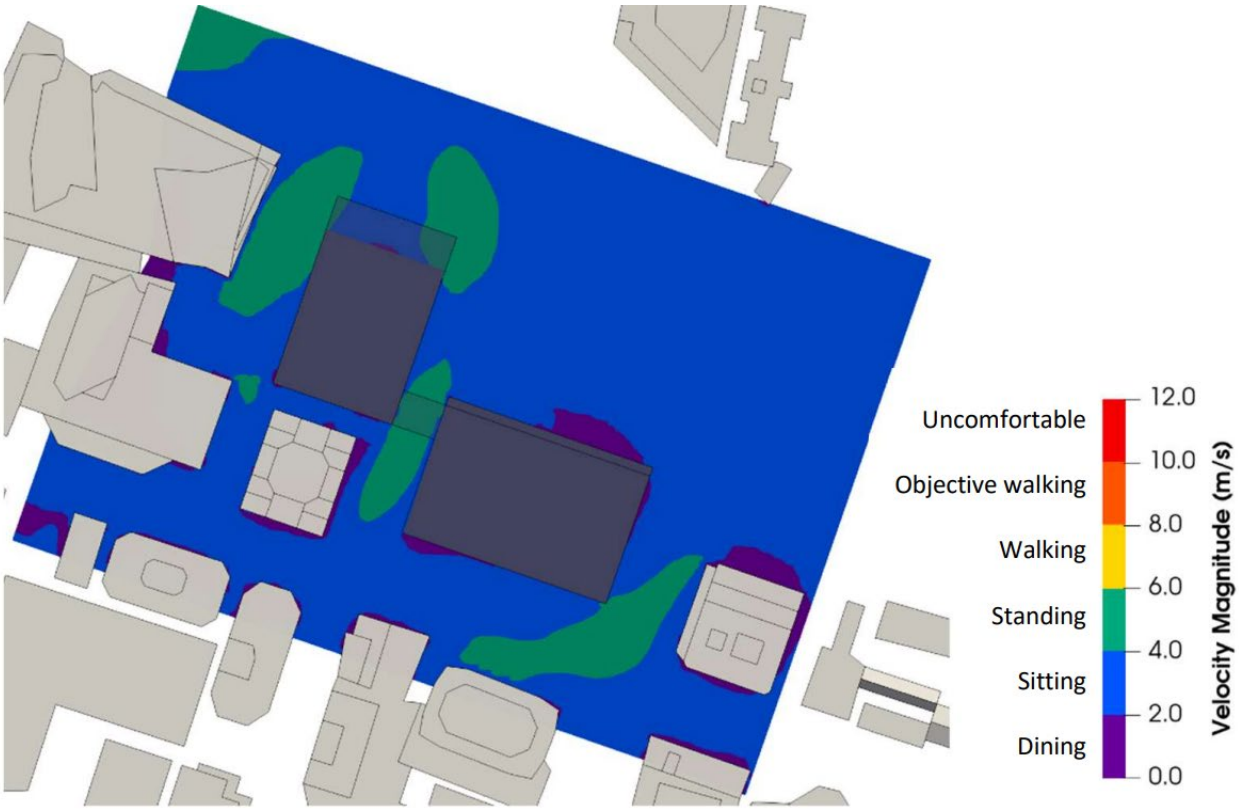


Figure 78 Wind conditions on the ground level of the site

Source: Arup

Therefore, the wind comfort and safety conditions around the site are considered suitable for the intended use of these spaces. The Assessment confirms the overall comfort and safety classification would not change compared to the existing development on site. This is in the view of the following:

- The orientation of the buildings on site and the back pressure generated by the high rise buildings at 330 Church Street are beneficial in improving wind conditions that flow from the south-east (**Figure 79**). This will improve conditions in the public domain along the riverfront.
- Downwash from the compound shape of the proposed development and the high-rise buildings to the immediate west accelerating around the corners are main flow mechanism causing stronger wind conditions. However, when compared to the existing development on site the general safety and comfort will remain the same and the majority of the site will be suitable for sitting.

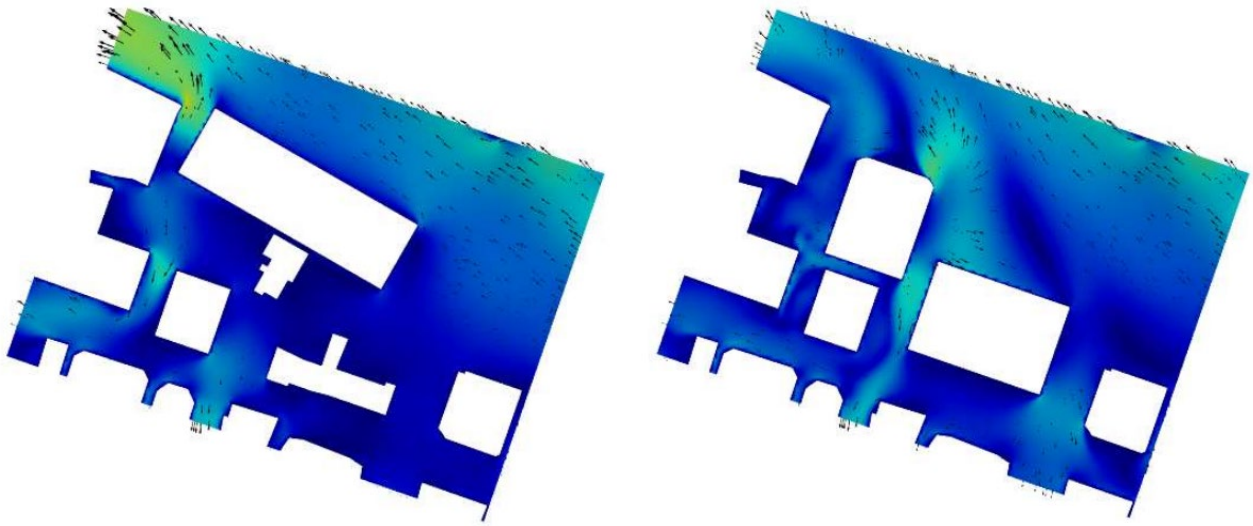


Figure 79 Existing v proposed built form. Showing the improved wind conditions on the ground level

Source: Arup

Recommendations

The modelling confirms that the wind conditions surrounding the proposed development are similar to those experienced surrounding the existing development on site. All locations measured will achieve the safety and comfort criteria and are identified as being appropriate for their intended use. Accordingly, whilst Arup has identified potential measures that could assist in further improving wind conditions on the site, these are not considered necessary to achieve any mitigation of adverse impacts, but could be explored at the future detailed design stage.

6.3.4 Reflectivity

A Reflectivity Assessment has been undertaken by Arup (**Appendix X**) to determine the potential glare impact of solar reflections from facades on traffic, pedestrians and surrounding buildings. The assessment has not analysed the geometry of the proposed trusses that articulate the building facades, as a conservative methodology which does not have regard to any overshadowing or the obscuring effect of the trusses.

The assessment confirms that reflections are not expected to result in unacceptable glare for drivers on Wilde Avenue travelling both north and south, and Phillip Street heading east. Some excessive reflection is predicted from the southern building façade for drivers heading west on Phillip Street, however, this occurs in a position to be obscured by the sun visor and as such is also not considered to be unacceptable glare.

When viewed from the river, there is the potential for the proposed development to generate glare for the ferries turning to dock at the wharf. As ferries typically travel at slower speeds during this manoeuvre, the operators will be able to adjust the vision control glare and will be directing their view towards the wharf rather than the building. Arup further confirm that other existing facades facing the river would cast similar reflections and as such the proposed development does not create new or unusual circumstances for ferry drivers, and for these reasons the reflections will not result in unacceptable glare.

The impacts for pedestrians, who move at slower rates and will be able to divert their vision to avoid glare, is considered to be insignificant. Further, adopting a normal external reflectance below 20% for external building finishes will reduce any potential glare reflections that may occasionally be produced towards pedestrians and other buildings.

Recommendation

The Reflectivity Assessment has found that the proposed development it is unlikely to result in unacceptable glare for drivers, ferries, pedestrians or surrounding buildings that cannot be managed. The following mitigation measure will ensure any potential impacts are appropriately mitigated.

Mitigation measure	Indicative timing
All external materials and finishes are to have a spectral reflectivity of less than 20%, unless a further Reflectivity Assessment confirms that the design will not result in unacceptable glare.	To be detailed in the construction drawings.

6.4 Transport, traffic, parking, and access

JMT Consulting has prepared a Transport Impact Assessment (**Appendix F**) to outline a strategy for access to Powerhouse Parramatta both during the construction and operation phase.

6.4.1 Operation

Parking

Carparking

As outlined in **Section 4.8.1**, no parking for use either by patrons or staff will be provided on the site. Public transport will be promoted as the primary mode of transport to use when travelling to and from the site, recognising that there are strong public transport links existing within and planned for the Parramatta CBD.

The proposal involves the removal of the 504 spaces currently provided within the Riverbank car park, which will require the redistribution of existing users of this facility to other public car parks or non-car travel modes such as public transport and active travel. On a typical weekday, it is modelled that the site may generate parking demand for approximately 140 cars. These vehicles can be easily accommodated within surrounding public carparks located within the Parramatta CBD in walking distance of the site. These carparks accommodate over 12,000 spaces, with JMT Consulting confirming that the Parramatta Station carpark alone provides 1,160 spaces and is typically only half occupied during the day. Accordingly, it is expected that the redistributed parking demand can easily be accommodated within existing surplus parking capacity.

Accordingly, the provision of vehicle parking on the site is not considered necessary or appropriate.

Bicycle demand

The development will provide bicycle parking and facilities for staff and visitors to encourage the use of bicycles when travelling to and from Powerhouse Parramatta. Bicycle parking for staff and the Powerhouse Residences have been determined using the rates specified in the Parramatta DCP or Green Star requirements where relevant and will be available in a secure facility in close proximity to the cycle path along the Parramatta River foreshore. End of trip facilities are to be provided within the western building.

Bicycle parking for the general public will be accessible at all times and is also located in close proximity of the cycle path along the Parramatta River foreshore. The 40 spaces provided in the undercroft space are considered to be adequate to accommodate the 1% to 2% of visitors that will arrive by bicycle to the Powerhouse. It is further noted that the Riverfront area does not preclude expanding parking facilities if there is shown to be high demand, and as such JMT Consulting recommends that the operator monitor demand and provide additional capacity if needed after the development commences operations.

Travel demand and capacity

Travel demand is a measure of the available capacities of various transport modes during the day and at peak hour, and has been forecasted using travel surveys of the existing Powerhouse Museum at Ultimo, knowledge of the current and future transport environment in Parramatta, and with consideration of the design and intended operation of Powerhouse Parramatta.

Public Transport

Because each of the different exhibition, presentation and research facilities will offer programs and operate concurrently with the working, retail, and temporary accommodation, people attending these diverse offerings will arrive and depart at different times, depending on the purpose of their visit. This reduces pressure on the transport network by limiting the number of people movements during peak hours of the day. JMT Consulting confirm that during this typical arrangement where 5,000 to 6,000 people will be arriving and departing from the site over the course of a day, the supporting transport network has the ability and capacity to accommodate these travel requirements.

JMT Consulting has also assessed a worst-case scenario event where 10,000 people are required to arrive or depart from the Powerhouse Parramatta site within an hour. There is a low likelihood of this worst-case scenario occurring as it would require large capacity events to take place across a number of spaces and commence and/or conclude at the same time. Notwithstanding, JMT Consulting confirm that the public transport network is capable of accommodating large numbers of people arriving and departing on a daily basis, as demonstrated by transport arrangements for other large-scale events such as those hosted at the nearby Western Sydney Stadium, and as such the network is well suited to accommodate the demands generated by the future Powerhouse Parramatta in this worst-case scenario. No additional services are considered necessary as the existing public transport services, when considered in conjunction with the planned public transport initiatives, are more than adequate to service the site.

Taxi and rideshares (point-to-point transfers)

Taxis and rideshare services are predicted to account for 100 vehicle movements per hour during peak periods, equating to less than 2 vehicles per minute. JMT Consulting these can easily be accommodated in the existing set-down areas near the site or within the proposed coach layby area to be provided along the Phillip Street frontage of the site.

Pedestrians

The proposed development has sought to improve the accessibility and connectivity of the site with consideration of the existing and future context of the site. The design makes provision for improved pedestrian pathways along the Parramatta River foreshore, servicing visitors travelling from the Ferry Wharf or Parramatta Valley Cycleway, as well as aligning within and continuing the future Civic Link through the centre of the site, servicing those visitors travelling from the heart of the CBD and the key transport node at Parramatta Square. A new relocated pedestrian (zebra) crossing on Phillip Street by Council will facilitate safe access for pedestrians travelling to the site in this direction. The potential future 'Powerline' and laneway connection will also facilitate direct east/west connections to Church Street and the future light rail stops.

Vehicles

In the worst-case scenario, up to 830 private vehicles may require parking within the Parramatta CBD. As the surrounding area currently provides over 12,000 publicly available parking spaces, this parking demand can be adequately accommodated.

The impact of these vehicle movements has also been assessed, confirming the following:

- Vehicle movements will not be concentrated in one area, but rather will be dispersed across a number of parking stations and areas to be used by those driving to attend the Powerhouse Parramatta.
- The worst-case scenario would occur outside of peak commuter hours, typically on a weekend or in the evening, when other traffic volumes are lower within the CBD.
- 640 vehicles enter the site daily, equating to 1,300 daily traffic movements, to use the existing Riverbank Carpark and as such the current operation of the site contributes to peak hour vehicle movements.
- SIDRA traffic modelling confirms that adjacent road network will continue to perform at similar levels of service during the future 2026 PM peak hour. The overall degree of saturation of the Smith Street / Phillip Street / Wilde Avenue intersection remains unchanged, with minor increase in average vehicle delay of six seconds – equivalent to an 8% increase.

In view of this, JMT Consulting confirm that the impact on the road network in the Parramatta CBD will be minimal and is acceptable. No road upgrades are identified as being necessary.

Coaches

Through analysing the current demands for the Powerhouse Museum at Ultimo, JMT Consulting confirm that the three (3) proposed coach spaces are adequate and can appropriately service demand. These spaces can be suitably accommodated on-street on the northern side of Phillip Street to provide safe access to the site, noting that parking cannot be accommodated on the site as:

- It would detract from the public domain to accommodate for turning circle requirements.

- It would need to be co-located with the loading dock at the ground floor of the western building, resulting in potential conflicts between large vehicle movements and groups of patrons (likely to be school groups).
- It would contribute to potential conflicts between pedestrians and vehicles when accessing the site via Phillip Street and Dirrabarri Lane.

Access and management

Servicing and loading

The proposed development has been designed so that all back of house (i.e. servicing / loading) activities are separated from main pedestrian arrival points; minimising conflicts between service vehicles and pedestrians walking in the precinct. As discussed in **Section 4.8.1**, loading and service vehicles will access the site primarily via Dirrabarri Lane and utilise the internal loading areas within the western building, which have been designed to accommodate the anticipated level of demand and so that all vehicles will enter and exit the site in a forward direction (swept path diagrams are provided with the Transport Impact Assessment). This also utilises the existing vehicle access point for the site.

Loading and servicing will be managed through an on-site facility manager and delivery management system that enables the team to track delivery times and allocate docks, ensuring demand can be moderated throughout the day and vehicles are not queuing to enter the site. This will effectively manage traffic flow during peak periods.

Emergency vehicles and evacuation

As discussed in **Section 4.8.2**, the proposed development ensures emergency vehicles remain capable of accessing the site and Parramatta River foreshore. The process for the site in the event of a flood is discussed in **Section 6.5** below.

Travel plan

The proposed development represents an excellent opportunity to promote the use of sustainable and active transport when travelling to and from the site. In view of this, JMT Consulting has identified a number of strategies and measures that may be implemented to reduce dependency on private vehicles and promote other modes of transport. These initiatives will naturally evolve with time and be refined before Powerhouse Parramatta commences operating. It is targeted that 80% of staff and residents, and 75% of visitors will use public transport, walking or cycling.

These initiatives demonstrate the Powerhouse's commitment to creating a more sustainable and resilient precinct that minimises the impact on the local and wider environment. The success of any adopted initiatives will be the subject of a two-yearly review, to assess travel demand and make refinements, as an ongoing commitment to sustainability.

Table 12 Potential travel plan measures

Measure	Notes	Staff	Visitor
Staff cycle advice	Advice on cycling and walking routes	✓	
Safety training	Cycle safety training courses (provided by others) for staff to improve cycling confidence.	✓	
Staff induction	All event day staff members to be made aware of the travel plan as part of their induction process, including a tour of end of trip facilities on site and available non-car travel options	✓	
Walking and cycling map	Produce map showing walking and cycle routes and bicycle parking in the area	✓	✓
End of trip facilities	Provision for end of trip facilities for staff	✓	
Bicycle parking	On site cycle parking, the use of these spaces will be monitored and requirements reviewed based on their usage.	✓	✓
Bicycle wayfinding	Ensure bicycle parking is clearly visible or provide signage to direct people to the cycle bays	✓	✓
Wayfinding	Provision of improved static wayfinding signage in the precinct to support pedestrian and cyclist movements to/from public transport stops	✓	✓
Real time information	Provide information on public transport journey times to the Powerhouse Parramatta via links to existing journey planning websites	✓	✓

Measure	Notes	Staff	Visitor
Shift working	Flexible start and finish times for staff, to allow them to take advantage of off-peak fares and encourage public transport use.	✓	
Public transport use	Encouraging public transport use for business travel	✓	
Information on website	Information on public transport timetables, pedestrian and cycle routes and facilities. Advertise the parking limitations and restrictions	✓	✓
Visitor information	Provide travel information to visitors via the Powerhouse website, including potentially at point of ticket purchase (where relevant)		✓
Carparking	No on-site parking is to be provided as part of the Powerhouse Parramatta.	✓	✓

Source: JMT Consulting

Recommendation

The Transport Impact Assessment prepared by JMT Consulting confirms that the proposed development can be accommodated within the existing transport network, and has been designed to facilitate safe, simple, enjoyable and seamless loading and delivers and arrival and exit arrangements for staff, residents and patrons. The assessment confirms:

- The existing and future planned transport network supporting the site is capable of accommodating the expected travel demands generated over a typical day as well as for a worst-case hypothetical utilisation scenario whereby 10,000 people are arriving at or leaving the precinct within a one hour period.
- The removal of all parking existing on the site will promote active and sustainable transport usage. Those that choose to drive to the site can still be accommodated within the existing parking stations in the CBD that are within close walking distance of the site. Adequate levels of bicycle parking for staff, residents and visitors is provided on the site, and can be expanded in the future if there is recognised demand.
- The traffic generated by Powerhouse Parramatta will be comparable to or less than that currently generated by the existing Riverside Carpark and will not adversely impact on the operation of road network, with the key intersection of Smith Street / Phillip Street / Wilde Avenue experiencing a similar level of service.
- All access arrangements for the site, including pedestrian pathways, emergency vehicles, and loading and servicing have been found to be adequate and appropriate.
- A range of transport measures can also be implemented by the Powerhouse to encourage the use of sustainable and access transport when travelling to and from the site for staff, residents, and visitors. These initiatives will be confirmed prior to the commencement of operations and will be monitored and developed over time to meet the target mode share.

The following mitigation measures are recommended with reference to JMT Consulting's findings.

Mitigation measure	Indicative timing
Prepare a Loading Dock Management Plan prior to the commencement of operations on the site. The LDMP is to detail: • Loading dock management details • Service vehicle volumes including size and frequency • Details around incident management at the access to the loading dock • Management of conflicts between cars accessing the site on • Dirrabarri Lane and vehicle movements to/from the loading dock.	Prior to commencement of operations
A Travel Demand Management Plan will be prepared with reference to the framework contained in the Section 6 of the Transport Impact Assessment by JMT Consulting (April, 2020) including provision for periodic monitoring of travel behaviour.	Following occupation of the site

6.4.2 Construction

JMT Consulting has prepared a preliminary Construction Pedestrian and Traffic Management Plan (CPTMP) (**Appendix F**) to assess the proposed access and operation of construction vehicles and their potential impact on the surrounding area. A detailed CPTMP will be developed with the appointment contractor and confirm the detailed construction methodology and specific measures for safely managing construction traffic in the surrounding area.

Pedestrian and cycle access

Pedestrian access will continue to be facilitated around the subject site, including along all of the street frontages and the Parramatta River foreshore. Construction hoarding will separate pedestrians and cyclists from works occurring on the site and ensure the safety of those using the pathways adjacent to the construction site. Where temporary interruptions to the shared path along the foreshore is necessary, diversions will be put in place to ensure continued movement along the Parramatta River edge.

Public transport

The shuttle bus and bus stops are sufficiently separated from the construction site, and the small number of vehicles using Wilde Avenue will not adversely impact the priority bus corridor along this route. The vehicle arrival and departure routes have been selected to avoid impacts on the construction of the Light Rail.

Parking

No parking for workers is provided on site, and as such workers will be informed to travel to the site via public transport or to use one of the existing parking stations within the Parramatta CBD. JMT Consulting confirm that a maximum parking demand of 65 cars is expected during the construction period, which in the context of the current supply within the Parramatta CBD is considered to be negligible.

The on-street parking spaces to be removed on Phillip Street to facilitate the proposed work zone will not adversely impact access to parking within the Parramatta CBD, as over 12,000 spaces remain available in the surrounding area.

Vehicle access

The proposed vehicle access points for the demolition and construction phases of the project are existing, with the exception of the vehicle crossing off Phillip Street. These access points will be managed by an accredited traffic controller, including Dirrabarri Lane which will remain open at all times to facilitate access to the adjacent GE Office Building and Meriton development as well as for emergency vehicles.

Traffic generation

JMT Consulting note that during the busiest construction phase, 100-120 trucks and 65 vehicles will access the site per day. This is considered minimal in the context of the existing traffic movements in the precinct, with the existing Riverside Carpark generating in the order of 1,300 daily traffic movements.

Cumulative construction impacts

The methodology for the redevelopment of the site has been developed with regard to key concurrent construction projects in the surrounding area, which is largely the construction of Stage 1 of the Parramatta Light Rail. The primary construction vehicle routes largely do not overlap with those used for the Light Rail project, with the exception of Victoria Road. The number of vehicle movements on this shared route are considered to be relatively low in the context of existing traffic volumes. JMT Consulting confirm that the cumulative impacts are, therefore, expected to be minor.

Recommendation

The Preliminary Construction Pedestrian and Traffic Management Plan prepared by JMT Consulting validates that the access and operation of construction vehicles associated with the redevelopment of the site will not undermine the safety or the capacity of the existing transport network, and as such will not result in any long-term or adverse impacts. Pedestrians and cyclists will still be able to travel along the frontages of the site, and vehicles that regularly use Dirrabarri Lane will continue to do so. There will be no adverse cumulative construction impacts as a result of the proposed development.

The following mitigation measures are recommended with reference to JMT Consulting's findings.

Mitigation measure	Indicative timing
A detailed Construction Pedestrian and Traffic Management Plan will be developed with the appointed contractor, confirming the detailed construction methodology and specific measures for safely managing construction traffic in the surrounding area.	Prior to the issuance of a construction certificate

Mitigation measure	Indicative timing
In the event that a footpath or shared path is obstructed, appropriate diversions are to be implemented.	During construction

6.5 Flooding, drainage and stormwater

Arup has prepared a Flood Risk and Stormwater Management Report (**Appendix O**) identifying the flood risk of the site and associated management strategies, as well as methods for proposed stormwater drainage, on site detention, and water sensitive urban design strategies.

6.5.1 Flooding

As identified in **Section 2.1.7**, the site borders the Parramatta River, and is located within the Upper Parramatta River Catchment meaning it is subject to mainstream flooding. The existing Riverbank Carpark basement level and landscape areas north of the carpark are exposed to flooding up to the 1% AEP (100 year) event. The site is also affected by overland flow paths originating from the Parramatta CBD Catchment that converge on Phillip Street and subsequently flow into Dirrabarri Lane and east of the existing GE Building to discharge into the Parramatta River.

The proposed development has been designed to provide passive flood protection by designing the floor levels and two main building entrances of the development above the 1% AEP (100 year) event flood level plus 0.5m freeboard, in accordance with the Parramatta LEP, whilst also ensuring that the flow conveyance from the site can be reduced to a minimum to mitigate any adverse impacts on neighbouring properties. The site will also make use of the architectural undercroft space together with the landscaped setback to the Parramatta River to provide flood storage. This area is subject to inundation by floodwaters and has been designed to achieve approximately the same flood storage and flow conveyance as the pre-development scenario when the river is in flood. The proposal, therefore, ensures there will be no substantial modification to the existing flood behaviour upstream or downstream of the site whilst protecting new building assets from flooding risk.

Arup confirm that the design of the proposed development does not present increased risk to public safety for people within the building. The buildings and main entrances are designed above the recommended flood level, and as such the only key consideration for the evacuation of the site is the Riverfront area and foreshore that has been designed to accommodate inundation by floodwaters. Arup recommends an early warning system, using rainfall forecasts will be used to determine if the under-croft space should be open for use, which would form part of a daily procedure prior to opening Powerhouse Parramatta. This daily review could be supported by on-site observations and permanent warning signage within the Riverfront area, as well as other potential audible and visual warning devices. As detailed in **Figure 80** below, the furthest path of travel for a person evacuating the affected areas is 155m, which is confirmed to be an acceptable distance to evacuate before the peak of a storm that takes approximately 30 minutes. Following the evacuation of the Riverfront and foreshore spaces, people would be expected to shelter in place. Modelling suggests that flooding from the local catchment would generally ease within an hour.

The detailed emergency planning measures will be confirmed in an emergency plan to be developed prior to the commencement of operations.

Landscaped and public domain areas located below the 1% AEP event flood will be designed with suitable materials, finishes and landscape planting species to ensure resilience to inundation and allow for low-cost and simple maintenance and restoration activities in post-flood conditions.

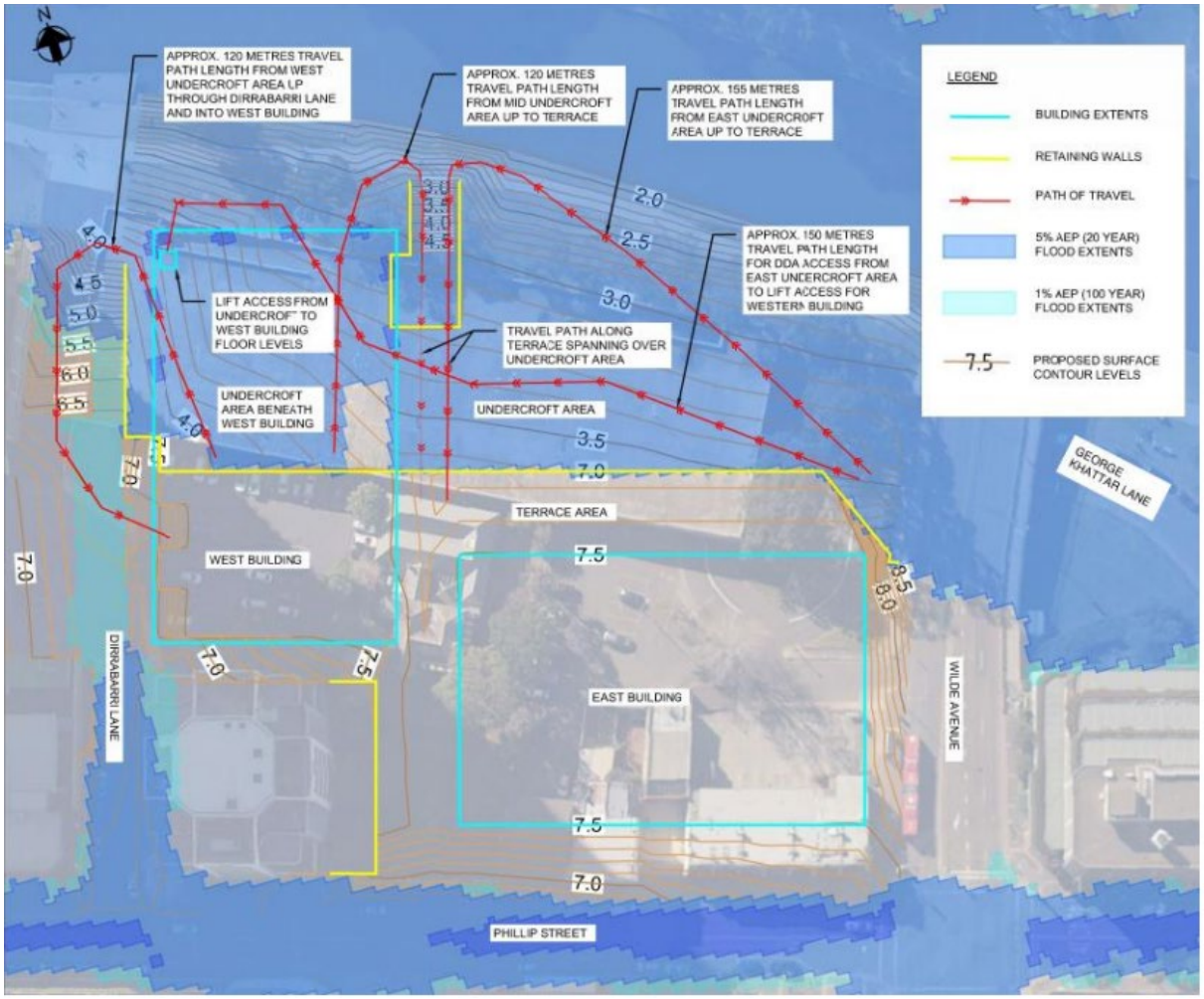


Figure 80 Flood evacuation assessment

Source: Arup

6.5.2 Stormwater

Arup also details the proposed upgrades to stormwater infrastructure to complement the flood risk management strategy and to achieve both functional requirements and sustainability objectives.

Water quantity

The displaced overland flow flooding will be managed with new conveyance infrastructure and will offset the negative effects generated by these changes to the pre-development flood behaviour. The new network is confirmed as generally maintaining the same amount of catchment area between the pre and post development conditions for the trunk networks and overall will be superior to the existing predevelopment configuration meaning more floodwater will be captured and conveyed in the proposed pits and pipes, resulting in less water flowing overland.

No on-site detention is proposed as Arup confirm that this would result in an unfavourable outcome as:

- The development site is directly adjacent to Parramatta River and as such discharging flows into the river in the quickest manner possible, before the river reaches its peak flood conditions, is preferred to mitigate flood risk to the site.
- The worst case flood event through the site occurs over the first hour of rainfall, and then begins to rise above the riverbanks approximately two hours after the storm event, meaning an OSD system would provide little benefit as it would be inundated by the river flood shortly after a storm event.
- The site accommodates approximately the same amount of flood storage as the pre-development conditions.

Water quality

Arup has identified Water Sensitive Urban Design strategies to provide positive visual, water quality and public amenity, which will be confirmed as the detailed architectural, landscape and stormwater designs are developed. It is expected at this preliminary phase that the development will incorporate gross pollutant traps, raingardens and/or tertiary treatment proprietary units for treating runoff from the building roofs, as well as landscape buffer strips and litter baskets to capture suspended solids and gross pollutants from external areas.

Preliminary MUSIC modelling confirms that these measures achieve the treatment quality requirements as summarised in **Table 13** below.

Table 13 Stormwater treatment targets and results

Pollutant	Required reduction	Modelled reduction	Compliance
Gross pollutant	90%	93%	✓
Total suspended solids	85%	88%	✓
Total phosphorus	60%	68%	✓
Total nitrogen	45%	47%	✓

Source: Arup

Recommendation

Arup in their assessment confirm the following in relation to the conditions of the site and development:

- Flooding is principally unchanged from the pre-development site, with the proposed undercroft space being at similar levels to the riverbanks to contain flood storage and having the same flood storage provision and flow conveyance. There is no substantial modification to the existing flood behaviour upstream or downstream of the site whilst protecting new building assets from flooding risk.
- The proposed buildings have been designed above the minimum flood planning levels for flood protection. An emergency evacuation plan will be developed to mitigate risk and ensure the protection of visitors to the site.
- The implementation of the water quality measures will ensure that water leaving the site achieves Council's water treatment targets. These will be developed alongside the detailed design and documentation of the proposed development for construction.
- The proposed upgrades to the stormwater network will replace existing drainage assets impacted by the development and tie into the proposed flood risk mitigation strategy.

It is considered that the proposed development does not result in any significant or adverse impacts, and as such no further study or refinement is required. No specific mitigation measures are nominated in the assessment by Arup, and as such the following are recommended.

Mitigation measure	Indicative timing
An emergency response plan is to be prepared prior to the commencement of operations to detail flood evacuation procedures for Powerhouse Parramatta, including the installation of any physical, visual and/or audible warning mechanisms. The plan should form part of staff induction and training programs.	Prior to operation.

6.6 Social and economic impacts

A Social and Economic Impact Assessment (SEIA) has been prepared by Ethos Urban (**Appendix Y**). The SEIA considers and analyses the potential social and economic impacts of the proposal and is based on a desktop review of publicly available information in regard to the redevelopment and with guidance and reference to relevant guidelines. It considers both qualitative and quantitative indicators associated with the project and uses these as a means to measure and understand the potential for both positive and negative impacts of the project.

It confirms that the proposal has the potential to result in both positive and negative impacts. The identified negative impacts are both short term and ongoing, and have informed a range of mitigation measures discussed in **Section 8.0** and below. These impacts include:

- That construction may impact the way of life of residents, workers and visitors to the Parramatta CBD area, particularly if cumulative construction impacts are felt with simultaneous development project construction phases, such as the Parramatta Light Rail and future Sydney West Metro Station construction. This includes cumulative impacts on the character of Parramatta that may shift the appreciation and value of social heritage, culture, customs and connections. Further temporary impacts may be experienced by local business as a result of noise and access during construction, albeit these will be offset somewhat by higher worker spending.
- The removal of items of heritage and archaeological significance as the site as it is redeveloped which may have some impact on the local community way of life and sense of place. The community is identified as having a particular attachment to Willow Grove, as well as the St George's Terrace.
- The attraction of up to 2 million visitors per year which may impact neighbouring properties unless effectively managed. Careful consideration needs to be given to the management and operations of Powerhouse Parramatta, which is also key to delivering positive benefits and ensuring that programs take into consideration the local setting, cultural values and population needs of the local area.

In addition to these impacts, the SEIA confirms that Powerhouse Parramatta is expected to provide a range of social and economic benefits to the community at a local, metropolitan and state level, including:

- Supporting approximately to 1,100 full-time equivalent (FTE) construction jobs as well as approximately 2,430 FTE indirect jobs over the development period, and between 300 to 400 FTE direct jobs (full-time, part-time and casual) as a result of the ongoing operation of Powerhouse Parramatta.
- Improving the level of visitation and tourism expenditure within the local and regional area and, in turn, increasing demand for entertainment, food and accommodation from visitors which will generate increased employment for residents in the locality. In addition, Powerhouse Parramatta, as a best-in-class facility, will help secure future exhibitions and events.
- Providing significant reputational and positive public benefits through the delivery of a new world class cultural institution for science, research and creative industries for the local community as well as the Western Sydney region and Greater Sydney area.
- Improving life-long education outcomes for students and supporting long term social and economic wellbeing through delivering an active working precinct that provides world class education, research and community facilities as well as education programs with high tech digital spaces for research and education programs, enhancing opportunities to collaborate with schools, universities and industry.
- Enhancing local and broader community lifestyles through the creation of a series of life-long learning programs, opportunities for culturally diverse festivals and events, specialist education and innovative learning opportunities.
- Providing new cultural and entertainment opportunities during both day and night and diversifying the local night-time economy.
- Improving way of life for users of the Parramatta CBD area, through enhancing active travel connections between the Parramatta CBD and the Parramatta River foreshore and thereby improving local access and amenity.
- Investing in construction employment opportunities as well as increased job opportunities for those employed in the science, education, innovation, creative and retail industries.
- Improving access to Powerhouse Collections as well as international exhibitions alongside engaging communities with local histories.

Overall, it is considered that with a range of mitigation measures to manage any risks as well as enhance the positive benefits, the project is anticipated to bring significant public benefits to the local and broader communities.

Recommendation

The SEIA identifies that there will be negative social and economic impacts through the redevelopment of the site, including impacts associated with construction works, the demolition and removal of local heritage, and the increased usage of the site as a new attraction within Sydney. However, there will also be significant and varied positive social and economic impacts resulting from the proposed development that will have both local and broader reach. These include improvements to education, lifestyle and way of life, and engagement with local histories, as well as providing significant employment opportunities both during the construction and operational phases and supporting the NSW's tourism and visitor economy. These will benefit the local community as well as the Western

Sydney region and Greater Sydney area, and are of particular importance in supporting the recovery of the Sydney and NSW economy following the Covid-19 pandemic at a time when creating jobs is more urgent. Accordingly, the SEIA concludes that through the implementation of mitigation measures to manage risks and enhance positive benefits, the proposed development will generate significant social and economic benefits.

The following mitigation measure is recommended with reference to the SEIA findings, recognising that a number of the identified mitigation strategies are consistent with those raised in other assessments and discussed elsewhere in this statement (for example heritage interpretation and the preparation of transport plans to encourage sustainable transport usage). No mitigation measures were identified as being necessary for the economic impacts of the proposed development.

Mitigation measure	Indicative timing
The detailed Construction and Environmental Management Plan is to include, or be supported by, a communications strategy to communicate the progress and staging of the construction process to the local community.	During construction

6.7 Noise and vibration

Arup has completed a Noise and Vibration Impact Assessment (**Appendix Z**), to identify and provide a quantitative and qualitative assessment of the noise and vibration generating sources produced during the construction and operation of Powerhouse Parramatta.

6.7.1 Noise environment

The site is located on the edge of the Parramatta CBD and is surrounding by a mix of residential, business, open space and various other education and cultural uses. North of the Parramatta River is primarily residential apartments, and south of the river is primarily commercial, with both sides interspersed with places of public worship and education institutions. The density of these surrounding land uses and the scale of the site requires the surrounding environment to be classified into Noise Catchment Areas (NCAs) that accommodate groups of receivers. These NCAs define those within the noise catchment up to Level 18 and those from Level 19 and above, and have been used to determine the reasonably most affected receivers that are assessed in this report (see **Figure 81** below). The surrounding environment was subject to both long-term and short-term noise monitoring (see **Figure 82** below) to understand the prevailing ambient environment at the nearest potentially affected receivers and to establish relevant noise criteria.

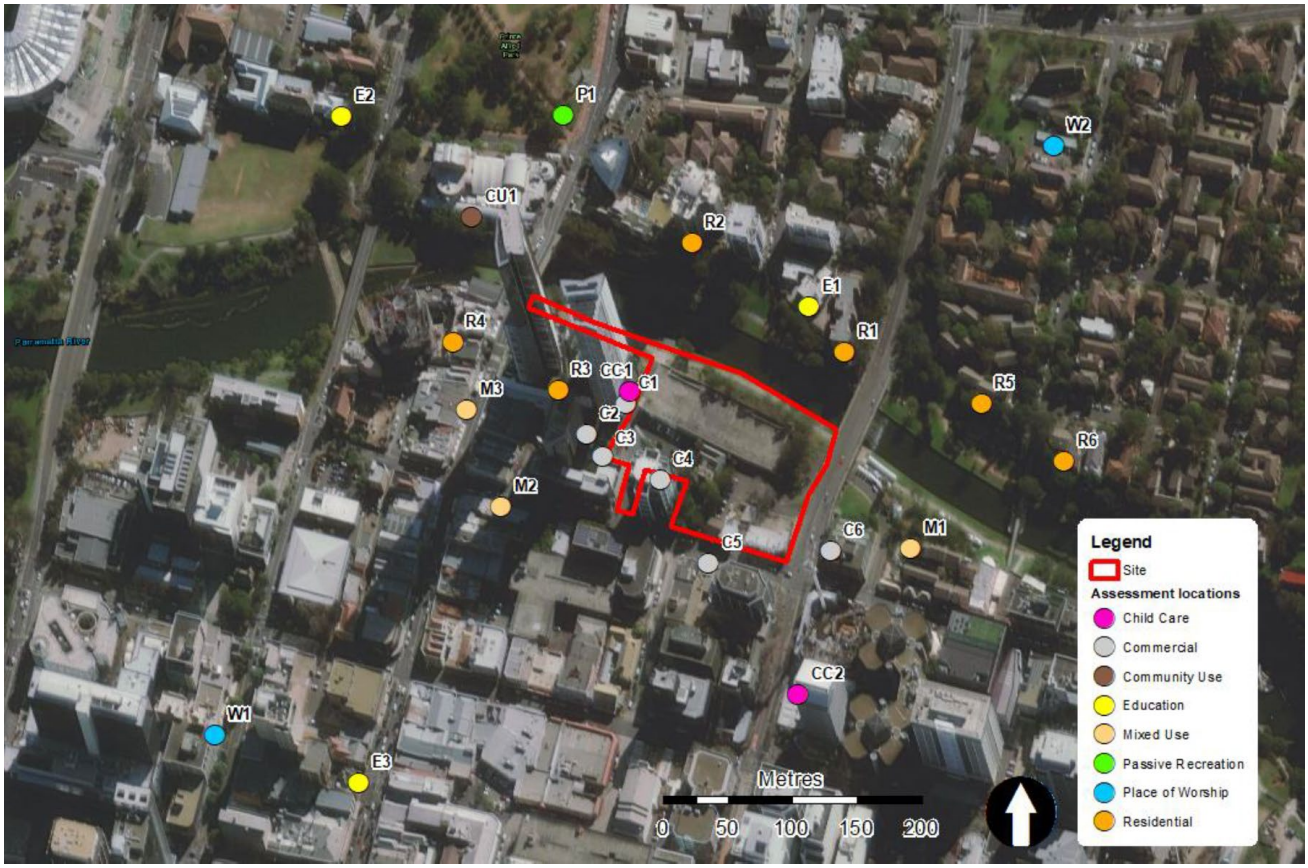


Figure 81 Noise assessment locations

Source: Arup

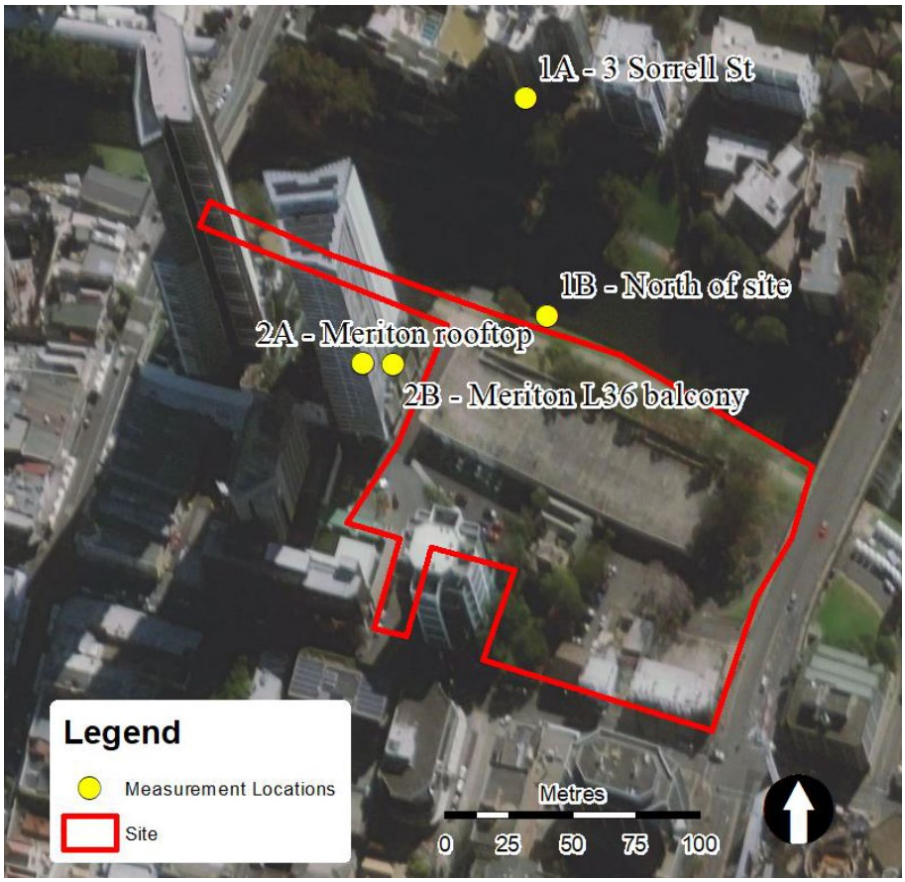


Figure 82 Noise monitoring

Source: Arup

6.7.2 Construction

Noise

The NCAs are used to determine the construction noise criteria, which has been used to evaluate the impacts of the construction of the development with consideration of the extent and program of works on the site, noise monitoring results and the relevant noise policies and guidelines.

The analysis confirms that exceedance of the nominated noise criteria may occur for residences directly north of the site on the northern side of the Parramatta River at Lamon Street and Sorrell Street. Only one location is identified as being 'highly affected', being the residences at 3 Sorrell Street, Parramatta. The residences directly to the west of the site within the Meriton development are largely shielded from the highest construction noise impacts. There are also exceedances predicted for commercial receivers adjacent to the site including the adjoining serviced apartments, and the Apex Institute of Education to the north of the site on Sorrell Street.

These predicted exceedances represent a conservative worst-case 15 minute period, and would be attributed to the use of such equipment as concrete saws and piling rigs. Because the method of piling is not known at this preliminary stage, the noise impacts modelled represent conservative assumptions and may be lower if undertaking bored piling instead of impact piling. Pulverisers are proposed to be used during demolitions works, which are a lower noise generating plant than traditional excavator-mounted hammers.

There is also the potential for increased traffic impacting the surrounding area as a result of the construction activities being undertaken on the site. As all construction vehicles will approach the site from Wilde Avenue and there is a relatively low number of construction vehicles per hour, especially in the context of existing CBD road usage, Arup confirm that the increase in noise levels to residential receivers is to be less than 2dBa. This is categorised as a 'minor impact' and represents an insignificant effect on the surrounding environment.

Mitigation measures have been identified by Arup to minimise impacts resulting from construction noise, which have been addressed in the section following.

Vibration

Arup has established vibration criteria used to determine the impact of the construction of the proposed development, and confirmed that the use of piling may result in significant vibrational impacts at receivers immediately adjoining the site and in the surrounding area. Whilst the exact method of piling has not been determined at this preliminary phase, Arup confirms that should vibration intensive equipment, such as rock hammers, vibratory rollers or compactors be required for the works, it is recommended that minimum work distances and monitoring practices be developed to minimise the risk of adverse vibration impacts. The minimum work distances are detailed in Section 3.9 of the Noise and Vibration Impact Assessment at **Appendix Z** and incorporated into the mitigation measures below.

Recommendation

In view of the potential modelled impacts on surrounding receivers from noise and vibration, Arup has prepared detailed recommendations to control construction noise during periods when exceedances are predicted above the relevant criteria. It has also been recommended that the construction contractor prepare a detailed Construction Noise and Vibration Management Sub-Plan (CNWMSP) to the Construction Environmental Management Plan which includes reviewing the modelled construction details and noise and vibration impacts contained in the Noise and Vibration Impact Assessment at **Appendix Z**.

Regarding vibration, Arup recommends that the minimum work distances are adopted where utilising vibration intensive equipment as detailed in Section 3.9 of the Noise and Vibration Impact Assessment. Works required to occur within these distances will be subject to vibration monitoring.

The following mitigation measures are recommended with reference to Arup's findings.

Mitigation measure	Indicative timing
A Construction Noise and Vibration Management Plan shall be prepared, including the final details of the types of plant to be used and updated estimates of the likely levels of noise and the scheduling of activities. The Plan will have references to the recommendations in Table 24 of the Noise and Vibration Impact Assessment prepared by Arup (April 2020).	Prior to the issuance of a construction certificate

Mitigation measure	Indicative timing
The contractor will refer to the minimum working distances in Table 25 of the Noise and Vibration Impact Assessment prepared by Arup (April 2020), and undertake vibration monitoring at the nearest potential affected building where vibration intensive works are required within these minimum distances. Vibration monitoring should be capable of real-time alerts where measured vibrations exceed the criteria.	During construction

6.7.3 Operation

Noise

Arup confirm that the primary noise emissions with the potential to impact surrounding development comprise traffic generated by the operation of the site, building services and plant, loading dock operations including waste collection, music from internal and external spaces, and from patrons arriving and leaving the site.

Traffic generated noise

The traffic generated through the operation of the proposed development is predicted to be less than that generated by the busiest period of the construction phase. As no on-site parking is proposed, the only traffic-generated noise would be that associated with infrequent loading/servicing, waste removal, coaches and taxi drop-off/pick-up. Accordingly, it is determined by Arup that this increase is insignificant and would represent less than a 1dBa increase in noise. No mitigation measures are considered necessary in this instance.

Building services and plant

The specifications for building service equipment (e.g. mechanical, hydraulic and electrical equipment) cannot be confirmed at this preliminary stage, and as such it is proposed that equipment will be selected during the detailed design and construction phase and provided with noise and vibration attenuation measures where required to meet the relevant criteria. At this preliminary stage, Arup confirm that the plant and equipment considered in the plans and specifications lodged with this EIS may require noise mitigation treatment including:

- enclosing the substations to be installed in the west of the site adjacent to Dirrabarri Lane;
- installing acoustic screens to the west of rooftop plant at an adequate height to shield receivers to the west, including those on upper floors overlooking the rooftop plant;
- using attenuators to control fan noise;
- installing acoustic louvres to control noise from plantroom ventilation openings;
- using vibrator isolators to reduce vibration input to the building structure; and
- incorporating sound absorptive treatments in plantroom spaces.

It is noted that emergency plant only operates during testing or in the event of an emergency, and as such is not a frequent source of noise. The specific location, type and size of this emergency plant will also be reviewed by Arup at the detailed design and construction phase.

Loading and servicing

The majority of loading dock activities including waste removal and deliveries, exhibitions, and installations will occur within the internal loading docks provided on the ground floor of the western building, which will be designed with acoustically rated doors and sound insulation. Accordingly, noise generated by the actual loading activities are expected to be contained within the loading dock and the greatest source of noise is to be from trucks reversing into the docks.

Modelled noise exceedances occur for small and large trucks using the docks at night time, including exceedances of the sleep criteria at nearby residential receivers and exceedances for the nearby hotel from potential air braking. These exceedances would occur once per truck entering or leaving the loading dock, noting that no exceedances are predicted for the use of light vehicles. In view of this, Arup has determined recommendations for loading and servicing associated with the development including restricting the use of articulated trucks or those over 6 tonnes from entering or leaving the loading docks between 6pm and 7am, and smaller trucks between 10pm and 7am. Light vehicles may only deliver goods via manual handling between 10pm and 7am.

Mitigation measures have been recommended in accordance with Arup's assessment in the following sections.

Patron access and egress

The public domain areas surrounding the site have been designed to complement the operations of Powerhouse Parramatta, and would be expected to be used for congregating, passive recreation, and as paths of travel through the site. The loudest activity would occur from large numbers of patrons leaving the site at one time, such as at the closing of the site, or from congregating in the public domain, such as prior to the commencement of an activity hosted at the Powerhouse. The worst-case scenario assumes 10,000 patrons are leaving the site within a 1 hour period. There is a low likelihood of this worst-case scenario as it would require large capacity events to occur across a number of spaces and conclude at the same time.

The modelling confirms that in this worst-case scenario there will be no exceedances at any locations at any time, and as such there would be no significant disturbance from patrons in the public domain.

Amplified music and events

In accordance with the Noise Policy for Industry, because of the complexity of proposed use and operation of the site that comprises a range of ancillary and related uses, Arup has used project noise trigger levels for assessing the operational noise impacts of Powerhouse Parramatta. These trigger levels comprise the level that, if exceeded, would indicate a potential noise impact on the community and so 'trigger' a management response. The noise trigger levels are set so that all combined noise emissions remain below the relevant recommended amenity noise levels for that location. Compliance with the nominated noise criteria would mean the proposed use would be categorised as a 'low risk' event, whilst any exceedances of the criteria would mean the use is categorised as having a 'medium risk' or 'high risk' and trigger additional mitigation and management measures to be adopted.

Arup modelled the noise sources that represented the loudest activities in each of the proposed spaces delivered on the site including crowd noises and amplified music in the presentation spaces and on the roof garden and outdoor terrace, as well as the mechanical doors that open-up Presentation Space 1. Other potential noise transmission through other paths such as ventilation openings or smaller doors are considered to be less significant and will be assessed and treated with attenuation measures during the detailed design stage of the project.

The modelling confirms that some exceedances are predicted for the Apex Institute of Education to the north of the site on Sorrell Street and Prince Alfred Square at Market Street during the day from the use of the terrace that faces the Parramatta River, which is used in conjunction with Presentation Space 7. These exceedances are not significant, and the loudest use of this terrace would be infrequent. It is emphasised that the modelling confirms there will be no exceedances during the day, evening or night for any nearby residences or tourist and visitor accommodation.

In view of this, the proposed activities presented in Table 39 of the Noise and Vibration Impact Assessment (being those that represented the loudest activities in each space) have been categorised as 'low risk' operations and considered reasonably permissible to occur on a regular basis. The medium and high risk activities comprise those that occur outside of typical hours or where the patron and music levels exceed those modelled as being appropriate as low risk activities. The categories and recommended mitigation strategies are detailed in **Table 14** below.

Table 14 Risk categories for events and the use of the site and indicative associated mitigation strategies

Risk Category	Definition	Mitigation strategies
Low risk	• Uses occurring between 7am and 12am (midnight) • Patron numbers and music levels are equal to or below Table 39	Ensure compliance with the parameters contained in Table 39.
Medium risk	• Uses occurring outside of 7am and 12am (midnight) • Patron numbers and music levels are equal to or below Table 39	• Noise monitoring at nearest affected receivers for the duration of any medium risk activities • An Event Representative(s) shall be appointed for each activity at the Powerhouse Parramatta, with the responsibility and appointed authority to exercise control of noise emissions from the Powerhouse Parramatta.

Risk Category	Definition	Mitigation strategies
		• Provide details of the activity on the Powerhouse website, including date, time, duration, location and nature of event and noise sources. • An information Hot Line would be available at all times during an activity. • Details of the Hot Line will be provided via the Powerhouse website.
High risk	• Uses occurring outside of 7am and 12am (midnight) • Patron numbers and music levels exceed those contained in Table 39	• All mitigation strategies identified for the medium risk category. • Written notification of the upcoming activity will be distributed by a letterbox drop to noise sensitive receivers within the notification boundary between 5 to 14 days prior to the activity.

Vibration

The most significant form of operational vibration would occur from loading and unloading large exhibition pieces within the site. Arup confirm that the vibration impacts would not be high enough to affect human comfort or structural damage at surrounding receivers, and as such no mitigation measures are considered necessary.

Recommendation

Arup has identified the different types of operational noise that may be generated by Powerhouse Parramatta and assessed the impacts of these noise sources on surrounding sensitive receivers in accordance with the Noise Policy for Industry and other relevant policies, technical guidelines, and codes. The assessment confirmed that:

- traffic generated noise will be minimal and will have an insignificant impact on the amenity of the surrounding area;
- the noise generated by building services and plant can be appropriately mitigated and managed, which will be confirmed during the detailed design and construction phase when the specifications for plant and equipment are known;
- exceedances associated with loading and deliveries are modelled for trucks (not light vehicles) entering and leaving the loading dock at night, and as such it is recommended that the use of the loading dock be restricted during the night period with consideration of the type of vehicle and loading activity;
- for the worst-case scenario of 10,000 people leaving the site within a one hour period, there will be no exceedance associated with patron egress at any surrounding locations and any time; and
- the modelling of the loudest typical activities in each of the proposed spaces delivered on the site, including crowd noises and amplified music, will not exceed the relevant criteria for nearby residences or tourist and visitor accommodation during the day, evening or night. Some exceedances may be experienced for one education premises and Prince Alfred Park to the north of the river, however, these exceedances are not significant, are infrequent, and will occur during the day. Events that exceed these typical activities in terms of typical hours or where the patron and music levels exceed those modelled, will be managed in accordance with the strategies developed by Arup and confirmed in an Operational Noise Management Plan.

The following mitigation measures are recommended with reference to Arup's findings.

Mitigation measure	Indicative timing
Noise emissions from any external mechanical plant are to be treated such that noise emission complies with the project noise trigger levels at all surrounding receivers. This may require the use of acoustic louvres, enclosures, barriers or attenuators. Measures will be incorporated into the construction drawings as required.	To be confirmed at the detailed construction drawing phase
Prepare a Loading Dock Management Plan prior to the commencement of operations on the site. The LDMP is to detail: • Loading dock management details • Service vehicle volumes including size and frequency • Details around incident management at the access to the loading dock	Prior to the commencement of use of the site

Mitigation measure	Indicative timing
• Management of conflicts between cars accessing the site on • Dirrabarri Lane and vehicle movements to/from the loading dock.	
Noise transmissions through loading dock doors are to be assessed to ensure the doors meet the project noise trigger levels at surrounding receivers. Measures will be incorporated into the construction drawings as required.	To be confirmed at the detailed construction drawing phase
The operational mitigation measures, including revised 'deemed to comply' conditions to be developed during detailed design, will be incorporated into an Operational Noise Management Plan (ONMP).	Prior to the commencement of use of the site
The ONMP shall be reviewed annually or more regularly on an 'as needs' basis. The review shall be conducted in consultation with an Accredited Acoustic Consultant.	Ongoing

6.8 Sustainability

An Environmentally Sustainable Design (ESD) Strategy has been prepared by ARUP (**Appendix U**) to address specific considerations and opportunities of this project, which will ensure the high sustainability aspirations are met. The project's sustainability approach will be in part guided by targeting a 5 Star Green Star rating and will work towards the implementation of a Zero Carbon Transition Plan. This will be achieved, in part, through applying the sustainability measures outlined in the Strategy, focusing on energy efficient design, climate resilience, minimising waste and reducing water consumption. In addition, the Powerhouse Parramatta has been assessed against the *National Construction Code* (NCC) to ensure that the building and its services facilitate the efficient use of energy.

Overall, project's commitment to achieving a Green Star rating will be achieved by involving building design that considers optimised building envelope, renewable energy generation, waste management, and climate change projections.

Recommendation

The ESD Strategy at **Appendix U** has been developed to align with the SEARs assessment, while also complying with the NCC requirements. By incorporating the objectives and measures outlined in the Strategy, the Powerhouse Parramatta will achieve a high Green Star rating, creates a more enjoyable and healthier experience for visitors and integrate the principles of ecologically sustainable development. As such, the following Mitigation Measure is recommended by Arup.

Mitigation measure	Indicative timing
Develop ESD strategy throughout the design development process including ongoing consultation with Green Building Council of Australia.	Ongoing

6.9 Safety and security

A CPTED Report has been prepared by Arup (**Appendix AA**) which outlines the project, policy, and crime context for the project and makes recommendations about appropriate CPTED strategies to reduce the opportunity for crime to occur. Mitigation measures have been developed to minimise the level of crime risk in these areas into the detailed design phase.

A review of crime occurring in NSW confirms that all crimes have been decreasing or have been stable over the last two years, with the exception of incidences domestic violence and stealing from a retail store that have increased. In analysing the Parramatta LGA, Arup has identified that there are a few opportunistic crime threat scenarios to be considered in the detailed design of the project including assault, stealing from a person, motor vehicle theft, stealing from a motor vehicle, breaking and entering, stealing from a retail store, intimidation, stalking or harassment, or graffiti and vandalism. It is noted that past crime statistics may not be a reliable indicator of future crime trends, but does provide some indication of immediate issues.

The assessment considers these potential crime categories and confirms that the opportunities for crime can be minimised to reasonable levels through the implementation of Mitigation Measures. Powerhouse Parramatta is not anticipated to significantly change the crime risk profile of the site.

Recommendation

The assessment confirms how the current design generally achieves the principles of CPTED and offers detailed recommendations on how to further improve safety within the site where appropriate. Further details on specific measures such as façade detailing, lighting layouts and surveillance camera (CCTV) layouts will be progressed at the detailed design and construction phase in accordance with the relevant standards and in coordination with security consultants and NSW Police.

The recommendations of the CPTED Report have informed the following Mitigation Measures.

Mitigation measure	Indicative timing
The final detailed construction drawings are to have consideration of the recommendations in the CPTED Report prepared by Arup (April 2020) as applicable.	To be detailed in the construction drawings
A CCTV network for the site is to be designed in consultation with a suitably qualified security consultant. Signage is to be installed at site entries advising visitors that CCTV is in operation throughout the precinct.	To be detailed in the construction drawings where possible, and/or implemented prior to occupation.
A lighting strategy is to be designed and implemented in consultation with a suitably qualified lighting expert to ensure that the CCTV network is effective, and the building will be lit during the night.	To be detailed in the construction drawings where possible, and/or implemented prior to occupation.

6.10 Soils and contamination

6.10.1 Acid Sulfate Soils

JBS&G has prepared an Acid Sulfate Soils Management Plan (**Appendix N**) identifying the potential for acid sulfate soils occurring on the site and techniques to mitigate the potential environmental impacts associated with potential site excavation works and piling.

Previous investigations on the site have confirmed that there is the potential for Acid Sulfate Soils and Potential Acid Sulfate Soils to be present in deep soils, which may be impacted where excavating parts of the site including for the delivery of lift cores, piling and the undercroft area. The exact depth of these soils are not yet known at this time and as such it is recommended that samples of soils from below 2m in depth should be collected at regular intervals and assessed with reference to the detailed construction plans documenting the final extent and location of excavation works on the site.

Where Acid Sulfate Soils and Potential Acid Sulfate Soils are encountered, mitigation strategies will be employed as identified in the Plan. JBS&G confirm that if implemented, these measures will minimise the environmental risk associated with the disturbance of soils.

Recommendation

JBS&G has confirmed that there is the possibility of encountering Acid Sulfate Soils and Potential Acid Sulfate Soils on the site, which will be determined through future sampling and testing when the detailed extent and location of excavation works are known. Mitigation strategies are identified in the plan to minimise the environmental risk associated with the disturbance of soils, which has been incorporated into the following mitigation measure.

Mitigation measure	Indicative timing
Where excavating at a depth greater than 2m, the appointed contractor should adhere to Management Procedures in the Acid Sulfate Soils Management Plan prepared by JBS&G (April 2020).	During construction

6.10.2 Contamination and remediation

A Detailed Site Investigation has been completed by JBS&G (**Appendix L**), which as outlined in **Sections 2.1.6** and **4.10**, confirms that there are locations within the site where elevated levels of soil contaminants occurred above the adopted assessment criteria. Accordingly, JBS&G has subsequently also prepared a Remedial Action Plan (RAP) (**Appendix M**) confirming the process for remediating and validating the site as being appropriate for its intended use.

The RAP confirms that the following will be completed in order to ensure the site is made suitable for its intended use by Powerhouse Parramatta:

- Three (3) identified 'hot spots' will be excavated and the soils appropriately stockpiled, classified and disposed of at an appropriately-licensed facility. These hot spot areas comprise the central, eastern and south eastern areas of the site. Whilst some exceedances were also found in the north and north western areas of the site, the RAP confirms that these areas do not require remediation as the depth at which the exceedances were detected did not present a risk to recreational or ecological exposures, there was no evidence of ecological stress, or specialised growing media would be imported in these areas to support landscaping. The adopted remediation method was identified as the preferred option as it represented the most efficient timeframe and cost and negates the requirement the ongoing management of contaminants if the soil were retained on site.
- Friable asbestos and asbestos fine impacted soils will also be excavated, with the removal and disposal of asbestos to be completed by a licensed asbestos removalist. It will be the requirement of the appointed civil works contractor to obtain the appropriate approvals and prepare an Asbestos Management Plan (AMP) in accordance with the applicable SafeWork guidance. During the remedial works at the asbestos contaminated soil hotspot, perimeter air monitoring will also be conducted on each of the site boundaries.
- An Unexpected Finds Protocol will implemented as a precautionary measure to ensure the protection of the workforce and surrounding community, should any unforeseen substances be identified during the demolition and construction phases of the project.

Following the conclusion of the remediation of the site, the environmental consultant will be required to demonstrate that the remediation objectives have been achieved and the site is appropriate for its intended use.

Recommendation

The Detailed Site Investigation and associated Remedial Action Plan have assessed the conditions of the site and confirmed the appropriate works and pathway to ensure that the site can be made suitable for its intended use. These substantiate that whilst elevated levels of soil contaminants occurred above the adopted assessment criteria in certain areas of the site, these areas can be remediated through excavating, managing and removing the contaminated soils including asbestos impacted soils.

No specific mitigation measures are identified by JBS&G, and as such the following is proposed with reference to the findings of the assessment. It is recommended that the RAP form part of a standard condition of consent.

Mitigation measure	Indicative timing
The detailed Construction Environmental Management Plan must set-out clear protocols in the event of an unexpected find.	Prior to the commencement of works on the site

6.11 Biodiversity

A request to waive the requirement to prepare a Biodiversity Development Assessment Report (BDAR) has been prepared by Jacobs and submitted separately to DPIE and OEH prior to the lodgement of this application. A waiver was granted prior to the exhibition of the application. The waiver request provided an assessment of the biodiversity significance and context of the site and determined that the proposed works did not warrant undertaking a further detailed assessment. It confirmed that:

- the development site is highly modified from its original state;
- the existing vegetation within the site is not naturally occurring and as such cannot be assigned to a 'Plant Community Type' as identified in the DPIE BioNet Vegetation Classification;
- there will be no loss of vegetation composition, structure or function because of the project, and as such no offsets can be calculated or would be required;
- the suitability of the site as habitat for threatened species is low, and there is no identified breeding habitat for species in the development site, meaning the development will not have an appreciable impact on threatened species abundance;
- whilst the trees on the site provide a marginal foraging resource, they do not provide resources for a significant proportion of the population of any of threatened species as the habitat is limited, as such the project is considered unlikely to have a detrimental impact on habitat connectivity;

- the movement of migratory, nomadic or local species will continue unaltered as the proposed refurbishment works do not represent significant new obstacles in the flight path; and
- no threatened species or ecological communities have been identified on the site as being sustained by water quality, water bodies and hydrological processes.

Recommendation

In view of the above, it was determined that the proposed development is unlikely to have a significant impact on threatened species or their habitats, and as such no mitigation measures are identified as being necessary.

6.12 Waste management

Arup has prepared an Operational Waste Management Plan (**Appendix BB**), outlining the waste management operations for the Powerhouse Parramatta. The Plan identifies the likely waste streams and quantities to be generated during the operation of the development which has been based on benchmark data. **Table 15** details the estimated waste generation volume of more frequently used waste streams, however, waste will also be generated by less frequent streams such as hazardous waste, sanitary waste and hard bulky waste.

Table 15 Estimated waste generation during operation

Materials stream	L per event day
General waste	4,976.5
Co-mingled recycling	1,032.7
Paper and card	11,187.8
Food organics	1,788.4
Total	18,985.4

Source: Arup

In addition to the estimated waste generated, the Powerhouse Parramatta will aim to adopt a landfill diversion target of 75% and a recycling rate of 70% for operational waste, in line with the NSW Waste Avoidance and Resource Recovery Strategy 2014-21.

It is assumed that waste generated during operation will be collected three times per week for recycling and general waste, and as required for hazardous and sanitary waste and for less frequent waste streams such as e-waste or bulky waste.

The following waste management systems and facilities are incorporated into the site design in order to promote the reuse, recycling and safe disposal of waste:

- A central waste storage room will be located in the loading dock on the ground level of the western building. It is the primary waste management area for the operation of the development. All waste and recycling will be brought back to the waste storage room and disposed of in the relevant equipment prior to collection by the external waste contractor.
- Public bins on all levels and throughout the public domain as needed to provide convenient access to patrons to dispose of waste. Cleaners will be responsible for transferring waste from the bins to the central waste storage room, using trolleys, back of house operations and the goods lift.
- Signage will be provided in all waste disposal, storage and collection areas to demonstrate what materials are acceptable in each bin. All waste streams will be stored in clearly labelled, colour coded bins to ensure that waste streams are not inadvertently mixed.
- Waste generated that is associated with hazardous waste, sanitary waste, heavy bulk goods, printer ink and e-waste will be collected on an as-required basis due to the ad-hoc nature of these streams.

Recommendations

The Waste Management Plan prepared by Arup forms a framework to implement best practice for waste management across all design and planning stages. Arup recommend that ongoing monitoring of the waste and recycling program is conducted by the operator of the Powerhouse Parramatta and that all staff, retail and commercial tenants are informed about correct waste management practices. This will be invaluable in driving sustainable waste management onsite and enhancing outcomes for waste minimisation, reuse and recycling. As such, the following mitigation measure is recommended.

Mitigation measure	Indicative timing
Prepare a construction and demolition waste management plan that will identify and quantify anticipated waste streams. The plan will describe how wastes will be managed in terms of storage, recycling and recovery, transportation and disposal.	Prior to commencement of construction

6.13 Construction management

Aver has prepared a preliminary Construction Management Plan (CMP) detailing the construction processes and procedures to be undertaken (**Appendix R**). The CMP considers the construction methodology, sequencing and logic for mitigating potential construction risks to the precinct and its stakeholders. The information included in the CMP has also been prepared to respond to the requirements of the SEARs, and will inform a further Construction Environmental Management Plan (CEMP) to be prepared by the appointed contractor prior to the commencement of works.

This section should be read in conjunction with the former assessments of noise and vibration (**Section 6.7**), water quality and stormwater (**Section 6.5**), soil contamination (**Section 6.10.2**), and traffic and transport impacts (**Section 6.4**), and the associated mitigation measures nominated in each of these sections.

Air quality and odour

A separate assessment has been prepared by Wilkinson Murray (**Appendix T**) assessing the proposed likely construction activities on the site to determine potential dust impacts and identify mitigation and management strategies to minimise these impacts. It confirms that air pollutants associated with the project comprise dust are particulate matter, but that it is considered unlikely that the proposed works would result in unacceptable air quality impacts, subject to the implementation of the mitigation measures. These measures include protocols around stakeholder communication and complaints, site management and maintenance, dust monitoring, construction vehicles, operating equipment on the site, and measures specific to construction works, haulage, and earthworks. It is recommended that these measures be incorporated into a Dust Management Sub-Plan to the CEMP. This has been considered in the mitigation measures below.

It is noted that odour problems are not associated with this type of work and are expected to be negligible/minimal.

Erosion and sediment control

A technical memo has been prepared by Arup (**Appendix O**) confirming that erosion and sediment controls are to be provided during the construction phase in accordance with applicable guidelines (e.g. Landcom Blue Book).

During earthworks, suitable temporary sediment basins will be provided to capture all runoff from disturbed areas, and additional measures such as sediment fences, sediment basins, channels, banks, straw bales and in-ground drainage, depending on the stage of works, will manage surface runoff whilst minimising erosion.

Waste minimisation and management

A Construction Waste Management Sub-Plan (CWMP) will be prepared prior to the commencement of construction works on the site. This will detail the waste expected to be generated during the demolition and construction phases of the project development, and the associated processes for sorting, storing and processing waste. The CWMP will confirm how waste going to landfill can be minimised, and the reuse and recycling of materials maximised, including appropriate monitoring and reporting programs. This has been captured in the mitigation measures below.

River foreshore access and events

As outlined in **Sections 4.14** and **6.4**, construction hoarding will be erected so that the existing pathways (including emergency vehicle access to the foreshore) are maintained where possible during the construction process. This ensures that the foreshore to the Parramatta River will remain accessible, except where reasonably undertaking the proposed tie-in works between the Powerhouse Parramatta public domain and this edge of the site. When these temporary interruptions occur, diversions will be put in place so that pedestrians and cyclists can continue to travel along the southern bank of the Parramatta River and to mitigate any potential disruptions.

Recommendation

The preliminary Construction Management Plan prepared by Aver considers the construction methodology, sequencing and logic for mitigating potential construction risks to the precinct and its stakeholders. It demonstrates that the impacts of construction works on the site can mitigated and managed, subject to developing a detailed Project Management Plan and associated technical studies.

The following mitigation measures have been developed with consideration of the recommendations by Aver in the CMP.

Mitigation measure	Indicative timing
Prepare a detailed Construction Environmental Management Plan (CEMP) prior to the commencement of works on the site including all required technical management plans and with consideration of other nominated mitigation measures.	Prior to commencing works
The CEMP is to include a Dust Management Sub-Plan with consideration of the recommendations in Section 6 of the Air Quality Impact Assessment prepared by Wilkinson Murray (April 2020).	Prior to commencing works
The CEMP is to be supported by a Construction Waste Management Sub-Plan detailing the waste expected to be generated during the demolition and construction phases of the project development, and the associated processes for sorting, storing and processing waste, including monitoring and reporting programs.	Prior to commencing works

6.14 Utilities and services

Arup has prepared an Infrastructure Services Strategy (**Appendix P**) that identifies the existing utilities and infrastructure of the site and notes any expected impacts or required upgrades as a result of the proposed development. Preliminary consultation has been undertaken with the relevant service providers, noting that further consultation will be required to obtain the necessary authority approvals prior to undertaking works on the site or in the vicinity of existing infrastructure. The assessment confirms that the proposed development can be appropriately serviced.

Recommendation

The assessment by Arup identifies the existing utilities surrounding the site and considered the necessary enabling works that will be required to facilitate the preparation of the site, including preliminary design solutions for connecting new infrastructure to surrounding utilities and services. Any issues raised by providers will be addressed and incorporated into the detailed design of the site for construction. No specific mitigation measures have been nominated in this instance.

6.15 Disabled access

The access arrangements for people with mobility impairments has been considered in the architectural and landscape solutions for the site, and in the transport strategies for the operation of the site, and discussed in the relevant former sections.

Morris Gooding Access Consulting (MGAC) has undertaken an Access Review (**Appendix CC**) to confirm whether the design is equivalent to or better than the principles of Universal Access considering all user groups, members of the public, visitors and staff for sensory impairment, mobility impairments, and dexterity impairments. The review confirms that the proposed development will be capable of compliance with the applicable requirements of the DDA Premises Standards 2010 and the Building Code of Australia (BCA), noting that the recommendations contained in the review are to be developed in partnership with the detailed design of the development and should be confirmed prior to construction commencing.

Recommendation

MGAC will be involved in the detailed design phase to ensure that various elements of the proposal will meet the applicable performance requirements of the DDA Premises Standards 2010 and BCA. No mitigation measures have been nominated by MGAC and we note that compliance with the *Disability Discrimination Act 1992* is a standard requirement as part of the issuance of a Construction Certificate. No specific mitigation measure is necessary in this instance.

6.16 Fire safety

Arup has reviewed the documentation and has assessed the capability of the development to satisfy the performance requirements of the BCA (**Appendix DD**) in relation to fire safety and engineering. With consideration of the preliminary design of the proposed development, Arup considers that compliance with the relevant sections of the BCA will be achievable, pending further refinement of a combination of fire engineering Performance Solutions and compliance with Deemed-to-Satisfy (DTS) Provisions as part of the detailed design phase of the project.

Recommendation

Arup confirms that compliance with the Performance Requirements of the BCA is achievable. Compliance with the fire safety and engineering requirements of the BCA is a standard requirement of the issuance of a Construction Certificate, and as such no specific mitigation measures are considered to be necessary in this instance.

6.17 Structural

Arup has prepared a Structural Design Statement (**Appendix EE**) confirming that the structural engineering design will be developed as part of the detailed design and construction phase of the project in accordance with the Australian Standards, BCA and accepted engineering principles. The structure will be designed to comply.

Recommendation

The Structural Design Statement confirms that the structural design of the proposed development will be designed in accordance with the relevant provisions, practices and principles. There are no specific mitigation measures that have been nominated by Arup in this instance.

6.18 Building Code of Australia

Steve Watson & Partners has completed a review of the project documentation and confirm that the design is capable of achieving compliance with the BCA (**Appendix GG**). Where additional details are required that are typically provided as the detailed construction documentation stage, Steve Watson & Partners confirm that they will complete an assessment of the design development documentation and specifications issued for construction.

The BCA assessment also confirms that there are few aspects that will be necessary to address by way of a performance solution to meet the relevant fire safety and engineering requirements of the BCA, but that these have been addressed as part of the separate assessment by Arup (**Appendix DD**)and will be subject to further review and testing as part of the detailed design and construction process.

Recommendations

Steve Watson & Partners confirm that the design is capable of achieving compliance with the BCA. No mitigation measures are identified by Steve Watson & Partners. Compliance with the BCA is a standard requirement of the issuance of a Construction Certificate, and as such no specific mitigation measure is necessary in this instance.

6.19 Public benefit and contributions

The provision of public benefits is intrinsically linked to Powerhouse Parramatta. The proposed development will benefit the area from a place-making perspective, providing new civic and community spaces within Parramatta with access to the foreshore and termination of the ‘Civic Link’, as well as financial perspective, representing a significant investment in culture and arts and contributing to the productivity and investment in the area. Powerhouse Parramatta is identified as being an essential component to the evolution of Western Sydney and the Central River City, as an anchor for arts and culture in the District.

Contributions

The relevant contributions plan for the site is the *Parramatta City Centre S94A Development Contribution Plan*. This Plan does not identify circumstances in which exemptions levied under Section 7.11 (formerly 94A) of the EP&A Act may be considered by the consent authority, which typically include not-for-profit development and cultural and community facilities. Accordingly, contributions will be levied in accordance with the Plan.

Recommendation

No further study or refinement is required, and no specific mitigation measure has been nominated in this instance.

6.20 Ecologically sustainable development principles

The EP&A Regulation lists 4 principles of ecologically sustainable development to be considered in assessing a project. They are:

- the precautionary principle;
- intergenerational equity;
- conservation of biological diversity and ecological integrity; and
- improved valuation and pricing of environmental resources.

An analysis of these principles follows.

Precautionary Principle

The precautionary principle is utilised when uncertainty exists about potential environmental impacts. It provides that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. The precautionary principle requires careful evaluation of potential environmental impacts in order to avoid, wherever practicable, serious or irreversible damage to the environment.

This EIS has not identified any direct serious threat of irreversible damage to the environment and, therefore, the precautionary principle is not required to be given further consideration in this instance. Notwithstanding, indirect avoidance of damage to the environment can be achieved through implementing the mitigation measures identified in this EIS, which will inform the construction and operation of Powerhouse Parramatta including the public realm.

Proactive measures to prevent environmental degradation have been included within the design, construction and operational phases of the proposed development. The contractor will implement an Environmental Management System that follows NSW Environmental Management System Guidelines during the construction phase, and Powerhouse Parramatta will develop operational procedures and actively pursue targets to meet the relevant mitigation measures and mitigate or minimise potential environmental risks wherever possible.

Intergenerational Equity

Inter-generational equity is concerned with ensuring that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations. The proposal has been designed to benefit both the existing and future generations through providing a new culture and arts destination that:

- provides unprecedented and life-long education outcomes for students and supporting long term social and economic wellbeing through delivering an active working precinct that provides world class education, research and community facilities as well as education programs with high tech digital spaces for research and education programs, enhancing opportunities to collaborate with schools, universities and industry;
- appropriately considers heritage interpretation as well as improving access to Powerhouse Collections to engage communities with local histories;
- implements safeguards and management measures to protect environmental values, and achieve best-practice sustainability targets to ensure Powerhouse Parramatta efficiently into the future;
- facilitates job creation and including for those employed in the science, education, innovation, creative and retail industries; and

- removes existing carparking to reduce dependency on private vehicles, support sustainable transport options, and enhance active travel connections between the Parramatta CBD and the Parramatta River foreshore and thereby improve local access and amenity.

The proposal has integrated short and long-term social, financial and environmental considerations so that any foreseeable impacts are not left to be addressed by future generations. Issues with potential long term implications such as waste disposal would be avoided and/or minimised through construction planning and the application of safeguards and management measures described in this EIS and the appended technical reports.

Conservation of biological diversity and ecological integrity

The principle of biological diversity upholds that the conservation of biological diversity and ecological integrity should be a fundamental consideration. As has been demonstrated in **Section 6.11** and throughout this EIS, the proposed development will not result in any significant effect on the biological and ecological integrity of the study area, subject to the implementation of the Mitigation Measures set out in **Section 8.0** below.

Improved valuation, pricing and incentive mechanisms

The principles of improved valuation and pricing of environmental resources requires consideration of all environmental resources which may be affected by a proposal, including air, water, land and living things. The cost of infrastructure, biodiversity offsets, design measures, and other sustainability initiatives associated with the proposed development have been incorporated into the cost of development and will be delivered in the most cost-effective way via a life cycle cost approach that provides best return on investment. Mitigation measures for avoiding, reusing, recycling and managing waste during construction and operation would be implemented to ensure resources are used responsibly in the first instance. Additional measures will also be implemented to ensure no environmental resources in the locality are adversely impacted during the construction or operational phases. Refer to the Mitigation Measures set out in **Section 8.0** below.

6.21 Site suitability

Having regard to the characteristics of the site and its location, the proposed development is suitable for the site as it:

- contributes to the long term strategic vision for the Parramatta CBD and GPOP Corridor, as an arts, culture, entertainment and education precinct that is accessible to local and international visitors;
- is uniquely positioned at the northern terminus of the planned Civic Link on the foreshore of the Parramatta River to accommodate an iconic new cultural institution located in the heart of the Western River City;
- will appropriately recognise and celebrate the Aboriginal and post-settlement heritage that exists on site;
- will facilitate the delivery and operation of a globally competitive arts and culture hub within the Parramatta CBD;
- has been designed to be developed in a manner that minimises impacts on its surrounds, and has been designed to in some respects improve the natural, historical, and environmental qualities of the site; and
- will result in only minor environmental impacts that can be appropriately managed and mitigated.

The subject site is also considered to be highly suitable for the proposal in that:

- it is zoned B4 Mixed Use under the Parramatta LEP 2011, which permits the development of ‘information and education facilities’ and all other land uses proposed in this application with consent;
- it is well serviced by existing and future transport arrangements, including trains, buses, ferry, the Civic Link, Parramatta Light Rail and Sydney West Metro;
- is of sufficient size to accommodate the proposed facilities;
- has existing utility infrastructure connections which have capacity, or which can be readily augmented to provide capacity for, the servicing requirements of the Powerhouse Parramatta; and
- the site is directly adjacent the Parramatta River, providing synergies and efficiencies in hosting events, the provision of retail and food, and enhancing the public domain.

6.22 Public interest

The application provides additional direct benefits that the previous site did not accommodate and realises the project objective to provide a world-class contemporary museum in Western Sydney, focused on science and innovation, that will meet the needs and aspirations of the community and deliver an exciting new cultural destination for the people of NSW and beyond. Powerhouse Parramatta will be the first major, world class cultural institution to be established in Western Sydney, and is considered to be in the public interest as it:

- delivers significant social, cultural and economic benefits to the local, Western Sydney and NSW community by providing new cultural infrastructure that accommodates world class education, research and community facilities as well as education programs with high tech digital spaces for research and education programs and opportunities for culturally diverse festivals and events;
- represents the economic and orderly development of land that will support approximately 1,100 full time-equivalent (FTE) construction jobs as well as some 2,430 FTE indirect jobs over the development period, and between 300 to 400 FTE ongoing jobs (full-time, part-time and casual) as a result of the ongoing operation of Powerhouse Parramatta;
- activates the site and surrounds, providing new cultural and entertainment opportunities during both day and night and diversifying the local night-time economy;
- provides a high-quality built form and landscape design that achieves design excellence, caters for different users and uses, is cognisant with the significance of the proposal for the Powerhouse Parramatta, and recognises the site's location as the terminus of the city's cultural infrastructure along the Civic Link and the intersection of a number of key urban movement connections;
- considers and integrates with other projects occurring in the surrounding area, including the future Civic Link, Parramatta Light Rail, and future laneway connections to adjoining land;
- achieves a high level of environmental performance by targeting a minimum 5 Star Green Star Rating as well as utilising the Green Star for New Buildings rating tool in accordance with the ESD Strategy, implementing measures that promote and support the uptake of sustainable transport options, and designing Powerhouse Parramatta with consideration of environmental risks and climate change;
- removing carparking on the site and ensuring increased visitation by public transport, cycling and walking through increased provision of bicycle parking and upgrades to end of trip facilities, improved coordination with new and existing infrastructure outside of the site, and the development of a Travel Plan as part of the future operation of the site; and
- the development will not result in any significant environmental impacts that cannot be managed through adherence to the Mitigation Measures outlined in **Section 8**, standards conditions of development consent and any further mitigation measures and conditions identified during assessment.

7.0 Environmental Risk Assessment

The Environmental Risk Assessment (ERA) establishes a residual risk by reviewing the significance of environmental impacts and the ability to manage those impacts. The ERA for Powerhouse Parramatta has been adapted from Australian Standard AS4369.1999 Risk Management and Environmental Risk Tools.

In accordance with the SEARs, the ERA addresses the following significant risk issues:

- the adequacy of baseline data;
- the potential cumulative impacts arising from other developments in the vicinity of the Site; and
- measures to avoid, minimise, offset the predicted impacts where necessary involving the preparation of detailed contingency plans for managing any significant risk to the environment.

Figure 83 indicates the significance of environmental impacts and assigns a value between 1 and 10 based on:

- the receiving environment;
- the level of understanding of the type and extent of impacts; and
- the likely community response to the environmental consequence of the project;

The manageability of environmental impact is assigned a value between 1 and 5 based on:

- the complexity of mitigation measures;
- the known level of performance of the safeguards proposed; and
- the opportunity for adaptive management.

The sum of the values assigned provides an indicative ranking of potential residual impacts after the mitigation measures are implemented.

Significance of impact	Manageability of impact				
	5 Complex	4 Substantial	3 Elementary	2 Standard	1 Simple
1 – Low	6 (Medium)	5 (Low/Medium)	4 (Low/Medium)	3 (Low)	2 (Low)
2 – Minor	7 (High/Medium)	6 (Medium)	5 (Low/Medium)	4 (Low/Medium)	3 (Low)
3 – Moderate	8 (High/Medium)	7 (High/Medium)	6 (Medium)	5 (Low/Medium)	4 (Low/Medium)
4 – High	9 (High)	8 (High/Medium)	7 (High/Medium)	6 (Medium)	5 (Low/Medium)
5 – Extreme	10 (High)	9 (High)	8 (High/Medium)	7 (High/Medium)	6 (Medium)

Figure 83 Risk Assessment Matrix

Table 16 Environmental risk assessment

				Risk Assessment		
Item	**Phase**	**Potential Environmental Impact**	**Proposed Mitigation Measures and / or Comment**	**Significance of Impact**	**Manageability of Impact**	**Residual Impact**
Aboriginal Heritage	C / O	• potential impacts on archaeology • impact on cultural values	• An Aboriginal Cultural Heritage Assessment Report has been prepared, detailing the sites social and cultural values, as well as potential for archaeological resource value. • The Archaeological Research Design has been prepared to guide test trenches to investigate the nature and extent of any archaeological remains. • A framework of supervised and unexpected finds will also be prepared to manage approaches to excavation and construction activity to ensure that adverse impacts to archaeology, if present, does not occur. • Opportunities to provide education and interpretation of the social and cultural significance of the site to the Aboriginal community, including historic use of the area will be pursued through the Heritage Interpretation Plan.	3	3	6 Medium
Post-settlement Heritage	C / O	• demolition of heritage items • potential impacts on surrounding heritage items • potential impacts on archaeology	• The redevelopment of the site will necessitate the demolition of Willow Grove and St George's Terrace, being local heritage items. Alternative options were considered as part of the competitive design process, and it was concluded these items could not be retained on the site. • The cumulative impact is identified as being minimal, and strategies are developed to recognise and celebrate the history of the site including programmatic heritage interpretation, archiving, and salvaging. • The development is not identified as impacting Old Government House and appropriate construction management will ensure there is no physical impact on the Lennox Bridge. • A Archaeological Research Design has been prepared to guide test trenches to investigate the nature and extent of any archaeological remains. • A framework of supervised and unexpected finds will also be prepared to manage approaches to excavation and construction activity to ensure that adverse impacts to archaeology, if present, does not occur.	4	3	7 High / medium
Water Management and Flooding	C / O	• Flooding • Stormwater • Water quality	• The proposed development has been designed to provide passive flood protection and achieves approximately the same flood storage and flow conveyance as the pre-development scenario when the river is in flood. Arup confirm that the design of the proposed development does not present increased risk to public safety for people within the building.	2	2	4 Low/Medium

				Risk Assessment		
			• A flood emergency plan will be developed prior to the commencement of operations, including the installation of any physical, visual and/or audible warning mechanisms. • The proposed stormwater network will be superior to the existing predevelopment configuration meaning more floodwater will be captured and conveyed in the proposed pits and pipes, resulting in less water flowing overland. • MUSIC modelling has been undertaken to confirm that the development will achieve the identified water quality improvement targets for the project.			
Visual and view impacts	C / O	• Impact on public views. • Impact on private views.	• View Impact Assessment confirms that whilst the proposed building will be visible within the landscape from some locations, impacts would be low or medium in nature and are reasonable within the CBD context of the site and the applicable planning framework for the land. • Site hoarding is already erected around the site and will be maintained throughout the construction phase to screen views to the site from the public domain.	3	2	5 Low/Medium
Overshadowing	O	• Potential for overshadowing of adjoining land. • Potential for overshadowing of new public domain.	• There is some additional overshadowing as a result of the proposed development, however, this does not impact any surrounding residential development and is limited in time duration. • The public open space areas along the Parramatta River foreshore will have excellent solar access.	2	1	3 Low
Wind	O	• Potential wind impacts on safety and comfort	• An Environmental Wind Assessment has been undertaken which considers the effect of the proposed building on wind conditions within the public domain. At all measures locations wind speeds will comply with the criterion for safety, and the comfort criteria ensures the spaces are acceptable based on the nature and intended usage of these locations.	2	2	4 Low/Medium
Reflectivity	O	• potential impacts to the safety of drivers, pedestrians, and ferries	• An Reflectivity Assessment has been undertaken by Arup which confirms that the proposed development is result in unacceptable glare for drivers, ferries, pedestrians or surrounding buildings that cannot be managed.	2	2	4 Low/Medium
Transport and Accessibility	C / O	• Construction traffic on local roads • Congestion associated with the operation of Powerhouse Parramatta	• A preliminary Construction Traffic, Transport and Pedestrian Management Plan has been prepared to ensure that demolition and construction activities do not adversely impact upon the amenity or safety of the locality. • The proposed development can be accommodated within the existing transport network, without the requirement for upgrades or additional services.	3	2	5 Low/Medium

				Risk Assessment		
			• A range of transport measures can also be implemented by the Powerhouse to encourage the use of sustainable and access transport when travelling to and from the site for staff, residents, and visitors. These initiatives will be confirmed prior to the commencement of operations and will be monitored and developed over time to meet the target mode share			
Noise and vibration	C / O	• Construction noise. • Operational noise.	• A Noise and Vibration Impact Assessment has been prepared by Arup which considers potential demolition noise and vibration impacts on nearby receivers and sets out mitigation measures to reduce impacts during the demolition phase. • The operation of Powerhouse Parramatta confirms that typical noise emissions from traffic, services and plant, loading and deliveries, and patrons leaving the site will be minimal and can be mitigated. • The operation of the Powerhouse Program on the site, including crowd noises and amplified music from the use of space, has been assessed as not exceeding the relevant criteria for nearby residences or tourist and visitor accommodation during the day, evening or night. Events that exceed these typical activities in terms of typical hours or where the patron and music levels exceed those modelled, will be managed in accordance with the strategies developed by Arup and confirmed in an Operational Noise Management Plan.	3	3	6 Medium
Biodiversity	C / O	• Impacts on flora and fauna.	• The BDAR waiver confirms there are not any significant native flora or fauna within the subject site.	1	2	3 Low
Contamination	C / O	• Remediation of contaminated soils	• An assessment of the conditions of the site has been completed by JBS&G, which confirms that the site can be made suitable for its intended use provided that the recommendations of the Remedial Action Plan are enacted and any unexpected finds are managed during the construction phase of the project.	3	2	5 Low/Medium
Safety and security	C / O	• Potential for crime and perception of crime within future public domain areas surrounding Powerhouse Parramatta	• A Crime Prevention through Environmental Design (CPTED) assessment has been undertaken that considers the potential for crime to occur within the public domain surrounding Powerhouse Parramatta and outlines how this risk will be minimised through detailed design and operational mitigation measures.	2	2	4 Low
Utilities and Infrastructure	C / O	• Capacity to service the new development	• An Infrastructure Management Plan has been prepared which confirms that the site is capable of being serviced via either existing or augmented utility services, with the final detail of utility servicing to be determined via the relevant utility service approval pathways.	2	2	4 Low/Medium
Air Quality	C	• Dust impacts during construction activities.	• An Air Quality Impact Assessment has been prepared that identifies potential dust-generating construction activities and standard mitigation	2	2	4 Low/Medium

				Risk Assessment		
			measures that can be implemented to reduce and avoid adverse air quality impacts.			
Communications and Community	C / O	• Information about DA • Construction impacts and complaints • Operational information	• Section 3.0 of this EIS and the Consultation Outcomes Report identify consultation activities that have been undertaken to date to inform the scope of the project and provide information to the community regarding the proposal and planning process. • This EIS will be publicly exhibited by DPIE and Infrastructure NSW will undertake further engagement during this period. • Subject to planning approval, regular communications will be provided to local residents throughout the construction phase to advise of the progress of works, likely impacts and special activities.	3	2	5 Low/Medium

8.0 Mitigation Measures

The collective measures required to mitigate the impacts associated with the proposed works are detailed in **Table 17** below. These measures have been derived from the previous assessment in Section 5.0 and those detailed in appended consultants' reports.

Table 17 Mitigation Measures

Ref No.	Mitigation Measure
Design and Operation	
D/O-BF	**Built form**
D/O-BF1	Design development and the assessment of design integrity shall occur in accordance with the process outlined in the New Museum Design Excellence Strategy approved by DPIE and endorsed by the NSW Government Architect and Council.
D/O-BF2	The detailed fit-out, operation, and signage for the food and drink tenancy and any retail stores are to be the subject of separate and future approval.
D/O-BF3	Details of the exact content, materiality, and illumination of signs within the facade zones will be submitted to the Secretary for endorsement prior to the issue of the relevant Construction Certificate.
D/O-BF4	All external materials and finishes are to have a spectral reflectivity of less than 20%, unless a further Reflectivity Assessment confirms that the design will not result in unacceptable glare.
D/O-HE	**Heritage**
DO-HE1	Prepare a Heritage Interpretation Plan focussing on programmatic interpretation strategies, and may include physical installations and visual and oral history archives, that include the multiple histories of the site pre and post-contact, developed in collaboration with relevant stakeholders to identify and interpret the key heritage conservation values of the "Willow Grove and potential archaeological site)" and the "St Georges Terrace (and potential archaeological site)". The Plan is to have reference to: • The conservation policies for interpretation for the "Willow Grove (and potential archaeological site)"; and • The City of Parramatta draft Heritage Interpretation Guidelines 2017, unless superseded.
DO-HE1	Salvaged significant fabric including contents, fixtures and objects must be made available, through a process to be developed by INSW in consultation with the City of Parramatta Council and/or local stakeholders.
D/O-TA	**Transport and accessibility**
D/O-TA1	Prepare a Loading Dock Management Plan prior to the commencement of operations on the site. The LDMP is to detail: • Loading dock management details • Service vehicle volumes including size and frequency • Details around incident management at the access to the loading dock • Management of conflicts between cars accessing the site on • Dirrabarri Lane and vehicle movements to/from the loading dock.
D/O-TA2	A Travel Demand Management Plan will be prepared with reference to the framework contained in the Section 6 of the Transport Impact Assessment by JMT Consulting (April, 2020) including provision for periodic monitoring of travel behaviour.
D/O-FL	**Flooding**
D/O-FL1	An emergency response plan is to be prepared prior to the commencement of operations to detail flood evacuation procedures for Powerhouse Parramatta, including the installation of any physical, visual and/or audible warning mechanisms. The plan should form part of staff induction and training programs.
D/O-NV	**Noise and vibration**
D/O-NV1	Noise emissions from any external mechanical plant are to be treated such that noise emission complies with the project noise trigger levels at all surrounding receivers. This may require the use of acoustic louvres, enclosures, barriers or attenuators. Measures will be incorporated into the construction drawings as required.
D/O-NV2	Trucks that are 6 tonnes or over, or any articulated trucks, must not enter or leave the loading dock between 10pm and 7am.
D/O-NV3	Noise transmissions through loading dock doors are to be assessed to ensure the doors meet the project noise trigger levels at surrounding receivers. Measures will be incorporated into the construction drawings as required.

Ref No.	Mitigation Measure
D/O-NV4	The operational mitigation measures, including revised 'deemed to comply' conditions to be developed during detailed design, will be incorporated into an Operational Noise Management Plan (ONMP).
D/O-ESD	**Sustainability**
D/O-ESD1	Develop ESD strategy throughout the design development process including ongoing consultation with Green Building Council of Australia.
D/O-SEC	**Safety and security**
D/O-SEC1	The final detailed construction drawings are to have consideration of the recommendations in the CPTED Report prepared by Arup (April 2020) as applicable.
D/O-SEC2	A CCTV network for the site is to be designed in consultation with a suitably qualified security consultant. Signage is to be installed at site entries advising visitors that CCTV is in operation throughout the precinct.
D/O-SEC3	A lighting strategy is to be designed and implemented in consultation with a suitably qualified lighting expert to ensure that the CCTV network is effective, and the building will be lit during the night.
Construction Management	
CM-1	Prepare a detailed Construction Environmental Management Plan prior to the commencement of works on the site including all required technical management plans and with consideration of other nominated mitigation measures.
CM-2	The CEMP is to include a Dust Management Sub-Plan with consideration of the recommendations in Section 6 of the Air Quality Impact Assessment prepared by Wilkinson Murray (April 2020).
CM-3	The CEMP is to be supported by a Construction Waste Management Sub-Plan detailing the waste expected to be generated during the demolition and construction phases of the project development, and the associated processes for sorting, storing and processing waste, including monitoring and reporting programs.
CM-4	The detailed Construction Environmental Management Plan is to include, or be supported by, a communications strategy to communicate the progress and staging of the construction process to the local community.
CM-5	A Tree Protection Plan is to be prepared by the Project Arborist which assesses the degree of impact to any Tree Protection Zones and provides strategies and mitigation measures for how to minimise or mitigate these impacts. Consideration should be afforded to the recommendations in the Arboricultural Impact Assessment prepared by Tree IQ (April 2020).
CM-TA	**Transport and Accessibility**
CM-TA1	A detailed Construction Pedestrian and Traffic Management Plan will be developed with the appointed contractor, confirming the detailed construction methodology and specific measures for safely managing construction traffic in the surrounding area.
CM-TA2	In the event that a footpath or shared path is obstructed, appropriate diversions are to be implemented.
CM-HER	**Heritage**
CM-HER1	Prepare and educate all on site contractors on an Unexpected Heritage Finds Protocol and Unexpected Aboriginal Finds Policy. Should any suspected archaeological resource/relic be encountered, a stop works would be required in the area of the find, and the project archaeologist contacted.
CM-HER2	Archaeological excavation works within the study area should be undertaken in accordance with the research design detailed in the Historical Archaeological Research Design Report prepared by Curio Projects (April 2020), and any findings from review by Registered Aboriginal Parties.
CM-HER3	Prior to any demolition, an archival photographic record will be prepared in accordance with the relevant requirements of the NSW Heritage Office's How to Prepare Archival Records of Heritage Items (2003) and Photographic Recording of Heritage Items Using Film or Digital Capture (2006) guidelines
CM-HER4	The Contractor(s) must salvage significant fabric from the "Willow Grove (and potential archaeological site)" and the "St George's Terrace (and potential archaeological site)" for the purposes of re-use and interpretation at the site, including: • Significant internal and external elements at the "Willow Grove (and potential archaeological site)" graded as exceptional, high and moderate significance in the CMP19 prepared for the heritage item. • Significant brick fabric at the "St George's Terrace (and potential archaeological site)", including parapet brickwork with the façade inscription "St. George's Terrace 1881", where possible. • Internal elements of the "St George's Terrace (and potential archaeological site)" which may be of heritage significance, to be identified by a qualified heritage consultant. Where practical, heritage specialists and/or a heritage engineer will provide construction support.

Ref No.	Mitigation Measure
CM-NV	**Noise and vibration**
CM-NV1	A Construction Noise and Vibration Management Plan shall be prepared, including the final details of the types of plant to be used and updated estimates of the likely levels of noise and the scheduling of activities. The Plan will have references to the recommendations in Table 24 of the Noise and Vibration Impact Assessment prepared by Arup (April 2020).
CM-NV2	The contractor will refer to the minimum working distances in Table 25 of the Noise and Vibration Impact Assessment prepared by Arup (April 2020), and undertake vibration monitoring at the nearest potential affected building where vibration intensive works are required within these minimum distances. Vibration monitoring should be capable of real-time alerts where measured vibrations exceed the criteria.
CM-SO	**Soils**
CM-SO1	Where excavating at a depth greater than 2m, the appointed contractor should adhere to Management Procedures in the Acid Sulfate Soils Management Plan prepared by JBS&G (April, 2020).
CM-SO2	The detailed Construction Environmental Management Plan must set-out clear protocols in the event of an unexpected find.

9.0 Conclusion and justification

This EIS has been prepared to assess the environmental, social and economic impacts of the construction and use of Powerhouse Parramatta. The EIS has addressed the issues outlined in the SEARs (**Appendix A**) and Schedule 2 of the *Environmental Planning and Assessment Regulation 2000* to consider the relevant environmental planning instruments, built form, and social and environmental impacts resulting from the proposed development. Appropriate mitigation measures have been identified to manage the impacts of the development through the construction and operational phases of the project.

The proposed development aligns with the strategic need and objectives for the delivery of a contemporary facility for excellence and innovation in applied arts and sciences, which will be an iconic cultural institution for Parramatta and NSW and provide a range of exhibition, research and education spaces supported by temporary accommodation, offices and co-working spaces, and retail. Powerhouse Parramatta will be the first major, world class cultural institution to be established in Western Sydney, providing significant new opportunities for local participation in the arts as well as contributing to urban amenity, liveability and tourism. It signifies substantial investment in the Parramatta CBD that is the economic anchor to the GPOP economic corridor and the wider development of the Central River City that is fundamental to Sydney's metropolitan planning future.

This application sets out the detailed measures relating to the construction, design and operation of the Powerhouse Parramatta which ensures that this museum precinct will achieve the project objectives and benefit Parramatta, Western Sydney, and NSW more broadly.

Having regard to biophysical, economic and social considerations, including the principles of ecologically sustainable development, the carrying out of the project is justified for the following reasons:

- the proposed development is suitable for the site that is ideally located within the Parramatta CBD and has excellent access to existing and planned public transport connections, connections to other culture and arts and civic institutions within a wider precinct, and is at the focal point of a number of key urban connections including the future Civic Link;
- the proposed development is permissible with consent and meets the requirements of the relevant statutory planning controls, including being well within the maximum permitted height and floor space parameters and, therefore, the planned capacity for the site;
- the design of Powerhouse Parramatta is the result of a two-stage international competitive design process in accordance with an Design Excellence Strategy approved by DPIE and endorsed by the NSW Government Architect and Council, and demonstrates design excellence having regard to the factors identified in Clause 7.10 of the Parramatta LEP;
- the cultural impact of the demolition of the Willow Grove and St George's Terrace local heritage items will be mitigated through the implementation of heritage interpretation measures, and on balance is outweighed by the significant positive cultural impacts associated with the delivery of a world-leading cultural institution that will make its own unique and important contribution to the cultural heritage of Parramatta, particularly through a major focus on highlighting Aboriginal culture, art, science and technology;
- the proposal includes a full description of adequate and appropriate measures proposed, developed based on detailed technical assessment carried out in accordance with the Secretary's Environmental Assessment Requirements, in order to mitigate any adverse impacts of the development on the environment;
- the proposed development will provide extensive social and economic benefits including supporting significant jobs during the construction and operational phases, improving the level of visitation and tourism expenditure within the local and regional area, improving life-long education outcomes for students and supporting long term social and economic wellbeing, and providing new cultural and entertainment opportunities during both day and night and diversifying the local night-time economy;
- the development will utilise the unparalleled position of the Powerhouse to undertake programmatic interpretation of the heritage on the site and connect people to local histories, as well as more broadly addressing the multiple histories of the site pre and post-contact, to minimise and mitigate the loss of heritage on the site;

- the project has been informed by pre-lodgement community consultation and establishes a framework for ongoing consultation and engagement with the community through the detailed design, construction and operational phases of the development; and
- the proposal is consistent with the principles of ecological sustainable development as defined by Schedule 2(7)(4) of the *Environmental Planning and Assessment Regulation 2000*, and will support the delivery of an ecologically sustainable development.

Given the planning merits described above, and the significant benefits associated with the proposed development, it is recommended that the application be approved.

Appendix A. Secretary's Environmental Assessment Requirements

Appendix B. Architectural Plans and Design Report

Appendix C. Landscape Architectural Plans and Design Report

Appendix D. Design Excellence Report

Appendix E. Site Survey

Appendix F. Transport Impact Assessment

Appendix G. Statement of Heritage Impact

Appendix H. Aboriginal Cultural Heritage Assessment Report

Appendix I. Archaeological Research Design

Appendix J.Arboricultural Impact Assessment

Appendix K. Biodiversity Development Assessment Report Waiver Request & Waiver

Appendix L. Detailed Site Investigation

Appendix M. Remedial Action Plan

Appendix N. Acid Sulfate Soil Management Plan

Appendix O. Flood Risk and Stormwater Management

Appendix P. Infrastructure Services Strategy

Appendix Q. Stakeholder Consultation Report

Appendix R. Preliminary Construction Management Plan

Appendix S. Geotechnical Desktop Assessment

Appendix T. Air Quality Impact Assessment

Appendix U. ESD Report

Appendix V. Visual Impact Assessment

Appendix W. Wind Impact Assessment

Appendix X. Reflectivity Report

Appendix Y. Social and Economic Impact Assessment

Appendix Z. Noise and Vibration Impact Assessment

Appendix AA. CPTED Report

Appendix BB. Operational Waste Management Plan

Appendix CC. Access Review

Appendix DD. Fire Engineering Statement

Appendix EE. Structural Statement

Appendix FF. Signage Assessment

Appendix GG. BCA Compliance Statement