

20 January 2021

2190947

Mr Jim Betts
Secretary
Department of Planning, Industry and Environment
12 Darcy St
Parramatta NSW 2150

Attention: Amy Watson (Team Leader, Key Sites Assessments)

Dear Amy,

Response to Request for Information Powerhouse Parramatta – SSD 10416

This letter is prepared on behalf of Infrastructure NSW in response to the matters raised in relation to the Response to Submissions and further Requests for Additional Information for SSD DA 10416 by the Department of Planning, Industry and Environment (DPIE). A detailed response to the matters is as follows.

Flooding

Following review by WMA of technical information on behalf of DPIE, further information is provided by Arup in response to those items raised. Reference is made to **Attachment 1** - Arup Technical Memo.

Analysis of alternatives

Sections 1.4 of the EIS and 5.2 of the Response to Submissions Report addressed the alternatives for the proposed development and identified how the retention of Willow Grove in situ or in part on the site could not be achieved while meeting the objectives of the project. Section 1.2 of the EIS addressed the strategic need for Powerhouse Parramatta which is supported in a range of strategies and plans as an important hub for culture, science, innovation and the arts.

For completeness, the following is a summary of the options analysed and the impacts of the alternative approaches.

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 – Retention of Willow Grove and St George's Terrace

Option 3 considers the retention of two mapped heritage items on the site, being Willow Grove and St George's Terrace. These heritage items are located at the Phillip Street frontage of the site, and occupy approximately 60m (or c. 50%) of the street frontage. Willow Grove and its landscaped curtilage further projects into the centre of the site occupying approximately 1,900m² (approx. 10% of site area). Through design amendments identified in the RTS Report and accompanying technical studies, it was confirmed that the St George's Terrace building could be retained within the former pedestrian forecourt area of the Powerhouse Parramatta project and as such the retention of this heritage item forms part of the preferred option discussed below.

The retention of Willow Grove in conjunction with St George's Terrace and the proposed Powerhouse Parramatta project would result in an unsuitable outcome that would undermine the achievement of the project objectives, particularly providing a functional ground plane and building capable of accommodating the Powerhouse programming, realising the Civic Link central circulation corridor, and addressing the constraints of the site.

Site conditions

The proposed development has been informed by the range of physical attributes defining the site. The eastern and western buildings that makeup the proposed Powerhouse Parramatta have been informed by a range of factors:

- An existing carriageway easement set over a portion of the site's western shared boundary with the Meriton development at 330 Church Street, which is used to enable vehicle and pedestrian access to this neighbouring land as well as securing space that is used by emergency services to gain access to the Parramatta River foreshore. This easement is critical for the continued operation of existing buildings and emergency vehicle access, and is not to be amended by the proposed development.
- The Civic Link identified by Council in 2017, which foresees converting Horwood Place to a landscaped pedestrian and cycle only link, which will ultimately connect through to Parramatta Square and Parramatta Railway Station. This major pedestrian thoroughfare is expected to accommodate significant pedestrian and cycling traffic, and directly aligns with Willow Grove. This link presents a significant opportunity for the site and greater Parramatta by providing an important connection from the centre of the Parramatta CBD to the Parramatta River, with the site acting as the northern anchor and complementing Parramatta Square at the commencement of the link.
- The site leverages significant amenity from its location on the Parramatta River, complementing Parramatta's developing culture and arts precinct including a range of existing civic uses within the CBD and along the foreshore including the Riverside Theatre, Roxy Theatre and Western Sydney Stadium. This also has the

benefit of further activating and engaging with the river frontage beyond the current environment and to deliver larger and improved publicly accessible open space along this frontage. This outcome requires the development to be physically separated from the river foreshore by a minimum 25m recommended by Council, which also benefits the mitigation of the risk of flooding. It is noted that the proposed development would also not be permitted in the northern-most section of the site that is zoned RE1 Public Recreation.

- This northern edge of the Parramatta CBD also naturally slopes down to the river frontage. 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. In the interests of minimising cut and fill, and addressing the existing topography of the site and larger surrounding area, the proposal has sought to use existing level areas wherever possible.

The culmination of these site conditions has influenced the footprints and scale of development on the site, which enables the continuation of the Civic Link to the Parramatta River foreshore aligned with Horwood Place; provides significant open space in accordance with Council's vision for a new riverside park at the termination of the link; does not impede or amend the continued operation of the neighbouring development and emergency services; and mitigates and minimises impacts wherever possible in terms of the risk of flooding and site disturbances.

See Figure 2 of the RTS Report.

Programming and project objectives

The design of Powerhouse Parramatta creates a range of spaces of a scale that enable the exhibition of the Powerhouse Collection and the delivery of an ambitious and constantly changing program. Care of the Powerhouse Collection is paramount, and the design includes front-of-house, back-of-house, and servicing requirements for the delivery of a world-class museum (education and information facility). These functional parameters detailed in the design brief and technical reports demonstrate the complexities in the delivery of new cultural infrastructure, which must achieve international benchmarks diverse utilisation, inclusivity and adaptability commensurate with its cultural and civic functions. The achievement of these functional requirements is paramount to ensuring that the buildings can serve their intended purpose.

Design and heritage integrity

In view of the above, the retention of Willow Grove cannot be achieved without compromising the vital positive aspects of the project and specifically:

- The achievement of sufficiently sized floorplate to achieve the functional requirements for the proposed new museum.
- The delivery of a linear, uninterrupted, and sufficiently sized Civic Link connection through the site to connect the CBD with the river foreshore.
- The provision of an entry plaza where possible on Phillip Street that supports arrivals and departures from the CBD.
- The development of buildings that comply with the flood planning level set by the Parramatta Development Control Plan, and provide ground floors that can withstand riverine flood events and overland flow flood events.
- The delivery of significant open space in accordance with Council's vision for a new riverside park at the termination of the link, and public domain areas generally within the site to benefit the public and associated Powerhouse programming.

Option 4 – The Powerhouse Parramatta (the project)

With consideration of the above, the Powerhouse Parramatta project is identified as the best option. The proposal comprises 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 provides over 18,000m² of exhibition and public space as well as ancillary and related uses which contribute to the operation of Powerhouse Parramatta as a new day-to-night cultural and arts destination.

The proposal provides:

- Two buildings that are physically divided and defined by the continuation of the Civic Link through the centre of the site in alignment with the remaining Civic Link through 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. 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.
- A functional and operational building layout including a range of interconnected uses and flexible and adaptable spaces and essential loading and servicing. It is essential that the two buildings are located and sufficiently connected to enable shared programming.
- The protection and activation of 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.
- 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.
- The provision of a significant open space fronting the Parramatta River in accordance with Council's vision for a new riverside park at the termination of the link.

Further, the proposed development was selected as the outcome of a multi-stage design competition and review process on the basis that it best achieved the endorsed design brief and the project objectives. The Jury decision was unanimous and concluded that the design maximised the public realm including a clear continuation of the Civic Link; the arrangement of spaces enabled public movement throughout and provided a highly permeable ground plane; and that the built form enabled multiple programmatic and operational options.

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.

Public domain and landscape design

The landscape drawings provided to date identify the proposed scheme for public domain areas and the landscaped roof terrace on the site. The landscape design will be further developed as part of the detailed design and construction process. Items for development include the detailed selection of materials and finishes, planting species, and the activation of various open spaces through programming, furniture and other detailed design matters. This includes the undercroft which will be further developed during detailed design and in tandem with the landscape. The detailed construction drawings developed for the landscape and undercroft design will be reviewed by the Design Integrity Panel prior to construction.

Design interfaces

The design of Powerhouse Parramatta has been developed to integrate the museum and its public domain within the Parramatta CBD, including planned developments such as Civic Link. The significant architecture of Powerhouse Parramatta will act as a marker at the northern extent of the proposed Civic Link, whilst also forming a landmark along the river foreshore.

The architecture interfaces with the Parramatta CBD through porous ground floor uses as well as significant indoor/outdoor spaces that are created between the distance of the exoskeleton and building façade. Whilst not all facades of the museum are permeable at street level due to operational requirements, the significant architectural expression of the exoskeleton creates visual interest within the urban landscape. Further, the architectural design as outlined in the development application documents is consistent with the competition winning design and has been endorsed by the Design Integrity Panel in accordance with the Design Excellence Process.

St George's Terrace

As outlined in the Response the Request for Additional Information dated 2 November 2020, approval is sought for the retention of the St George's Terrace as well as external physical works to the building as part of this application. The internal fit-out and use to be the subject of a separate and future planning process as identified in Mitigation Measure D/O-BF5. The retention of the Terrace in relation to the overall design of Powerhouse Parramatta has been endorsed by the Design Integrity Panel.

Design Integrity Panel

As outlined above, the detailed design of the landscape proposal and undercroft will be reviewed by the Design Integrity Panel prior to construction. To assist with this design process, the Design integrity Panel will be augmented with a landscape architect joining as a member.

Conclusion

The responses provided in this letter and the attached technical advice do not give rise to the need to revise any of the Mitigation Measures for the project. Should you require clarification regarding the above or in relation to any other matter relating to this project, please do not hesitate to contact the undersigned.

Yours sincerely,



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To	WMA DPIE	18 January 2021
Copies	Tom Kennedy	Reference number
From	ARUP	File reference Tech Note 3000
Subject	Powerhouse Parramatta – DPIE Flood RFI's	

1 Introduction

DPIE, and their technical advisor WMA, has undertaken a review of the Stormwater Management Reports and responses to submissions. This technical note has been prepared to provide supplementary information to address questions raised by DPIE and WMA.

2 Information Requested

2.1 Impact of Filling of land above 1:100 Average Recurrence Interval and up to the PMF

The reporting to date has focussed on flood impacts up to and including the 1% AEP flood. To understand the magnitude of impacts for rarer floods, impact maps are attached to this technical note for the 1:1000 AEP flood and the Probable Maximum Flood (PMF). These maps are presented in Figures P1.19-0.10A-MOF and P1.19-PMFA-MOF.

From these figures, the following is noted:

- Impacts for the 1:1000 AEP flood on private property outside the site are less than 10mm except for a few small areas. One is adjacent to 330 Church St and another is a small area in Phillip St (which is likely to be due to modelling accuracy issues).
- Impacts for the PMF are less than 10mm for area along the Parramatta River. However, the project would result in impacts in the order of 50mm in the Parramatta CBD. Flood depths for the PMF in these streets would already be in the order of 2m to 4m.

2.2 Blockage Factors within Undercroft

Further information was requested by DPIE's independent engineer in relation to how the flood model considered the proposed structures located within the undercroft.

Model files and a spreadsheet detailing how Flood Loss Coefficient's (FLC's) were calculated have been provided to DPIE and their independent engineer.

Technical Note

The proposed structural columns have been treated like a set of bridge piers and represented the losses accordingly using a distributed loss along the line of the columns (using a J value and appropriate k value).

2.3 Cumulative Flood Impacts

It is assumed that all developments on the Parramatta River floodplain in the vicinity of the project would need to meet the requirements of no adverse impacts for flood events up to the 1% AEP flood. The project also results in no adverse impacts for flood events up to the 1% AEP flood.

Hence, the cumulative impact of this project and other future or imminent developments on the floodplain is likely to also result in no adverse impacts.

2.4 Mitigation Measures for 330 Church Street

Section 7.3.3 of the Flood Risk and Stormwater Management Addendum report makes reference to a feasible mitigation measure that results in there being no adverse flood impact, in the 1% AEP event excluding climate change, to 330 Church Street.

A retaining wall is to be provided to support the ramp connecting the southern end of Dirrabarri Lane to the Parramatta River foreshore. The top of the retaining wall supporting the west end of the ramp, wraps around to the corner of 330 Church Street. The top of the wall has been set at the 1% AEP flood level meaning that flood waters can't overtop and inundate the basement car park in events up to and including the 1% AEP event. The top of wall height could be increased to meet the levels for the 1% AEP flood level with climate change if the consent authority deemed this to be necessary.

Refer to Figure 1 for extracts of the civil design showing the general arrangement of the wall and a typical section.

Technical Note

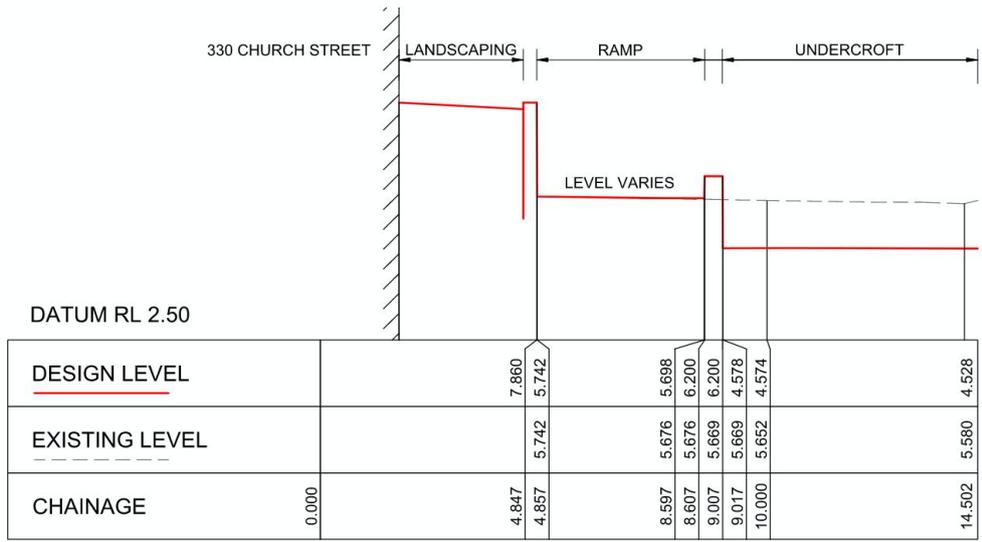
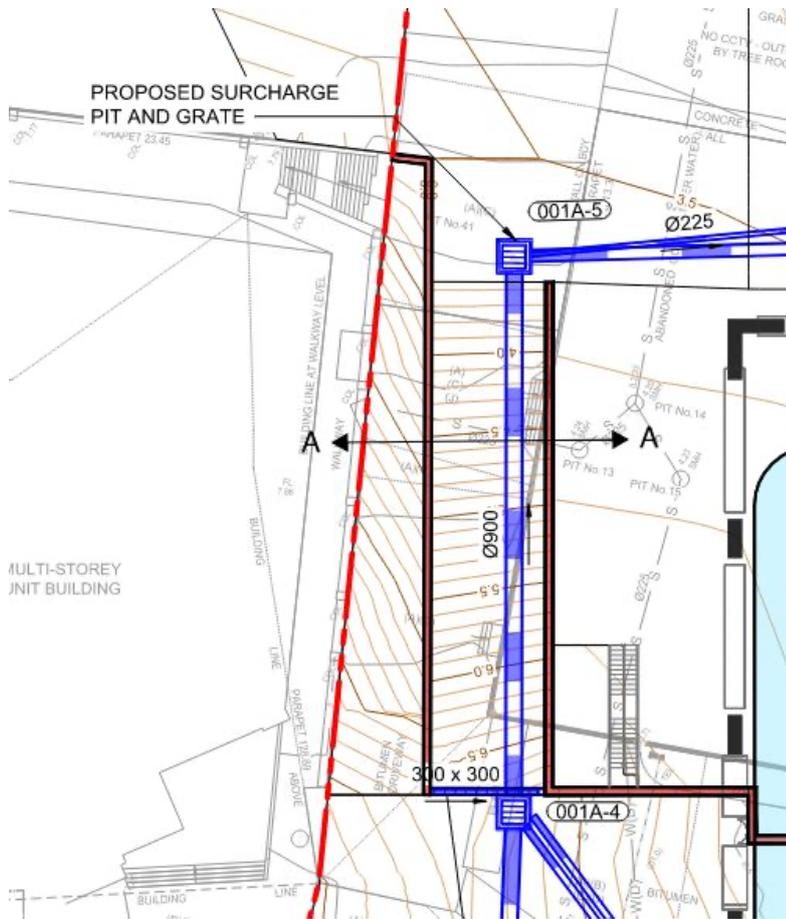


Figure 1 – Plan and Section of Retaining Wall Adjacent to 330 Church Street

Technical Note

2.5 Operation of Fire Safety Equipment

A plant room has been provided within the eastern building of Powerhouse Parramatta, with RL of 2.45m AHD. This plant room contains a fire tank, fire pump-set and valving plus stormwater and sewer sumps.

The plant room walls and slab have been designed as a fully tanked (sealed) system and will have a suitably designed waterproofing system in place to prevent water ingress.

Separate stormwater and sewer sumps with separate pumps and pressure mains are included within the plant room. The pressure mains are routed via the underside of Ground Mezzanine level (above PMF level) and drop back down to lower ground level before exiting the building footprint via gravity outlets. Non-return valves are proposed prior to the discharge to prevent any flood waters entering the plant room during flood events.

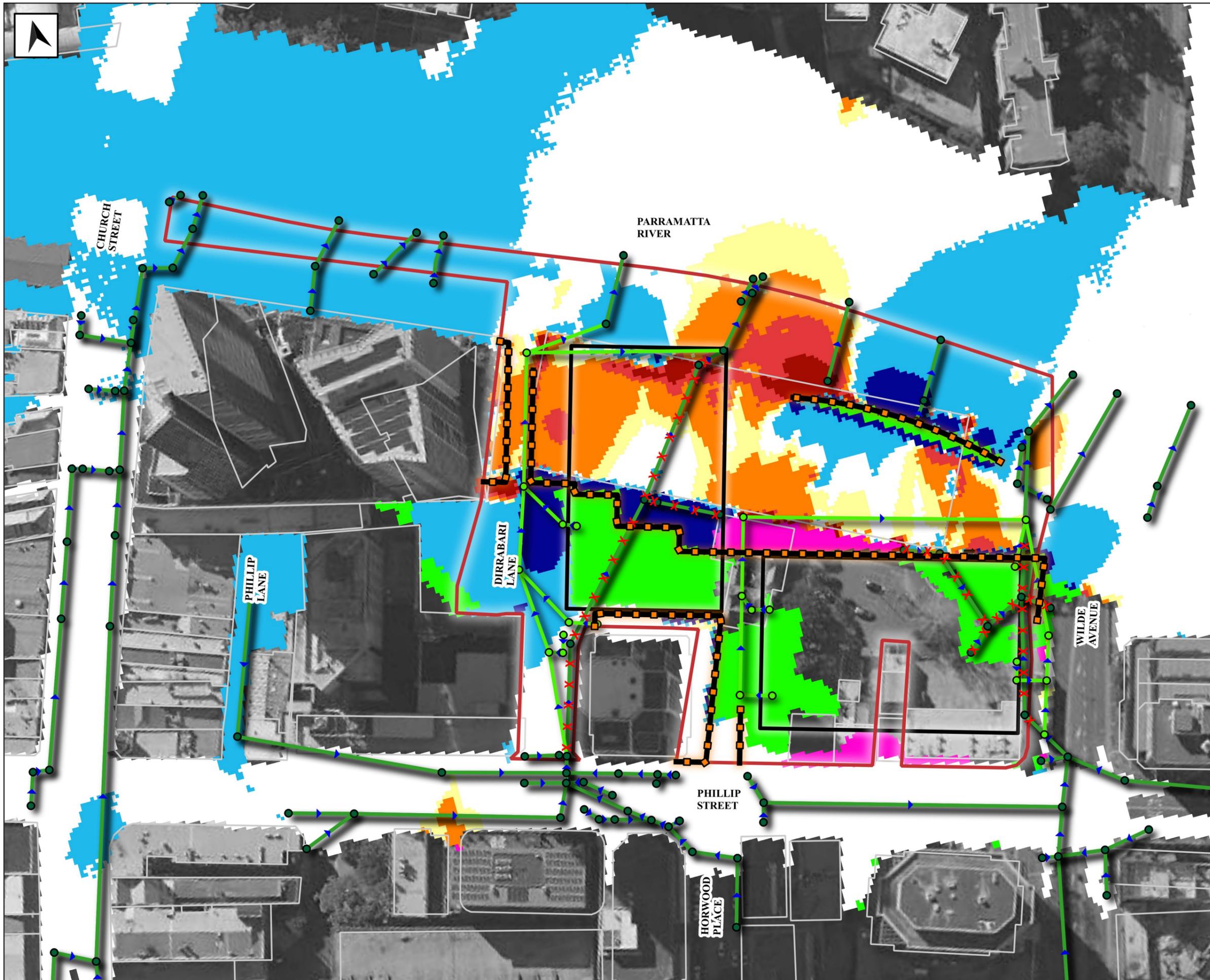
The equipment in this room is powered by the substation proposed as part of the development. The substation plinths have been set at the same level as the ground floor level of Powerhouse Parramatta (RL 7.5m AHD) and as such are above the 1% AEP flood level. As an additional measure, the equipment will also be connected to the back-up generator located above the PMF level.

The above design measures implemented are considered an appropriate response to the site constraints and mean that the fire services will be operational in a 1% AEP event.

3 Emergency Management Plan

Further clarification and details are provided to assist in understanding the risks associated with accommodating people overnight on the museum site.

- A 'shelter-in-place' approach will be adopted given the flooding behaviour of the area
- All levels for overnight accommodation will be above the PMF level
- A full-time (24 hour) concierge will be on site and will be responsible for following and implementing the emergency management plan during a flood.
- All overnight occupants will be briefed on the flood management and fire evacuation procedures as part of their induction.



Legend

- Development Site Boundary
- Powerhouse Building Outline
- Existing Building Outlines
- Post-development Retaining Wall
- Pre-development Pits
- ▶ Pre-development Pipes
- ✕ Redundant Pits
- ✕ Redundant Pipes
- Post-development Pits
- ▶ Post-development Pipes

Peak Level Flood Afflux (m)

- <= -0.10
- 0.10 - -0.01
- 0.01 - 0.01
- 0.01 - 0.02
- 0.02 - 0.05
- 0.05 - 0.10
- > 0.10
- Previously Flooded Area
- Newly Flooded Area

Note: Flooding impacts report changes in peak flood levels (mAHD). Note this is not the same as peak water depth.

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Issue	Date	By	Chkd	Appd	

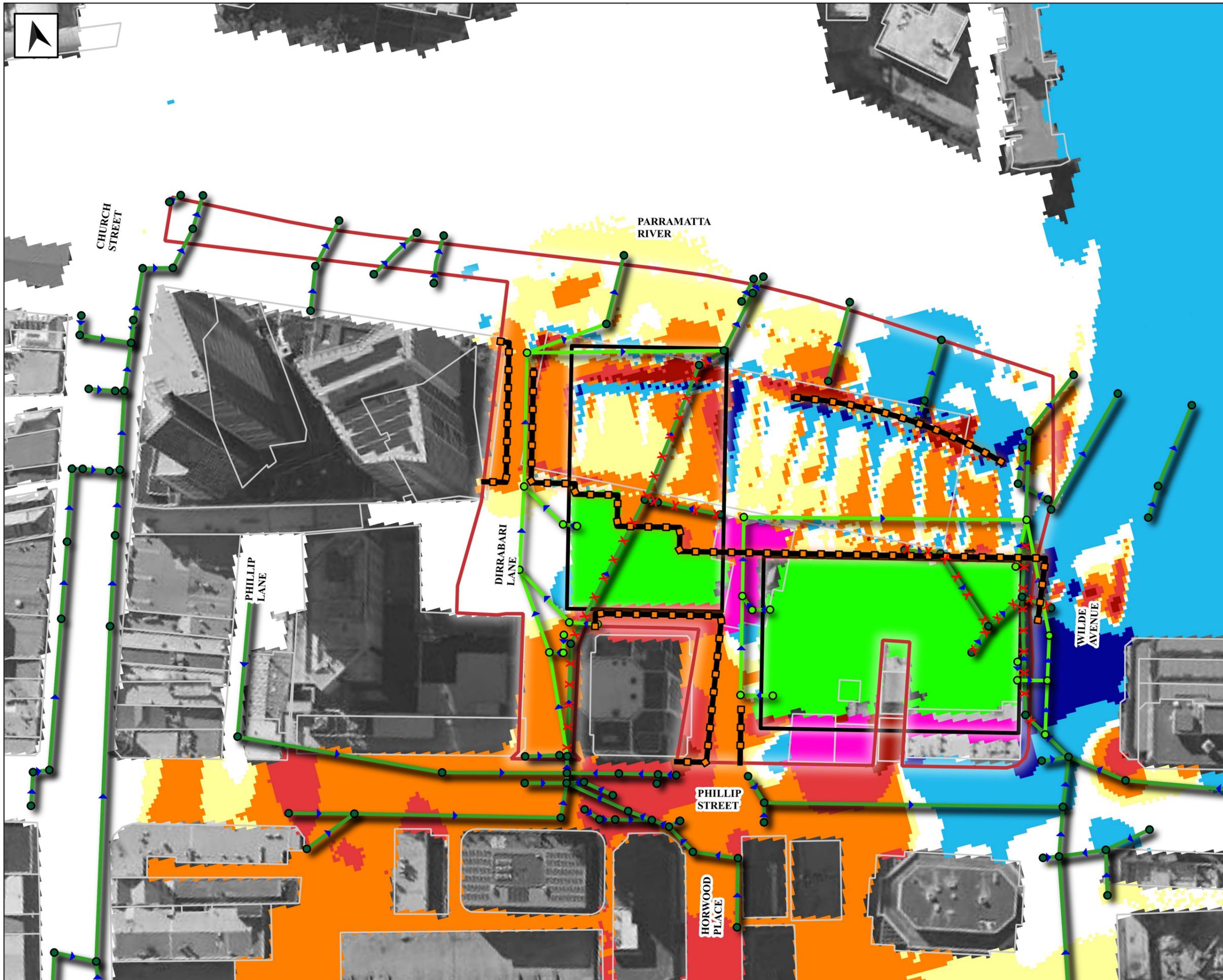
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Client

Powerhouse Parramatta
 Post-development - River & Overland Flood Afflux
 0.10% AEP (540 min)



Job No 273467	Figure Status Final
Figure No P1.10-0.10A-MOF	Issue 1



Legend

- Development Site Boundary
- Powerhouse Building Outline
- Existing Building Outlines
- Post-development Retaining Wall
- Pre-development Pits
- Pre-development Pipes
- Redundant Pits
- Redundant Pipes
- Post-development Pits
- Post-development Pipes

Peak Level Flood Afflux (m)

- <= -0.10
- 0.10 - -0.01
- 0.01 - 0.01
- 0.01 - 0.02
- 0.02 - 0.05
- 0.05 - 0.10
- > 0.10
- Previously Flooded Area
- Newly Flooded Area

Note: Flooding impacts report changes in peak flood levels (mAHD). Note this is not the same as peak water depth.

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Client

Powerhouse Parramatta
 Post-development - River & Overland Flood Afflux
 PMF (240 min)



Job No 273467	Figure Status Final
Figure No P1.10-PMFA-MOF	Issue 1