

APPENDIX P ADDENDUM CPTED ASSESSMENT

Arup



Infrastructure NSW

Powerhouse Precinct Parramatta

**Powerhouse SSDA report – Security
CPTED Assessment - Addendum**

PHM-ARP-REP-SC-0005

Issue 05 | 8 October 2020

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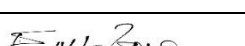
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1 Introduction

This report supports the Response to Submissions for the State Significant Development Application (SSDA) for Powerhouse Parramatta.

The purpose of this CPTED report is to identify opportunities for implementing passive security strategies to reduce crime security risks for the precinct based on the amended architectural and landscape design and comments raised during the public exhibition of the SSDA. The following activities have been undertaken:

- A review of the amended architectural and landscape drawings of the precinct;
- Confirmation of CPTED recommendations from the CPTED Assessment lodged with the SSDA for public exhibition as well as any updated recommendations in light of the amended design.

2 Assessment Requirements

Arup has assessed the amended architectural and landscape design as contained within the Response to Submissions. Where relevant, the CPTED recommendations have been reassessed against the parameters outlined in the original CPTED report lodged as Appendix AA to the EIS for Powerhouse Parramatta.

3 CPTED Principles

3.1 Crime Prevention Through Environmental Design

CPTED refers to the process of designing spaces to reduce opportunities for/ decrease risks associated with criminal behaviour. As stated in the “*Crime prevention and the assessment of development applications*”, the four main principles of CPTED include:

- **Natural surveillance** – increased visibility of space to observe and detect antisocial behaviours, as well as provide a deterrence effect for potential offenders.
- **Natural Access Control** – manipulating the layout of a space to deter offenders from gaining unauthorised access and limiting potential ‘escape routes’.
- **Territoriality** – refers to the clear distinction between public and private space. This can assist in enhancing the ability of legitimate users of the space to detect unauthorised access.
- **Space management** – ensures that the space is regularly maintained and cared for.

However, additional principles have been developed in more modern interpretations of the CPTED concept, known as 2nd Generation CPTED (Saville and Cleveland 1997) that supplement the above. These include the following:

- **Social Cohesion** – facilitating a sense of community through designing spaces that fulfil the needs of the local community (e.g. community halls, schools and playgrounds), reducing boredom and/or disconnect within the community;
- **Connectivity** – designing spaces that provide the capacity for diverse interaction between community members. This encourages space activation and increased liveability;
- **Community culture** – designing spaces to generate an interest and sense of ownership of the space through providing for cultural identity (e.g. displaying public art).

This Addendum Report utilises the four main principles of CPTED as well as 2nd Generation CPTED to reassess the amended architectural and landscape design for Powerhouse Parramatta.

4 Implementing CPTED Principles into Design

This section provides recommendations for the implementation of CPTED principles for identified locations throughout the Powerhouse site. Recommendations have been developed for each of the individual locations, however the following overarching strategies are proposed at a site-wide level that are consistent with those outlined in Appendix AA-CPTED Assessment lodged with EIS for Powerhouse Parramatta:

Landscaping

Landscaping should be well maintained and considerate of the impact of planting on the visibility of public spaces. As such, passive surveillance can be increased, improving capabilities of detecting anti-social and criminal behaviours, supporting CCTV field of view and limiting opportunities to vandalise plant beds and trees. It is recommended that branch height be 3m (1.5m in critical areas) for trees, and shrub heights be below 600mm to remove the potential use as a hiding spot.

Key Design Objectives

Minimise impact of planting on natural surveillance

Lighting

Lighting is an important component of natural surveillance and may contribute to the public perception of safety of a site.

The public domain lighting design should avoid high contrast ratio (i.e. ‘walls of darkness’) and support the identification of a person’s face from c. 15m distance. The lighting design should be implemented in a manner that encourages the legitimate use of safe spaces around the site – e.g. safe pathways where other controls have been implemented, such as CCTV or operational controls. Effective lighting design may improve passive surveillance by encouraging evening space activation and supporting the night-time economy of the Powerhouse precinct as applicable.

Further, it is noted that the undercrofts for both buildings need to be considered as potential risk areas as a result of lower visibility. Therefore, it is recommended lighting measures are implemented to promote visibility of the space and to support CCTV coverage.

Key Design Objectives

Facilitate identification of a person’s face from c. 15m

Limit stark contrasts in lighting to avoid creating ‘walls of darkness’

Support technical security controls (e.g. CCTV)

Maintenance

Public spaces that are not well-maintained may result in poor perceptions of safety for the site and encourage illegitimate use (per ‘broken windows’ theory – Wilson and Kelly, 1982) due to a perceived absence of guardianship for the space. Implementing consistent maintenance regimes for the precinct (i.e. promptly cleaning up graffiti/ repairing damage) may demonstrate guardianship over the space and discourage such behaviours by removing the associated ‘rewards’.

Key Design Objectives

Implement ongoing maintenance regimes/ response capabilities to property damage.

Anti-Climbing Measures

The current design of the building façade contains a perforated exoskeleton design with 2-3 levels of lattice. This presents potential climbing opportunities noting the lattice may be used for hand/foot holds. This presents several security, safety and operational concerns. Since lodgement of the EIS, further design development has been undertaken to address this issue. Continued development of the concept will be undertaken during the detailed design phase of the project.

In order to address this issue, coordination between façades, architect and the security teams is to be undertaken to consider a reduction in climbing opportunities. Solutions may include limiting potential finger holds at ground level and/or utilisation of material finishes that increase the difficulty of climbing the exoskeleton.

Key Design Objectives

Facilitate coordination between design teams to reduce climbing opportunities in the design.

4.1 Pedestrian Walkways

Although amended in form, the primary pathways that direct pedestrians into popular sections throughout the precinct are largely consistent between the amended design and the design lodged as part of the EIS. Due to the site’s permeability, pedestrians are encouraged to use the dedicated pathways outside of operational hours, which is likely to present potential opportunities for threat actors to target people where isolated. Potential crime threat scenarios associated with walkways include: assaults, theft from the person and intimidation, stalking and harassment.

The strategies suggested in Appendix AA-CPTED Assessment lodged with the EIS are considered relevant to the amended design, being:

- Limit alcoves close to pedestrian walkways and impact to natural surveillance to reduce opportunities for threat actors to leverage site layouts to ambush patrons and to allow pedestrians to identify potential hazards in time to react;
- Where possible, sightlines are to be maximised from the terraces interfacing with Phillip Street to enable visibility of surrounding areas, e.g. removing vegetation that may obstruct sightlines;
- Ensure lighting/ natural and technical surveillance is not blocked by mature plants or other structures, and;
- Support wayfinding through the use of signage and maps incorporated throughout the space to encourage use of safe pathways through the precinct.



Figure 1 Powerhouse Museum Precinct Pedestrian Walkways

4.2 Building Entrances

Building entrances within the amended architectural design are largely consistent with the design as lodged with the EIS. As such, the recommendations in regard to CPTED strategies for building entrances will be maintained.

Multiple building entrances have been noted throughout the precinct (see Figure 2). As a result of the potential for higher foot traffic in these locations during operational hours, relatively high natural surveillance is expected. It is anticipated that this will reduce outside of operational hours where the precinct is less populated and may present opportunities for carrying out criminal behaviours with lower likelihood of detection. Crime threat scenarios for building entrances may include: crimes against the person such as assault and theft from the person. It also is noted that there is the potential for property crimes including break and enter and general theft offences.

The following CPTED strategies are proposed for building entrances:

- Provide clear sightlines from pathways to entrances;
- Facilitate clear sight lines from within the building such that users can see the space prior to exiting;
- Clearly distinguish the entrance from public walkways through:
 - Changes of material and texture in the pavement;
 - Level changes, and;
 - Signage – to indicate public entrances/ restricted access entrances as well as direct patrons leaving the facility toward key transport/ exits (e.g. buses, taxis etc.)
- Design the entrance to limit opportunities for potential threat actors to hide.



Figure 2 Powerhouse Museum Precinct Entrances

4.3 Undercroft

The undercroft is shown on the plan with pedestrian access from multiple points. Structural elements of an undercroft mean it is a large open (but undercover) space with reduced sightlines from structural columns, similar to underground parking structures. The undercroft is accessible from three ends beneath the Podium (see Figure 3), with visual surveillance from the building or lawns above obscured by the Podium. This limits passive surveillance specifically to other users of the undercroft during operational hours and may present opportunities for criminal or antisocial behaviour with this reduced likelihood of detection.

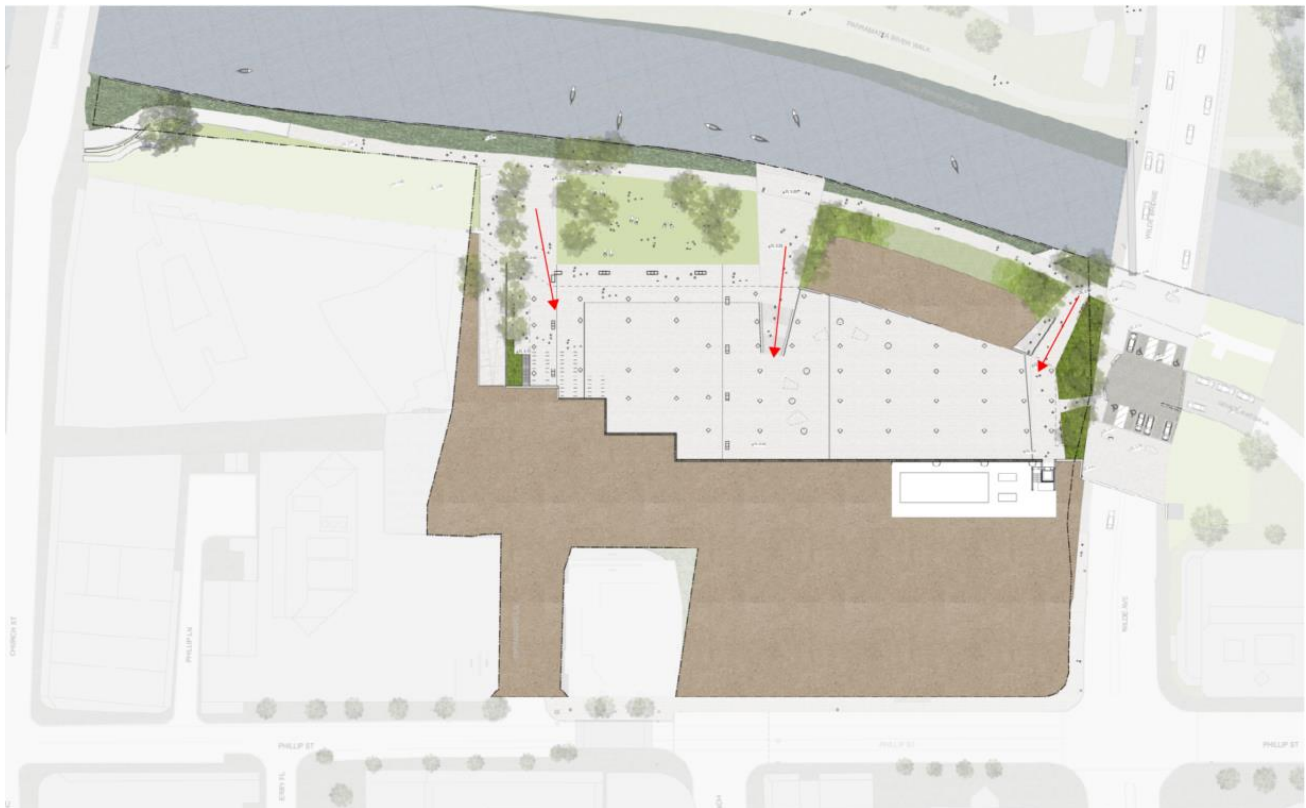


Figure 3 Undercroft access points (River Level)

However, the area will only be accessible to the public for managed events by Powerhouse. At all other times the area will be closed to the public through the use of screens.

The screens will only be open for managed events where staff will be in attendance. In addition, 24 hour on-site security and CCTV will assist with management of the space. The only other time that the undercroft screens will be opened is in the event of a flood, where there will be no people allowed within the space.

Crime threat scenarios for the undercroft may include: crimes against the person such as assault and theft, property crimes including break and enter, graffiti/vandalism and motor vehicle or bicycle theft. It is also noted that adjacent to this undercroft is a secure bicycle facility which may attract criminal activity such as theft or property damage. This facility is shown in Figure 4.

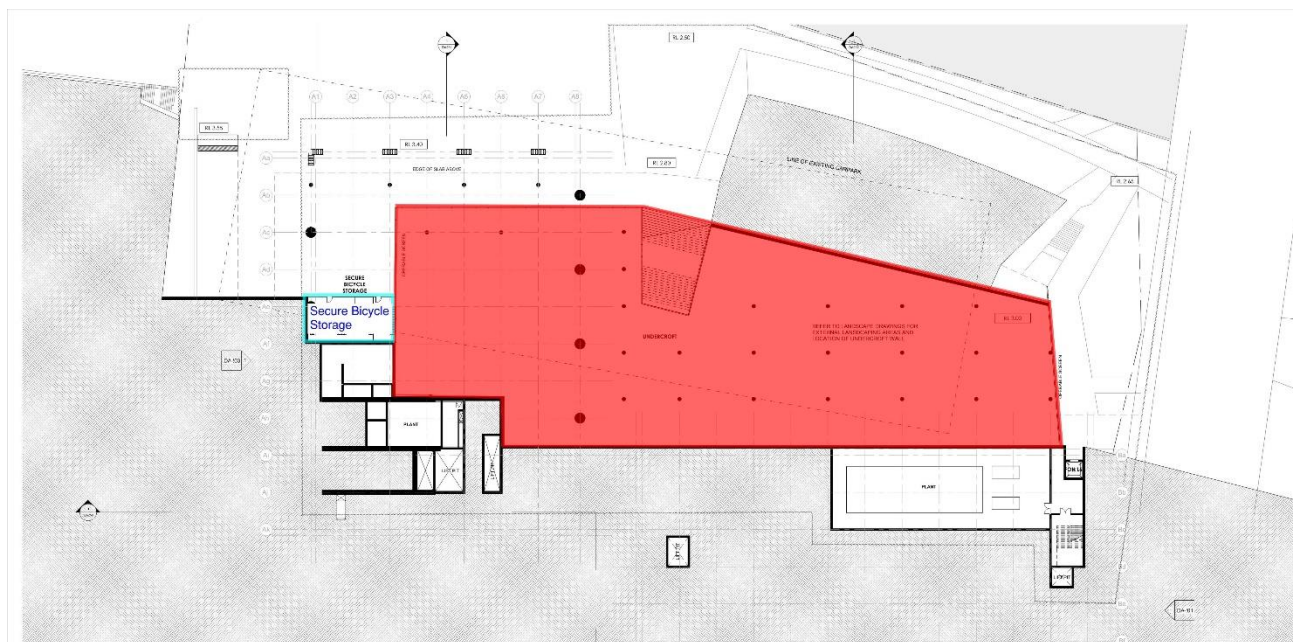


Figure 4 Architectural Plans showing the undercroft location, with adjacent bicycle storage facility

The following CPTED strategies are proposed for the undercroft:

- Comprehensive CCTV coverage;
- Adequate lighting
- Operational plans for presence during managed events with security patrols and CCTV monitoring by 24-hour onsite security; and
- Clear wayfinding signage that indicates pathways for patrons.

4.4 Open Space areas

While the landscape design has been amended, the assessment of CPTED impacts remains consistent with that of the design lodged with the EIS.

Open space areas and the remaining public domain are shown on plan interfacing with key pedestrian walkways. It is anticipated that pedestrians will gather in this area for extended periods of time. However, at night-time and during off-peak hours (where natural surveillance is limited), landscaped areas that lead away from clear sightlines may lead to isolation of potential crime targets. Key crime threat scenarios for these locations may include: assault, theft from the person and intimidation, stalking and harassment.

CPTED strategies proposed for the open space areas include:

- Maintaining landscaping per the site-wide guidance to limit obstructions to natural surveillance. Consider (on a risk basis) maintaining minimum branch heights on trees above 1.5m to discourage climbing/ vandalism (breaking of branches) and to support passive surveillance.
- Mature plant heights in garden beds are below 600mm in height where practical. Alternatively, plant species selection may be selected that minimise obstructions to passive sightlines and lighting through the site;
- Design should consider activation of the space to encourage legitimate use (e.g. seating, recreational equipment, events flexibility) to promote sense of community ownership. If incorporated, vandal resistant materials and finishes should be implemented where practical.



Figure 5 Powerhouse Museum Precinct Open Space Areas

4.5 Seating areas

The amended landscape design has two additional seating areas compared to the design lodged with the EIS. Despite these additional seating areas, the impacts of CPTED remain consistent.

The presence of seating is anticipated to encourage patronage in this area during operational hours – facilitating natural surveillance. It should be noted that, as with other locations, this space may present opportunities for a range of crime threats out of hours, including: crimes against the person – i.e. assault, steal from person and intimidation, stalking and harassment. It is noted that crimes against the property, such as vandalism of seating and tables is also a potential threat scenario identified for seating locations. CPTED strategies proposed for seating areas include:

- Implementing regular maintenance schemes in line with the site-wide recommendations to repair/restore furniture that is damaged.
- Designing lighting to enable pedestrians seated in the area to identify potential security hazards around them;
- Vandal resistant materials and finishes should be considered for furniture. Additionally, removable furniture can be considered for usage while complying with the proposed strategies.
- Implement signage/ changes to pavement material/ texture to direct patrons to safe pathways.

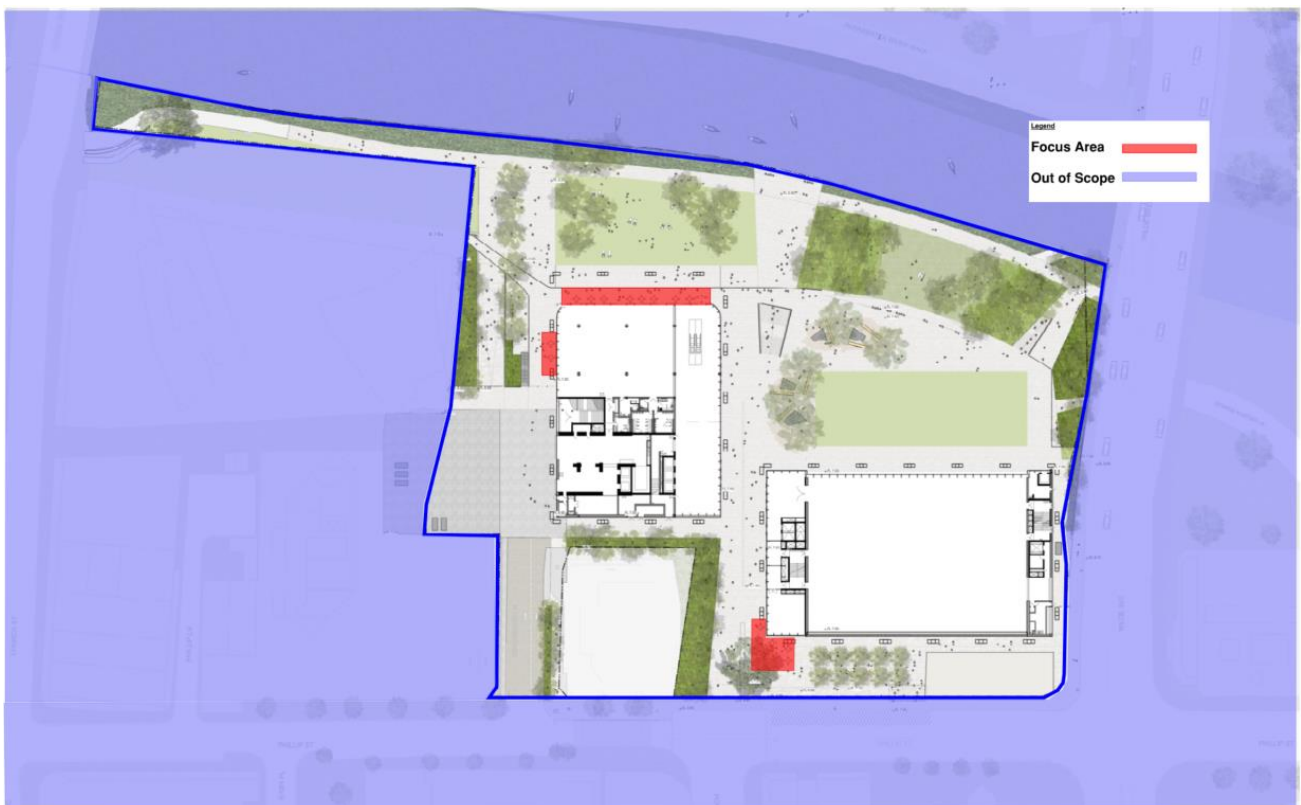


Figure 6 Powerhouse Museum Precinct Seating Areas

4.6 Vehicle entrances

Vehicle entrances under the amended design are consistent with the design lodged with the EIS.

CPTED strategies proposed for vehicle entrances include:

- Clearly signpost loading/service vehicle access points and segregate public/ restricted access points where practical.
- Demarcate vehicle entrances and pedestrian entrances to discourage pedestrian usage of vehicle entries through the use of signage.



Figure 7 Powerhouse Museum Precinct Vehicle Entrance

4.7 Coach Stop

A coach stop area is shown on the current plan that has been relocated to Phillip Street rather than an indented bay as per the design lodged with the EIS (see Figure 8). Despite the design change, the recommendations provided for CPTED remain consistent.

While the bus stops are expected to encourage patronage of the location – and it is located on a main road – late-night usage may present opportunities for isolated patrons to be targeted by threat actors. However, it is noted that this stop is not intended for public use, but instead by coaches for school excursions, tour groups and other such groups. As such, it is not expected that users of this location will be loitering in this space outside of Powerhouse Parramatta's operating hours.

While large groups at any given time are likely to deter potential offenders, there still exists a number of potential crime threat scenarios. These include assault, theft from the person and intimidation, stalking and harassment. In addition, crimes against property are a possibility, including vandalism of the bus stop and associated assets. The following CPTED strategies are provided for the coach stop:

- Minimise potential hiding opportunities by facilitating clear passive surveillance of the bus stop from the footpath and roadway. Consider impact on visibility of assets such as the terraces, rubbish bins, bus shelters and landscaping;
- Where possible, sightlines are to be maximised from the nearby terraces to enable visibility of surrounding areas, e.g. removing vegetation that may obstruct sightlines;
- Implement lighting and maintenance strategies consistent with the site wide guidelines, particularly in the surrounding space involving the terraces;
- Vandal resistant materials and finishes should be considered for any bus stop assets (e.g. shelters, signage) that are proposed.

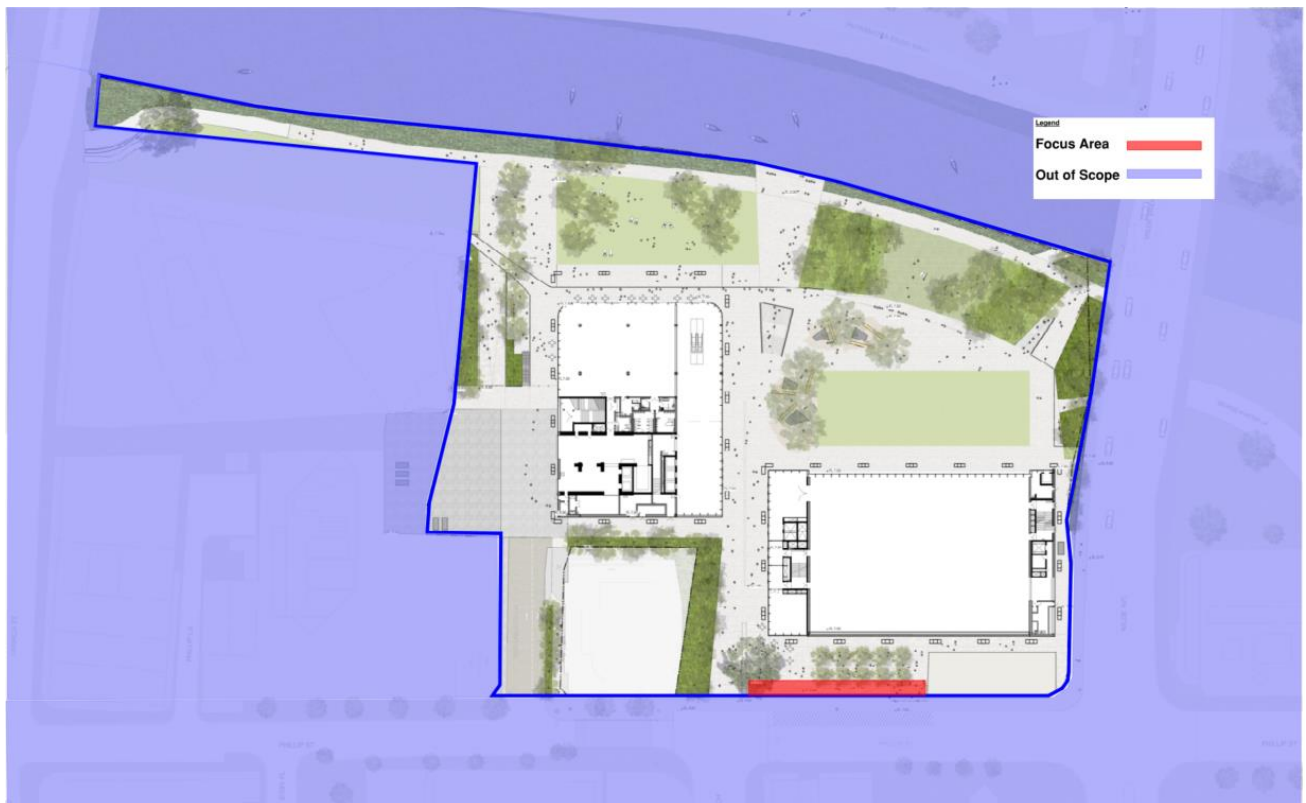


Figure 8 Powerhouse Museum Precinct Coach Stop

5 Conclusion

The amended architectural and landscape design has been assessed against CPTED principles and it is concluded that the proposal is consistent with the design lodged with the EIS. The CPTED recommendations remain largely consistent as per Appendix AA- CPTED Assessment to the EIS, with minimal recommendations or mitigations included as a result of the design amendments.