MULTIPLEX

# COCKLE BAY PARK REDEVELOPMENT

## APPENDIX I CONSTRUCTION MANAGEMENT PLAN

State Significant Development, Development Application (SSD DA)

Prepared for DPT Operator Pty Ltd and DPPT Operator Pty Ltd
22 September 2021

Revision A

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# 1. Introduction

This preliminary Construction Management Plan (CMP) Report, has been prepared to accompany a detailed State Significant Development (SSD) Development Application (DA) (Stage 2) for a commercial mixed use development, Cockle Bay Park, which is submitted to the Minister for Planning and Public Spaces pursuant to Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The development is being conducted in stages comprising the following planning applications:

» Stage 1 – Concept Proposal setting the overall 'vision' for the redevelopment of the site including the building envelope and land uses, as well as development consent for the carrying out of early works including demolition of the existing buildings and structures. This stage was determined on 13 May 2019, and is proposed to be modified to align with the Stage 2 SSD DA.

» Stage 2 – detailed design, construction, and operation of Cockle Bay Park pursuant to the Concept Proposal.

The Proponent and their selected Contractor are committed to engaging with the local community, the City of Sydney, Government Agencies and stakeholders as they plan and deliver the Cockle Bay Wharf Redevelopment project. Consultation will continue to be a key priority throughout the construction process to ensure the community and stakeholders receive regular updates and have the opportunity to provide feedback.

The final version of the CMP will ensure all construction is properly facilitated, integrated and coordinated thus guaranteeing the Project's objectives are met.

It is intended that further detailed CMP's and works plans, for each phase of the project, as outlined in this plan, will be prepared and relevant approvals secured prior to construction commencement.

## 1.1 Background

The Proponent controls the lease of the Site, and of the adjacent Darling Park precinct. The Darling Park site is a successful premium grade office precinct located on the west of the Sydney CBD, the associated Crescent Garden, located to the west of the three existing Darling Park towers, is a key area of open space in this part of the city.

The Proponent has recognised a number of key issues with the existing layout of the Darling Park and Cockle Bay precinct, these being:

» The existing Cockle Bay Wharf building is not well integrated with the city, the Western Distributor freeway currently acts as a barrier to separate this area from the CBD;

» Publicly accessible open space is limited to the existing Crescent Garden in Darling Park; and

» The existing Cockle Bay Wharf building is outdated and is not in keeping with the future of Darling Harbour area as a vibrant entertainment and tourist destination.

The Cockle Bay precinct is at risk of being left behind and undermining the significant investment being made in Darling Harbour that will see it return to the world stage as a destination for events and entertainment.

Accordingly, the Proponent is taking a carefully considered and staged approach to the complete revitalisation of the site and its surrounds. The envisaged development, which will be facilitated by the proposed building envelopes, will:

» Reconnect the city with the Darling Harbour waterfront and the Darling Park Crescent Garden

» Create new publicly accessible open space in the heart of the Sydney CBD;

» Create new public land above the Western Distributor;

» Provide new access routes between the city and the ICC Sydney / Darling Harbour Live precinct;

» Support the Sydney economy by providing a new premium commercial building; and

» Refresh and renew an existing entertainment and tourist destination.

## 1.2 Overview of Proposed Development

The proposal relates stage of the development application and seeks to establish necessary approvals to deliver the renewal and re-imagining of Cockle Bay Wharf. The detailed design follows the selection of Henning Larsen, following the Design Excellence Competition (Competition) carried on the Project. The Cockle Bay Wharf site is to

be developed for a mix Retail, Cultural and Commercial (Office) uses, including retail and restaurants, commercial offices, and open space.

A more detailed and comprehensive description of the proposal is contained in the Environmental Impact Statement (SSDA Stage 2 and Stage 1 MOD).

## 1.3 Purpose of Report

This report has also been prepared in response to the following Stage 1 (SSD 7684) conditions of consent summarised in Table 2.

**Table 2 - Concept approval of Conditions of Consent**

| Item | Description of Requirement | Section Reference |
|---|---|---|
| Condition C34 | Future Development Application(s) shall provide analysis and assessment of the impacts of construction and include: | |
| | a) Construction Pedestrian and Traffic Management Plan (Condition C35) | This report – Section 8 & 9<br><br>*Refer also Appendix I-2 Construction Pedestrian and Traffic Management Plan* |
| | b) Cumulative Construction Impact Assessment (i.e. arising from concurrent construction activity) | This report – Section 4 & 7<br><br>*Refer also Appendix I-2 Construction Pedestrian and Traffic Management Plan* |
| | c) Noise and Vibration Impact Assessments (Condition C30) | This report – Section 8.2<br><br>*Refer also Appendix V Noise and Vibration Impact Assessment* |
| | d) Community Consultation and Engagement Plans | This report – Section 7 & 10.9<br><br>*Refer also Appendix J Consultation Outcomes Report* |
| | e) Construction Waste Management Plan | This Report – Section 10.7<br><br>*Refer also Appendix JJ Waste Management Plan* |
| | f) Air Quality Management Plan | This report – Section 10 |
| | g) Water Quality Impact Assessments and an Erosion and Sediment Control Plan (including water discharge considerations) | This report – Section 10 |
| | h) Acid Sulphate Soil Assessment and Management Plan. | This report – Section 10.4 |
| Condition C35 | Future Development Application(s) shall include a Construction Pedestrian and Traffic Management Plan (CPTMP) and Maintenance Traffic Management Plan (MTMP), prepared in consultation with TfNSW Sydney Coordination Office, Transport Management Centre and TfNSW. The CPTMP shall specify but not be limited to the following: Should any impacts be identified, the duration of the impacts and measures proposed to mitigate | |

| Table 2 - Concept approval of Conditions of Consent | | |
|---|---|---|
| | any associated general traffic, public transport, pedestrian and cyclist impacts should be clearly identified and included in the CPTMP. | |
| | a) impact on RMS asset maintenance program during construction, operation and maintenance and coordination with this program | *Refer Appendix KK Western Distributor Impact Assessment* |
| | b) management of the impacts of pedestrian and cyclist movements during construction, operation and maintenance | This report – Sections 4.3, 8 & 9<br><br>*Refer also Appendix I-2 Construction Pedestrian and Traffic Management Plan* |
| | c) location of work zone(s) | This report – Section 6 |
| | d) location of crane(s) | This report – Section 4 |
| | e) haulage routes | Refer Appendix I-2 Construction Pedestrian and Traffic Management Plan |
| | f) construction vehicle access arrangements | This report – Section 6 |
| | g) details of temporary pedestrian access arrangements . The proposed temporary pedestrian access arrangements should be provided prior to the demolition of pedestrian bridges. The proposed temporary pedestrian accesses should be able to cater for the current demand for the pedestrian bridges that are to be demolished | This report – Section 4 |
| | h) proposed construction hours | This report – Section 8 |
| | i) estimated number of construction vehicle movements | *Refer Appendix I-2 Construction Pedestrian and Traffic Management Plan* |
| | j) construction program | This report – Section 3.3 |
| | k) consultation strategy for liaison with surrounding stakeholders | This report – Section 7 & 10.9<br><br>*Refer also Appendix J Consultation Outcomes Report* |
| | l) any potential impacts to general traffic, cyclists, pedestrians and bus services within the vicinity of the site from construction vehicles during the construction of the proposed works | This report – Section 8 & 9<br><br>*Refer also Appendix I-2 Construction Pedestrian and Traffic Management Plan* |
| | m) cumulative construction impacts of projects including the Sydney Light Rail Project, Sydney Metro City and Southwest and The Ribbon (IMAX) development. Existing CPTMPs for developments within or around the development site should be referenced in the CPTMP to ensure that coordination of work activities are managed to minimise impacts on the road network | This report – Section 4 & 7<br><br>*Refer also Appendix I-2 Construction Pedestrian and Traffic Management Plan* |

| Table 2 - Concept approval of Conditions of Consent | | |
|---|---|---|
| | n) cumulative impacts of other known development and major infrastructure projects impacting the Western Distributor and surrounding road network | *Refer Appendix KK Western Distributor Impact Assessment* |
| | o) should any impacts be identified, the duration of the impacts and measures proposed to mitigate any associated general traffic, public transport, pedestrian and cyclist impacts should be clearly identified and included in the CPTMP | *Refer Appendix I-2 Construction Pedestrian and Traffic Management Plan* |

## 1.4 Abbreviations

The abbreviations used in this Plan are outlined below.

| Abbreviation | Definition |
|---|---|
| AS/NZS | Australian and/or New Zealand Standard |
| MPX | Multiplex Constructions Pty Ltd |
| CMP | Construction Management Plan |
| CASA | Civil Aviation Safety Authority |
| CBP | Cockle Bay Park |
| DSA | Disruption Service Application |
| OLS | Obstacle Limitation Surface |
| PPE | Personal Protective Equipment |
| PNSW | Property New South Wales |
| ROL | Road Occupancy Licence |
| SICEEP | Sydney International Convention, Exhibition and Entertainment Precinct |
| SMF | Synthetic Mineral Fibre |
| SWMS | Safe Work Method Statement |
| TfNSW | Transport for New South Wales |
| WAD | Works Authorisation Deed |

Figure 1 Abbreviations

## 1.5 Document Control

This Plan will be monitored and necessary changes will be identified in the table below and communicated to all relevant personnel.

| Rev | Date | Description | Page | Reviewed By | Approved By |
|---|---|---|---|---|---|
| A | 06/10/2021 | SSDA Submission | ALL | Bob Downes | Nick Hailazidis |

Figure 2 Revision Table

# 2. Site Description

The site is located at 241-249 Wheat Road, Sydney to the immediate south of Pyrmont Bridge, within the Sydney CBD, on the eastern side of the Darling Harbour precinct. The site encompasses the Cockle Bay Wharf development, parts of the Eastern Distributor and Wheat Road, Darling Park and Pyrmont Bridge.

The Darling Harbour Precinct is undergoing significant redevelopment as part of the Sydney International Convention, Exhibition and Entertainment Precinct (SICEEP) including Darling Square and the IMAX renewal (W Hotel) projects. More broadly, the western edge of the Sydney CBD has been subject to significant change following the development of the Barangaroo precinct.

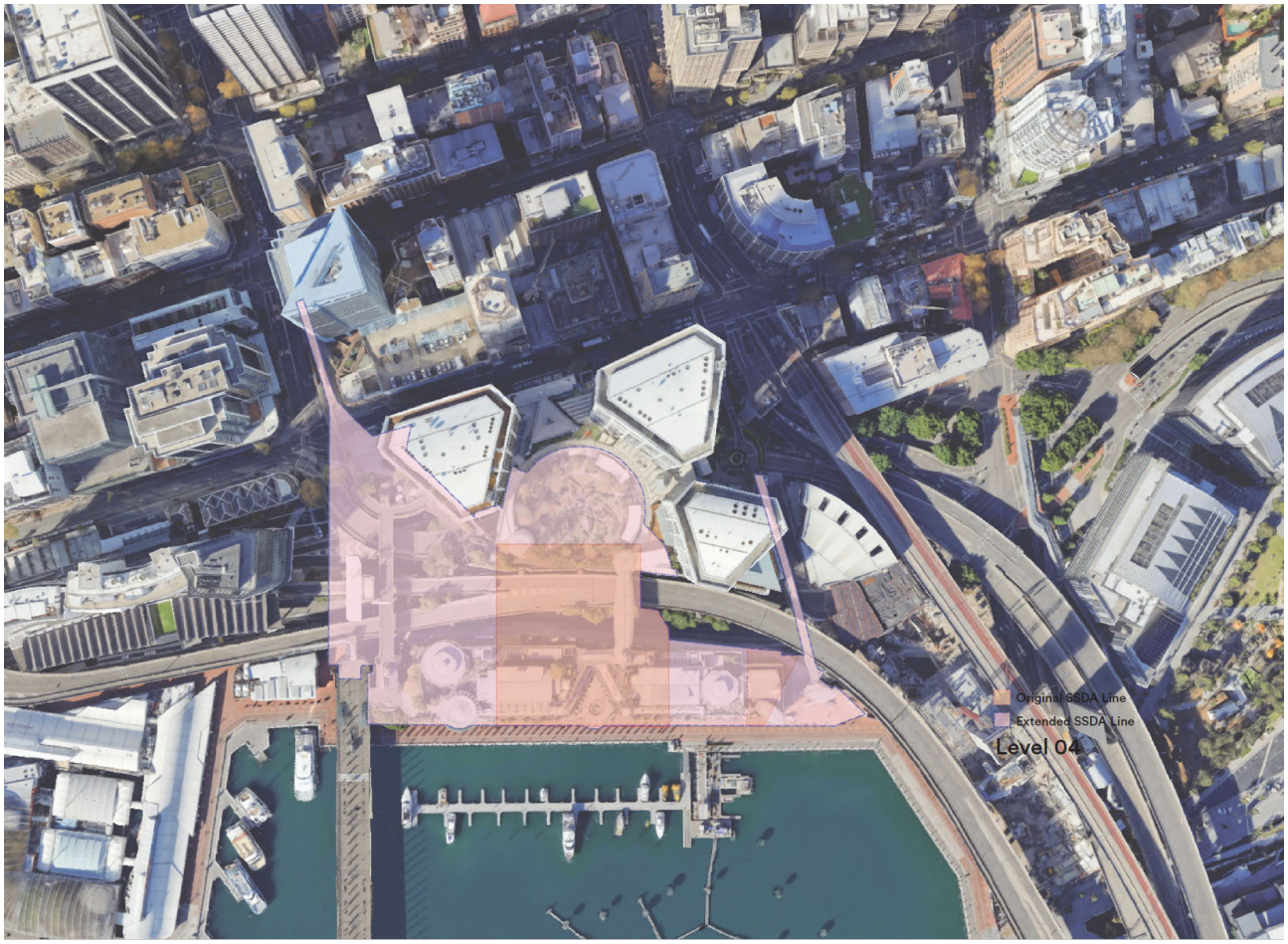



Figure 3 Location Plan

# 3. Works Description

## 3.1 Project Description

The Detailed Design Development proposal is for:

» New land bridge connecting Darling Park to Cockle Bay Wharf

» New podium buildings containing both retail and commercial uses, services, plant and equipment

» New 43 story mixed use tower containing both retail and commercial spaces, services and plant and equipment.

## 3.2 Project Phasing

The Project will require authority approvals, investigations (e.g. archaeological, acid sulphate soils, marine impact and the like), design, construction planning and commercial issues to be resolved before construction can commence. Given the nature of the Land bridge construction crossing the Western Distributor, and Multiplex's recent experience with 161 Sussex Street, a rigorous approval process will need to be coordinated with TfNSW, PNSW and City of Sydney Council for each road closure required for construction activity on or above the roads. The date of Project commencement of construction is subject to leasing commitments and market demand and Stage 2 SSDA approval process.

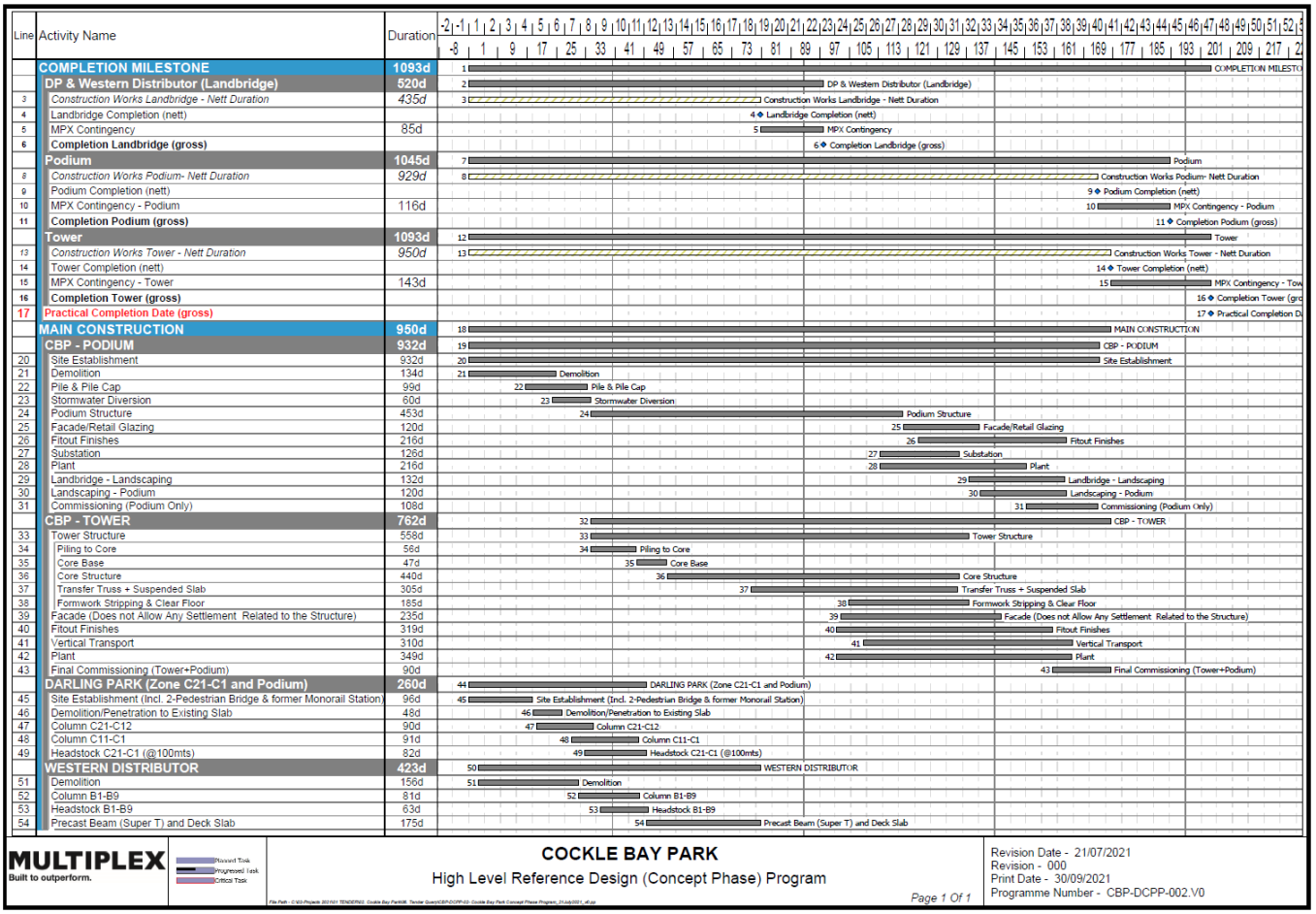
The Project is proposed to be constructed in six separate phases. The phases listed below are in approximate order of construction but may overlap in duration, or may be re-ordered as required by the owners. The project phasing including major activities associated with the construction are identified in the table below.

| | |
|---|---|
| Phase 0 | Market Street Bridge is required to be completely demolished to allow for the construction of a new regraded bridge connection from Market Street to the new land bridge. This will enhance the free flow of pedestrian and bicycle use between the CBD and Cockle Bay.<br>A temporary bridge will be installed prior to the demolition of the existing Market Street bridge, to facilitate continued access and egress above Sussex Street and the Western Distributor whilst the CBPP works are undertaken. The works will be carried out in a staged fashion to allow the current access from Druitt Street and Darling Park Bridge to remain operational until the new Market Street Bridge connection is complete.<br>Refer to Drawing to MPX-CBW-001 (1 of 8) |
| Phase 1 | Survey and Site Establishment<br>» Detailed site survey<br>» Extensive potholing<br>» Erection of site hoarding and accommodation<br>» Establishment of environmental and safety controls prior to demolition<br>» Left turn onto Wheat Road established behind Helm Bar<br>» Civil works to the south intersection of Wheat Road and Harbour Street to establish construction access |
| Phase 2 | Demolition<br>» Demolition of existing Cockle Bay Wharf structure<br>» Alternate pedestrian links established including temporary access from Sussex St to Pyrmont Bridge<br>» Demolition of pedestrian bridges<br>» Demolition of Darling Harbour Monorail Station |
| Phase 3 | Land bridge (Level 3 Podium)<br>» Establish tower cranes<br>» All works on or above the Western Distributor restricted to 9pm and 5am Sunday to Friday<br>» Piling, pile caps, columns, headstocks, beams and topping slab<br>» Ramps, paths and terracing<br>» Services<br>» Public Domain, landscaping and finishes |
| Phase 4 | New CBP Retail Podium<br>» Excavation of lift core pit |

| | |
|---|---|
| | » Tower and core piles<br>» Stormwater division works<br>» New podium piles through existing promenade deck with harbour protection measures<br>» Works to the existing ground floor structure<br>» Public Domain, landscaping and finishes<br>» Wayfinding and Signage |
| Phase 5 | CBP Tower<br>» Superstructure<br>» Façade<br>» Fit out & Finishes<br>» Vertical transport and Services<br>» Wayfinding and Signage |

## 3.3 Program

An indicative construction program has been prepared (refer below) for the works following our assessment and analysis of the proposed Cockle Bay Park Redevelopment.




## 3.4 Site Management – Organisations and Responsibilities

The Proponent intends to appoint a managing Design and Construct Contractor (to be known as 'Contractor' within this document) for the design finalisation, construction approvals, delivery, completion and certification of the CBP Project. An indicative organisational and responsibilities chart is shown below:

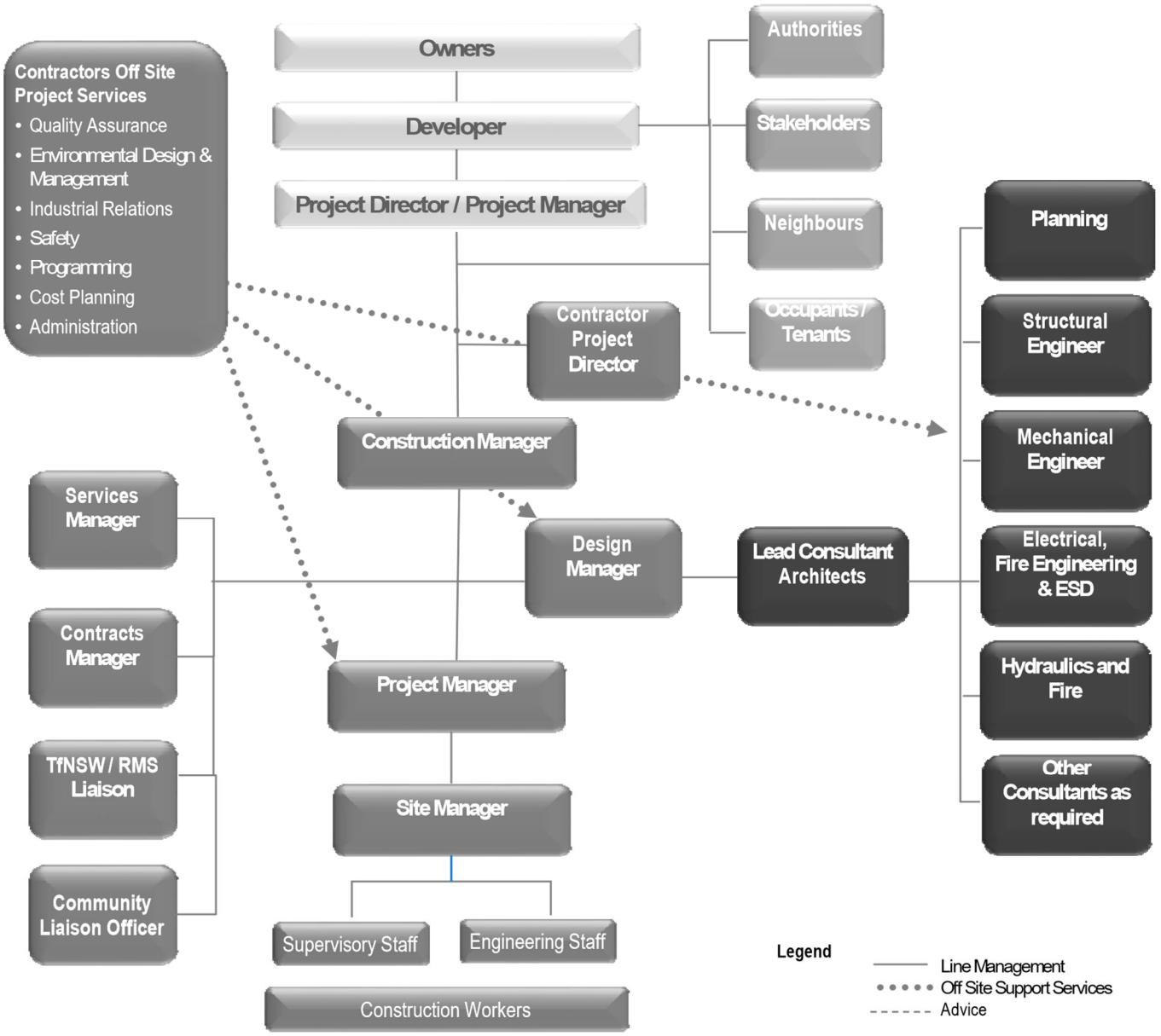



Figure 4 Organisational Chart

# 4. Physical Constraints of the Site

An understanding has been developed of the physical constraints that influence the Site. A summary of these constraints follows.

## 4.1 Darling Park and Crescent Garden

Darling Park and Crescent Garden will remain an operational precinct throughout the proposed development. Currently housing three premium office towers, a centrepiece crescent garden and a variety of retail and dining options, it is crucial that the day-to-day operations and amenity of Darling Park are not disrupted. Works interfacing Darling Park will be undertaken in discreet stages during the course of the CBPP in consultation with existing tenants, users and the like.

### 4.1.1 Safety

The area of Darling Park directly affected by the project is the Western boundary, where the interface of the new Land bridge will occur. There will be a 7-8m height difference between the top of the Land bridge terrace and the crescent garden, and therefore overhead protection measures will be in place to protect pedestrians below. A formwork screen will extend from the slab edge and a B-Class hoarding with 10kPa overhead protection will be established within the crescent garden, with a temporary footpath underneath. The landscaping to the Crescent Garden will be restored based on the updated landscape design upon project completion.

A formwork screen will also be established for all other live edges with a potential to impact traffic or pedestrians. This includes the area adjacent to Market Street at the interface of the Land bridge deck and the ground floor DP1 podium.

### 4.1.2 Cranes and Materials Handling

A preliminary crane analysis has been carried out considering the size and position of the precast concrete elements making up the Land bridge (over the Western Distributor) and construction of the new commercial tower over. Included below is specific commentary and drawings depicting each:

#### 4.1.2.1 Landbridge Cranes

Three luffing cranes will be required for the Landbridge works; with two to be positioned on the Cockle Bay Wharf side and one on the Sussex St side (refer to figure overleaf). These cranes will lift the larger precast components lifted from the road network during approved road closures. A 10kPa protection deck or hoarding will be installed prior to lifting any materials or luffing over any areas outside of the site boundaries. Although having the potential to extend over Darling Park, a strict Crane Management Plan will be in place to forbid slewing over Darling Park, and the cranes will simply luff upwards to avoid DP1 and DP3. See section 5.3 for more detail regarding cranes and materials handling.

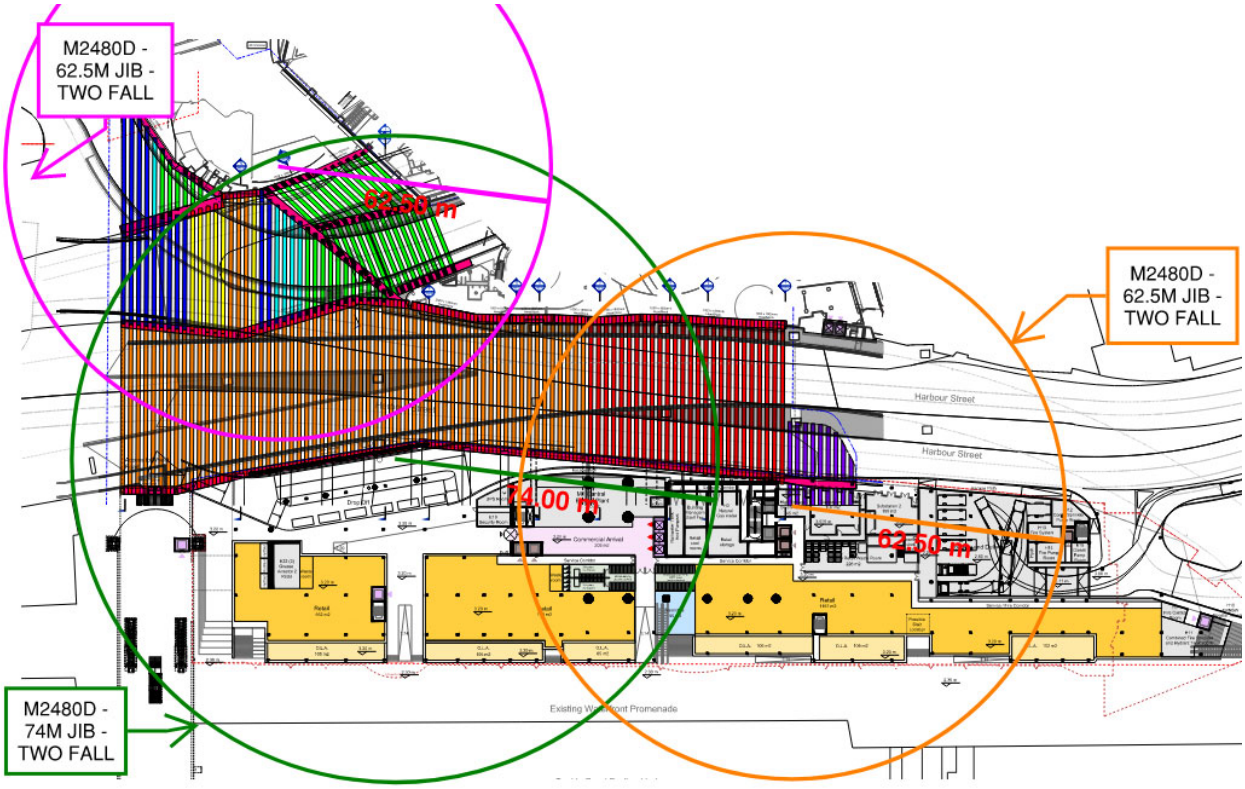



Figure 5 Crane Layout Plan at Level 3

### 4.1.2.2 Tower Cranes

The initial construction for the tower will utilise the existing land bridge cranes. On completion of the heavy lifts of the land bridges and the structural steel trusses for the tower-cantilevered areas, the two M2480D cranes located on the Cockle Bay Wharf side will be replaced with cranes more appropriate for the tower construction. It is anticipated a M390D luffing crane will be utilised along the northern elevation of the tower, with a M310D luffing crane to be installed within the core. A separate approval will be procured through CASA for the proposed Tower Cranes to construct the tower component of CBP.

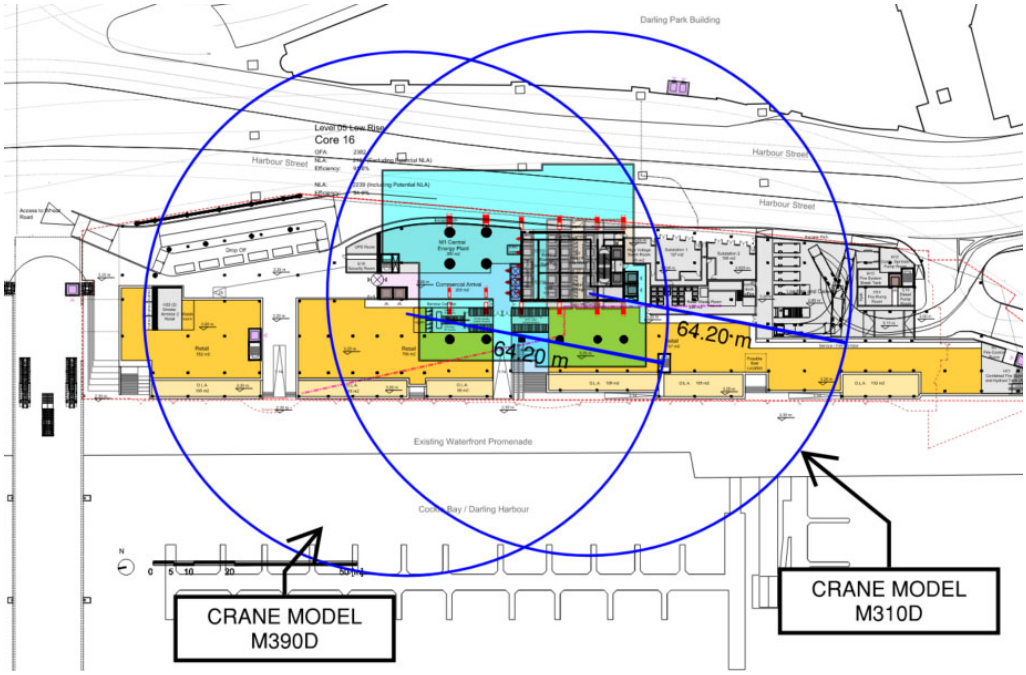



Figure 6 Crane Layout Plan for Tower Construction

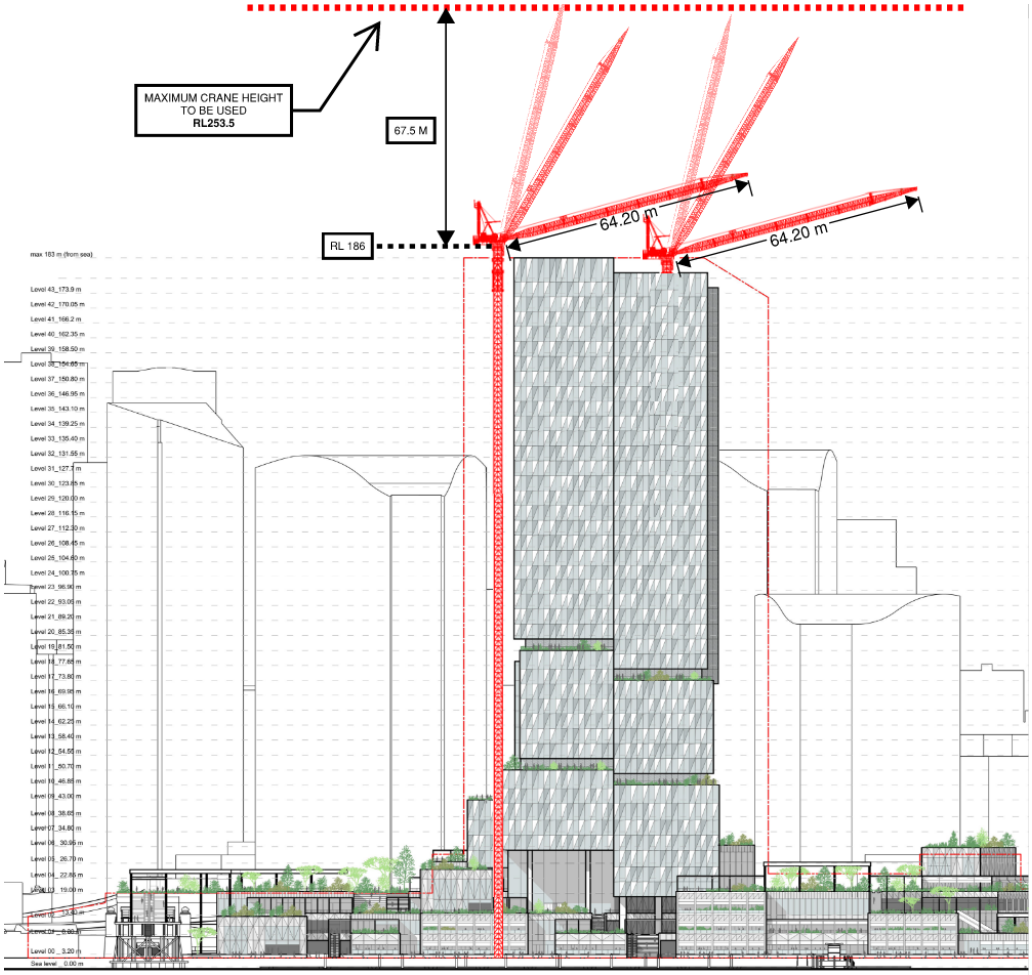



Figure 7 Tower Cranes Section

## 4.2 Roads

The Western Distributor, Harbour Street and Wheat Road run through the centre of the development site and present a significant physical constraint for the construction of the Land bridge. The interaction of the development with the surrounding roads is being discussed with the relevant authorities and will require a Works Authorisation Deed (WAD) between the Proponent and the TfNSW. Upon approval of the WAD, each individual road closure will require a Road Occupancy Licence (ROL), which can be applied for one month prior to the closure.

### 4.2.1 The Western Distributor

The Western Distributor is a state road managed by TfNSW and is an elevated overpass in this area. Components of the Western Distributor directly affected by the development include:

» The northbound portion between Pyrmont Street/Fig Street/Anzac Bridge on-ramps and the Harbour Bridge

» The southbound portion from the Harbour Bridge

» The southbound on-ramp extending from Market Street and travelling underneath Darling Park

» The northbound off-ramp leading to King Street.

The majority of expected road closures will be on Western Distributor as the foundations for the Land bridge Terrace Underpass are situated within the Western Distributor medians. A combination of these lanes may require closures at any one time. The extent of the Western Distributor in the vicinity of the development is highlighted in orange on Figure 8. During the course of the works, the current road reserve and corridor widths will be retained during construction unless agreed otherwise.

### 4.2.2 Harbour Street

Harbour Street is largely an on-grade road in this area, merging with the Western Distributor north of the site. Closures at the Bathurst Street intersection northbound and Harbour Bridge southbound will need to be approved and coordinated. The works associated with Harbour Street will include installation of a B Class hoarding for demolition works, safety screens on the boundary of Harbour Street and Wheat road to protect Harbour Street from construction works. In addition, a left turn from Harbour Street to Wheat Road on Northern perimeter will be installed to provide access for existing tenants along Wheat Road. The installation of the land bridge T beams will also require road closures. The extent of Harbour Street in the vicinity of the development is highlighted in blue on Figure 8 below.

### 4.2.3 Wheat Road

Wheat Road is a one-way road servicing loading dock areas for Cockle Bay Wharf and other buildings along Darling Harbour. Between Druitt St and The Pyrmont Bridge Wheat Road acts as a service road for Cockle Bay hence once the demolition of Cockle Bay commences this section of Wheat Road will not be required. A temporary left turn off Harbour Street onto Wheat Road is proposed to the north of the Pyrmont Bridge, maintaining access to back of house areas servicing Helm Bar, the aquarium, zoo and wax museum (Refer to Section 5.1). It is anticipated that the W Hotel site will be in operation during the construction of the Project, and as such a combined Construction Traffic Management Plan may be developed between the two sites if required.

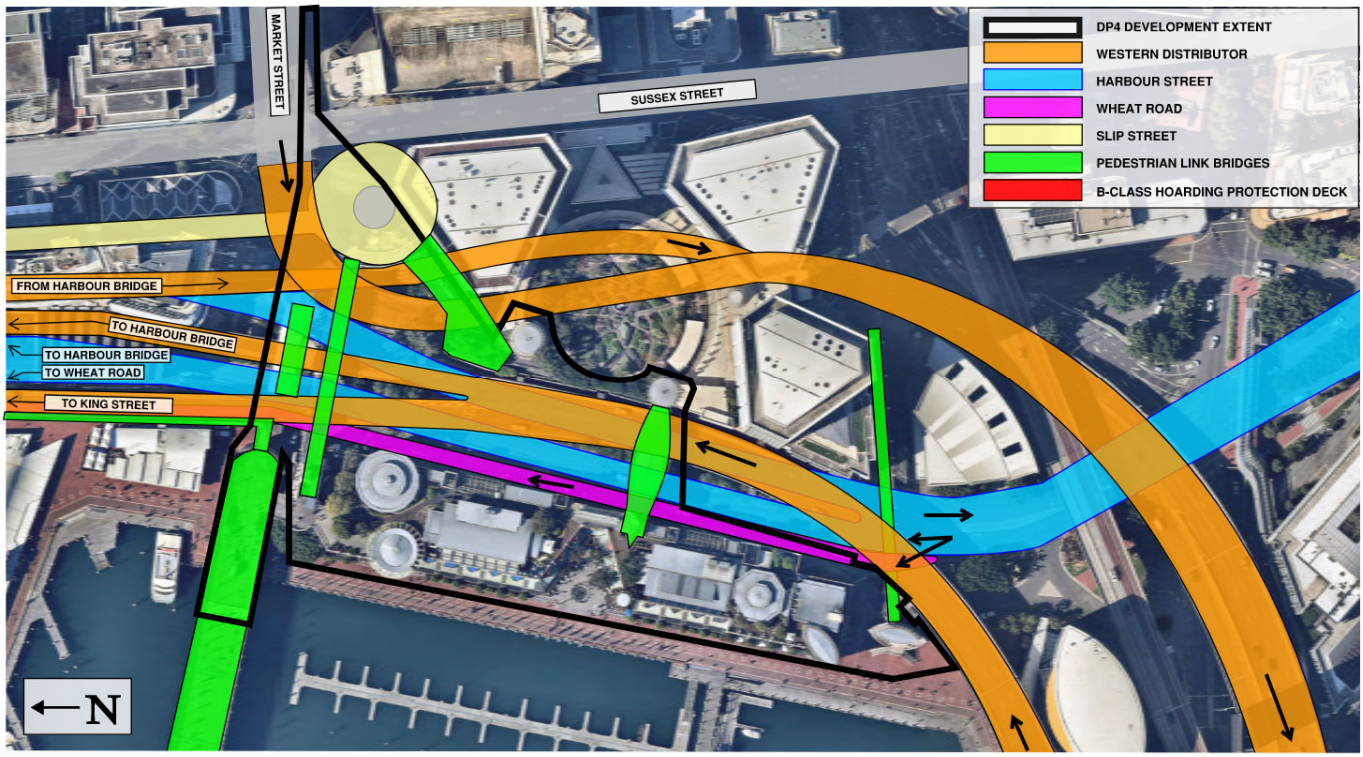



Figure 8 Roads and pedestrian links in the vicinity of the development envelope

### 4.2.4 Working Hours

Construction activities over Harbour Street or the Western Distributor including foundation and service relocations will take place as night works due to the road closures necessary to construct the Land bridge structure. From previous experience at 161 Sussex Street (pictured following), Multiplex has anticipated road closures between 9pm and 5am Sunday to Friday nights. These works will be coordinated with the CBD Coordination office for traffic logistics and major events. Whilst services works, landscaping, finishes to the deck, and stairs down to the Crescent Garden may occur during the day, the construction of the underpass foundations and structure will take place out of hours with coordinated road closures with appropriate detours.

## 4.3 Pedestrian Bridges

There are multiple pedestrian bridges in the vicinity of Cockle Bay Wharf that provide access across the Western Distributor, Harbour Street, Wheat Road and surrounding streets. Approaches for each of the key pedestrian and cycling bridges has be defined below.

### 4.3.1 Cable-stayed Pyrmont Bridge Link to Sussex Street and Existing Monorail Infrastructure

This is a cable-stayed bridge linking the Pyrmont Bridge with Sussex St. This bridge overlaps with the current design for the Land bridge and will therefore need to be demolished in a staged manner to continue pedestrian access. Works to demolish this bridge will occur as night works coordinated with relevant authorities. An option for maintaining access may involve construction of a portion of the new deck prior to demolition of the existing bridge, or a temporary modular pedestrian bridge to the north of the development. The monorail station adjacent to the pedestrian walkway will be demolished in conjunction with the cable-stayed bridge. Where possible there may be opportunity to re-use the existing footings for the monorail station and the existing pedestrian bridge.

Figure 9 Cable-stayed bridge linking Pyrmont Bridge with Sussex Street and Existing Monorail Station. Aerial view. (Google Maps, 2017)

### 4.3.2 Pyrmont Bridge Bicycle Path

Currently there is an existing bicycle path located along the western side of the western distributor, which connects to the centre point of the eastern end of the Pyrmont Bridge. The new design for CBP will incorporate two new escalators and a set of stairs to provide access from Pyrmont Bridge to the new land bridge. As this is located in the current bicycle path, an alternative path will be required and will be developed in conjunction with heritage and traffic consultants. The figure below demonstrates an approach to maintain pedestrian and cyclist access whilst the land bridge works are built. Any temporary measures installed to maintain access to Pyrmont Bridge bicycle path will be removed and the final architectural design delivered.

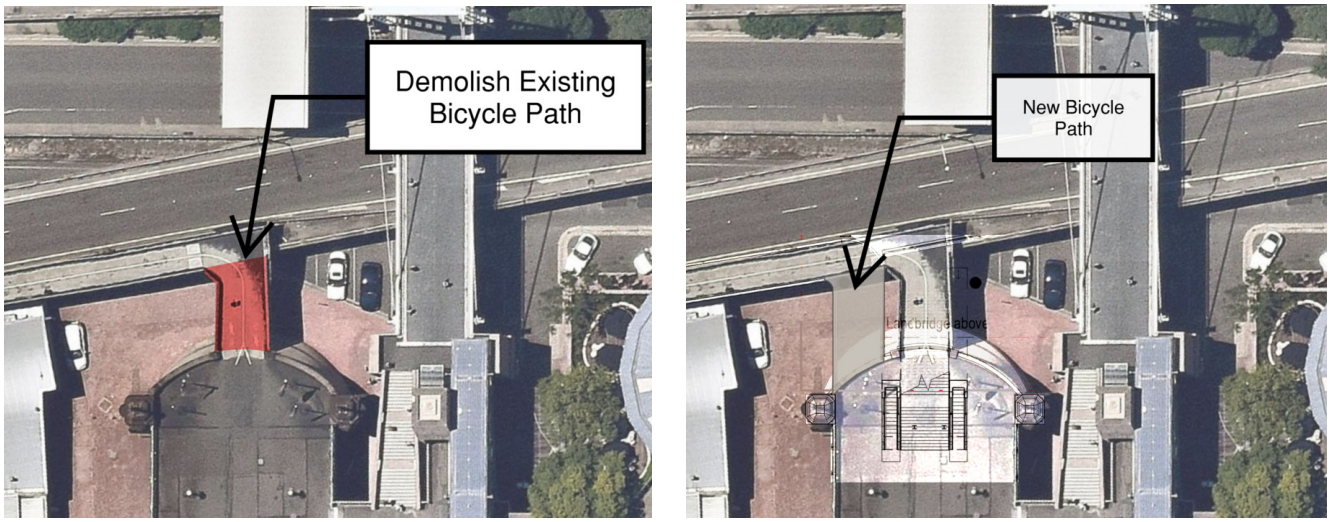



Figure 10 Staging approach to maintain pedestrian and cyclist access to Pyrmont Bridge

### 4.3.3 Cockle Bay Wharf – Darling Park Bridge

This bridge was constructed to link Cockle Bay Wharf with Darling Park across the road. The bridge structure and Western abutment will be demolished along with Cockle Bay Wharf as part of the development, whilst the rotunda at the Eastern abutment will be modified as part of the new Land bridge and Darling Park Interface Works. Works to demolish this bridge will occur as night works coordinated with relevant authorities.

Figure 11 Cockle Bay Wharf to Darling Park Bridge. Aerial view looking North (Google Maps, 2009)

### 4.3.4 Druitt Street Bridge

Uninterrupted access between Cockle Bay and the CBD, via the Druitt Street walkway is to be maintained at all times. To achieve this two options have been developed for further investigation during the final design phase:

» Option A: As Figure 12 indicates below, partial relocation of the current walkway allowing for the southern portion of the existing walkway and stairs to be demolished, leaving access to the existing lift and the northern stair to be available at all times. The southern side will then be reconstructed with a new walkaway, lift and stairs allowing the remaining parts of the northern side to be demolished.

» Option B: Install a new lift and stair in either a temporary or a permanent location, which can be incorporated in the new design, allowing these to be constructed early, which will enable full demolition of the existing structures.

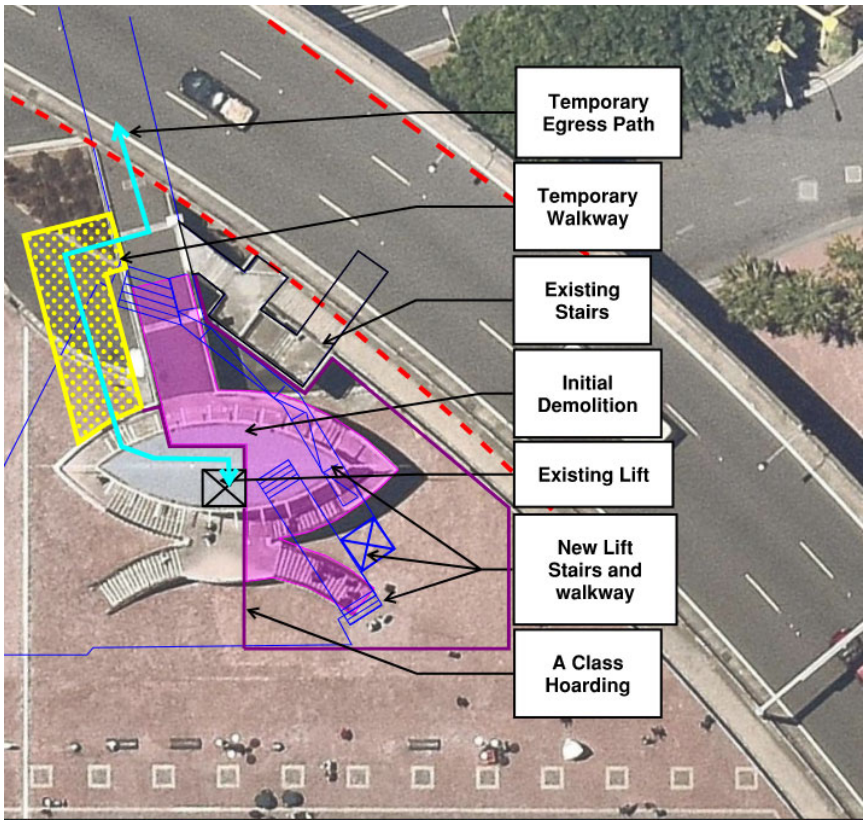



Figure 12 Druitt Street Bridge Access Staged Methodology Option A

### 4.3.5 Market Street Bridge

Similar to the Druitt Street Bridge, uninterrupted access via the Market Street bridge is to be maintained at all times. The figure below demonstrates an approach to maintain pedestrian and cyclist access throughout the project, including demolition and construction phases. Any temporary measures installed to maintain access will be removed upon completion. Phasing will include:

» Phase 1 – temporary closure of Market Street east (refer yellow area in figure 13) and redirection of pedestrian foot traffic across Sussex Street to the existing lift and stairs (refer green areas in figure 14);

» Phase 2 – demolition of existing Market Street east and retain columns to be incorporated into new bridge;

» Phase 3 – construction of new Market Street east (refer yellow areas in figures 13 and 14), including construction of temporary pedestrian bridge (refer orange area in figure 13). At this point pedestrians will be redirected;

» Phase 4 – construction of new landbridge and area marked in blue will be the new connection point to the Market Street east bridge section built in phase 3; and

» Phase 5 – removal of temporary pedestrian bridge installed in phase 3.

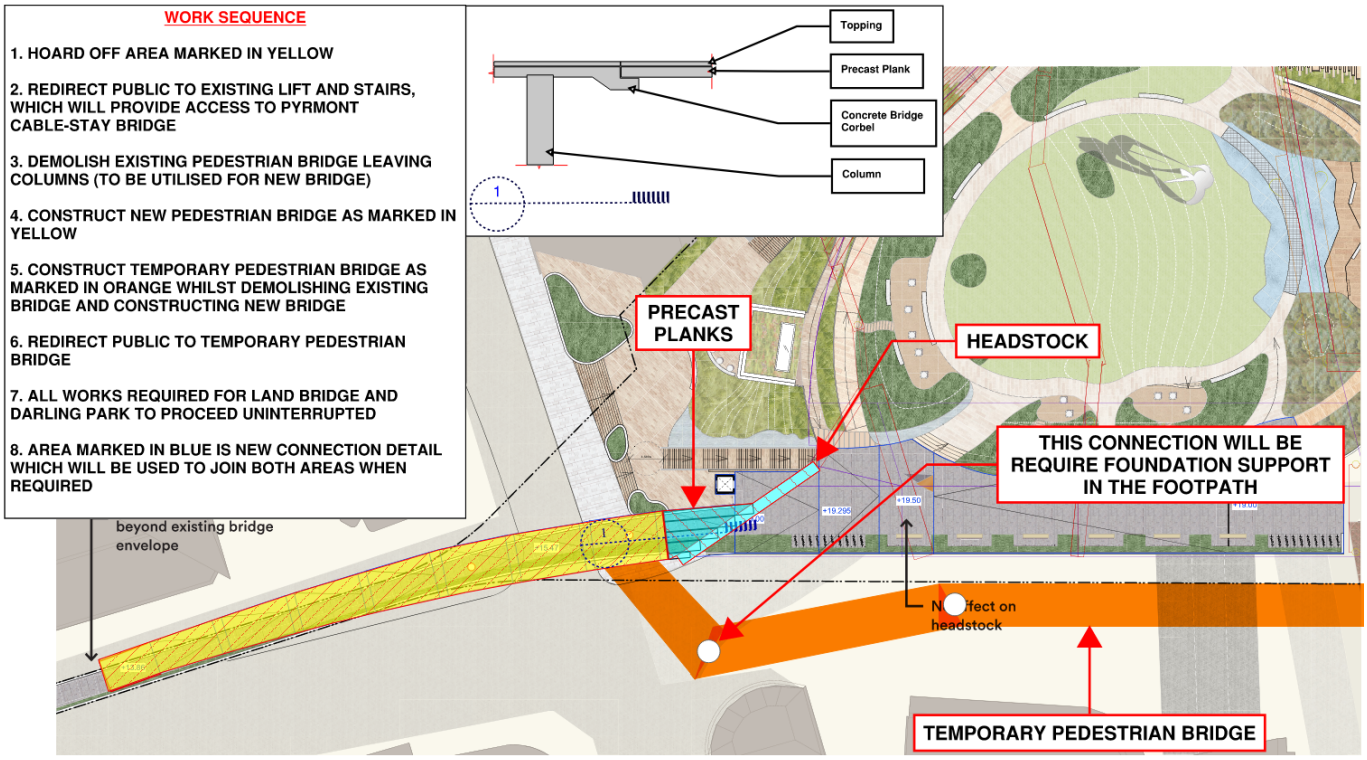



Figure 13 Staged Methodology of Market Street Bridge works

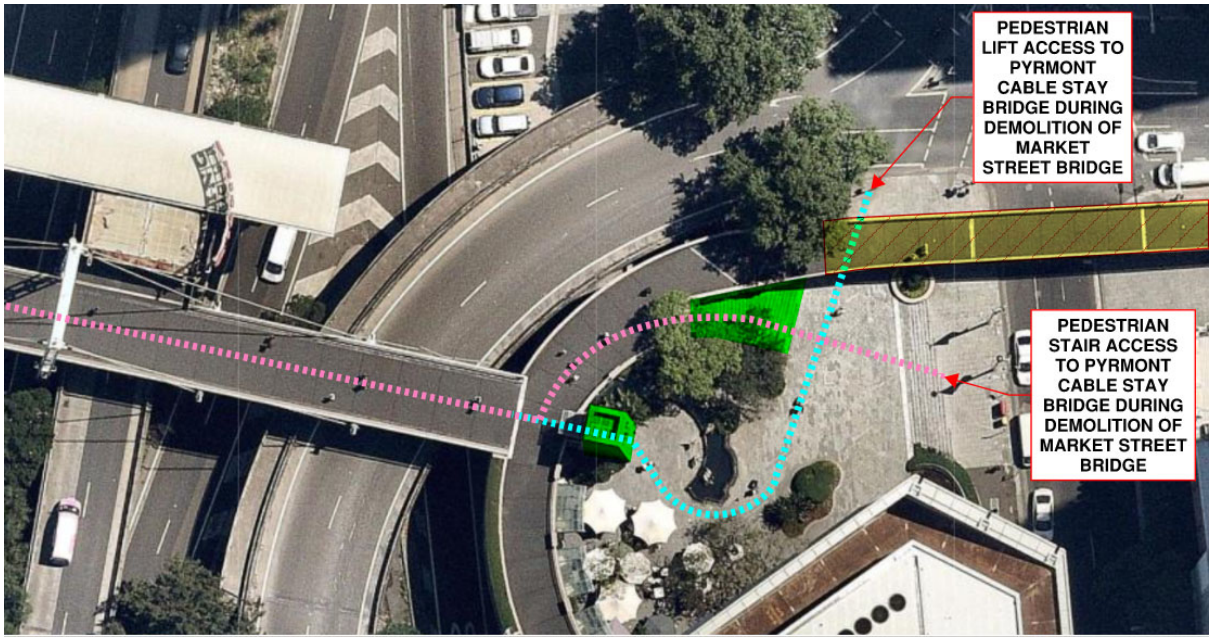



Figure 14 Access to Pyrmont Bridge via existing stairs and lift during demolition of Market Street Bridge

# 5. Major Work Items

## 5.1 Demolition

Demolition on the Site will be completed in a manner appropriate for its central, high traffic location. Noise, dust and vibration levels will be controlled in accordance with good practice for CBD construction and City of Sydney guidelines to minimise impacts to adjacent tenants as well as the general public and amenity of Darling Harbour.

A project specific Demolition Plan will be developed following further design progression and in accordance with elements approved for demolition as part of the Stage 1 consent. Demolition will be carried out primarily during Phase 2 with the demolition of the existing Cockle Bay Wharf podium, the two link bridges and the decommissioned monorail station as outlined in Section 3.3. Detailed demolition at connections with Darling Park will also need to take place to construct the Land bridge Terrace as part of Phase 3 works. Localised demolition of kerbs and gutters will be required to make way for piling rigs around median strips on Harbour Street. The bulk of demolition work will occur within the Cockle Bay Wharf site, with limited demolition over the roads taking place during road closures. A dilapidation report will be conducted and all kerbs will be reinstated compliant with TfNSW standards.

Detailed work methods are yet to be determined, however it is envisaged that the Contractor will utilise small excavators and bulldozers to demolish upper floor slabs, and pneumatic hammers on excavators for lower levels. Structural certifications need to be obtained for working machinery on the existing concrete slabs to be demolished.

During both demolition and excavation, the Contractor will pay specific attention to items of heritage significance to ensure no damage occurs i.e. working in the vicinity of the Pyrmont Bridge when demolishing the northern extent of Cockle Bay Wharf. The Demolition Plan will also address procedures for catching debris, filtering run-off and minimising dust during demolition works.

To facilitate the work, construction hoardings will be erected on all frontages. Due to the proximity of the existing building to the Darling Harbour promenade to the West, and Harbour Street to the East, an external scaffold with chain wire mesh and shade cloth will be erected on all exposed work faces to act as fall protection, supress dust, prevent falling objects and provide visual amenity to the surrounding area. To enable the demolition to be completed safely in isolation to the adjacent roads including Harbour St and the Western Distributor safety screen will be erected on the existing Eastern boundary of Wheat Road.

A hazardous materials survey will be undertaken to identify the location and type of hazardous materials on the site as well as a dilapidation survey of any adjacent infrastructure or buildings. As Darling Park was constructed in the early-mid 1990's, with Cockle Bay Wharf following from 1998-99, the extent of hazardous material in the structure is expected to be minimal.

### 5.1.1 Typical Demolition Sequence

» Erect class ‘A’ and ‘B’ hoardings to separate adjoining areas from the proposed demolition zone

» Undertake services terminations and relocations

» Install any necessary retention, stabilisation and protective measures

» Hazmat removal and soft strip out

» Commencing from top down with demolition of façade and structural elements

» Metal, rubbish, concrete and masonry will be progressively loaded onto trucks for transport off site to the recycling depot.

» Factors that will need to be further considered in the future development of the demolition plan include:

» Minimisation of noise and dust

» Effective loading out of materials in order to achieve maximum productivity

» Identification and removal of hazardous materials prior to demolition commencement

» Traffic management plan

» Identify local areas, which may be affected by the demolition and construction activities i.e. close proximity to the Sea Life Aquarium, the existing Darling Park towers and other neighbouring buildings.

The demolition methodology will be planned to deliver the maximum productivity for a CBD site such as this in order to minimise disruptions over an extended period. It is intended that the demolition contractor can utilise Wheat Road for construction access to maximise efficiency.

### 5.1.2 Demolition Staging

| | |
|---|---|
| **PART 1** | » Perimeter hoardings and site accommodation established<br>» A left turn lane from Harbour Street onto Wheat Road will be established to the north of the site and modifications to Wheat Road at the South .This is subject to approval from TfNSW.<br>» Wheat Road access behind CBW will be restricted to construction traffic, refer to Appendix I Construction Pedestrian Traffic Management Plan (CPTMP) prepared by Aurecon for further details<br>» The Darling Park pedestrian bridge will be demolished<br>» Demolition of the southern half of CBW will commence.<br>» Erection of Temporary Access bridge for pedestrians |
| **PART 2** | » The cable-stayed pedestrian bridge will be closed to the public and demolition will commence. Alternate access will be established prior to closing the bridge.<br>» The existing Monorail station will be demolished<br>» Demolition of the northern half of CBW will commence<br>» Foundation piles to core to commence<br>» Stormwater Diversion works to be follow core piling works |
| **PART 3** | » Existing CBW podium demolition complete<br>» Demolition and foundation works to Darling Park commence<br>» Foundation works to the Cockle Bay Park tower core and podium piles will progress |
| **PART 4** | » A new temporary access road through the site will be completed and used for construction access. With vehicles entering the site from the South and exiting to the North.<br>» Core construction commences<br>» Podium construction commences |

Please refer to construction sketches in Appendices when reading this section.

## 5.2 Excavation, Foundations & In-ground Services

### 5.2.1 Tower and Podium

Bulk excavation and spoil removal is required for the Project. The proposed ground floor slab will be utilised as a working platform and local strengthened as required for heavy machinery. Bulk excavation to the tower core pit and

detailed excavation of tower pile caps will be required. Piling for the proposed tower column piers will require a proven environmental management system with different strategies dependent on the pile position in relation to the existing sea wall. Piling through the existing ground level promenade deck will also be required to support the new podium structure. A cofferdam will be installed due to the depth of the pile caps as well as the tower columns outside the existing seawall. This will comprise of a sheet-piling wall driven to rock to allow dewatering and construction to take place. In addition to this, a one million-litre deluge water storage tank will be constructed using the same methodology. The Environmental Management Plan will address piling in the vicinity of the harbour. Refer to Section 9 for approach to marine environmental controls.

An existing Sydney Water stormwater line runs beneath the proposed core footprint. This is to be re-diverted with its new location being placed between 4 major tower columns. Due to the complexity of this exercise, the following procedure will be as follows.

The major column piles and piles caps located north of the core, will need to be constructed prior to the re-diversion of the stormwater line. This will allow the new stormwater line to be partially supported by the pile caps. We anticipate that under boring will be required across Darling Street to connect the stormwater line to a pit located at the centre island. This will then be connected to a newly installed culvert within the site, located at the eastern boundary and will run through to the existing sea wall.

Once completed, we will be able to cut off the existing stormwater line through the core, and proceed with the installation of foundation core piles located within the core. Following the piling works, a cofferdam will be installed around the core base, enabling detailed excavation to commence.

### 5.2.2 Land Bridge

Detailed excavation will be extensive in order to construct foundations in median strips on Harbour Street to support the Land bridge structure. This detail is dependent on the final foundation design and existing services.

Detailed work methods are yet to be determined, however it is envisaged that the contractor will use small excavators to dig pad footings and piling rigs to construct the column piers. The sizes of the piling rigs will be dependent on the head height clearance with the Western Distributor overpasses, as well as the width clearance within the different foundation zones.

On the 161 Sussex St Redevelopment, Multiplex worked with the structural engineer to reduce the number of foundations, to minimise the impacts on the Western Distributor. The extent of the road closure required was significantly reduced through this process. This review of structural foundation numbers would be recommended as part of the D&C process associated with this project.

### 5.2.3 Darling Park

Due to the complexity of working in and around the existing building and authority services within Darling Park carpark, we advise a full report be carried out to identify all known and unknown services prior to Contractor commencement to ensure all new works are properly coordinated.

Once further investigative works have been completed, the main works located within the Darling Park carpark will be carried out in a bottom up sequence. These works involve localised demolition of the existing basement slab and minor detailed excavation in new pad footing locations, which in turn will enable piling works to commence. Due to the limited head room within Darling Park carpark, conventional bored piles will be replaced with a series of micro piles, which will be installed via an air track drill.

Once micro piles have been placed in accordance with engineers specifications, pad footings will be formed and poured with column starter bars cast in.

New columns will be installed using an up and under method with tubes placed at the top of the columns allowing pressure grouting to be carried out.

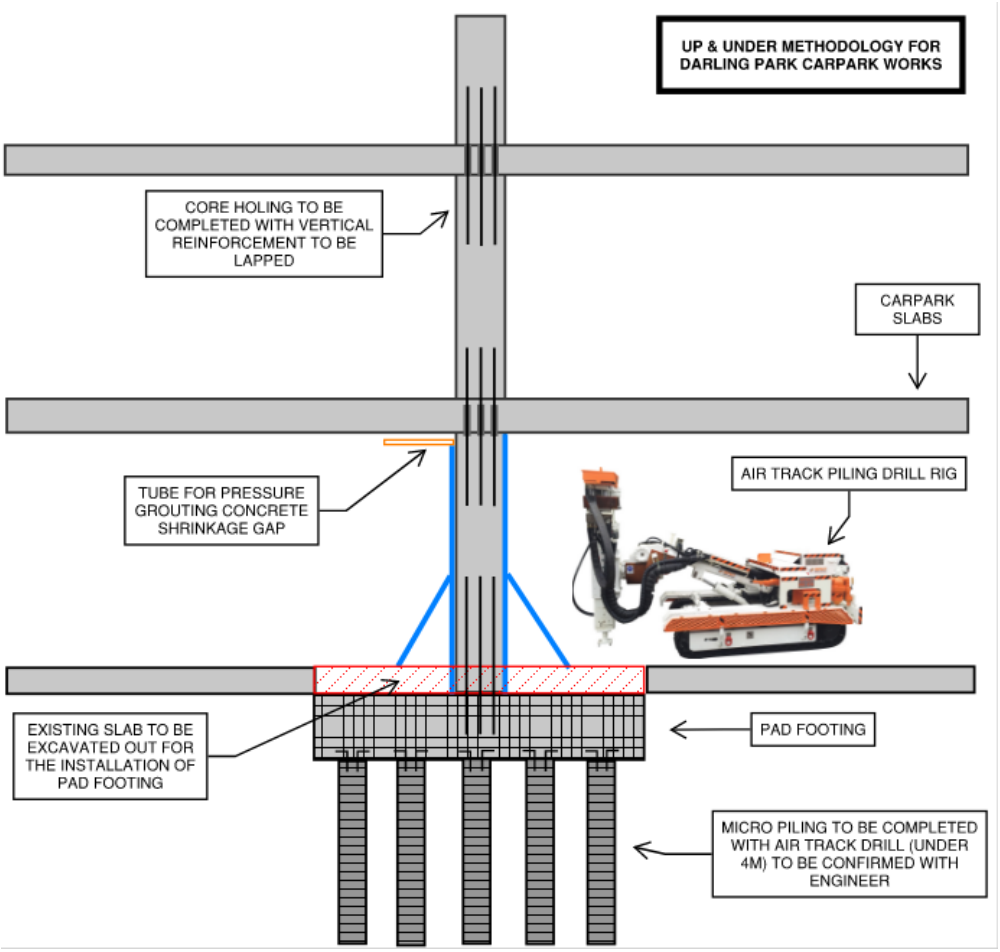



Figure 15 Up & Under method to be utilised for Darling Park works

## 5.3 Structure

New structure will be constructed as part of Phase 3, Phase 4 and Phase 5 works.

### 5.3.1 Land Bridge (Phase 3)

The Land bridge structure will feature concrete foundations, which include deep bored piles and a pile cap. Concrete columns will extend from these foundations to support concrete headstocks, which may be precast elements. The primary deck girders will be precast concrete 'Super T' or similar beams craned into position, with a precast slab system utilised to form the deck slab and provide overhead protection to the roads above which these works will be carried out during approved road closures. This will allow reinforcement, edge formwork and services to be installed during the DA stipulated working hours and limit the required road closures.

### 5.3.2 Super Structure (Phase 4 & 5)

The CBP Tower and podium structure is foreseen to consist of conventional reinforced concrete elements, post-tensioned concrete elements and conventionally reinforced vertical concrete columns and cores. However, the Eastern section of the tower is supported by cantilevered trusses that are connected to the core and major columns elements within the tower allowing or the tower to be constructed over the Western Distributor. Further detailed coordination will need to be completed during the final design of the tower to ensure these elements can be constructed with minimal impact on the typical floor cycles. System formwork will be used for vertical elements such as lift and stair cores. The use of structural steel as a secondary structural frame for an internal tower atrium is also under consideration. The typical floor structure will be erected behind perimeter formwork screens and will be progressed on a floor-by-floor basis split into two pours.

## 5.4 Fit-out and Building Services

Office floors within the CBP Tower will be built to meet modern premium grade office standards. The majority of new building services will be selected to ensure environmental performances meet the market leading targets (Greenstar/NABERS).

The new CBP podium will feature boutique retail, restaurant and bar fit out with plant rooms on the ground floor and Level 2 mezzanine.

## 5.5 External & Public Domain Works

A key component of the Project is the Cockle Bay Park Public Domain – Northern Park that extends over the Western Distributor and connects Darling Park with Darling Harbour, offering a direct pedestrian link from Market Street. The Land bridge will act as an integrated public domain with landscaping and gardens. These landscaping and finishing works will ensure that the new development merges appropriately with the existing Darling Park podium on Sussex Street and the connecting bridge that extends along Market Street.

# 6. Site Layout, Logistics and Materials Handling

## 6.1 Construction Traffic Management

Aurecon have prepared a preliminary Construction and Pedestrian Traffic Management Plan for the Project (refer to Appendix I), addressing the following:

» Wheat Road modification works

» Enabling & substructure works

» Hours of work

» Truck routes

» Traffic diversions

» Construction site entries

» Pedestrians

» Principles of construction traffic management.

### 6.1.1 Wheat Road Modification Works and Site Vehicular Access

The section of Wheat Road adjacent to Cockle Bay Wharf will be closed for construction and a new entry to Wheat Road will be constructed at the Northern end of the site. To enable the permanent construction works a temporary turn off from Harbour St to Wheat Road will be established during night road closures. Public traffic will be diverted around the construction activity via Harbour Street and the temporary slip lane to Wheat Road to the north of the site. Construction vehicles will enter via the South and exit onto Wheat Road at the North of site. Details of the slip lane and site access can be seen in the figures below and further information regarding vehicular access can be found in the Aurecon Traffic management Plan (refer to Appendix I). The new access lane will maintain access to existing bus/coach parking on Wheat Road, servicing Helm Bar and the adjacent Aquarium, and continued access to King Street Wharf via Shelley Street.

» Construction of a new temporary connection to Wheat Road to the north of the site (refer to Figure below)

» Modification to the entry to Wheat Road for Construction Vehicles at the Southern end of the site.

» Closure of Wheat Road through CBP Site and diversion of existing Wheat Road traffic

» Construction of the new Wheat Road entry and exits and adjustment of and temporary Wheat Road diversions as per the final design.

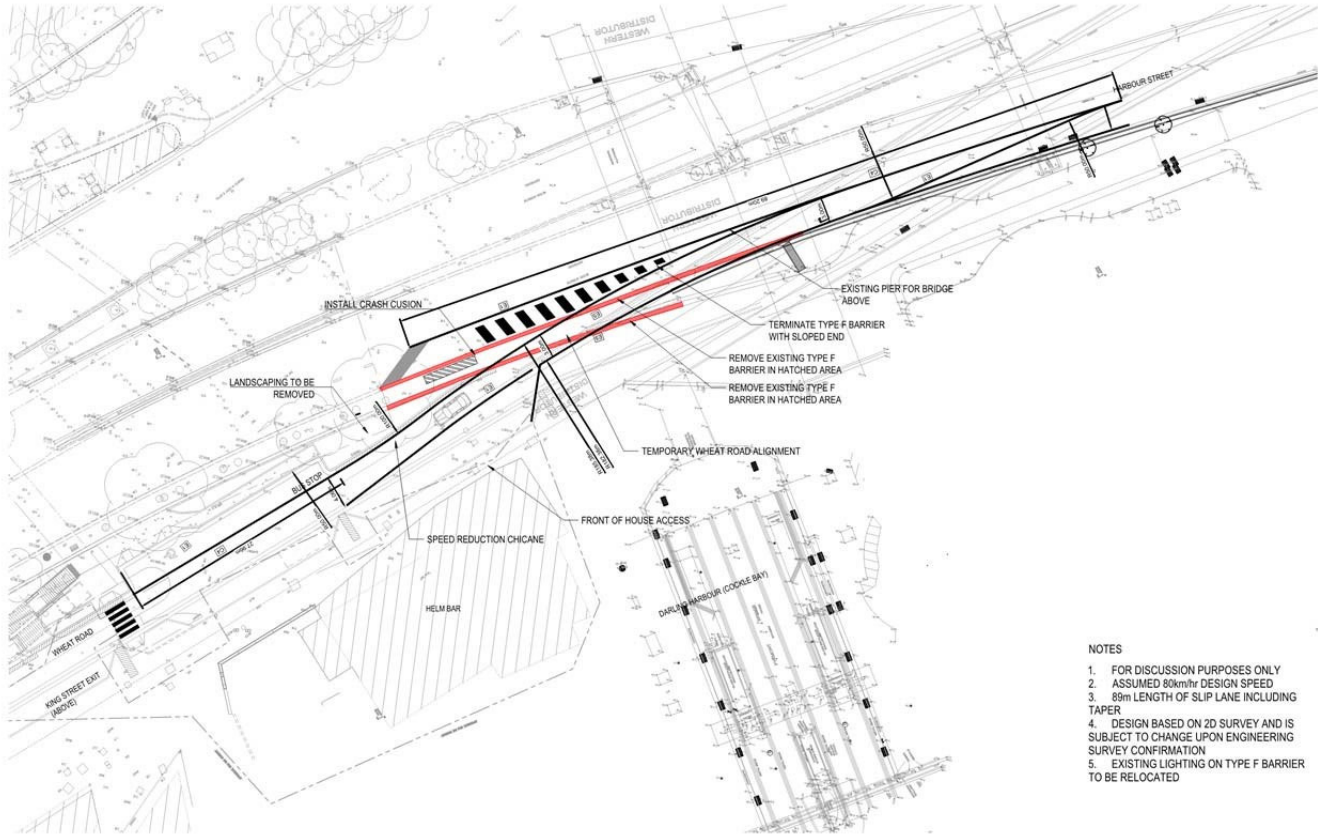



Figure 16 Proposal for Left Turn off Harbour Street Behind Helm Bar

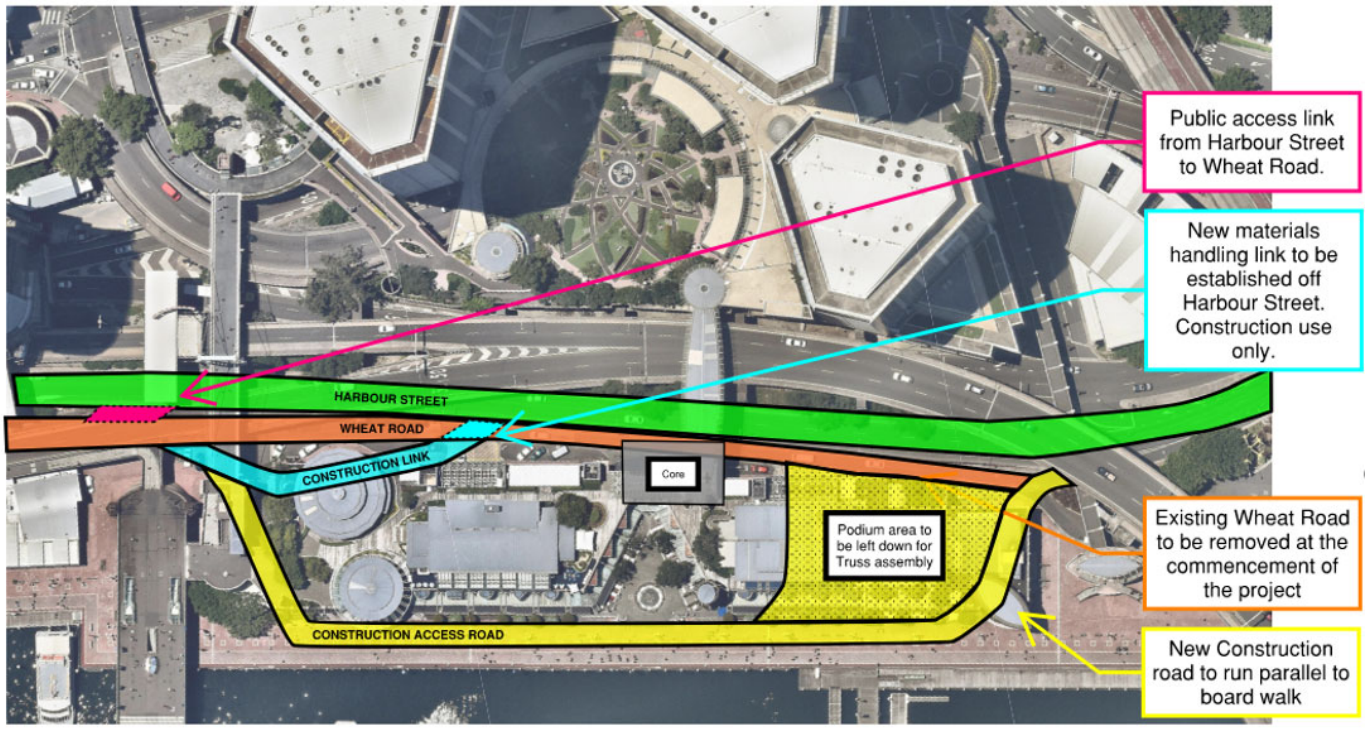



Figure 17 Proposed Construction Vehicular Access

### 6.1.2 Construction Worker Access

» Once hoardings have been established, the main site access for workers will be via turnstile gates located at the northern perimeter of the site. This site entry point can be reached via the cable-stayed bridge prior to its demolition followed by the temporary footbridge that will be installed in its place, this allows for convenient and covered access to the site from Market Street.

» Inside the site, a combination of designated walkways, scaffold stairs and hoists/lifts will be utilised for clear access and egress across the site.

### 6.1.3 Public Transport Route

Public transportation will be encouraged owing to there being no on-site parking and limited street parking. The available options for public transportation are as below:

» 7-minute walk is estimated from Town Hall Train Station to the site

» There are a number of bus routes that stop within close walking distance.

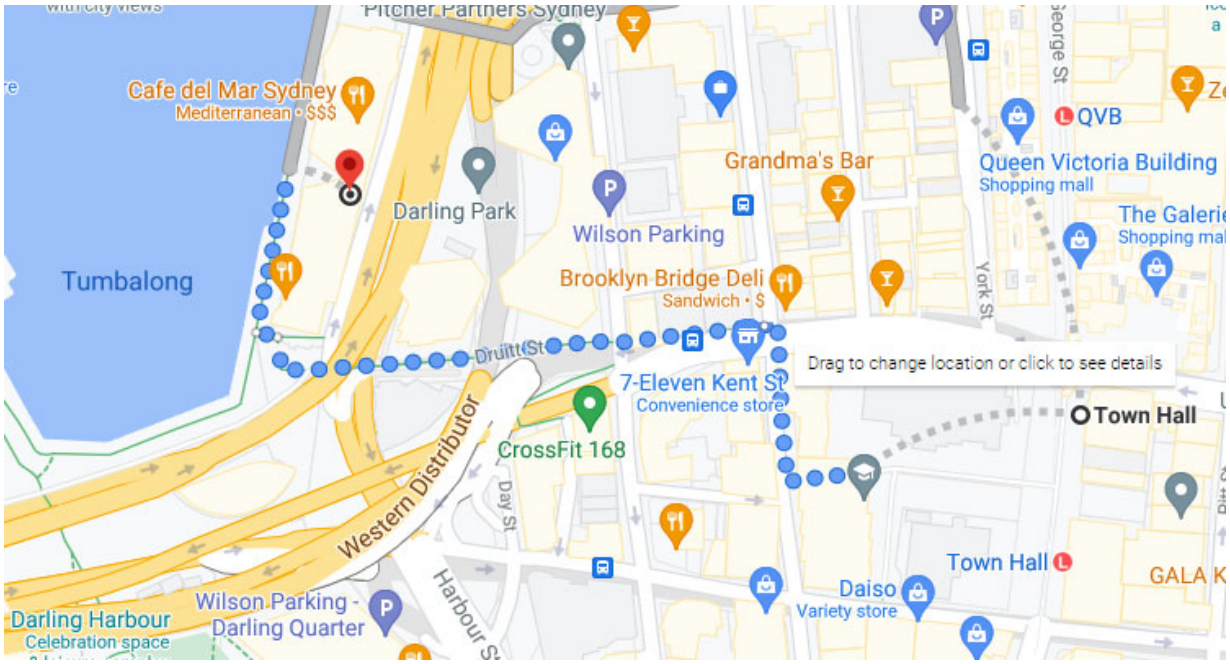



Figure 18 Distance to Town Hall Train Station

## 6.2 Material Deliveries

The site is bound by major arterial roads to the East and a significant pedestrian promenade to the West. This leaves Wheat Road as the only feasible construction access and materials delivery route for the Project.

The portion of Wheat Road behind CBW within the site boundaries is intended to be used during the demolition phase for construction vehicles only, and the remainder of Wheat Road to the North of the site will be maintained for buses, taxis and delivery trucks servicing Helm Bar and the aquarium complex to the north. This can be facilitated by establishing a left turn from Harbour Street onto Wheat Road as outlined in Section 5.1.1.

To ensure that there is sufficient public protection between the construction site and public roads, hoardings and barriers will be utilised. Vehicles entering and exiting the Wheat Road construction zone will do so in a controlled and planned manner with minimal disruption to local vehicular and pedestrian traffic. To sustain this focus the Contractor will manage construction, pedestrian and vehicular interactions on all public roads with traffic and pedestrian control. At all times the Contractor will be mindful of any work being undertaken by local authorities adjacent to and/or surrounding our site, and will cooperate with other contractors on adjacent developments to combine traffic control plans if necessary.

In order to minimise traffic on Harbour Street, a ‘Just in Time’ strategy will be utilised to ensure maximum efficiency whereby materials are only delivered to site when they are required. Excess materials are not stored on site to improve access paths, limit double handling and reduce further risks associated with excessive storage of material.

This also provides a safe and efficient flow of construction vehicles in and out of the site onto Harbour Street and Wheat Road.

## 6.3 Hoardings and Overhead Protection

Hoardings will be installed to establish a secure barrier between the construction site and the general public.

### 6.3.1 External Hoardings

During the site establishment and mobilisation period, external hoardings will be erected on all external frontages.

An “A” class hoarding, of standard plywood type construction, complying with the requirements of the City of Sydney Council hoarding policy, will be installed to along the northern, western and southern boundaries to establish a secure barrier between the construction site and Darling Harbour. The eastern frontage along Harbour Street will be protected via a formwork screen on the jersey kerbs at the boundary. This screen will require WAD approval prior to installation.

A ‘B’ class hoarding of structural steel construction, complying with all requirements of the City of Sydney hoarding policy and the project specific requirements, will be installed near the new tower to facilitate the protection of the general public along the Darling Harbour Promenade. This hoarding will also provide a platform for site accommodation sheds. Hoardings and fences will comply with City of Sydney guidelines for branded films, way finding and marketing.

### 6.3.2 Scaffold and Screens

A combination of a perimeter screen system and scaffold will be utilised for the tower and podium structures respectively. The screens will provide perimeter protection coverage for approximately 4 levels and will progress upward with the tower structure. It is anticipated that the Land bridge Terrace structure over the Western Distributor is completed prior to the Level 4 Podium slab and tower progressing, in order to provide overhead protection and a propping base for the structure footprint extending over Harbour Street.

As the deck structure over the Western Distributor progresses, perimeter rails on all live edges will be installed to allow safe construction above the deck.

## 6.4 Cranes, Hoists and Loading Platforms

It is anticipated that a combination of tower cranes will provide an efficient configuration for the site, with mobile cranes introduced to supplement craneage as required. Crane type and number will take into consideration some of the following:

» Coverage and load capacity for lifting the precast concrete elements into position over Harbour Street and the Western Distributor

» Coverage for the podium structure

» Coverage for the tower structure

» Ability to slew to avoid surrounding structures.

Figure 19 Night works at the 161 Sussex Street development. Multiplex has experience craning precast beams into position over the Western Distributor.

To provide adequate vertical transport for the tower construction we will require one twin hoist, one core hoist and a jump lift. Once the final lifts are operational, three will be converted to builders lifts and the twin hoist will be removed.

### 6.4.1 Further Approvals

Upon consultation with Sydney Airport, it has been noted that the Obstacle Limitation Surface (OLS) above the project site is RL156.000 AHD. An OLS Assessment will therefore need to be performed on the tower cranes, in addition to the proposed tower envelope itself, which extends to RL189.800.

Details of any cranes that are through the RL156.000 OLS will be forwarded to AirServices Australia, CASA and the Major Airlines for assessment and comment back to Sydney Airport. As tower crane operations will be greater than 3 months at a height through the Airports OLS surface, approval from the Federal Department of Infrastructure will be required.

These approvals are being sort from CASA at this time.

### 6.4.2 Mobile Cranes

Due to the size of mobile cranes required, their mobilisation times and the minimal working hours during road closures, mobile cranes will only be used if absolutely necessary. Mobile cranes will be utilised for the erection and dismantling of the tower cranes and smaller mobile cranes may be used during night works if feasible. All crane loadings will be assessed in consideration of the road bearing capacities prior to mobilisation.

### 6.4.3 Hoists and Loading Platforms

A twin Alimak hoist will be used to service the tower structure. A jump lift within the tower core will also be used to provide access to the working jump form deck.

Loading platforms will be utilised along the tower perimeter and along the podium perimeter to facilitate materials handling onto the working decks. These will be rotated upwards as the structure progresses.

## 6.5 Accommodation

In order to complete, the construction works it is necessary to provide site amenities for the workers that include lunch, change, ablution, first aid and wash down facilities. Options for housing project personnel currently include placing the sheds on the ‘B’ class hoardings along the Darling Harbour Promenade.

## 6.6 Site Induction

The Contractor will prepare and operate a specific site induction for all employees working on the project, and ensure that every individual on the project attends a site-specific induction before he or she is allowed to start work. This induction will be a requirement under the Occupational Health & Safety Plan to be formulated for the project. The site induction sessions will be held on a regular basis and where possible subcontractors will be requested to attend the week prior to the date, they are due to start.

The site induction will include specific commentary on the Disruption Shutdown Application (DSA) and Permit to Work (PTW) processes. All employees will be educated on the behavioural and security and community requirements for the project. Any employee found to be repeatedly disregarding these requirements will be removed from site.

## 6.7 Site Security

A licensed security provider will be engaged to provide security services on the project. Preliminary details of the proposed site security methodology for the project are detailed below:

» **Static Guarding** – A fully compliant and professional static security officer will be located at all entry and exit points during construction working hours.

» **Compliance Management** – The security contractor will provide a compliance operator to operate the electronic compliance system that will be commissioned onsite.

» **Access Control** – Security guards stationed at the entry points to the site provide access control to the site. Individuals entering the site will have their ID card scanned by the electronic compliance system. This system provides a record of every employee onsite and ensures that all subcontractors onsite have current and acceptable insurances, are bona-fide companies, and have all appropriate OH&S documentation in place.

» **Occupational Health & Safety** – The security guards at the entry gate control the entry of subcontractors and check that those entering site are wearing the appropriate PPE for working on a construction site.

» **Regular Patrols** - The security guards will also complete regular patrols of the site and will contact the Site Manager should any issues of concern be identified.

# 7. Protection of Heritage Items and Surrounding Developments

Heavy construction works and general access will be directed away from areas of heritage significance as much as possible. Wherever required, heritage components will be protected with appropriate panelling, barriers and fencing. In general, heritage items that are to remain and/or be refurbished will be identified and protected. Details of the refurbishment will be developed in conjunction with trade experts, the Heritage Architect and the agreed future Heritage Management Plan.

Site inductions and toolbox talks will be held by the Contractor to inform site personnel and visitors of the location of heritage items and the requirements for their protection. Work method statements will be developed specifically for works in close proximity to heritage items.

There are areas on the site where demolition and excavation will occur adjacent to the heritage buildings that are to remain. These may require temporary protection measures to be implemented.

## 7.1 Dilapidation Survey

Prior to commencing work onsite, a full Pre-Construction Dilapidation Report will be completed by a Dilapidation Survey Consultant for adjacent structure to be retained (i.e. the Pyrmont Bridge, TfNSW structures on Harbour Street/Western Distributor including Waterfront Promenade). The dilapidation report will cover all areas where construction works are occurring and to which the construction certificate applies. A post completion survey will also be compiled for comparison.

## 7.2 Archaeological

During the detailed design phase and prior to commencing work onsite, the Contractor will engage a Archaeologist to prepare the required management plans referred to in the Maritime Archaeology Statement of Heritage Impact (refer Appendix LL), Aboriginal Cultural Heritage Assessment report (refer Appendix MM) and the Non-Aboriginal Archaeology Assessment (refer Appendix NN). The Contractor will work with the Archaeologist to establish the proposed construction methodology and hold points for archaeological investigations.

Works undertaken onsite will be carried out strictly in accordance with the agreed management plans and methodology to ensure archaeological integrity of the site is maintained.

## 7.3 Adjoining and Adjacent Neighbours

Careful site management, which will minimise disruption and inconvenience to neighbouring buildings and their occupants, is of the highest importance. The Contractor will provide a Community Liaison Officer to work with neighbours, understand their needs and requirements, and, where possible, adjust construction works methodologies accordingly. The adjoining properties and neighbours specifically identified for consultation are identified below.

The surrounding properties include:

» Helm Bar and Bistro

» W Hotel

» Ausgrid Offices

» 161 Sussex Street

» Darling Park Towers 1, 2 and 3

» Sydney Sea Life Aquarium

» Wild Life Sydney Zoo

» Madame Tussauds

» Charter and Commercial Vessels Operators.

## 7.4 Surrounding Properties Management

### 7.4.1 Communication

Prior to commencement of works, the Contractor will undertake a communication meeting with the stakeholders and surrounding tenants. This briefing will involve an outline of the construction sequence, together with an overview of the staging and timing of the works. This initial meeting will provide an opportunity for input from the stakeholders and tenants before finalising methodology.

To ensure ease of communication between all parties, a protocol will be established to:

» Define lines of communication and appoint a single point of contact for neighbours

» Times for site inspections within the leased premises

» Specific dates for regular communication meetings

» Clarify the escalation process

» Implement the Disruption Shutdown Application (DSA).

It is essential that the stakeholder team is aware of current and future activities within the premises and how these could impact on tenants and customers. Points of contact between the Contractor's project team and stakeholders will be agreed for various scenarios, with stakeholders provided with 24-hour contact numbers. Key personnel from the Contractor's project team will be available to attend stakeholder internal briefings if required to communicate details of the proposed works to their respective team members.

### 7.4.2 Services Interruptions and Impairment

Prior to any services being impaired or work being carried out within an active operational environment, a Disruption Shutdown Application (DSA) will be made by the contractors. This process will be implemented on the project to provide advance agreement for specific work activities to be carried out. DSA's will typically be made a number of weeks in advance of proposed work and in line with the agreed project notification durations. Depending on the risk profile of the proposed work, the agreed notification durations may be required months in advance.

The DSA process will be of particular value on the project in relation to the following elements:

» Early works within a tenanted area prior to shutdown of CBW or that could affect adjacent occupants

» Works that may affect the services to a tenanted area

» Activities in the general public realm

» Works that may affect local traffic flow

» Works that may exceed the agreed noise and vibration criteria

» Major services changeovers or shutdowns.

The benefits to all parties of the DSA process include:

» Proposed works are planned in detail

» Stakeholders are briefed on the proposal

» Stakeholders are empowered and become active participants in the project

» Early dissemination of this information effectively to relevant team members

» Works are undertaken in a more controlled and diligent manner.

### 7.4.3 Complaints Response Process

The complaints response process for the Project will be outlined in the Communication Plan when it is developed. This Plan will describe the Contractor's approach and procedures for communication with internal and external stakeholders, necessary territory authorities, and the public.

### 7.4.4 Emergency Contact

The initial point of contact for the Project for complaints will be the Project Manager and the Site Manager.

**Project Manager: TBC Site Manager: TBC**

As other key personnel commence onsite, further names and contact numbers will be issued and displayed prominently on signboards.

# 8. Public Amenity, Safety and Pedestrian Management

## 8.1 Hours of Work

General demolition and construction works will be undertaken within the hours permitted under the development approval. For works over the Western Distributor and Harbour Street without overhead protection, road closures will need to be approved and coordinated under the WAD.

Working hours are foreseen as follows:

» Between 7am and 7pm Monday to Friday

» Between 7am and 6pm Saturday

» No working Sundays or public holidays (by exception)

» Night works on roads expected between 9pm and 5am Sunday to Friday nights at a minimum.

## 8.2 Noise & Vibration Management

Particular care will need to be taken during the construction of each phase of the project to control noise and vibration. Work methodologies and plant selection for demolition and excavation will be reviewed to determine the most practical and programme-effective solutions for these works. This active approach will mitigate the potential for human discomfort and noise and vibration disruptions to surrounding key stakeholders.

Noise and vibration transfer from the construction process could potentially have an impact upon adjacent building tenants, the public and surrounding premises. Vibration could also potentially affect the heritage fabric of the Pyrmont Bridge.

Prior to the commencement of any works onsite a Noise and Vibration Management Plan will be developed by the Contractor in consultation with the Stakeholders to develop strategies for the mitigation of noise and vibration generated by the works with reference to the recommendations contained in the Noise and Vibration Impact Assessment developed as part of the Stage 2 SSD DA. In order to help meet the noise and vibration requirements of the site, baseline testing will be carried out and existing operational levels identified. Early identification of baseline levels will enable subcontractor methodologies to be specifically tailored to ensure the benchmarks are not exceeded.

Vibration and noise generating activities will be coordinated and undertaken in consultation with the appropriate parties and carried out during the subsequent agreed periods. Work methodologies and plant selection will be reviewed to mitigate the potential for noise and vibration from the new works effecting pedestrians and patrons of Darling Harbour and its businesses.

Work practices that minimise noise and vibration will be used wherever possible. These include but are not limited to the following:

» Flexible working hours avoiding noisy work during peak business operation times

» Plant and equipment selection to reduce noise where possible

» Plant and equipment fitted with silencers where possible

» Acoustic testing of proposed methodologies prior to commencing work

» Erection of temporary screens to encapsulate dust and noise

» Diligent housekeeping to minimise the generation of dust

» Methodology development aimed at finding alternatives capable of reducing noise and vibration where possible

» Location of major plant such as cranes away from noise and vibration sensitive areas where possible.

The following items outline some of the Contractors key control measures, which will be applied during the demolition and construction phase to assist with noise reduction:

» Plant known to emit noise strongly in one direction would, where possible, be orientated so that noise is directed away from noise sensitive areas.

» Machines fitted with engine covers would be kept closed when not operating.

» The height materials are placed either into or out of trucks, would be limited where possible.

» Stationary and mobile equipment including offsite vehicles would be maintained regularly.

» Operation would be limited to occur within the approved hours.

» Continuous training through inductions and ongoing meetings would be provided for operators, labourers, subcontractors and supervisors, to keep minimal noise impacts on local residents and businesses top of mind.

» Notifications of particularly noisy works would be undertaken prior to any planned works commencing. This would include either personal or community meetings with adjoining properties owners and/or tenants, this process will be undertaken in particular prior to Demolition and Excavation phase of the project.

» Regular servicing of equipment , or when an individual plant item are identified as being particularly noisy, would be conducted.

» A construction noise-monitoring plan for the construction period prior to commencing works would be designed and implemented.

» All complaints in relation to noise would be monitored and recorded.

» An onsite person would be identified as the contact point in the event of noise complaints with contact details provided within the Construction Management Plan.

### 8.2.1 Monitoring

The Contractor will engage an independent acoustic / vibration consultant to install and monitor noise and vibration logging equipment at suitable locations. These monitors will be calibrated and programmed to an agreed level with an alarm being triggered in the event of vibration or noise exceeding the acceptable range. This alarm will automatically page the nominated Contractor's liaison officer. In the event of such an incident works will cease in the specific area and be reviewed. If appropriate, alternate methods will be considered and adopted.

#### 8.2.1.1 Noise monitoring

Noise monitoring will be undertaken to monitor and help minimise construction noise in order to avoid discomfort to the occupants of surrounding premises.

The specific noise monitoring methods that will be outlined in the Construction Noise Plan.

##### 8.2.1.1.1 Unmanned Noise Monitors

These monitors are programmed to notify 'back to base' and alarm locally whenever noise exceeds the required level. They are also linked back to software programs that are used for monthly noise reports and specific incident reporting. Locations for the monitors are selected strategically based on assessment of the nearest affected receivers. Should they be installed in an unsecure location, typically the noise monitoring equipment would be housed in a steel cage to prevent damage, theft or vandalism.

##### 8.2.1.1.2 Manned Noise Monitors

Manned noise monitoring will be undertaken to assess specific and new work methodologies when required. Construction methods will be reviewed and changed if required.

» Noise Reports will be prepared on an as required basis i.e. monthly.

» Community Liaison will be carried out if required to address any community concerns regarding noise.

#### 8.2.1.2 Vibration Monitoring

Vibration monitoring during the demolition and new structure phases will be undertaken in order to monitor potential human discomfort and potential structural / heritage damage in and around the existing building.

The specific vibration monitoring methods that will be used are identified within the Construction Vibration Plan.

» Upon establishment of the required vibration monitoring equipment, monitoring will be carried out on a regular basis to ensure work is being undertaken within the agreed vibration levels. Working hours, work methods and site practices will be reviewed accordingly.

» Vibration monitoring reports will be prepared on an as required basis i.e. monthly or incident reporting.

  – Monitoring will be carried out on a regular basis throughout the project. The four main activities of work that are expected to provide vibration and noise that will require monitoring are:

- Soft Strip out
- Demolition
- Structural new build works
- Fit-out / finishes
- Heritage restoration works.

## 8.3 Public Safety

Works will be undertaken with public safety as a significant consideration. Class A and B type hoardings will generally be erected around the site perimeter and where construction is occurring over or adjacent to public thoroughfares.

Formwork screens will be utilised to secure leading edges during construction of structural elements.

General safety measures will be undertaken as standard practice such as scaffolding around demolition works, adequate lighting, safety signage, provision of site security, flashing lights at vehicle cross overs, and physical barriers between construction works areas and public access areas.

## 8.4 Pedestrian and Cyclist Management

To allow for continuous public access, materials handling and management of pedestrian safety, some diversions from existing pedestrian routes will be required for large periods of the work. The installation of way finding signage and lighting will be professionally managed to ensure clear pedestrian understanding and preservation of safety and amenity.

The management plan will also consider the existing bike infrastructure located within the vicinity of the site and will be managed as to not impact or impede with current major cycling routes.

# 9. Traffic Management

The Contractor will engage a qualified traffic engineer to prepare a detailed Construction Traffic Management Plan (CTMP) prior to the issue of a Construction Certificate including consideration of any recommendations contained in the preliminary Construction and Pedestrian Traffic Management Plan developed as part of this Stage 2 SSD DA. Traffic will generally be managed in the following way:

» Designated transport routes will be communicated to all personal, and enforced

» Designated peak hour and non-peak hour delivery vehicle waiting areas

» Strict scheduling of vehicle movement will occur to minimise off site waiting times

» On-site parking will not be provided, and site workers will be encouraged to utilise public transport

» Vehicle movements will be compliant with conditions of Consent and broader road-use regulations, particularly with regard to hours of work, materials loading and unloading, and over size deliveries and installation

» Stakeholder feedback will be incorporated into traffic plans if appropriate.

For more detail regarding traffic, management and road closures please refer to the preliminary Construction and Pedestrian Traffic Management Plan produced by Aurecon (refer to Appendix I).

## 9.1 Traffic and Pedestrian Management

A site specific Construction Traffic Management Plan (CTMP) will be produced for each phase of the project works to ensure vehicle movements to, around and from the site do not affect traffic arterials within the vicinity of the project or pedestrian movements around it.

The contractor will manage traffic associated with the site to minimise the impact on the local area. The Traffic Management Plan will be incorporated in subcontractor agreements and the key points communicated to the workforce through the site induction procedures.

## 9.2 Site Access

Access to the Site will be available at various times via the Darling Harbour Promenade as well as the site gates for construction vehicles at either end of the portion of Wheat Road proposed to be closed at commencement.

Heavy and wide loads will be coordinated with the relevant authorities and stakeholders for approval, to minimise traffic impact during work hours. The majority of heavy and wide loads will adhere to transport curfews in the case of the precast concrete girders.

Onsite traffic management will be finalised with each stage of the works, as appropriate. Ongoing liaison with the relevant authorities will occur throughout.

# 10. Environmental Management

An Environmental Management Plan will be developed to provide a coordinated high-level plan that details, at a Project level, the environmental management strategies and procedures that will be adopted on the Project on which Multiplex may operate as the Principal Contractor.

This plan will be a sub-plan of the Project Management Plan, which forms part of the Multiplex Management System that is certified to:

» AS/NZS ISO 9001:2008 – Quality Management System

» AS/NZS ISO 14001:2004 – Environmental Management System

» AS/NZS 4801:2001 – Occupational Health and Safety Management System

» New South Wales Government Accreditation Scheme.

## 10.1 Focus Areas

The following areas/features of the Project have been identified as posing potential risk to the environment during construction:

» Works to the new podium deck west of the sea wall – this includes demolition of the existing slab, piling and concrete pouring.

» Exposure of Potential Acid Sulphate Soils during core excavation (further investigation required)

» Site discharge during demolition and excavation works

» Potential effects of noise and vibration on marine life

» Potential water and air contamination

The Environmental Management Plan will address these concerns through sub-plans including, but not limited to:

» Spill Management

» Air Quality Management

» Waste Management

» Noise and Vibration Management

» Liquid Waste

» Water Quality

» Disturbance of Flora and Fauna

» Indigenous and European Heritage

» Visual Amenity

» Refuelling

» Groundwater Management

## 10.2 Harbour Protection Methodology

Successful implementation of well-considered methodologies and water protection measures will be crucial to the Environmental Management of the Project.

In order to construct the piles for the proposed podium structure, portions of the existing promenade slab will need to be cut out. The existing documentation indicates a precast plank system with a topping slab supported on steel columns with a headstock beam. An appropriate methodology for the new podium piles may include:

» A temporary grillage/machine platform to support the piling rigs and excavators

» A saw cut and lift approach with methods to minimise dust and slurry

» The use of a barge positioned on the harbour below the promenade to catch any falling debris

» A silt curtain established along the boundary to provide an added defence to dust, sediment and debris » Steel caissons to minimise silt disturbance and provide formwork to the new concrete piles.

» A maintenance and monitoring plan for harbour protection measures to continue to be in effect until project completion.

» Protection of elements identified in Maritime Archaeological Plan Appendix LL.

## 10.3 Occupational Health & Safety

The Contractor will be the nominated “Principal Contractor” as required under the WHS Act. This role will require the careful and controlled management of worker and public safety. Detailed methodologies are yet to be developed, however typical approaches include job training, toolbox talks, and implementation of emergency management plans, safe work method statements, weekly WHS meetings and audits to confirm compliance.

The Contractor will be required to report on WHS on a regular basis.

## 10.4 Hazardous Materials

Consultant survey works are required in order to establish existing site conditions and identify any remediation works that may be required. This investigation would include:

» Hazardous material (Hazmat) survey of the existing structures

» Any additional requirements for soil classification, sampling and analysis works

» Community liaison plan to be established and contact made with relevant authorities.

» In the event that hazardous materials are uncovered once site works have commenced, the following procedures and principles will be followed; this would be consistent for expected and unexpected hazardous materials:

» Notification to client and project stakeholders

» The contractor to develop a remediation management plan

» Advise the client of the most cost and time efficient solutions whilst adhering to industry best practice standards

» Agree strategy and commence implementation.

With asbestos for example, all employees need to be trained in the recognition of asbestos and synthetic mineral fibre (SMF) as part of their employers Safe Work Method Statements (SWMS). Employees would cease work on discovering any Hazmat not identified in the report and then inform their supervisor who would arrange for the appropriate action to be taken.

General procedures for hazardous materials removal (including asbestos) will usually be carried-out as follows, but often-specific details and procedures will be developed upon material identification. Detailed work method statements will be produced identifying processors such as:

» The area to be decontaminated to be bunted off at a minimum 10 metre radius

» Asbestos warning signage to be erected to inform people of the nature of the work being carried out

» ‘No Unauthorised Access’ signage to be erected

» Water points to be established

» Personal Protective Equipment (PPE) including but not limited to Hard Hat, Safety Boots, Disposable Coveralls,

» Gloves, Masks and Glasses to be worn at all times when in the Hazmat removal zone

» All personnel involved in the removal of asbestos to have attended and completed the approved Work cover courses and to be the holders of valid, Work Cover approved asbestos removal licenses

» Tools and equipment appropriate to the type of asbestos containing material to be used for its removal in order to minimise the disturbance of the material thus preventing the release of fibres

» Where appropriate, water to be used to keep the material slightly damp thus minimising the chances of dust and fibres being released

» All asbestos waste to be wrapped in 200µm plastic and tightly secured

» All asbestos waste to be removed from site and disposed at a licensed EPA asbestos disposal facility

» Asbestos waste to be removed at the end of each shift. Stockpiling of asbestos will not be permitted

» Clearance certificates to be provided on completion of Hazmat Removal.

The protection of all council infrastructure including trees, overhead cables, and existing services will be managed to ensure that all infrastructure is maintained, and in the same condition at the completion of the project.

The following protection procedure will be adopted:

» Ensure all existing services are identified, and terminated or diverted as appropriate

» Ensure movement or placement of construction plant does not damage infrastructure

» At the beginning of construction we will advise adjoining and nearby properties of commencement date, possible disruptions and approximate construction time.

### 10.4.1 Site Remediation and Hazardous Materials

Consultant survey works have already been carried out to establish existing site conditions and to identify any remediation works that may be required. As hazardous materials have already been identified, procedures and principles have been developed. These procedures and principles will be consistent for expected and unexpected hazardous materials. They are outlined below:

» Notify client and project stakeholders

» Develop a Remediation Management Plan

» Advise the client of efficient solutions according to industry best practice standards

» Agree strategy and commence documentation of DSA (Disruption Shutdown Applications)

» Communicate DSA to all stakeholders

» Validation of Remediation Action Plan upon completion of hazardous material removal.

Hazardous substances supplied to the project will be approved for use and accompanied by a current Material Safety Data Sheet (MSDS). All hazardous substances will be registered, correctly stored, decanted, used and disposed in accordance with the MSDS and regulatory requirements. Employees will be trained in the Safe Work Method Statement (SWMS) based on the MSDS and provided with the appropriate Personal Protective Equipment (PPE).

## 10.5 Site Discharge

Any discharges from the site will be strictly controlled to ensure hazardous materials and contaminants are contained to authority requirements and do not pollute the council storm water system or Darling Harbour. The contractor will have within its standard procedures, the requirement of spill kits for hazardous materials also including environmental audits that review the usage and storage of hazardous materials onsite.

### 10.5.1 Dewatering

The Developer and Contractor are committed to the management of water discharge from the site throughout the duration of the project. To ensure effective management, a ‘Water Quality Management Plan’ as a sub-plan to the Environmental Management Plan will be implemented.

Key management strategies include:

» Objective – Avoid the release of contaminants to waterways / drainage systems

» Target – All water discharged complies with the Healthy Waters State Planning Policy

» Measure – Water Quality records confirming compliance with pre-discharge limits.

These and other water quality aspects at the Site will be controlled by:

» Weekly environmental inspections

» Water quality recording

» Training for responsible staff

» Tool Box talks for trade staff

» Subcontractor Environmental Work Method Statements.

### 10.5.2 Silt Protection

A stormwater and sediment control plan will be developed to ensure that stormwater from the project does not enter the harbour without being filtered, and that no water entering the council stormwater system contains silt or other contaminants.

The stormwater and sediment control plan includes but is not limited to providing further detail to the below key control measures:

» Extent/location of silt protection to be installed

» Extent of silt curtains to be installed along Cockle Bay

» Extent/location of sediment basins to be installed

» Regular weekly checks of silt fences, banks and the like

» Specific checks after any significant storm event to ensure integrity and performance of silt protection

» Sediment fences to be repaired as required and excessive sediment deposits should be removed

» Water quality samples must be taken and analysed prior to the release of any water from the sediment pond/catchment

» All water quality data including dates of rainfall, testing and water releases must be maintained in an onsite register

» Maintenance and cleaning of adjoining/surrounding access roads.

## 10.6 Dust Control

Dust control will be implemented in areas of all active demolition and construction. Dust control will also be implemented within the construction zone as determined by the Contractor, and as required for the health and safety of employees.

All works will be undertaken in accordance with a ‘Construction Air Quality’ sub-plan as part of the Environmental Management Plan. Dust control measures will be implemented as required, and in accordance with Protection of the New South Wales Environment Operations Act. Dust management will be most critical during the demolition and excavation phases of the project. All subcontractors involved with these works will be required to provide Environmental Work Method Statements that specifically address dust management.

Methods of reducing dust that will be implemented are:

» Encapsulating work zones through the construction of engineer designed full height dust proof scaffolds / hoardings

» Reviewing tool and plant selection in an attempt to select plant with superior acoustic performance

» Utilising concrete saw cutting techniques to reduce dust generation

» Continuous cleaning throughout dust generating work activities Ensuring demolition debris skips are covered at all times.

» Site perimeter – Solid panel hoarding will be provided on the boundary during the overall construction phase and perimeter scaffolds clad in shade cloth will be provided during demolition to minimise the escape of dust

» Demolition and excavation – Working surfaces will be watered down as required with stock piling of material minimised

» Plant movement within the basement will be minimised with all loads covered before exiting the site and a stabilised driveway maintained

» Construction – A high level of housekeeping to minimise the likelihood of windblown dust and the banning any dry grinding will be maintained.

## 10.7 Waste Management

It will be part of the Contractor's philosophy that a tidy site is a safe site, and this principle will be maintained throughout the demolition and construction duration. Rubbish bins/skips will be provided at strategic positions around the site, where all subcontractors will be required to clear their rubbish as it accumulates. These bins will be brought down the building in the construction hoists / builders lifts and loaded via forklift into the large skips for removal from site.

A specific Waste Minimisation Plan will be developed in accordance with the Contractor's Environmental Management System to ensure optimum waste management initiatives are implemented.

The Contractor will develop a Waste Minimisation Plan that is included as a sub plan of the Environmental Management Plan for the Project. The aim of this plan is to work at best practice in minimising the amount of waste produced during the development and manage that waste in order to reduce the amount going to landfill.

The Waste Minimisation Plan (WMP) will exceed regulatory requirements and meet compliance with potential Green Star benchmarks set for the CBP Tower. In setting such high standards and to achieve waste re-use and recycling onsite, the site-specific Waste Minimisation Plan will be implemented. The Contractor's project team will be trained in the WMP and the subcontractors informed on variations to the required changes from the industry 'business-as-usual' approach.

Subcontract trade packages will be prepared and tendered to ensure optimum recycling through Waste Management achieves the required Green Star targets. All rubbish will be removed from site on a daily basis via wheelie bins and deposited in bins/skips, which will be provided at strategic positions onsite. Where space permits, the Contractor will also provide specifically labelled recycling bins for materials such as cardboard and plasterboard to maximise the amount of material able to be recycled.

In addition, all subcontractors are responsible for removing their own packaging and other re-usable items such as pallets from site. Adopting this policy:

» Promotes recycling by subcontractors and suppliers

» Removes unnecessary packaging at the source rather than at site

» Reduces the amount of rubbish being sent to land fill.

Monthly reports detailing the overall percentage of rubbish being recycled will be provided by the waste disposal contractor. This information will enable the effectiveness of the implemented waste management strategies to be monitored and appropriate steps to be taken if necessary to improve.

## 10.8 Recycling

Further to Section 9.5 Waste Management, detailed recycling programs will be developed for both demolition and construction phases of the works. The site subcontractors will be required to report on extent of recycling achieved and be subject to Environmental Audits.

## 10.9 Community Consultation and Engagement

The effective management of stakeholders, the local community and the many interested parties is an essential factor in minimising risk to the project. A solid management process will ensure that, at any point during the project, the Contractor has a full understanding of the community's expectations and can respond accordingly.

The Contractor will develop and implement a detailed Community Engagement Management Plan, prior to commencement. This Management Plan will guide engagement with the community and stakeholders throughout the planning and delivery phase. This plan is a living document that will continue to develop during construction so that it accurately reflects emerging issues.

The Contractor will be proactive in planning for issues of public concern. These issues could include dust, odour and air quality, noise and vibration, and traffic management. When noisy works occur, the Contractor will provide:

» Respite periods

» Noise loggers

### 10.9.1 Engagement Tools

The Contractor may implement a number of engagement tools including:

» Allocation of a Community Liaison representative

» Holding Community Consultative Committee meetings

» Project update notices and newsletters – letter drops and emails distributed to local and surrounding members of the community notifying them of disruption activities, noisy works and general project progress

» 1300-project hotline number – a 24-hour hotline number, allowing the public to call and enquire about project concerns, complaints and general queries. Response is provided back to the client within 48 hours

» Community outreach programs

» One-on-one meetings

» Media communication and releases

» User group meetings

» Site Tours

» Promotional events.