**Figure 41** – Artist impression of potential building form within the South-East and South-West development plots

**Source:** Denton Corker Marshall

The concept proposal only seeks approval for the overall maximum quantum of GFA across The Haymarket Site (residential buildings 147,691m$^2$ and non-residential 49,545m$^2$).

The concept proposal includes the provision for a 500mm vertical articulation zone for each development plot envelope, to allow for architectural detailing and expression.

## 4.6.2 Building Height

**Table 7** sets out the maximum building heights for each new building within across the six development plots. As shown on the Parameter Plans, building heights are measured by the maximum RL.

The overall maximum height of development on the site ranges from RL 25.03 to RL 138.63m.

To assist in the assessment of the concept proposal building envelopes, the number of storeys contained within the indicative design scheme (not for approval) is provided in column 3 of **Table 7** below.

**Table 7** – Proposed maximum building heights

| Building (Column 1) | Maximum RL (Column 2) | Maximum Height Metres/Storeys (Column 3) |
|---|---|---|
| North Plot | | |
| - | RL 28.50 | 6 storeys |
| North East Plot | | |
| Podium | RL25.03 | 6 storeys |
| NE1 | RL68.38 | 18 storeys |
| NE2 | RL38.10 | 9 storeys |
| NE3 | RL138.63 | 40 storeys |
| South East Plot | | |
| Podium | RL25.03 | 6 storeys |
| SE1 | RL99.85 | 28 storeys |
| SE2 | RL38.10 | 9 storeys |
| SE3 | RL68.38 | 18 storeys |
| South West Plot | | |
| Podium | RL25.03 | 6 storeys |
| SW1 | RL91.38 | 25 storeys |
| SW2 | RL38.10 | 9 storeys |
| SW3 | RL138.63 | 40 storeys |
| North West Plot | | |
| - | RL53.60 | 12 Storeys |
| Western Plot (Darling Drive) | | |
| W1 | RL75.20 | 21 Storeys |
| W2 | RL75.20 | 21 Storeys |
| **Overall max** | **RL138.63** | **40** |

## 4.7 Mix of Uses

The concept proposal is seeking approval for a mix of residential buildings, non-residential and open space uses on the site. The Proposed Land Use Parameter Plan, refer to **Figure 42**, details the proposed land uses across each of the development plots.

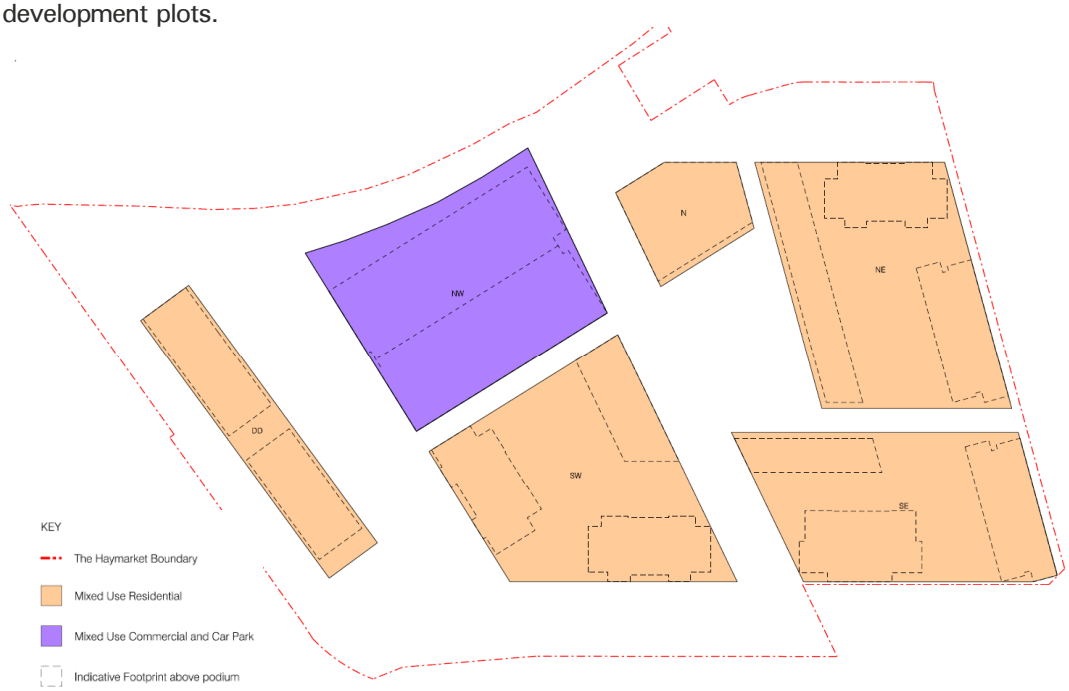


**Figure 42** – Proposed Land use Parameter Plan

**Source:** Denton Corker Marshall

As illustrated, each of the development plots, apart from the North-West development plot, will accommodate 'Mixed Use Residential' land uses, with the North-West development plot to provide for 'Mixed Use Commercial and Car Park' land uses.

The illustrative design scheme provides details of the specific types of uses that could potentially be accommodated within each of the development plots under the banner of 'Mixed Use Residential' (for the North, North-East, South-East, South-West, and Western/Darling Drive) and 'Mixed Use Commercial and Car Park' (for the North-West Plot). Broadly these uses include:

### Mixed Use Residential

- Residential buildings (e.g. residential flat buildings and student accommodation)
- Other - retail/community/IQ Hub

Mixed Use Commercial and Car Park

- Commercial
- Public Car Park
- Other (Retail/Community)

The non-residential component of the Concept Proposal comprises a maximum of 49,545m$^2$ GFA. The indicative design scheme apportions this maximum GFA to the following uses:

- Commercial (26,107m$^2$) – North West Plot
- Public Car Park (13,588m$^2$ - equivalent to approximately 400 spaces) – North West Plot
- Retail, community, and IQ Hub (9,850m$^2$) – spread across the North, North-West, North-East, South-East and South-West Plots.

While the illustrative design scheme shows non-residential uses comprising retail, commercial, public car park, community etc the future non-residential uses to be developed on the site could be a range of non-residential uses as permitted in the Darling Harbour Development Plan No 1.

## 4.8 Street Layout, Access and Parking

A series of new streets and lanes are proposed as part of the concept proposal, refer to **Figure 43**, supporting one of the key urban design principles for the project – being to increase permeability and accessibility across the Haymarket Site.

### The Boulevard

'The Boulevard' is proposed as a major new pedestrian thoroughfare, which will travel in a north-south direction through the Site and connect through (as part of the PPP DA) to Darling Harbour in the north. It will link major public gathering spaces (Haymarket Square, Tumbalong Park and Harbouside) within the SICEEP Precinct and also provide direct access between Central Station and Darling Harbour.

## Laneways

A number of internal streets are proposed to be constructed as pedestrian focussed laneways, between 8m and 12m wide. These include:

- Little Hay Street, which is proposed to be extended into the Site and terminating at the Boulevard/Haymarket Square;
- A new street indicatively referred to as 'Dickson's Lane', which will connect Darling Drive with Haymarket Square; and
- Access between the North and North-East Plots.

These laneways are intended to be designed to replicate the urban grain and laneway characteristics of nearby streets in Chinatown and Ultimo.

## Existing Street Network

The Concept Proposal includes a number of alterations and connections to the existing road network in order to provide vehicular access to development plots. Alterations or additions to the road network (which will be detailed further within subsequent Stage 2 DAs) comprise:

- the realignment of Darling Drive further to the east, and the provision of traffic calming works;
- road changes to Exhibition Place in order to create a one way road accessed from the roundabout on Darling Drive and egressed further south on Darling Drive via an extension running parallel with the North-West Plot boundary;
- the provision of a new laneway at Hay Street to provide vehicular access to the South-West Plot;
- vehicular access points to Harbour Street to provide access for the North-East and South-East Plots; and
- the extension of Factory Street into the site, connecting with Little Pier Street.

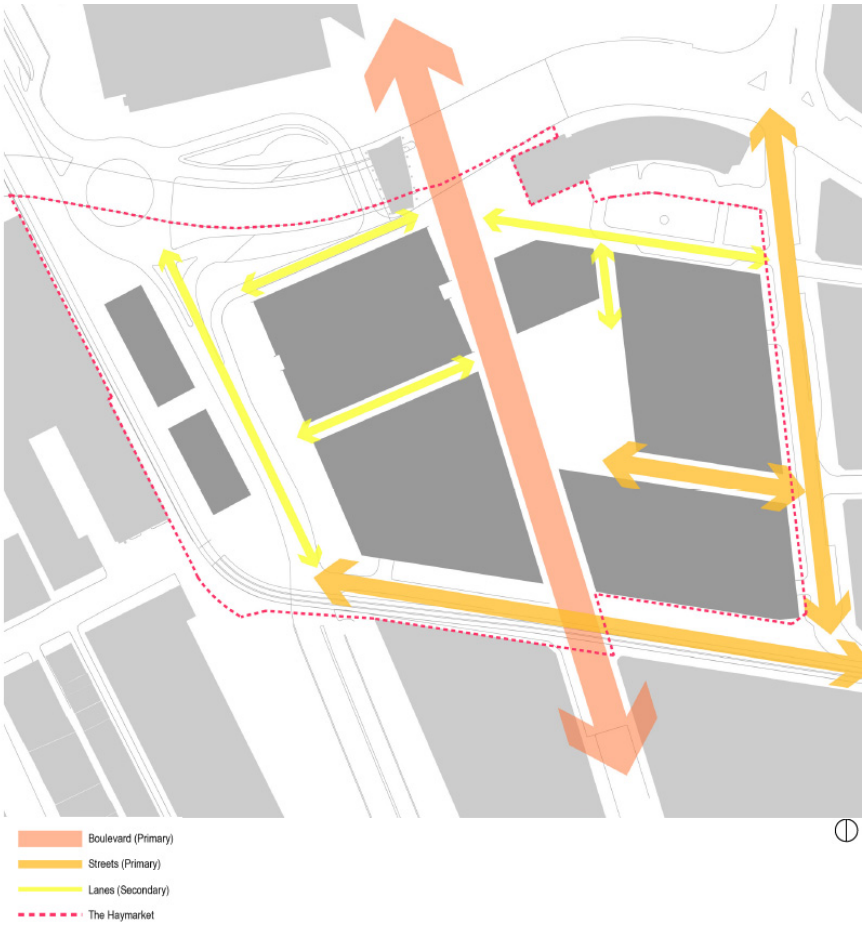


**Figure 43** – Proposed Street Network

**Source:** Denton Corker Marshall

## Vehicle Access

Vehicular access to above ground parking within the various Development Plots is identified in the illustrative design scheme (refer to **Figure 44**) and is as follows:

- North-East and South-East Plots via Harbour Street;
- South West Plot via the new internal access road on Hay Street; and
- North West Plot via Exhibition Place.

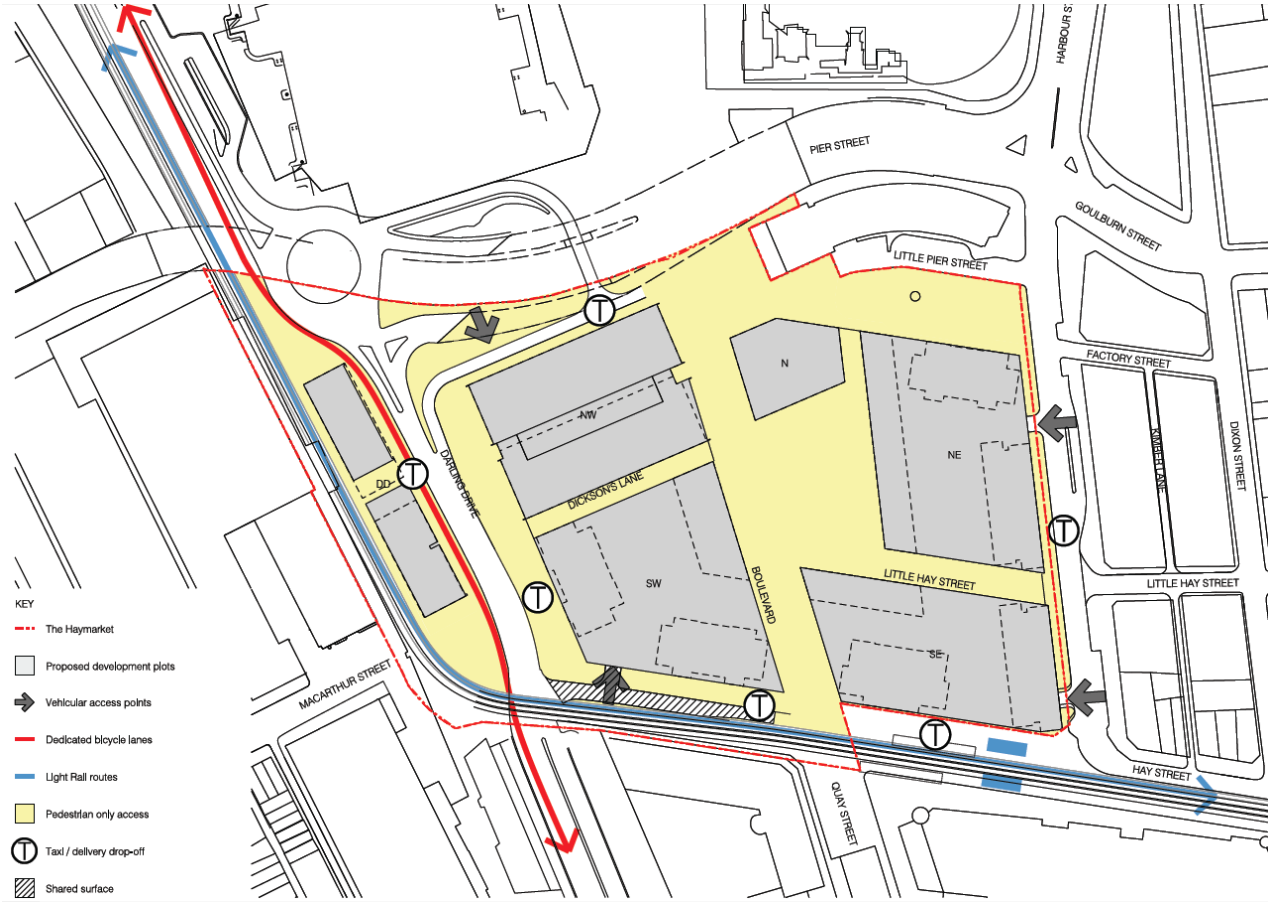


**Figure 44** – Site Access and Parking

**Source:** Denton Corker Marshall

## Parking (Above Ground)

The Concept Proposal seeks approval for above ground parking within the North-East Plot, South-East Plot, South-West Plot, and North-West Plot.

The above ground parking to be provided within the North-West Plot is to serve the needs of future proposed non-residential uses (e.g. commercial) together with providing parking to serve the general public (public car park). The public car park is required in order to meet the demand generated by the new world-class convention, exhibition and entertainment facilities to the north of The Haymarket Site (subject of a linked but separate DA). The public car park will accommodate approximately 400 spaces.

The remaining above ground parking proposed within the North-East, South-East and South-West Plots will be provided in the podiums and will serve the particular residential and non-residential uses proposed within that development plot.

Apart from the above ground public car park proposed within the North-West Plot, all other car parking (which will serve the particular needs of the residential and non-residential uses within that development plot) will therefore be excluded from GFA calculations.

No parking is proposed as part of the concept proposal to be provided to serve the needs of development within the Western (Darling Drive) Plot or the North Plot.

### Residential Parking Rates

The Concept Proposal seeks approval for residential parking rates to be adopted in future Development Applications:

- Zero (0) spaces per studio apartment;
- Maximum one (1) space per two (2) one bedroom apartments;
- Maximum one (1) space per one bedroom + study apartment, plus one (1) additional space per five (5) apartments;
- Maximum one (1) space per two bedroom apartment, plus one (1) additional space per five (5) apartments; and
- Maximum two (2) spaces per 3 + bedroom apartment.

## 4.9 Landscaping, Open Space and Public Domain

An indicative Public Domain Concept has been prepared by HASSELL and included as an appendix to the Design Report (**Appendix J**). The Public Domain Concept has been prepared in accordance with the Infrastructure NSW SICEEP Urban Design and Public Realm Guidelines.

An illustration of the Public Domain Concept is provided at **Figure 45**, with key components summarised below. Future Stage 2 DAs will provide the details regarding the exact make-up of the public domain, landscaping, and open space.


**Figure 45** – Public Domain Concept

**Source:** HASSELL

## Haymarket Square

Haymarket Square is a key component of The Haymarket public domain strategy, and is proposed to be located within the heart of the site.

Haymarket Square will be defined by built elements situated to the north, east and south. These built elements will provide opportunities for retail and food tenancies with alfresco dining. At the northern, eastern and southern edges of the Square, the outdoor dining areas will be provided on raised terraces to help frame the space. On the northern side, steps to the terrace will be wide and generously spaced in order to provide an informal stage and amphitheatre, which may be used as a flexible performance space.

The Square will also be capable of accommodating deckchairs, lounges and other items of furniture to assist the formation of an 'outdoor lounge', an identity which will be unique amongst the public domain offerings within the SICEEP Site.

The Square is envisaged to incorporate water and water interpretative elements, which will be evocative of the Site's historical connection with the water and the former foreshore line. A simple palette of stone paving of various sizes and textures will be incorporated, together with the use of deciduous trees.

## The Boulevard

The site wide connecting street will comprise of three primary key elements:

- Pavement – utilising consistent materials for its entire length and a similar language to other significant Sydney pedestrian spaces;
- Seating – envisaged to be provided along its length and focused around avenue trees and activity spaces; and
- Avenue planting - a grand colonnade of native trees, providing shade and protection from the elements and a grand backdrop spaces

The Boulevard is proposed to be lined with an avenue of Eucalyptus trees, which will provide a continuous tree canopy that will provide shading for seating areas provided along the entire length, and a visual connection between the Site and other components of the SICEEP public domain. The materials proposed for the Boulevard will be consistent throughout SICEEP in order to provide a sense of connection and continuity.

## The Laneways

A number of internal streets are proposed to be constructed as laneways, between 8m and 12m wide. These laneways are proposed to be designed to be consistent with the urban grain and laneway characteristics of nearby streets in Chinatown and Ultimo. All laneways are proposed to be paved with natural stone paving, and planted with deciduous trees.

It is also proposed for seating zones to be provided intermittently throughout.

## Hay Street Shareway

The proposed development of the South-West and South-East Plots will provide a greater sense of enclosure and improve the existing streetscape along Hay Street. Hay Street will continue to function as a shared space for Light Rail and pedestrians, and Paddy's Market Light Rail Station will serve as the main public transport node for The Haymarket. The illustrative design provides for an additional outdoor space to be provided within an under-croft at the southern side of the South-East Plot, which may be utilised to accommodate outdoor markets as a natural extension of the Paddy's markets.

In addition to pedestrian traffic generated by the Station and markets, The Boulevard will terminate at the intersection of Hay Street and Quay Street. These conditions will cumulatively make Hay Street a key pedestrian thoroughfare.

In order to ensure safety within the shared zone, Hay Street is proposed to be clutter free, and wide enough to ensure adequate lines of sight. Paving will provide simple and robust footpaths that complement the City of Sydney paving. Planting will be limited to a simple row of trees along the northern side of the carriageway to the south of the South-West Plot, which will be illuminated at night.

### MacArthur Place

MacArthur Place is proposed to be located to the south of Building W2 within the Western Plot (Darling Drive). Situated at the south-western corner of the Haymarket Precinct Macarthur Place will be a secondary square associated with the proposed accommodation. This space provides a visual termination point to the Goods Line which will be utilised as a main entry point to the Haymarket Precinct from the west and south.

### Darling Drive

Darling Drive is proposed to be subject to significant planting with medium to large sized evergreen trees in order to soften the landscape and to frame the road. The main purpose of Darling Drive under the Concept Proposal is for the movement of vehicles and cyclists, therefore the public domain will be arranged in a way to encourage pedestrians to utilise The Boulevard when travelling in a north-south direction.

### Public Art

Haymarket Square is in itself considered to be an installation of public art, which encourages public engagement and interprets the natural and anthropogenic history of the Site. In addition, the Concept Proposal utilises existing public art in the northern portion of the site by retaining the Memory Lines memorial. The Boulevard will also include a public art overlay.

### Green Roofs / Landscaped Podiums

The illustrative design scheme incorporates landscaped podiums within the North-East, South-East and South-West Plots. These spaces are envisaged to provide recreation and amenity for residents, with deep soil zones provided to ensure a generous canopy and privacy screening throughout. Communal facilities are also expected to be provided on the podium levels. Detailed designs for the podium landscaping will be submitted with the relevant Stage 2 DAs.

Green roofs are also indicatively shown on the roofs of the future North Plot and North-West Plot buildings.

# 4.10 Site Preparation, Remediation and Development Staging

The redevelopment of the site is proposed to be carried out in stages, with the SEC to remain open until December 2015 having an influence on development staging. Accordingly, site preparation and remediation works will be carried out on a staged basis and aligned with the progression of relevant Stage 2 DAs.

## Demolition Works

In order to make the Site suitable for development, the existing structures, landscaping, and public domain improvements will be demolished. It is proposed for staged demolition to occur, principally to enable the continued operation of the existing Sydney Entertainment Centre in the interim. The specific scope of demolition works and staging will be detailed within subsequent Stage 2 DAs to follow.

## Remediation

The Concept Proposal seeks approval for a strategy to remediate The Haymarket Site. Further details on the proposed strategy are provided within the Overarching Remedial Action Plan (ORAP) prepared by Coffey Environments and included as **Appendix K** and Section 5.20.

## Relocation of services

The proposed layout has been selected in order to create minimal disruption to existing below ground infrastructure; however the implementation of the Concept Proposal will inevitably result in the relocation of some infrastructure and services. Those infrastructure items that will require relocation or augmentation to accommodate the Concept Proposal are outlined below. The identified works are indicative only at this Stage and will be confirmed during the Stage 2 DA process.

**Water and Sewer**

- Portions of the existing sewer and water infrastructure are likely to be demolished and new reticulation pipework installed.
- Sewer mains running north/south through the Site may be capped off and abandoned. New mains are likely to be constructed from the Hay Street main in the south and mains to the north of the Site in order to service the Site.
- A trunk water main in the southern portion of the site will be relocated to accommodate the future buildings.

**Gas**

- Existing network may be expanded into the site and reticulated to supply the future buildings.

**Telecommunications**

- Telecommunications infrastructure will be installed that is capable of supporting 100Mbps via fibre-to-the-premises (FTTP) service.
- Wireless telecommunications infrastructure currently located within the SEC will be relocated.

**Electrical**

- Some sections of the existing electrical infrastructure may require demolition and some diversions may be required.

**Rail Corridor Utilities**

- The Light Rail Corridor located in the western portion of the site contains infrastructure that may require relocation in order to accommodate the Concept Proposal. Arrangements for suitable relocations will be made in consultation with RailCorp prior to lodgement of the Stage 2 DAs.

## Development Staging

An Indicative Staging Strategy is included within the DCM Design Report, included at **Appendix J** and reproduced at **Figure 46**. The specific timing of the delivery of each stage will be dependent on a number of factors, including market conditions.


**Figure 46** – Indicative Staging Plan

**Source:** Denton Corker Marshall

# 5.0 Environmental Assessment

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

Under Section 79C(1) of the EP&A Act, in determining a development application the consent authority has to take into account a range of matters relevant to the development including the provisions of environmental planning instruments; impacts of the built and natural environment, the social and economic impacts of the development; the suitability of the site; and whether the public interest would be served by the development.

The assessment includes only those key matters under Section 79C(1) that are relevant to the proposal. The key planning issues associated with the proposed development are listed in **Table 8** below.

**Table 8** – Planning Issues

| Planning Issues | Assessment | |
|---|---|---|
| | EIS | Technical Study |
| Director General's Environmental Assessment Requirements | Section 5.1 | - |
| Environmental Planning and Assessment Act 1979 | Section 5.2 | - |
| Compliance with Planning Policies | Section 5.3 | - |
| Compliance with Planning Instruments | Section 5.4 | - |
| Design Excellence | Section 5.5 | **Appendix O** |
| Built Form | Section 5.6 | **Appendix J** |
| Internal Residential Amenity | Section 5.7 | **Appendix J** |
| Public Domain and Landscaping | Section 5.8 | **Appendix J** |
| Overshadowing | Section 5.9 | **Appendix J** |
| Transport and Accessibility | Section 5.10 | **Appendix Q** |
| Accessibility | Section 5.11 | **Appendix R** |
| Non-Indigenous Heritage | Section 5.12 | **Appendix C** |
| Archaeology | Section 5.13 | **Appendix D**<br>**Appendix E** |
| Noise and Vibration | Section 5.14 | **Appendix S** |
| Infrastructure and Utilities | Section 5.15 | **Appendix H**<br>**Appendix T** |
| Waste | Section 5.16 | **Appendix U** |
| Water Cycle Management | Section 5.17 | **Appendix V** |
| Air Quality | Section 5.18 | **Appendix W** |
| Geotechnical Issues | Section 5.19 | **Appendix F** |
| Contamination | Section 5.20 | **Appendix K**<br>**Appendix X** |
| Construction Management | Section 5.21 | - |
| Socioeconomic and Cultural Issues | Section 5.22 | - |
| Crime Prevention through Environmental Design | Section 5.23 | **Appendix M** |
| Environmental Sustainability | Section 5.24 | **Appendix L** |
| Ecologically Sustainable Development | Section 5.25 | **Appendix L** |
| Development Contributions | Section 5.26 | - |
| Site Suitability | Section 5.27 | - |
| Public Interest | Section 5.28 | - |

## 5.1 Director-General's Environmental Assessment Requirements

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

## 5.2 Environmental Planning and Assessment Act 1979

### State Significant Development

The EP&A Act establishes a specific assessment system to consider projects classed as State significant development (SSD). State significant development is such development deemed to be of state significance and includes for example projects considered located in precincts regarded as important by the NSW Government, such as Darling Harbour. As noted in Section 5.4, the proposed development the subject of this DA is classed as SSD.

Section 83B of the EP&A Act relates to staged development applications. A staged development application is a one that sets out concept proposals for the development of a site, and for which detailed proposals for separate parts of the site are to be the subject of subsequent development applications. The application may set out detailed proposals for the first stage of development.

This development application is a Staged SSD Development Application (DA), comprising a concept proposal for the entire site. A staged development application is commonly referred to as a 'Stage 1 Development Application' or a 'Concept Proposal'. These terms are used interchangeably throughout the consultant reports, but should be interpreted to mean 'staged development application' (for the purposes of section 83B of the EP&A Act) in each instance.

Section 83D of the EP&A Act provides that while any consent granted on the determination of a staged development application for a site remains in force, the determination of any further development application in respect of that site cannot be inconsistent with that consent.

This EIS has examined and taken into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the proposed development. **Table 9** provides an assessment of the proposed development against the objects of the *Environmental Planning and Assessment Act, 1979*.

**Table 9** – Objects of the EP&A Act 1979

| Object | Comment |
|---|---|
| 5(a)(i) To encourage the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment. | The Concept Proposal will contribute to the proper management, development and conservation of the natural and artificial resources of the Site. In particular, measures outlined in the Sustainability Plan prepared by Lend Lease and included as **Appendix L** will be implemented to ensure the conservation of natural resources throughout the construction and operational phases, and existing artificial resources and infrastructure will be retained where practicable.<br><br>The Concept Proposal will promote the social and economic welfare of the community by providing an improved urban environment for residential and commercial use, and will greatly enhance a key CBD location that is presently underused. |

| Object | Comment |
|---|---|
| | The Concept Proposal will contribute to a better environment through the implementation of sustainability measures, and the provision of extensive public domain works. |
| 5(a)(ii) To encourage the promotion and co-ordination of the orderly economic use and development of land. | The proposed Stage 1 SSD DA involves the orderly redevelopment of the Haymarket Site for residential and non-residential uses. The Proposal will promote economic growth and make greater use of an underutilised Site in a prime CBD location. |
| 5(a)(iii) To encourage the protection, provision and co-ordination of communication and utility services. | The Concept Proposal would not impact on the provision or coordination of communication and/or utility services. Relevant utility providers have been consulted during the development of the proposal. |
| 5(a)(iv) To encourage the provision of land for public purposes. | The Concept Proposal supports the provision of a substantial quantum of public domain works, to the benefit of existing and future residents, workers, and the wider community. |
| 5(a)(v) To encourage the provision and co-ordination of community services and facilities. | The Concept Proposal nominates floor space for community facilities and services. These uses will be formalised in future DAs. |
| 5(a)(vi) To encourage the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats. | The proposal would be undertaken in a highly modified and disturbed urban environment, and would not impact on biodiversity values. The Site is not considered to have habitat suitable for any threatened flora and fauna, and the only vegetation proposed to be removed are introduced street trees. |
| 5(a)(vii) To encourage ecologically sustainable development. | The Concept Proposal accords with the principles of Ecologically Sustainable Development, as set out in Schedule 2 of the EP&A Regulation 2000. This is further considered in Section 5.25 of this EIS. |
| 5(a)(viii) To encourage the provision and maintenance of affordable housing. | The Concept Proposal allows for the provision housing that is affordable, with details be addressed in future DAs. |
| 5(b) To promote the sharing of the responsibility for environmental planning between different levels of government in the State. | Extensive consultation has been undertaken with various levels of government and government agencies during the preparation of this proposal, and all government agencies will be afforded the opportunity for further input into the development process during the public exhibition process. |
| 5(c) To provide increased opportunity for public involvement and participation in environmental planning and assessment. | The community consultation carried out assisted the development of the proposal and is detailed in section 3 of this EIS. Further consultation will be carried out during design development, prior to the commencement of construction, and throughout the construction period. |

## 5.3 Compliance with Planning Policies

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

### 5.3.1 NSW 2021

NSW 2021 is a long-term plan to deliver services in NSW, and sets clear priorities to guide government decision-making and resource allocation.

NSW 2021 is based around five strategies to rebuild the economy, provide quality services, renovate infrastructure, restore government accountability, and strengthen our local environment and communities. NSW 2021 includes numerous goals that are relevant to the site, such as 'grow patronage on public transport by making it a more attractive choice', 'build liveable centres', and ‘enhance cultural, creative, sporting and recreation activities’. NSW 2021 also aims to focus growth around existing transport hubs.

The Concept Proposal is consistent with the goals of NSW 2012 in that it aims to:

- encourage patronage on public transport by increasing residential and commercial density in close proximity to Metro Light Rail, rail, bus and ferry services;
- enhance the 'liveability' of Haymarket and its surrounding neighbourhoods by providing:
  - a substantial quantum of residential dwellings in close proximity to employment, education, and recreational activities;
  - employment opportunities in close proximity to public transport and high density residential developments;
  - improved amenity in the public domain; and
  - improved pedestrian connectivity with surrounding precincts.
- enhance cultural and recreation activities through the provision of a contemporary and vibrant public domain, and encourage creativity in conjunction with neighbouring educational establishments and key stakeholders (e.g. through the provision of low cost start up spaces for creative industry), in order to support creative industries.

### 5.3.2 Metropolitan Plan for Sydney 2036

The Metropolitan Plan for Sydney aims to provide an integrated planning framework to manage Sydney's growth to 2036. The Concept Proposal is consistent with the general objectives of the Metropolitan Plan for Sydney in that it:

- will contribute to making Sydney more compact and connected by substantially increasing residential and commercial density in an underutilised area of the CBD with excellent public transport links;
- will assist in achieving 70% of new dwellings being located within existing areas by facilitating residential growth in an established suburb;
- will strengthen Sydney's role as a globally competitive city by substantially improving the amenity and vitality of a crucial site;
- will facilitate the growth of innovation by providing opportunities for low-cost commercial floorspace suitable for start-up ventures and social initiatives in creative industries;
- will strengthen links to South-East Asia by complementing the redevelopment of the Sydney International Convention, Exhibition, and Entertainment Precinct, and embracing the cultural diversity of the neighbouring Chinatown precinct;
- will provide a substantial quantum of residential dwellings in the CBD with excellent public transport links, allowing more people to work closer to home;
- will provide local opportunities for residents and visitors to walk, cycle, or use public transport; and
- will encourage growth in close proximity to existing light rail, rail, bus and ferry services.

### 5.3.3 NSW Long Term Transport Masterplan

The NSW Long Term Transport Masterplan was published by Transport for NSW in December 2012. The Masterplan focuses on key transport challenges identified during an extensive consultation process, and sets out how the NSW Government aims to respond by integrating transport services, modernising the transport system, growing the network to meet future demand, and maintaining important road and public transport assets.

The Concept Proposal is consistent with the Masterplan in the following ways:

- it supports the expansion of the Light Rail System, by providing housing and employment opportunities in direct proximity to an existing Metro Light Rail station (Paddy's Market);
- it will assist in unclogging the Sydney CBD transport system by connecting more people to existing Light Rail Infrastructure and encouraging patronage on an existing network with spare capacity;
- it will encourage walking by extending the surrounding street network into the Haymarket Site, creating east-west connections that have never before existed, and the provision of 'The Boulevard', a major north –south pedestrian thoroughfare that will connect the Site and the surrounding locality with the remainder of the Darling Harbour Precinct;
- it will encourage public transport use by providing residential dwellings and employment opportunities in close proximity to light rail, rail, bus and ferry services; and
- it will encourage cycling through the provision of a dedicated cycleway on Darling Drive that has been designed to be consistent with the existing and planned components of the Sydney cycleway network.

### 5.3.4 Sydney City Draft Subregional Strategy

The Sydney City Draft Subregional Strategy is applicable to the City of Sydney LGA. The Strategy sets actions for the subregions of the metropolitan area in order to ensure local delivery of the objectives set out within the Metropolitan Plan for Sydney. The Stage 1 Concept Proposal is consistent with the Draft Subregional Strategy in that it:

- provides for increased housing on a significant renewal site that is strategically located within 'Global Sydney';
- supports nearby strategic employment centres;
- will encourage more sustainable travel behaviour through locating residential development within walking distance of light rail, rail, bus, and ferry services, whilst improving access to transport via walking and cycling networks;
- provides for new residential development which will promote a mix of housing types, ensuring diversity in the supply of labour to nearby employment centres;
- provides new housing within an existing urban area that is strategically located in close proximity to transport, open space, and existing employment centres;
- creates a built form that will achieve design excellence;
- supports the UTS Haymarket Campus by providing nearby housing with good transport connections;
- involves infill development which will assist in containing Sydney's urban footprint;
- incorporates design features and construction methods that will assist with tackling climate change and protecting Sydney's natural environment; and
- supports the provision of increased, improved and accessible open space on the Site.

### 5.3.5 Additional Relevant Planning Policies

The Concept Proposal also demonstrates consistency with key planning policies identified in the DGRs, as demonstrated in **Table 10** below.

**Table 10** – Compliance with relevant planning policies

| Policy | Compliance |
|---|---|
| **Sustainable Sydney 2030** | The Concept Proposal is generally in accordance with the aims of Sustainable Sydney 2030.<br>Key measures include:<br>▪ reducing greenhouse gas emissions by investigating opportunities to utilise renewable energy generated on the PPP Site, designing for efficient energy use, and saving embodied carbon through slab retention;<br>▪ supporting increased direct and indirect employment in the entertainment and retail sectors;<br>▪ supporting public transport usage by encouraging Rail/Light Rail patronage;<br>▪ improving pedestrian and cyclist access to the Sydney Harbour foreshore through the provision of new pedestrian connections throughout the Site and a dedicated cycle lane on Darling Drive; and<br>▪ providing new and upgraded recreational and cultural facilities to promote social interaction and community cohesion. |
| **Infrastructure NSW SICEEP Urban Design and Public Realm Guidelines** | Due regard has been given to the Urban Design and Public Domain Guidelines in formulating the Concept Proposal. The Design Report included at **Appendix J** provides a summary of how the Concept Proposal responds to key aspects of the Urban Design and Public Domain Guidelines. |
| **City of Sydney Chinatown Public Domain Plan** | The Concept Proposal is consistent with the Chinatown Public Domain Plan. Whilst the Site is not within the boundary of the study area, the Chinatown Public Domain Plan identifies that the existing SEC Site stymies pedestrian connectivity between Chinatown and Darling Harbour, and that any future redevelopment of the SEC Site would present an opportunity to improve connectivity and provide a plaza that addresses Chinatown.<br><br>The Concept Proposal will provide improved connectivity between Chinatown and The Haymarket through the extension of Factory and Little Hay Streets into the Site. It is envisaged that the urban grain and laneway characteristics of nearby streets in Chinatown will be replicated, and that Haymarket Square will host events and markets that celebrate and embrace the cultural values of the Chinatown Precinct. |
| **Development Near Rail Corridors and Busy Roads-Interim Guideline** | Renzo Tonin & Associates have set out the relevant criteria against which each Stage 2 SSD DA will be assessed. These criteria include the provisions of the *Development in Rail Corridors and Busy Roads – Interim Guideline* and the relevant rail vibration guidelines. |
| **Planning Guidelines for Walking and Cycling** | The Concept Proposal will improve walkability and cycle access across the City through the provision of new on and off-road routes, active transport facilities, and wayfinding signage. The Concept Proposal will improve connectivity to the surrounding street network to the Sydney CBD, Haymarket and Pyrmont/Ultimo. |
| **NSW Bike Plan 2010** | The Concept Proposal will improve connectivity for cyclists along the western edge of the CBD through the provision of a dedicated cycle lane on Darling Drive, which will connect to the regional cycle network. |
| **Integrating Land Use and Transport Policy Package** | The Concept Proposal will provide a substantial quantum of residential dwellings in the CBD with excellent public transport links, which will facilitate more people working closer to home. It proposes residential growth in close proximity to existing Metro Light Rail stations and railway stations, and will provide local opportunities for residents and visitors to walk or cycle. |
| **Sydney's Light Rail Future** | The proposal recognises the expanded role light rail will play in Sydney's transport future, and encourages the utilisation of Paddy's Market Light Rail Station as the main public transport node for The Haymarket.<br>The appeal of light rail to future residents, workers and visitors will be further enhanced by the planned completion of the Dulwich Hill to Lilyfield light rail extension and increased frequency.<br>It is noted that the Concept Proposal allows for Hay Street to continue its function as a shared space for light rail and pedestrians. |
| **Cycle Strategy and** | The proposed realignment of Darling Drive is planned to accommodate a |

| Policy | Compliance |
|---|---|
| **Action Plan 2007-2017** | separated cycleway along the western alignment of Darling Drive and will form part of the City of Sydney's 'R8 Pyrmont – Moore Park' proposed regional cycle network. |
| **Healthy Urban Development (HUD) Checklist** | The proposed development is consistent with the HUD checklist in that it:<br>▪ incorporates a range of public domain spaces which promote and are conducive to physical activity;<br>▪ promotes walking, cycling and public transport, and improved connectivity to the existing urban network;<br>▪ will encourage local employment to reduce journey-to-work times;<br>▪ provides a safe urban environment designed with regard to CPTED principles; and<br>▪ contributes to the building of community infrastructure through the provision floorspace for community use. |
| **Waste Classification Guidelines (DECC 2008)** | The Waste Classification Guidelines have been considered in the Overarching Remediation Action Plan included as **Appendix K**. Waste classification relevant to the detailed designs will be appropriately addressed in future SSD DAs. |
| **Heritage Council Guidelines Assessing the Significance of Archaeological Sites and Relics** | The Heritage Council Guidelines are addressed in **Appendix D** and **E**, and Section 5.14 of this report. |
| **Crime Prevention Through Environmental Design principles** | CPTED principles are addressed in **Appendix M** and Section 5.23 of this report. |

## 5.4 Compliance with Planning Instruments

The following planning instruments are relevant to the Concept Proposal:

- State Environmental Planning Policy – (State & Regional Development) 2011;
- State Environmental Planning Policy – Infrastructure 2007;
- State Environmental Planning Policy – (Building Sustainability Index: BASIX) 2004;
- State Environmental Planning Policy No. 65 – Design Quality of Residential Flat Development;
- State Environmental Planning Policy No. 55 Remediation of Land;
- Draft State Environmental Planning Policy – (Competition) 2010;
- Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005; and
- Darling Harbour Development Plan No. 1.

The SSD DA's consistency and compliance with the relevant strategic and statutory plans and policies is located in **Table 11** below.

**Table 11** – Compliance with relevant planning instruments

| Instrument | Comments |
|---|---|
| **SEPP (State & Regional Development)** | Pursuant to the SEPP a project within the Darling Harbour Site will be SSD if it has a capital investment value (CIV) of $10 million or more.<br><br>The Stage 1 Concept Proposal has a CIV of over $10 million, and is therefore identified as SSD and considered to be development of State and/or Regional Significance. This EIS has accordingly been prepared in support of the DA. |
| **SEPP (Infrastructure)** | The proposed development triggers consultation with NSW Roads and Maritime Services (RMS) under the provisions of Schedule 3 of the SEPP as the proposed Concept Proposal will generate 300 or more dwellings, over 10,000m$^2$ of commercial floorspace, and accommodate over 200 motor vehicles.<br><br>As the concept proposal includes rail corridor land, referral of the application to the relevant rail authority is also required.<br><br>Future Stage 2 DAs may also require referral to relevant infrastructure providers. |
| **SEPP (BASIX)** | The residential component of the Concept Proposal is to comply with the requirements of BASIX. Certificates will be prepared and submitted with the Stage 2 SSD DA's as required. |
| **SEPP 65 (Design Quality of Residential Flat Development)** | The Concept Proposal is consistent with the provisions of SEPP 65 and the Residential Flat Design Code. This is addressed separately in sections 5.6 and 5.7. |
| **SEPP 55 (Remediation of Land)** | Clause 7 specifies that a consent authority must not consent to the carrying out of any development on land unless it has considered whether land is contaminated and if the land is contaminated, it is satisfied that the land is/can be suitable for the proposed development.<br><br>An Overarching Remedial Action Plan has been prepared for the Site by Coffey Environments and is included as **Appendix K**. The Plan has been summarised in Section 5.20 of this Report. In summary, the Plan considers that the Site can be made suitable for the proposed development, and outlines a strategy to ensure that the requirements of SEPP 55 are appropriately addressed. |
| **Draft SEPP (Competition)** | The proposed Concept Proposal is consistent with the aims of the Draft SEPP (Competition) in that it will promote economic growth and competition within NSW. |
| **SREP (Sydney Harbour Catchment)** | Within the Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005 (SREP), the Site is identified as being within the following:<br>▪ the Sydney Harbour Catchment Area;<br>▪ the Foreshores & Waterways Area Boundary; and<br>▪ the City Strategic Foreshores Area.<br><br>Part 3, Division 2 within the SREP refers to matters which are to be taken into consideration by consent authorities before granting consent for development.<br><br>The proposed Concept Proposal is generally consistent with the relevant provisions and matters for consideration set out in Clauses 20 to 27 of the Sydney Harbour REP.<br>Biodiversity, ecology and environment protection: The Concept Proposal allows for WSUD initiatives to be incorporated at the detailed design stage. Indicative measures to be incorporated include stormwater capture, treatment and disposal infrastructure, to ensure water quality does not adversely impact upon |

| Instrument | Comments | |
|---|---|---|
| | | water quality or aquatic vegetation. Vegetation within the public domain will incorporate a range of native species contributing to biodiversity, and will enhance the ecological qualities of the Site. |
| | Public access to, and use of, foreshores and waterways | The proposed development improves access to the Sydney Harbour Foreshore by improving public pedestrian connectivity to Cockle Bay with the provision of 'The Boulevard', and other new streets and laneways. |
| | Maintenance of a working harbour | The Concept Proposal does not result in the loss of 'working waterfront' lands. |
| | Interrelationship of waterway and foreshore uses | The Concept Proposal does not directly impact upon access to or uses within the waterway. |
| | Foreshore and waterways scenic quality | The Concept Proposal is located a sufficient distance from the foreshore and its waterways to ensure it will have no impact upon its scenic qualities. |
| | Maintenance, protection and enhancement of views | A Visual Impact Analysis has been prepared for the SICEEP project by JBA and is included at **Appendix N**. The impact (including cumulative impacts) of the proposed development upon views to and from Sydney Harbour, public places, landmarks and heritage items is considered to be acceptable on this site. |
| | Boat storage facilities | Boat storage facilities are not proposed as part of the Concept Proposal. |
| | Clause 59 deals with development in the vicinity of heritage items. Heritage is addressed in Sections 5.12 and 5.13. | |
| **Darling Harbour Development Plan No 1** | The Concept Proposal is consistent with the provisions of the Darling Harbour Development Plan No.1 (DHDP). Compliance with the DHDP is discussed in further detail in Section 5.4.1 below. | |

### 5.4.1 State Environmental Planning Policy No 65 – Design quality of Residential Flat Development

Denton Corker Marshall has prepared an assessment of the concept proposal against the design principles of SEPP 65 (included within the Design Report provided at **Appendix J)**. The following sections reproduce DCM's response to each principle. It should be noted that the SEPP 65 Assessment includes a design verification statement.

Based on the assessment, the proposal conforms to the objectives sought by the SEPP 65 in the following ways:

#### Principle 1: Context

The Site is located in a transitional zone between the prestigious event spaces and buildings proposed within the PPP and the Haymarket and Chinatown precincts of the City. Haymarket and Chinatown are urban and gritty, and dominated by a mix of post-industrial, market and university uses.

The Concept Plan is divided into a series of urban blocks, which are defined by extensions of the existing local street network. Taller built forms are positioned at the Site perimeter, respecting the sensitivity of Haymarket Square and responding to the City context. The local height datum of 20-22m is respected by the proposed podium, creating a human scale.

### Principle 2: Scale

A variety of scale in the built form is proposed in order to:

- respond to the range in heights of existing buildings;
- to ensure that buildings and open spaces have sufficient solar access, and
- to provide variety in built form and to ameliorate view impacts.

### Principle 3: Built Form

The Concept Proposal adopts the principle of perimeter block planning, proposing envelopes aligned with new and existing streets. The public domain is clearly defined by the arrangement of the built form, which is appropriately setback from Haymarket Square to ensure solar access. The Concept Proposal layout will facilitate the provision of vibrant and active streetscapes that contribute to the creation of a distinct precinct character.

### Principle 4: Density

The Concept Proposal allows for a density of approximately 310 dwellings per hectare (equivalent to an FSR of 4.3:1). A high density mixed-use development is appropriate in this location given the close proximity to employment and education opportunities, activity centres and public transport. The density is sustainable in terms of new and existing infrastructure provision and benefits provided by improvements to the public domain.

### Principle 5: Resource, Energy and Water Efficiency

The design of the Concept Proposal ensures the efficient use of resources, energy and water by taking advantage of existing and proposed infrastructure, and the Site's close proximity to existing amenities and services. In addition, the Stage 2 SSD DAs will ensure compliance with BASIX, and opportunities to implement sustainability initiatives will be explored and implemented wherever feasible.

### Principle 6: Landscape

The Concept Proposal provides distinct components within the public domain, ensuring a wide range of spaces suitable for a range of active and passive recreational activities. These spaces have been designed with due regard to the natural, historical, and future built environments of the Site.

### Principle 7: Amenity

Future residential buildings are capable of achieving a high level of compliance with the 'Rules of Thumb' contained within the Residential Flat Design Code. Future buildings will provide efficient layouts, a variety of apartment sizes, and will take advantage of City and Harbour views to ensure a high level of amenity.

### Principle 8: Safety and Security

The Concept Proposal and the positioning of the future buildings has been informed by CPTED principles, which will ensure The Haymarket is a safe and secure environment.

### Principle 9: Social Dimensions

A variety of apartment sizes and types will be accommodated in the Stage designs. These will provide a range of price points which will attract a variety of different household types and diversity in social mix. The provision of student housing and commercial floorspace suitable for hi-tech start-up firms will further contribute to the creation of a vibrant and diverse precinct.

### Principle 10: Aesthetics

This SSD DA seeks concept approval for the precinct layout, building envelopes, and indicative uses. The aesthetics of the individual building designs will be addressed in future DAs.

## 5.4.2 Darling Harbour Development Plan No.1

The Darling Harbour Development Plan No.1 (DHDP) is the principal planning instrument applicable to the SICEEP Site, and more specifically The Haymarket Site. It provides a broad framework for development, principally through identifying permissible uses.

The objectives of the DHDP are to encourage the development of a variety of tourist, educational, recreational, entertainment, cultural and commercial facilities, and to set out those uses which are deemed permissible.

The Concept Proposal is consistent with these objectives as part of the SICEEP redevelopment project. The SICEEP redevelopment will deliver new world class convention, exhibition and entertainment facilities, and will re-position Sydney as the major events and business venue in the Asia-Pacific region.

The Haymarket Concept Proposal is a key component of SICEEP Project and will provide a new vibrant neighbourhood and will provide an opportunity for more people to make use of the existing and proposed recreational, entertainment, cultural and commercial facilities in the precinct.

The Concept Proposal seeks approval for a mix of uses, commensurate with its CBD fringe and relationship with the proposed new world-class convention, exhibition, and entertainment facilities and surrounding educational establishments.

A summary of the permissibility of the residential and non-residential uses proposed as part of the Concept Proposal, illustrative design scheme, and other potential permissible uses under the DHDP is provided with **Table 12** below.

**Table 12** – Permissibility of land uses (including possible future land uses) within the Concept Proposal

| Component | Darling Harbour Development Plan No 1 | Permissible? |
|---|---|---|
| **Demolition** | ▪ Clause 8 of DHDP - the renovation or demolition of a building or work may not be carried out except with a permit being obtained as a permissible use. | Yes |
| **Residential Buildings** | ▪ Clause 6 (d) of DHDP - Schedule 1 includes 'residential building' as a permissible use.<br>*Note: Proposed student accommodation is addressed in further detail below.* | Yes |
| **Commercial Building** | ▪ Clause 6 (d) of DHDP - Schedule 1 includes 'commercial premises' as a permissible use. | Yes |
| **Television Studio** | ▪ Clause 6 (d) of DHDP – Schedule 1 includes 'film, television and radio studios' as a permissible use. | Yes |
| **Public domain improvements** | ▪ Clause 6 (a) of DHDP includes development for the purposes of recreational facilities as a permissible use. | Yes |

| Component | Darling Harbour Development Plan No 1 | Permissible? |
|---|---|---|
| | ▪ Clause 6 (c) of DHDP includes development for the purposes of beautifying the landscape as a permissible use.<br>▪ Clause 6 (d) of DHDP – Schedule 1 includes 'parks and gardens' as a permissible use.<br>▪ Clause 6 (e) of DHDP includes development for any purpose incidental or subsidiary to permitted development as a permissible use. | |
| **Outdoor events and functions, including involving live entertainment** | ▪ Clause 6 (a) of DHDP includes development for the purposes of tourist, educational, recreational, entertainment, and cultural facilities as a permissible use.<br>▪ Clause 6 (d) of DHDP – Schedule 1 includes 'markets' as a permissible use.<br>▪ Clause 6 (e) of DHDP includes development for any purpose incidental or subsidiary to permitted development as a permissible use. | Yes |
| **IQ Hub** | ▪ Clause 6 (d) of DHDP – Schedule 1 includes 'commercial premises' and 'light industries' as a permissible uses. | Yes |
| **Retail premises** | ▪ Clause 6 (d) of DHDP – Schedule 1 includes 'art galleries', 'child care centres', 'commercial premises (other than premises used for pawn broking or other forms of moneylending)', 'professional consulting rooms', 'recreation facilities', 'refreshment rooms', 'shops', and 'theatre restaurants' as permissible uses. | Yes |
| **Upgrade and reconfiguration of Darling Drive** | ▪ Clause 6 (d) of DHDP – Schedule 1 includes 'public utility undertakings' as a permissible use.<br>▪ Clause 6 (e) of DHDP includes development for any purpose incidental or subsidiary to permitted development as a permissible use. | Yes |
| **Tree removal** | ▪ Clause 6 (e) of DHDP includes development for any purpose incidental or subsidiary to permitted development as a permissible use. | Yes |
| **Remediation** | ▪ Clause 6 (e) of DHDP includes development for any purpose incidental or subsidiary to permitted development as a permissible use. | Yes |
| **Car parking** | ▪ Clause 6 (d) of DHDP – Schedule 1 includes 'car parking stations' as a permissible use.<br>▪ Clause 6 (e) of DHDP includes development for any purpose incidental or subsidiary to permitted development as a permissible use. | Yes |
| **Signage e.g. wayfinding, building identification, event signage** | ▪ Clause 6 (a) of DHDP includes development for the purposes of tourist, educational, recreational, entertainment, cultural facilities or commercial facilities as a permissible use.<br>▪ Clause 6 (c) of DHDP includes development for the purposes of beautifying the landscape as a permissible use.<br>▪ Clause 6 (e) of DHDP includes development for any purpose incidental or subsidiary to permitted development as a permissible use. | Yes |
| **Extension/ Augmentation of infrastructure** | ▪ Clause 6 (d) of DHDP – Schedule 1 includes 'public utility undertakings' and 'utility installation' as a permissible use.<br>▪ Clause 6 (e) of DHDP includes development for any purpose incidental or subsidiary to permitted development as a permissible use. | Yes |

### Permissibility of Student Accommodation

Buildings W1 and W2 in the Western Plot (Darling Drive) are indicated within the illustrative design scheme as being used for student accommodation. The Western Plot (Darling Drive)

As noted in **Table 12** above, residential buildings are permissible under the DHDP.

Turning to the definition of 'residential buildings' provided within the City of Sydney Planning Scheme Ordinance (CSPSO) – which the DHDP calls up for undefined terms, a residential building is defined as:

> *"a building used or intended for use as a residential flat building, a boarding-house, a lodging house or a hostel, but does not include a motel".*

Student accommodation is considered to be characterised as both a hostel and a boarding-house (using the ordinary meanings of both terms), and therefore permissible under the DHDP by virtue of such uses being listed within the definition of a 'residential building'.

## 5.5 Design Excellence

### Context

The achievement of design excellence for the redevelopment of the SICEEP Site has been an important theme since the project's genesis and inception, and is clearly linked to the Project Vision set by the NSW Government (i.e. delivering world–class convention, exhibition and entertainment facilities and reaffirming Darling Harbour as Australia's premier gathering place).

More specifically, one of the NSW Government's objectives for the SICEEP Project in fulfilling the vision includes *'demonstrate excellence in design and environmental sustainability'*.

A mix of techniques are being utilised to create design excellence. The Government intent is to ensure a 'Precinct Outcome' whereby design forms an integral component of the consortium. A 'master plan' was required as the overarching document, guiding all aspects of the proposal. Through development of the master plan within the consortium team, the competing interests of urban design, facility functionality, operational logistics and commercial realities were balanced. Further using a number of acclaimed architects will create architectural diversity.

### Design Review Panel

As an initial step in ensuring design excellence is delivered, INSW established and appointed a Design Review Panel (DRP). The DRP is chaired by the Government Architect and includes the following membership:

- Peter Poulet (NSW Government Architect)
- Yvonne von Hartel AM – (Founding Principal of peckvonhartel).
- Kim Crestani (Principal Manager, TfNSW)

In addition to the formal appointment of members to the DRP, there are also observers involved including Graham Jahn AM (Director, City Planning, Development & Transport at the City of Sydney) and Helen Lochhead (Director, Strategic Developments at Sydney Harbour Foreshore Authority).

Biographies of the members and observers of the DRP are provided at **Appendix O**.

The Terms of Reference (TOR) established by INSW for the DRP were:

1. Provision of advice on proposed architectural and urban design guidelines.
2. Review of proponent concepts during the tender development phase.
3. Provision of advice to Infrastructure NSW regarding design submissions.
4. Review of design development documentation for the preferred proponent.
5. Provision of specialist design advice as required by Infrastructure NSW.

As evident from the TOR, the DRP has and will continue to play a crucial role in championing design excellence for the SICEEP Project.

The design has been presented to the DRP on several occasions as it has evolved. As noted from the meeting minutes attached at **Appendix O**, the DRP identified an opportunity for Macarthur Street to be extended into The Haymarket. The value of such a connection was acknowledged by the design team, and an exploration was undertaken to determine the feasibility of such a proposal. However, these investigations revealed that issues relating to topography, visual alignment, pedestrian safety, and commercial viability (amongst others) rendered the proposal unsuitable.

### Urban Design Guidelines

Woods Bagot was engaged by INSW to prepare Urban Design and Public Realm Guidelines (Urban Design Guidelines) for the SICEEP Project, which provided a framework for the realisation of the Project Vision.

These Guidelines formed an important starting point and basis for the design concepts and Master Plans of the shortlisted consortia Darling Harbour Live (formerly known as 'Destination Sydney') and VeNuSW. Key design excellence principles set out within the Urban Design and Public Realm Guidelines include:

- Creating new connections in the east-west and north-south direction and helping to knit the city fabric together;
- Using appropriate building height, alignment, form, grain and massing;
- Using appropriate materials suited to the local area palette;
- Responding to the adjacent items of heritage significance through the design of alignments, proportions, and solid to void ratios;
- Preserving significant view corridors;
- Minimising loss of solar access to the public domain;
- Preventing loss of privacy by overlooking of adjacent properties;
- Providing a new landmark for Darling Harbour, increasing the visual presence of facilities in the City and enriching the composition of the city skyline;
- Presenting a new face to the city, one that engages with people at street level and that enhances quality of the street life;
- Providing a constant presence of events both day and night which will create a critical mass and be responsive to the current and emerging city fabric; and
- Providing signature spaces that are open to the parklands and Darling Harbour and in the process showcasing the City and making it an integral part of the convention experience.

## Selection of the Preferred Proponent

Design was a major component of the evaluation process undertaken by the NSW Government in selecting the preferred proponent. The overall RFP and selection process of the preferred proponent in this regard closely mirrored a City of Sydney Council 'invited' competitive design alternatives process. For example:

- Two shortlisted consortia were selected and invited to submit a proposal/design and compete for the role of preferred proponent;
- A project brief was issued to each consortia by INSW on which to formulate and base its proposal, including setting out evaluation criteria;
- Each consortium was given a set timeframe in which to prepare and submit their proposals;
- After submission, each consortium was given the opportunity to present their proposal to INSW; and
- An Evaluation Panel (jury) was appointed by INSW to assess, evaluate and recommend the nomination of a successful proponent.

Underpinning each of the shortlisted consortium's bids for the SICEEP Project were both renowned international and Australian design, architectural and landscape firms (all of which have demonstrated design excellence ability):

Darling Harbour Live

- OMA
- Populous
- HASSELL
- DCM
- AJ + C
- PWP Landscape Architecture

VeNuSW

- FJMT
- LMN Architects
- Architectus
- ASPECT Studios

The DRP played a key role in assisting and advising on the design of each proposal to the Evaluation Panel appointed by INSW. The interactive evaluation process also enabled the opportunity for an iterative process on design related aspects (amongst others) to be provided (based on DRP comments) to each consortium. This provided an opportunity for each consortium to refine and strengthen design aspects.

Given the importance of design in selecting the preferred proponent, the involvement of the DRP and with two high calibre design teams competing against one another in multi architect/designer terms, the realisation of achieving design excellence in delivering the SICEEP Project by the Preferred Proponent has been assured.

### Detail Design Development of the Darling Harbour Live Master Plan

Design excellence in implementing the Darling Harbour Live Preferred Master Plan will be achieved through:

- Retaining an internationally and Australian renowned design team which is recognised for design innovation and excellence throughout the delivery of the project;
- Continuing regular and collaborative meetings with the DRP in the ongoing design and refinement of future DAs for which planning approval will be sought (refer to **Appendix O** for details of meetings held with the DRP in relation to this SSD DA);
- Utilising a variety of architects in delivering the detailed design for future buildings within the Concept Proposal; and
- Utilising the Darling Harbour Live consortium's skills and proven track record to deliver world class convention, exhibition and entertainment facilities, a high quality, expanded and re-invigorated public domain, and a new neighbourhood with a vibrant and exciting mix of commercial, residential, and retail uses.

## 5.6 Built Form

The DHDP does not provide controls for building height, floor space ratio or setbacks within Darling Harbour. Accordingly the Concept Proposal has been designed to respond to the desired future built form of the Precinct as outlined in the Preferred Master Plan.

The Concept Proposal will provide a built form that is responsive to the context and characteristics of the site, including existing built form, the character of surrounding precincts, the location of the site within a transitional zone on the CBD fringe, and close proximity to public transport.

### 5.6.1 Building Height, Bulk and Scale

As illustrated in **Figure 47**, the Concept Proposal responds to the context of the Site's position at the CBD –edge, with the Darling Harbour topography and within the context of surrounding buildings.


1 The Haymarket

**Figure 47** – Elevated 3D view of The Haymarket (illustrative) from the east

The proposed building heights will contribute to the creation of a highly functional and aesthetically pleasing high density mixed use precinct, and are acceptable for the following reasons:

- The proposed building heights are compatible with heights of the existing buildings around the development site, with particular reference to 'The Peak' apartment building, which provides a vertical benchmark of 46 storeys (RL160). All proposed buildings are below the height of The Peak.
- The proposed heights reflect the City fringe location, and are suitable given the immediate proximity to high capacity mass transit (rail and light rail).
- The layout supports a positive urban design outcome in terms of the interface between built form and public domain. Taller towers are setback from Haymarket Square to ensure adequate solar access and create a sense of enclosure for the Site.
- An intermediate scale is proposed around Haymarket Square which provides a civic scale, and reinforces the significance of this key component of the public domain.

- The Concept Proposal promotes legibility and wayfinding by locating towers at key gateways to the Site, more specifically:
  - SW3 and SE1 form a gateway entrance to 'The Boulevard', ensuring this key location is easily located from the south.
  - SW1 acts as a landmark when approached from the west, in particular those approaching from The Goods Line and MacArthur Street.
  - NE3 acts as a landmark when approached from the north-east, particularly Goulburn and Factory Streets.
- Taller buildings are principally oriented to the north to ensure maximum solar access and outlook, whilst providing for view sharing for surrounding developments.
- Taller buildings are provided without a setback from the podium level, providing a striking built form that responds to its Global City context. Future buildings are to be given a human scale by clearly defining the ground plane from the podium and the podium from the tower (through the provision of a re-entrant/accent/shadow line at the podium level) along with differentiation in materials (to be detailed within Stage 2 DAs).
- The arrangement of the buildings above podium level provides suitable building separation and maximises solar access and outlook.
- The siting of the proposed towers provides for building separation that aims to support view sharing, and provide privacy and amenity benefits for future residents. Although some of the proposed envelopes do not meet the minimum separation requirements of the RFDC, the indicative internal apartment layouts provided in the Design Report (**Appendix J**) suggest that the intent of the RFDC guidelines can be readily achieved by the detailed designs and their positioning within the approved envelopes.
- Visual analysis of the proposed built form at Section 5.6.5 demonstrates that the proposed building heights are capable of integration into the built form typology of the locality.

### 5.6.2 Building Framework

The following design elements of the street layout and building footprints within the Concept Proposal contribute to the future built form qualities of the Site:

- The Concept Proposal adopts the principles of perimeter edge planning, which preserves the amenity of public domain and responds to the City context of the Site.
- High quality public domain and landscaping is focussed at the heart of the Site, which reinforces its importance in providing amenity benefits.
- The alignment of The Boulevard is contiguous with the PPP Site, and is reinforced within The Haymarket by the siting of the future built form. The Boulevard will provide a strong visual connection between The Haymarket and the wider Darling Harbour Precinct.
- The podium levels and the potential provision of retail and commercial uses on lower levels will provide human scale and break up the massing of the built form. At the Site perimeter, high-rise buildings align with the building line, responding to the City context.
- The arrangement of the buildings across the Site provides good separation, encourages natural ventilation, and maximises solar access and outlook.
- Laneways are provided as a direct response to the fine grain development patterns found in the neighbouring Chinatown and Ultimo precincts. Leading from the Site perimeter to Haymarket Square, these laneways create a point of difference in the urban experience and contribute to a sense of arrival when opening up to Haymarket Square.

## 5.6.3 Building Separation and Visual Privacy

The Residential Flat Design Code (RFDC) recommends a range of building separation distances depending on the height of residential buildings. The separation distances increase, or are staggered as height increases.

These recommended controls are framed around the objectives of maintaining acoustic and visual privacy; controlling adverse overshadowing impacts; promoting daylight access, and providing for adequate open space and deep soil zones within a site.

**Figure 48** illustrates the minimum building envelope separation distances to be achieved under the Concept Proposal above podium level. The proposed minimum building separation distances are based on the indicative design scheme. It is noted that building separation will be assessed as part of the Stage 2 DAs, and that the assessment will be based upon the future buildings and not the Concept Proposal envelopes.

The plans reveal some areas of variation with the building separation "Rules of Thumb" contained in the RFDC which are discussed below.

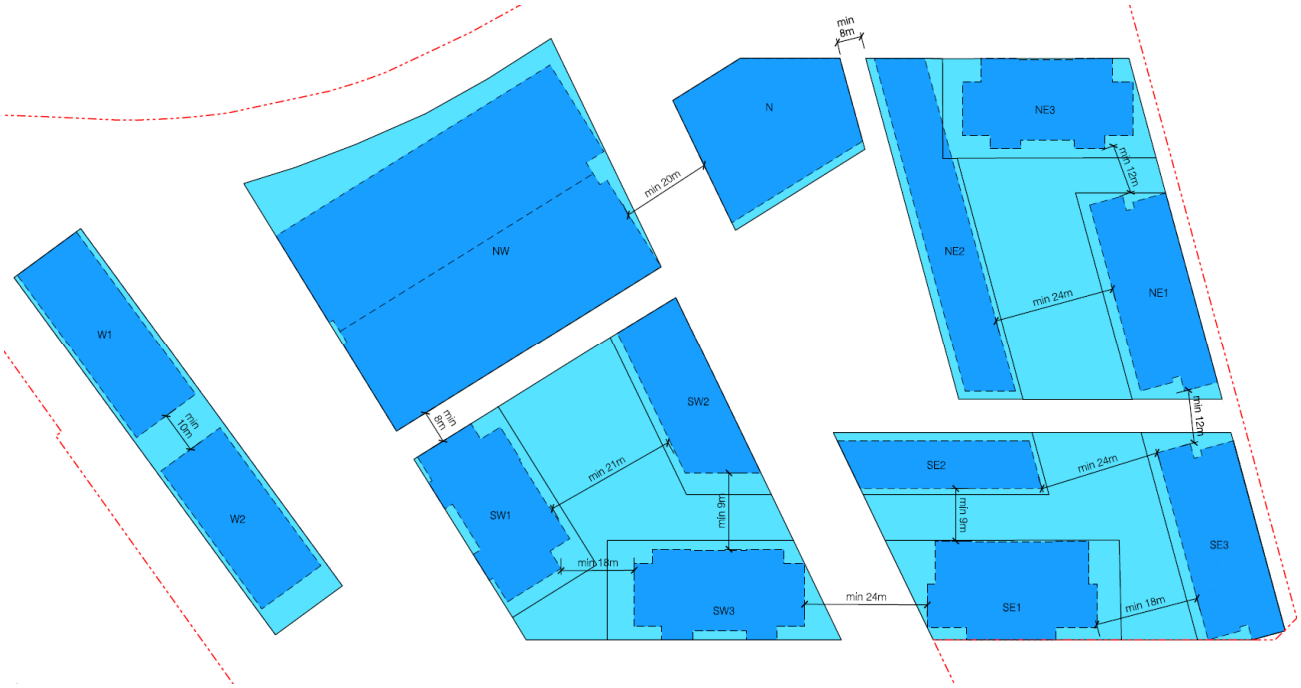


**Figure 48** – Minimum separation distances above podium

Notwithstanding the numerical variations from the recommended separation distances, it is considered that the proposed separation distances are suitable given that Concept Proposal is able to meet the key objectives of the requirement as follows:

- The building separation distances do not affect the ability of the indicative floor plates to demonstrate compliance (from a whole of precinct perspective) with the daylight access 'Rule of Thumb' under the RFDC.
- The Concept Proposal minimises overshadowing impacts to key areas of the public domain through the use of podiums and setbacks from Haymarket Square. These break up the scale of development when viewed from key areas of the Public Domain, reducing perceived bulk at the 'human scale'.
- Adequate open space and deep soil zones can be provided across the Site.

It is also noted that the separation distances between the proposed building envelopes and existing developments are generally able to comply with the provisions of the RFDC. However, it is anticipated that there may be some minor non-compliance in the separation distance between the North-East Plot and existing development at 68 Harbour Street (the Holiday Inn). This noncompliance is only applicable to apartments on Levels 9-12.

Where variation in building separation is sought, the Stage 2 DAs may rely on design features to protect visual privacy measures, such as:

- the placement of highlight windows;
- the orientation of apartments (and living areas in particular);
- the use of privacy screens;
- offsetting of balcony areas; and
- indicative floor layouts that are strategically orientated to provide privacy between apartments by avoiding overlooking.

### 5.6.4 Building Depth

In regards to building depth, the RFDC suggests a maximum internal plan depth of 18 metres from glass line to glass line to promote the use of dual aspect apartments.

The objectives of the RFDC relative to building depth are designed to ensure that the spatial arrangements of apartments are functional and well organised and that they provide for access to natural light and ventilation to provide high standards of residential amenity.

The proposed building envelopes (above podium) incorporate relatively minor variations to the maximum building depth recommendation as follows:

- NE1: 21m
- NE3: 24m
- SE1: 24m
- SE3: 21m
- SW1: 24m
- SW2: 19m
- SW3: 24m
- W1: 20m
- W2: 20m

The Concept Proposal seeks approval for the above mentioned building envelopes. It should be noted that floorplates in the detailed designs are likely to be below the maximums set above. This may result in additional compliance with the 'Rule of Thumb'.

The proposed building envelope depths are considered to be acceptable given that the Concept Proposal is able to meet the key objectives of the RFDC recommendations. More specifically:

- The building depths do not preclude the future buildings from achieving compliance with the solar access 'Rules of Thumb' from a whole of precinct perspective.
- The proposed building envelopes will achieve a high standard of residential amenity.

- The extent of building depth variation is minor (generally being between 2m and 6m) and is considered to be acceptable given that the indicative scheme has demonstrated compliance with other key RFDC objectives.

The indicative floor plates also demonstrate that future residential buildings can be designed in a functional and well organised manner. This will provide additional opportunities for amenity benefits to be incorporated into the detailed floor plate designs.

### 5.6.5 Visual and View Impact Analysis

A Visual and View Impact Analysis has been prepared by JBA and is included at **Appendix N**. The methodology for the analysis is detailed within the Report.

To support the visual analysis key public domain views, view corridors and public vantage points within and surrounding the SICEEP Site have been identified. Photomontages have been prepared for a total of 27 public domain views and vantage points in the following general locations:

- King Street Wharf;
- Darling Harbour East;
- Darling Harbour West;
- Tumbalong Park;
- Bathurst, Liverpool and Goulburn Street Corridors;
- Quarry, William Henry and Macarthur Street Corridors;
- Southern Precinct;
- Darling Drive;
- Pier Street;
- Pyrmont Street; and
- Ian Thorpe Aquatic Centre.

The selection of vantage points has also had regard to the location of existing heritage items within and in the vicinity of the site that are visible from the public domain including:

- Chinese Garden of Friendship, Hay and Pier Streets;
- Darling Harbour Rail Corridor;
- Darling Harbour Water Feature;
- Pumping Station No.1;
- Powerhouse Museum; and
- Pyrmont Bridge.

Seven key buildings in the vicinity of the SICEEP Site have been identified as being impacted or potentially impacted on by the SICEEP Project in terms of private views. A view impact analysis is provided for each of these key buildings:

- Novotel Sydney Darling Harbour;
- 18-20 Allen Street, Pyrmont;
- Darling Court;
- Oaks Goldsbrough Apartments;
- Bullecourt Apartments;
- The Peak Apartments; and
- The Quay (under construction).

The analysis considers the visual and view impacts in relation to both the PPP and The Haymarket SSDAs. It also provides a preliminary analysis of the cumulative visual and view impacts of the overall SICEEP Project on a site wide basis including the future International Convention Centre (ICC) Sydney Hotel component. The visual and view impact images included at **Appendix N** that show the future ICC Sydney Hotel are for information only and do not form part of the SSDA for which approval is sought. The detailed assessment of the visual and view impacts of the ICC Sydney Hotel component of the SICEEP Project is to be the subject of a separate future DA.

The urban design principles for the SICEEP Project have sought to preserve significant public domain street corridors, as well as to protect and reinforce views to and from key public domain open spaces, and significant heritage buildings and structures within the public domain.

The urban and architectural design approach has been to both ensure that important views to public buildings, along major streets and to the harbour are not obscured, and to enrich the existing public domain through improvements in visual connectivity within and to the site and maintaining lines of sight wherever possible. In the planning for the SICEEP Project emphasis has been placed on the retention and protection of key views and vistas at the street level and generally from or within the public domain from encroachment by the new building forms, and to site and design the new buildings to maintain and open up views from the public domain to Sydney Harbour. Consideration has also been given to views and outlook available from existing private residences and other adjoining development.

With respect to the public domain the Visual and View Impact Analysis demonstrates that:

- Existing important views from the public domain at street level to the most significant and highly utilised public domain spaces within and in close proximity to the SICEEP Site are retained and / or enhanced through the creation of new or re-aligned visual links;
- Existing public domain views to key heritage buildings and places are retained, including to the Darling Harbour Water Feature, Chinese Garden of Friendship, and Pumping station No.1 in the southern part of the Site; visual connectivity to other heritage items in the vicinity is not generally affected by the proposed new built form;
- The proposed new buildings within the SICEEP site will frame existing public domain views and enclose streets creating a pedestrian scale. They will also contribute to a new southern CBD skyline and redefine the skyline on the western side of Darling Harbour;
- Continuous and unobstructed sightlines to the foreshore are maintained to the public, and views to, through and over the Site are retained such that the public / pedestrians will continue to enjoy the visual qualities of the harbour and its foreshores. The principle east west public domain view corridors providing both physical and visual access to the foreshore are retained;
- The continuation of existing streets into and through the SICEEP Site will establish new sightlines, visual permeability and views and vistas throughout the precinct.

Where the proposed new built form impacts on or reduces partial existing public domain views towards the Sydney CBD skyline, these impacts are considered to be minor and do not detract from the overall visual connectivity for pedestrians in the public domain nor result in an adverse impact. Generally, the affected vantage points are not key places for pedestrians to stop and view the CBD or its skyline, and the wide range of different viewing points available within the Darling Harbour precinct and its approaches will continue to provide for variety and interest in views, vistas and sightlines available to pedestrians approaching and moving through the precinct from the north, south, east and west.

Low, medium and high level views of the sky along streets and from public domain places (squares, parks etc) are retained, created or enhanced in a variety of contexts. The siting and design of the new buildings within The Haymarket has sought to preserve important views of the Sydney CBD from encroachment and to both maintain and open up significant views from the public domain.

With respect to the impact of The Haymarket development on private views the Visual and View Impact Analysis identifies that:

- The siting and design of new built form elements has sought to respond to view sharing principles and to provide for an appropriate outlook from adjoining private development to the greatest extent practicable in a highly urbanised inner city environment;
- The Haymarket development will result in no or little impact on available private views to existing residents of the Oaks Goldsbrough, Darling Court and 18-20 Allen Street, or to the Novotel hotel building;
- The impacts associated with The Haymarket development are considered to continue to provide for a reasonable outlook from apartments that may nonetheless have a change in 'view', consistent with current planning objectives, strategies, principles and development controls for the CBD which recognise that outlook, as distinct from views, is the appropriate measure of residential amenity within a global CBD context;
- There will be a reduction in views available from, in particular, the lower and middle levels of The Peak in certain locations resulting from the creation of an entirely new urban precinct in The Haymarket where there are only currently low rise buildings in existence. The interruption of existing views that are currently unimpeded by any development is inevitable in this context. Notwithstanding, the proposed development has accommodated view sharing between and above buildings, and has sought to retain a combination of water, horizon and CBD skyline views by the positioning of the building footprints and configuration of the public domain connections through the site.
- The Haymarket will have limited impact on the current northerly views towards Darling Harbour at the high rise and medium rise levels of The Quay Apartments (under construction). The existing field of view will be reduced in part however views will generally be retained across Sydney Harbour and there will be no impact on the easterly views up Ultimo Road towards the CBD.

It is considered that the proposed The Haymarket proposal has achieved a reasonable balance between the protection of private views and the protection of public domain views in the delivery of a new world class entertainment precinct on the foreshore of Darling Harbour.

Further opportunities are available at the detailed design stage of each building within The Haymarket precinct to provide for view sharing, having regard to the detailed design guidelines that have been proposed as part of the concept.

Taking into consideration the overall SICEEP Project including the future ICC Sydney Hotel that will be the subject of a future SSDA, the development proposed as part of The Haymarket is acceptable in terms of visual and view impact.

### 5.6.6 Reflectivity

Reflectivity analysis will be undertaken for the detailed designs and submitted with the Stage 2 DAs. It is anticipated that all facade glazing will have a normal specular reflectivity of visible light of 20% or less (as required) to avoid adverse glare to occupants of neighbouring buildings. Such measures will ensure that the future buildings will not cause adverse solar glare to vehicle drivers or pedestrians in any of the surrounding areas or to the occupants of other residential buildings.

## 5.7 Internal Residential Amenity

The built form of the proposed development promotes design excellence and is appropriate to the site with the ability for the design of the future residential apartments defining the public domain and positively contributing to the character of the streetscape. The proposed building envelopes support a high level of internal amenity and outlook, particularly in the context of the site's inner city location.

A preliminary assessment of the Concept Proposal against the key Natural Ventilation, Solar Access and South Facing Apartments RFDC 'Rules of Thumb' is provided below.

#### Natural Ventilation

The Natural Ventilation 'Rule of Thumb' requires that 60% of apartments to be naturally cross ventilated. The spatial layout of the Concept Proposal building envelopes aim to maximise the number of apartments that will achieve cross ventilation and indicative floor layouts (typical level above podium) have been prepared to demonstrate likely cross ventilation for the development (refer to **Figure 49**). **Figure 49** indicates that on a typical level above podium the illustrative scheme is able to accommodate more than half of apartments on a corner or with dual aspect to enable natural cross ventilation.

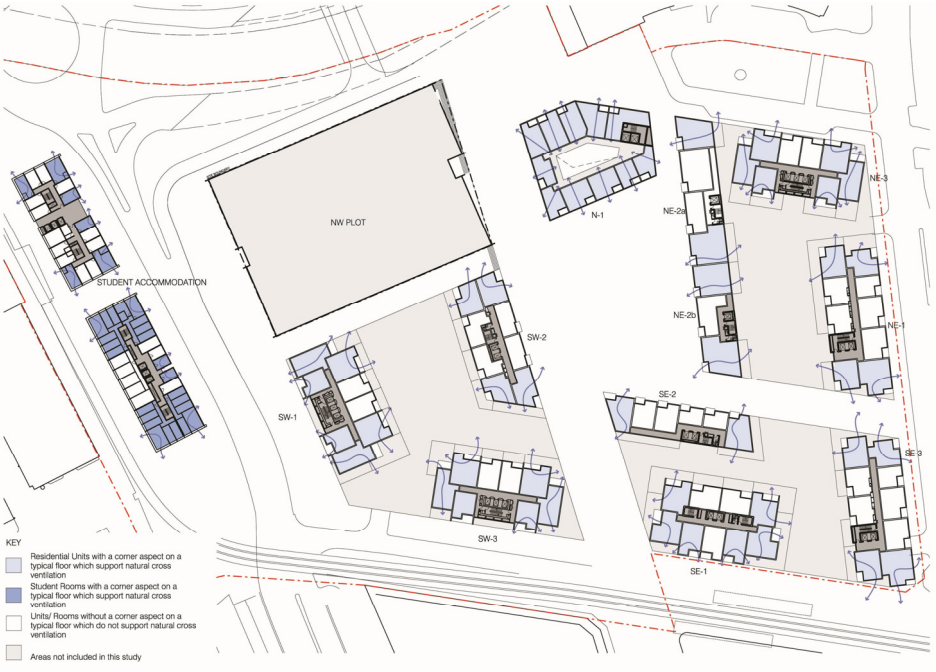


**Figure 49** – Compliance of illustrative typical floor layouts with cross ventilation requirements

The indicative scheme reveals that from a whole of precinct perspective 43% of apartments (with 64% for student accommodation) would achieve natural cross ventilation. Whilst numerically this figure is below the RFDC 60% 'Rule of

Thumb', an acceptable level of ventilation will still be achieved for future dwellings especially given exposure to higher wind speeds at elevated locations in buildings. It should be noted that the upcoming SEPP 65 Review considers all units above nine (9) storeys to comply with cross ventilation as a result of wind pressures at higher elevations. This methodology would substantially increase the number of compliant apartments across the Site.

## Solar Access

The RFDC 'Rule of Thumb' for solar access states that living rooms and private open spaces for at least 70% of apartments in a development should receive a minimum of three hours direct sunlight between 9am and 3pm in mid-winter. In dense urban areas such as The Haymarket, a minimum of two hours is acceptable. **Figure 50** demonstrates the indicative scheme's compliance (typical level above podium) with the 'Rule of Thumb'.


**Figure 50** – Solar access at the winter solstice

Solar access modelling of the indicative layouts has been undertaken and indicates up to 70% of residential apartments from a whole of precinct perspective will receive at least two (2) hours of solar access at the winter solstice. Moreover, 90% of student accommodation rooms are expected to achieve compliance.

## South Facing Apartments

The RFDC recommends a maximum of 10% of dwellings to have a single southerly aspect (south-west to south-east). **Figure 51** demonstrates the indicative scheme's (typical level above podium) compliance with the 'Rule of Thumb' and how it seeks to minimise the number of south facing apartments.


**Figure 51** – South facing units

From a whole of precinct perspective, approximately 17% of apartments and 4% of student accommodation rooms in the indicative design are single aspect and south facing.

The RFDC control is designed to supplement the direct sunlight access control above. The objective of the "Rule of Thumb" is to maintain reasonable daylight access, whether this be direct sunlight or diffuse light from the sky.

Notwithstanding that up to 17% of apartments across the precinct in the indicative scheme will contain south facing single aspect apartments it is considered that suitable daylight access will be afforded to the development as:

- Single aspect south facing apartments are confined to future buildings NE3, SE1, and SW3. Residents in south facing apartments in building NE3 will benefit from views overlooking the landscaped podium level, whilst residents in Buildings SE1 and SW3 will benefit from district views to Broadway and beyond.
- The majority of south facing dwellings do not face another apartment building, meaning ample diffuse daylight will be available to these apartments despite their southern orientation.

On balance, therefore notwithstanding the technical variation from the RFDC "Rule of Thumb" it is considered that the single aspect south facing apartments will receive adequate diffuse daylight and have other factors such as views that enhance amenity. Overall access to direct sunlight due to resident access to significant open spaces within and surrounding the development should also be considered.

## Summary

The application of the numeric RFDC 'Rules of Thumb' is always a challenge in relation to infill urban renewal projects such as that being proposed by this DA. Further, the provisions of the RFDC may not be applied equally, or weighted the same, in different contexts. For example, a suburban context would have a different set of amenity considerations to a higher density urban context.

In addition, by living in an urban environment, amenity factors such as access to jobs, transport, retail and services mean a resident is often willing to trade-off an apartment with full daylight access/ventilation for these other benefits.

The Concept Proposal is considered to deliver building envelopes that support residential development across the Site that is able to achieve acceptable and reasonable levels of internal amenity.

## 5.8 Public Domain and Landscaping

The Public Domain Concept for The Haymarket has been prepared by Hassell and is included as an appendix to the Design Report at **Appendix J**. The Public Domain Concept Plan has been prepared in accordance with the Infrastructure NSW Urban Design and Public Domain Guidelines, as required by the DGRs.

More than 20,000m$^2$ of public open space will be provided across the Haymarket Site, highlighting the important and central role that the public domain will have on the success of the precinct. The envisaged public domain treatments will deliver a range of important public benefits for the Site and will encourage residents and visitors to engage with the open space, new streets and laneways provided.

The majority of the public domain is consolidated within the core of the Site, and is centred on 'Haymarket Square' and 'The Boulevard' (refer to **Figure 52** below).


**Figure 52** – Public Domain Concept

**Source:** HASSELL

The design of Haymarket Square allows for retail and food tenancies with alfresco dining around its perimeter, and deckchairs, lounges and movable other items of furniture within its core to assist the formation of an 'outdoor lounge'. These features will encourage uses into the space for extended periods and ensure the space is more than a transition space. In light of the above measures, it is anticipated that Haymarket Square will become the defining element of 'The Haymarket' (refer to **Figure 53**) and the 'place to be' for residents, workers, and visitors alike.

**Figure 53** – Artist impression of Haymarket Square and The Boulevard looking south

**Source:** Virtual Ideas

Water is a common theme within the Public Domain Concept Proposal, which incorporates a range of water and water interpretative elements. Within Haymarket Square a central water feature is identified as a potential feature – with indicative designs reflecting a 'fracture' reminiscent of Dickson's Dam. The feature could potentially be complemented by fountains encouraging children and families to engage with and take ownership of the space.

Haymarket Square, and the laneways and streets that surround it, are proposed to be planted with deciduous trees to provide solar access in winter and shade in summer. This will encourage people to make use of the space by providing user comfort throughout the seasons.

The Boulevard is a new pedestrian spine that links The Haymarket with Tumbalong Park and through to Darling Harbour. A continuous Eucalyptus canopy is to be provided on the eastern side of The Boulevard, broken only at key locations along the route. Seating is expected to be provided within the shaded areas, with the potential for lighting to be included to convey a festival character at night. These public domain treatments will ensure that users of the space will have adequate shade and opportunities for rest, and demonstrates a high level of amenity.

To the west of Darling Drive buildings will be surrounded by landscaping and a new park (MacArthur Place) is planned to be provided. The public domain treatments proposed for this location effectively balance the need to provide a transition space between the Goods Line and The Haymarket with public safety in a highly trafficable area.

In addition to the above key elements, the Public Domain Concept includes the following elements that will provide public benefits:

- The provision of vehicular access only around the perimeter of the Site, resulting in a highly pedestrianised environment with provision for emergency access to The Boulevard;
- Substantial planting to Darling Drive, improving outlook for occupants of the Western Plot;
- The accommodation of overland flow paths and WSUD measures to mitigate the impacts of stormwater events;

- Incorporation of active streets/laneways that support a vibrant and exciting new addition to the CBD/Haymarket urban grain;
- The reinforcement of the hierarchy of spaces, improving legibility and wayfinding within the Site;
- The use of high quality and robust materials to deliver superior design outcomes;
- Sufficient provision of seating and shading for user comfort;
- Opportunities for play and interaction with the built environment; and
- Opportunities to accommodate heritage interpretation strategies.

In light of the above, the Public Domain Concept is considered to be acceptable, and establishes a strong public domain framework for the future Stage 2 DAs. It is intended that the designs will be further developed in accordance with the Public Domain Concept and the supporting Design Guidelines prepared by DCM (refer to **Appendix J**).

### Private and Communal Open Space

The Haymarket Site is within a higher density urban area on the edge of the CBD and will provide a high level of residential amenity through the means described above and through the provision of open space in the following manner:

- Each future apartment will incorporate private open space areas in the form of balconies which achieves ample access to sunlight and natural ventilation;
- Green roofs will be investigated in future DAs;
- The site benefits from the immediacy to (existing and future) high quality public domain, including access to the new Haymarket Square, Tumbalong Park, Cockle Bay, the Goods Line, the Chinese Garden of Friendship, and more broadly Belmore Park and Wentworth Park; and
- Podium communal open space areas for residents are anticipated to be provided as per the indicative design scheme.

## 5.9 Overshadowing

A Shadow Study of the indicative design has been undertaken by Arterra and included within the Design Report prepared by Denton Corker Marshall (refer to **Appendix J**).

It is noted that there are no overshadowing controls applicable to the proposed development, however the City of Sydney Development Control Plan 2012 is applicable elsewhere in the Sydney LGA and prescribes the following:

- A minimum of 70% of dwellings adjacent to the proposed development must achieve a minimum of two hours direct sunlight between 9am and 3pm on 22 March and 21 June on to at least 1m$^2$ of living room windows and a minimum 50% to private open space.
- No additional overshadowing should occur onto a neighbouring dwelling that currently receives less than two hours of direct sunlight to habitable rooms and 50% of the private open space between 9am and 3pm.

### Potential Impacts of the Concept Proposal

The shadow diagrams indicate that the Concept Proposal will result in some additional overshadowing during the equinox and winter solstice, more specifically:

- to residential dwellings in Ultimo to the west of the former tram sheds in the morning during the equinox and winter solstice;

- to the powerhouse museum courtyard in the morning during the equinox and winter solstice;
- to Hay Street throughout the day during the equinox and winter solstice;
- to UTS Building throughout the day during the equinox and winter solstice;
- to the communal recreation podium at the Peak Apartments in the late afternoon during the equinox and throughout the day during the winter solstice; and
- to commercial buildings east of Harbour Street in the late afternoon during the equinox and winter solstice.

The impacts to residential dwellings in Ultimo are limited to the early morning. These residences are free from shadows cast by the Concept Proposal by mid-morning during the equinox and by late morning during the winter solstice. Accordingly the proposed impacts are minor and generally comply with the requirements of the Sydney DCP 2012.

The Peak Apartments residential tower (north and west facades only) would be partially overshadowed by the Concept Proposal in the late afternoon at the winter solstice. The landscaped podium will continue to receive at least 2 hours of daylight access, assuring compliance with the intent of the DCP.

Whilst there are significant overshadowing impacts to the Powerhouse Museum courtyard, it is noted that the playground is identified as potentially being redeveloped in the future for a non-residential use.

In light of the above, the Concept Proposal is not likely to create any significant overshadowing to adjoining private residences, and generally complies with the controls of the Sydney DCP 2012.

## Overshadowing within the Site

**Public Domain**
The shadow study identifies that the majority of shadows cast by the Concept Proposal would fall within the Site and the adjoining public streets. Accordingly there are potential overshadowing impacts to the public domain and the shared open spaces proposed for the podium levels.

Haymarket Square and The Boulevard are the principal areas of public domain proposed for the Site. The shadow study demonstrates that these areas will receive sufficient solar access during the equinox and winter solstice. This level of solar access is considered to be acceptable given that these areas are largely free of shadows during the middle of the day when the space is most likely to be utilised. Furthermore, Haymarket Square is to be planted with deciduous trees, which will ensure the area receives maximum solar access during the winter months.

**Residential communal open space**
Residential communal open space is proposed for the podium levels of the North-East, South-East, South-West Development Plots. The shadow study reveals that the podium levels will be overshadowed at varying levels across the day. Whilst the majority of podiums do not receive solar access to at least 50% or more of their area during the winter solstice, this is considered to be acceptable for the following reasons:

- All podium levels will receive good solar access during the summer months when the communal areas are more likely to be utilised;

- The building envelopes have been positioned in a way that enables achievement of the RFDC 'Rules of Thumb' for solar access; and
- The Site has excellent access to a range of public domain spaces in the locality that will not be overshadowed during winter and accordingly will provide significant amenity benefits for future residents, including the proposed Haymarket Square, Tumbalong Park, the Cockle Bay foreshore, and The Goods Line (proposed separately).

In light of the above, the overshadowing impacts of the Concept Proposal are considered to be reasonable and acceptable, especially given the nature of the development being an infill urban renewal project located on the CBD fringe. Additional detailed shadow analysis will be submitted with the detailed designs proposed for future DAs.

### 5.9.1 Wind Impact

A Wind Impact Assessment of The Haymarket Concept Proposal has been carried out by Cermak Peterka Petersen (CPP) and is included as **Appendix P**. The report is qualitative, and draws conclusions based on the prevailing wind conditions and the results of quantitative wind tunnel tests available for the separate PPP proposal.

The report finds that the proposed building envelopes may result in downwash from taller buildings, and that windy conditions could be expected at ground level at the windward corners of the buildings. Channelling wind flow could also be experienced at some locations without appropriate amelioration. Notwithstanding this, it is anticipated that the Haymarket Square will receive shielding from the prevailing winds, and is expected to be suitable for pedestrian sitting activities and outdoor dining.

#### Mitigation Measures

Notwithstanding the predicted wind impacts of the taller buildings, the report notes that the strength of the conditions in windy locations will depend on the final architectural form of the towers and other structures, and will need to be confirmed through wind tunnel testing as part of the Stage 2 DAs. CPP concludes that a range of mitigation measures can be implemented to reduce the potential wind impacts including awnings, fins and landscaping. Such measures, where required, will be detailed within future Stage 2 DAs.

## 5.10 Transport and Accessibility

Hyder Consulting was engaged to prepare a Transport and Traffic Impact Assessment, which is included as **Appendix Q**. The Assessment has been prepared to fulfil the requirements of the DGRs and is in accordance with the NSW Department of Transport's Draft Interim Guidelines on TMAPs and the RMS Guide to Traffic Generating Developments. The comprehensive assessment presents a summary from a study completed for the Whole of Precinct with specific reference to the proposed Haymarket proposal, also draws upon a number of previous studies prepared on behalf of the NSW Government.

### 5.10.1 Traffic Generation

A mirco-simulation model (AIMSUN – Advanced Interactive Mircoscopic Simulator for Urban and Non-Urban Networks) has been developed for the core study area and provides the ability to model the movements of individual vehicles and their interactions with other traffic and network constraints. Detailed SIDRA modelling has also been undertaken to confirm the outcomes of the mirco-simulation modelling and to determine future intersection performance at key locations.

Peak traffic generation for the SICEEP Project as a whole has been estimated by Hyder to be:

- PPP - 2,276 estimated vehicle trips per hour (PM Peak).
- The Haymarket - 372 estimated vehicle trips per hour (based on indicative design scheme and apportioning zero trips for student accommodation).
- Hotel Complex (subject of a separate DA) - 0 estimated vehicle trips per hour.

Hyder advise that the majority of trips for both the Hotel Complex and student accommodation will comprise walking, public transport, taxi, coach, mini bus etc.

It is noted the Sustainability Plan prepared by Lend Lease and included as **Appendix L** identifies that future residents of the Haymarket are likely to have lower car usage than average, owing to a range of factors. These include:

- the close proximity of the Site to the Sydney CBD;
- local amenity and facilities provided within walking distance of the precinct;
- access to public transport; and
- low parking rates.

Based on these site characteristics, Lend Lease estimate that future residents will drive approximately 1.7km per person per day, which is 90% lower than the Sydney Metropolitan average.

An assessment of future key intersection performance was undertaken by Hyder using both SIDRA modelling (where a Level of Service rating is given based on performance) and AIMSUN modelling. The SIDRA modelling results indicate that the impact of the overall SICEEP development does not impose conditions on the intersections worse than what would have otherwise occurred through existing traffic. The results do acknowledge that some critical movements (not all of which are attributable to traffic generated by the overall SICEEP development) necessitate improvement measures in order to achieve satisfactory intersection performance (these are predominately attributed to the PPP works).

More specifically to The Haymarket, the Assessment identifies:

- that Darling Drive and Harbour Street will continue to have capacity to accommodate the existing traffic plus additional traffic generated by the SICEEP development;
- that the proposed extension to Exhibition Place, which will service The Theatre (proposed separately as part of the PPP scope of works) and the North-West Plot will significantly improve the operational performance of adjacent intersections, including Darling Drive/Pier Street, and Pier/Goulburn/Harbour Streets; and
- that the impact of The Haymarket development does not impose conditions on the intersections worse than what would have otherwise occurred through existing traffic; and
- that the predicted peak traffic flows at relevant intersections are unlikely to result in queues that would block the egress path from the driveways proposed for Harbour and Hay Streets.

## Mitigation Measures

Hyder advise that the following improvement measures should be considered in order to achieve satisfactory performance for intersections directly adjacent the Haymarket Site:

- minor adjustment to the signal layout and operation to the Darling Drive / Hay Street intersection; and
- signal coordination of the Harbour Street / Pier Street / Goulburn Street intersection with adjacent signals.

## 5.10.2 Car Parking

The provision of car parking across the SICEEP Site has been carefully considered to ensure it supports sustainable initiatives/transport measures that encourage the uptake of non-car mode transport and reduce dependency on private vehicles. A further critical aspect to the provision of car parking is to ensure that it provides value for money to the NSW Government. Across The Haymarket there will be approximately 1,400 car parking spaces provided (a reduction of some 500 spaces compared to the existing provision of parking).

### Residential

As previously stated, the Concept Proposal seeks approval for parking rates to be adopted in future Development Applications:

- Zero (0) spaces per studio apartment;
- Maximum one (1) space per two (2) one bedroom apartments;
- Maximum one (1) space per one bedroom + study apartment, plus one (1) additional space per five (5) apartments;
- Maximum one (1) space per two bedroom apartment, plus one (1) additional space per five (5) apartments; and
- Maximum two (2) spaces per 3 + bedroom apartment.

These rates are considered to be appropriate having regard to comparable urban renewal projects in the area and based on Lend Lease's experience in developing and selling apartments within the locality.

Further, the proposed parking provision and rates comply with RMS Guidelines (Guide to Traffic Generating Development). Residential parking is to be accommodated within the podiums (i.e. above ground parking) of the North-East Plot, South-East Plot and South-West Plots. No parking is proposed for the future residential buildings (student accommodation) within the Western Plot (Darling Drive).

In addition, Lend Lease is proposing to investigate incorporating car share spaces within both the public domain and private car parking areas. It is anticipated that approximately 14% of households would take up car share, requiring approximately 20 car share spaces.

### Public Car Park

The Concept Proposal includes the provision of an above ground public car park (car parking station) within the North-West Plot (providing approximately 400 spaces). This car park is intended to service visitors to the SICEEP Site, principally the core facilities.

### Commercial/Office

The indicative design scheme also separately provides for ancillary parking (in the order of 50 spaces) to service the non-residential (commercial office space) development within the North-West Plot. The provision of up to 50 spaces to serve a commercial development with a potential maximum GFA of 26,107m$^2$ is considered by Hyder to be appropriate and comparable to the nearby Darling Walk commercial office development.

### Retail + Student Accommodation

No car parking is specifically being proposed as part of the Concept Proposal to support the retail and student accommodation land uses. This is considered appropriate given the site's locational advantage of being in close proximity to existing public transport and active transport modes and it is anticipated to also mainly service the local areas surrounding the site whereby patrons will likely access the site via walking trips.

## 5.10.3 Road and Pedestrian Safety

Hyder has undertaken an analysis of crash data (supplied by RMS) for the period of 2007 – 2012 for key streets adjoining the SICEEP Site, being Harbour Street to the east and Darling Drive to the west. The results reveal there has been a reduction in incidents since a peak in 2009 and the majority of incidents involving pedestrians occurred along Harbour Street.

Hyder note that the proposed reconfiguration of Darling Drive and confinement of the loading activities away from Daring Drive will promote safety for pedestrians and cyclists. Further, the proposed new pedestrian crossing facilities, linking core facilities with the light rail, are located at reasonable distances from the loading dock access points to ensure proper sight lines are maintained for both pedestrians and truck drivers.

In terms of pedestrian safety on Harbour Street, Hyder note that the section between Hay Street and Goulburn Street was particularly problematic. This is considered to be a result of the one way directional flow of traffic, limited pedestrian crossings, and medium to heavy pedestrian activity due to proximity to Chinatown. The Concept Proposal is unlikely to result in additional safety issues as the driveways proposed for Harbour Street are left-in left-out and therefore unlikely to result in crash conflicts. The need for a more detailed road safety audit (to determine future measures to reinforce safety) will be considered as part of the detailed design phase.

Future proposals associated with the Chinatown Public Domain Plan include provision for an additional pedestrian crossing facility across Harbour Street south of Goulburn Street.

## 5.10.4 Pedestrian Network

The proposed pedestrian network builds on the initiatives introduced with the Goods Line (formerly known as the Ultimo Pedestrian Network) and the Chinatown Public Domain Plan and provides interfacing with the improved pedestrian network around South Darling Harbour. Aside from maintaining existing routes, the design will extend the Goods Line to Darling Drive to improve access and strengthen linkages between Central Station, the education precinct (UPS/TAFE), Haymarket, Chinatown from the south towards the Powerhouse Museum and Darling Harbour to the north. The reconfiguration of Darling Drive and the new pedestrian connections will also enhance accessibility to Quarry Street to the west and create new east-west connections through Tumbalong Place.

## 5.10.5 Cycle Network

The SICEEP Project aims to build upon the initiatives of the City of Sydney to improve connectivity within the locality with the cycle network and new public transport linkages. The SICEEP Project proposal will create new cycling routes through the public domain by:

- Extending the cycling route in an east-west direction and providing a new shared pedestrian and cycle pathway linking the Precinct to the west along the Pier Street corridor link and; and

- Enhancing the north-south connections at Quay Street to Harbourside via a through route between the core facilities and Tumbalong Park.

As part of the realignment and reconfiguration of Darling Drive, cycle connections will be enhanced via the dual lane two-way segregated cycle path on the west side of Darling Drive. Further connections to the existing routes will be provided through new linkages on the existing road network.

The Traffic Transport and Access Plan (included within **Appendix Q**) illustrates the proposed cycle connections and linkages.

## 5.10.6 Light Rail Interface

The Concept Proposal, through the re-alignment of Darling Drive and the proposed Western (Darling Drive) Development Plot, will result in an encroachment into land owned by Railcorp that is adjacent to the Light Rail Corridor. As the detailed design of the buildings and works evolve further consultation with TfNSW (Railcorp) will occur to ensure that the potential impacts on the light rail are addressed. Relevant future Stage2 DAs will provide necessary details and outline how impacts will be mitigated.

## 5.10.7 SICEEP Project TMAP Package of Measures

### Public Transport Initiatives

Current and future improvements to existing public transport services are being planned and implemented by Transport for NSW. The SICEEP Project will support this package of improvements and ultimately aims to increase the mode share for sustainable means of transport through the provision of sustainable transport information and the strengthening of site connectivity to public transport infrastructure.

### CityRail

Rail infrastructure initiatives focus on the existing rail system. The proximity of the existing rail stations puts the stations within walking catchment, and existing pedestrian linkages will provide improved connectivity. Improvements being planned by TfNSW to the rail network are aimed at providing better and more efficient services.

### Light Rail

The SICEEP Project incorporates improved connectivity to the Light Rail Stations on Darling Drive via new pathways and pedestrian crossing facilities on Darling Drive. These connections will enhance access to the light rail transport system, promoting patronage of the system and supporting the investment being made by the NSW Government in extending the light rail network (e.g. the Inner West Light rail extension project). The future addition to the Light Rail network from Circular Quay to the eastern suburbs will also significantly improve light rail linkages to the SICEEP Site.

### Bus Network

Proposals by the NSW Government to streamline the CBD bus network (achieving a more integrated transport solution to reduce congestion in the CBD) will create simpler, faster and better bus services.

### Taxis, Coaches and Buses

Further reducing the dependency of private vehicles across the SICEEP Site will be the provision of new drop-off and pick facilities for busses and coaches and taxis.

### Walking

The proposed north-south boulevard through the SICEEP Site and its connection with Quay Street and the UPN will foster improved pedestrian linkages between Darling Harbour and Central Station. To and from Town Hall station, connectivity can be improved focussing on the existing east-west crossings at Bathurst Street, Market Street, Liverpool Street, and Goulburn Street.

There is also considered to be benefits in focusing efforts on improving pedestrian access and desire lines to and from public transport nodes using existing facilities through interactive wayfinding and signage, coordination and pedestrian priority at signals and pathway enhancements.

### Cycling

The provision of new cycling facilities linking the SICEEP Site to the external cycle network and the installation of support facilities will encourage the use of cycle as an alternative to private car.

### Parking

Appropriate parking policies are to be incorporated in order to further reduce car mode split (and make sustainable means of transport more attractive), including:

- Reducing availability;
- Applying a pricing scheme to control the use of parking and discourage driving by both staff and visitors; and
- Carpooling measures to encourage high occupancy vehicles.

The provision of Variable Message signs (VMS) at key locations leading up to the SICEEP Site is also a critical feature to be adopted in order to direct traffic to suitable locations for parking, hence reducing travel time on the network and potentially road user delays.

### Intersection Improvements

Intersection operational performance can be improved through signal coordination and optimisation of the signal timings. Liaison with the Roads and Maritime Services to be undertaken to ensure that future traffic forecasted for the SICEEP Project are considered and measures can be put in place to aid in minimising intersection delays during specific time periods and on special days.

### Travel Behaviour Change

The main means of achieving behaviour change for travel to the SICEEP Site is to ensure that the required public transport services and infrastructure are made available (e.g. bus routes, light rail, rail, footpaths, cycle-ways), and then to ensure that the community knows of their existence, and the benefits to them of using the facilities. Travel plans will play a key role in supporting travel behaviour change.

## 5.11 Accessibility

An Access Review of the Concept Proposal has been prepared by Morris Goding Accessibility Consulting (MGAC) and is included at **Appendix R**. The report makes an assessment of proposal in terms of delivering equality, independence and functionality to people with disabilities, against the requirements of applicable Australian Standards, the Building Code of Australia 2013, the Commonwealth Disability Discrimination Act 1992 (DDA), and the DDA Access Code 2010 – DDA (Access to premises – Buildings) Standards 2010.

MGAC have assessed the individual components of the design based on the indicative layout included in the Design Report prepared by Denton Corker Marshall (see **Appendix J**). MGAC note that the Concept Proposal is capable of providing continuous accessible paths of travel for people with disabilities, and have determined that the indicative built elements demonstrate an appropriate degree of accessibility.

### Mitigation Measures

Subject to the mitigation measures detailed in the Access Review being adopted, the Access Review concludes that compliance with statutory requirements can readily be achieved. The recommendations of the Access Review are summarised in Section 6 of this EIS.

## 5.12 Non-Indigenous Heritage

A Statement of Heritage Impact (SOHI) has been prepared by TKD Architects (see **Appendix C**) to assess the potential impacts the proposed development will have (if any) on the heritage significance of the Site and heritage items in the vicinity of the Site. TKD Architects' report follows the general guidelines for Statements of Heritage Impact set out in the NSW Heritage Manual and has been prepared in accordance with '*The Conservation Plan*' by Dr J. S. Kerr, the ICOMOS '*Burra Charter*', and the DGRs.

The SOHI identifies those heritage items that are present on the SICEEP Site, and its vicinity. The Hay Street Stormwater Channel (Hay Lackey Drain) (State Significance), and the Pier Street Precinct Archaeological Remains (State significance), are the only heritage items identified as being located within the Site. Given that these are archaeological items, the potential impacts of the Concept Proposal to these items are assessed in Section 5.13 below.

The following heritage items are identified as being located within the vicinity of the Site:

- Darling harbour Rail Corridor (State significance);
- Powerhouse Museum (local significance);
- Ultimo Post Office (State significance);
- Former Hydraulic Pumping Station No.1 (the Pumphouse) (State significance);
- 68 Harbour Street (local significance); and
- Market City Façade (State significance).

### Potential Impacts of the Concept Proposal

The proposed Concept Proposal will result in major changes to the existing built form, and therefore has the potential to impact upon the setting of heritage items within its vicinity. TKD Architects have assessed the potential impacts to specific heritage items as follows:

**Darling Harbour Rail Corridor**

The SOHI finds there will be some impacts to the Darling Harbour Rail Corridor resulting from future buildings in the Western Plot (Darling Drive). The two proposed buildings will be situated immediately to the east of the Rail Corridor, and may impact on the open character of the Corridor. Notwithstanding this, the SOHI acknowledges that the setting of the Rail Corridor will be enhanced by the continuation of the Ultimo Pedestrian Network and associated landscaping works north to Darling Harbour. On balance, the potential impacts are considered acceptable.

**Powerhouse Museum**
Future buildings in the Western Plot (Darling Drive) are also expected to impact the Powerhouse Museum, by blocking views to this heritage item from the east. However, it is noted that the effected facade of the Museum is utilitarian, commensurate with its original frontage to the former Darling Harbour Goods Yard, effectively reducing the significance of any impact.

**Ultimo Post Office**
The SOHI determines that there will be no impact on the Ultimo Post Office, which is located at some distance from the site and is screened by buildings associated with the Powerhouse Museum.

**Former Hydraulic Pumping Station No.1 (the Pumphouse)**
The SOHI has assessed the potential impact of the Concept Proposal (particularly the North Plot) on the Former Hydraulic Pumping Station, and determined that the Concept Proposal will result in a similar scale and height relationship between the north plot and the existing built form. The SOHI finds that setting of the heritage item will be enhanced due to widening of the Pumphouse plaza.

**68 Harbour Street (local significance)**
It is anticipated that the scale of development proposed in the Concept Proposal will result in some impact on views to the former Post Office Stores at 68 Harbour Street. However, it is noted that the facades were recently incorporated into a hotel development that included the provision of additional floors of a contemporary design, which is not related to the architecture of the heritage facades.

**Market City Façade (State significance)**
The SOHI finds that there will be little impact to the Market City Façade, with the exception of limited view loss at the southern portion of the Haymarket site. The proposed Concept Proposal will provide buildings of a height that is consistent with the height of the residential tower constructed above the Market City Facades, and other contemporary developments in the locality.

In general terms, the Concept Proposal is considered to be acceptable in terms of its potential impacts to heritage items. In particular, the proposed development is:

- sympathetic to the Haymarket/Chinatown Special Character Area, in that it continues the urban scale and street pattern of the surrounding locality;
- will provide an enhanced experience for those visiting working and living in the precinct; and
- does not impede heritage items in the vicinity of the Haymarket Site being viewed and appreciated in their local settings.

Whilst the SOHI acknowledges that views to several heritage items will be affected by the building envelopes proposed in the Concept Proposal, this is considered acceptable given the context of the Haymarket Site and the benefits of the proposed development.

## Mitigation Measures

An interpretation Strategy for the entire SICEEP Site is to be prepared in accordance with the NSW Heritage Manual and the OEH's Heritage Interpretation Policy. SHFA's 2008 publication '*Telling the Stories of Darling Harbour'* is an interpretation strategy based on ten distinct themes. Themes relevant to the Haymarket Site and potential opportunities for their interpretation are reproduced below:

- Gathering Cockles- the first people, and European Settlement.

  - Place in the paving quotes and thoughts describing the original natural landscape.
  - Use installations to showcase the range of traditional lifestyle skills including collecting foods, making tools and raising families.
  - Mark in the paving the outline of the harbour and creek line prior to reclamation.
  - Mark in the paving the Hay Street stone culvert alignment and discuss the loss of natural creek lines and the decline in urban water quality.
- Steaming ahead – the industrial revolution comes to Sydney.
  - Mark the Hay Street sewer and discuss public health issues prior to sewers – the sewer in Darling Harbour is one of the world's first.
  - Identify the Dickson's Mill site with a focus on Dickson and describe the first applications of his own designed steam engines in the process of timber milling, brewing and foundry works.
- Power to the people – how Darling Harbour powered Sydney with electricity, lit it with gas, provided the power to drive its trams and hydraulic lifts.
  - Focus on the Pumphouse by presenting plans of the city showing network of pipes and images of typical lifting devices, particularly steam driven bank vault doors.
- Decline and rebirth – Darling Harbour's transformation from port and industrial area to leisure tourism precinct.
  - Present chronological images showing the transformation from its early colonial natural state to its shipbuilding and wharf period, its peak industrial period and its conversion to a public landscape.

The SOHI recommends that the Interpretation Strategy *'Telling the Stories of Darling Harbour'* should be incorporated into the detailed design of the SICEEP redevelopment, and that the process should include consultation with relevant stakeholders. The interpretation strategy would be complemented by appropriate interpretative devices, as outlined in the Strategy.

# 5.13 Archaeology

## 5.13.1 Indigenous Archaeology

An Aboriginal Archaeological Assessment Report has been prepared by Comber Consultants in association with the Metropolitan Local Aboriginal Land Council, and in accordance with the Office of Environment & Heritage (OEH) Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales, and the DGRs.

### Archaeological Background

A search of the Aboriginal Heritage Information Management System (AHIMS) database has been undertaken and no known Aboriginal sites or objects are recorded as being located within or immediately near the proposal. However, it is noted that archaeological deposits were encountered during excavation works for then nearby 'Darling Walk' development. These deposits comprised a midden with charcoal and ten artefacts (eight chert, one silicrete, and one quartz).

Given these previous finds in the locality, it is anticipated that sub-surface aboriginal archaeological deposits may be encountered, particularly along the original shoreline (located in the western portion of the Haymarket Site).

Comber Consultants also note that a complex aboriginal archaeological deposit was previously encountered nearby at the site bounded by Napoleon, Sussex,

Erskine and Kent Streets. This suggests that deposits may also be encountered in former tidal zones.

It is not anticipated that deposits will be encountered elsewhere in the site, given that this is reclaimed land.

### Potential Impacts of the Concept Proposal

No significant excavation works are proposed as part of the Concept Proposal, which will minimise any potential impacts to Indigenous archaeology. Notwithstanding this, the Aboriginal Archaeological Assessment Report advises that piling works in proximity to the original foreshore could impact on Aboriginal archaeological deposits.

### Mitigation Measures

In order to mitigate any impacts to potential aboriginal archaeological deposits, Comber Consultants advise that archaeological testing, recording and salvage should occur in areas where piling or any other ground disturbance that will penetrate the fill is to be undertaken within the area of the original foreshore. In addition, the following measures are proposed:

- Prior to commencement of the monitoring and testing, a research design and management strategy should be prepared.
- Monitoring, recording and testing should be undertaken in partnership with the Metropolitan Local Aboriginal Land Council.
- If any Aboriginal "objects" (as defined under the *National Parks* & *Wildlife Act 1974)* are located during the course of the testing program, the Metropolitan Local Aboriginal Land Council should apply for a Care Agreement with the Department of Environment and Heritage to enable them keep the objects.
- The program of sub-surface testing should be coordinated with Casey & Lowe, the archaeologists undertaking testing/recording in respect of the historical archaeology.
- If any previously undetected Aboriginal "objects", artefacts or sites are uncovered, work must cease in the vicinity of that object, artefact or site and further advice sought from the archaeologist who undertook the program of sub-surface testing.

## 5.13.2 Non-Indigenous Archaeology

A Non-Indigenous Archaeological Assessment and Impact Statement has been prepared by Casey and Lowe and is included as **Appendix D**. The Statement conforms to the Heritage Branch, Office of Environment and Heritage guidelines for Archaeological Assessments, and has been prepared in accordance with the DGRs. The Statement identifies non-indigenous archaeological items within and in the vicinity of the SICEEP Site.

### Archaeological Background

Casey and Lowe note that the SICEEP Site has the potential to include archaeological remains that would illustrate many aspects of the evolution of Darling Harbour from the 1810s to the early 20th Century. It is noted that the Haymarket Site was involved in the very beginnings of steam technology in Australia with the introduction of Dickson's steam mill and the construction of a dam wall for his mill pond. The Site is of further interest, given that the eastern portion of the site was subdivided for residential and commercial uses from 1855 onwards. In light of this, it is anticipated that archaeological remains of a number of significant items may potentially be present on the Site.

An assessment of the potential archaeological remains has been carried out in accordance with the Burra Charter of Australia ICOMOS. It is anticipated that many archaeological remains may be present on the Site, some of which may be of State or local heritage significance.

Items of potential State significance include:

- Dickson's dam wall (c1815); and
- Dickson's mill buildings (c1830).

Items of potential local significance include:

- Residential housing throughout the eastern half of the study area:
  - remains of 27 houses and yards established prior to 1880, including dwellings later occupied by Chinese residents;
  - 15 houses and the Australian Inn hotel (c1865), and
  - rear yards and cesspits of 19 houses located are beneath Harbour Street.
- 1870s/1880s manufactories, including:
  - Cormack cooperage, later Centennial Cooperage ;
  - Biddell Bros confectionery factory; and
  - Rowlands Aerated and Mineral Water works.
- Four pub sites;
- Small shops/homes, including Chinese shops and store keepers and warehouses;
- Workshop associated with the Sydney Hydraulic Pumping Station;
- 1850 and 1860s reclamation of the millpond and Darling Harbour; and
- Possible remains of a c1860s ditch running near the alignment of Lackey Street, as illustrated on the 1865 plan.

Casey and Lowe advise that the archaeological remains identified above are considered to have a moderate to high level of potential survival within the Haymarket Site. Moreover, the recording, analysis and interpretation of these potential remains has the ability to yield information that will contribute to an understanding of NSW's cultural and natural history.

**Previously identified archaeological remains**
The Statement also identifies that known archaeological remains of Section 170 register items are located within the Haymarket Site, those being the Hay Street Stormwater Channel (Hay Lackey Drain) (State significance), and the Pier Street Precinct Archaeological Remains (State significance).

The Hay Street Stormwater Channel runs from the south western corner of the SEC building in the west, to the intersection of Hay and Dixon Streets in the east. The Pier Street Precinct Archaeological Remains are located across the entire Haymarket Site.

## Potential Impacts of the Concept Proposal

The Statement notes that archaeology may already be impacted by existing development on the Site. In particular, it is noted that a series of very large stormwater culverts were installed throughout the Site, particularly in the western portion, during redevelopment works in the 1980s. These culverts are known to be quite deep and are expected to have had substantial impacts on potential archaeological resources.

In terms of potential impacts arising from the Concept Proposal, the Statement identifies that the future buildings have some potential to impact archaeological deposits, principally through the required piling works. It is noted that the slab of the existing SEC is proposed to be partly reused as part of the redevelopment, and basement excavation is not proposed. These aspects of the proposal will serve to lessen any potential impacts to archaeological deposits.

Key impacts arising from the Concept Proposal are outlined below:

- There is some potential for impacts to the upper levels of archaeology during the demolition phase, which may be caused by vibration and other disturbances.
- Disturbances may also be caused through the excavation of contaminated material.
- It is anticipated that there may be some regrading required in order to provide flood mitigation, and that some final RLs may be between RL2.3 and 2.6. Archaeological deposits are expected to be present between RL 2.0 and 2.4, therefore the may be some impacts on the archaeology of Dickson's Mill and the Biddell Bros Confectionary Factory.
- It is noted that there is a requirement to install new infrastructure services and utilities that will cross the line of Dickson's dam wall, however these impacts can be reduced by 'bundling' services together to minimise the overall area of impact.
- The excavation of holes in order to plant trees has the potential to impact archaeology. In particular, potential impacts may occur to 1860s reclamation and post 1880s buildings on the eastern side of the former Lackey Street.
- Piles associated with the existing building already exist across the Site. The new buildings are proposed to be piled on an 8m grid. The potential remains may be penetrated by additional piling work which is predicted to have some impact on surviving resources.
- Some construction is proposed to be carried out above Dickson's Dam wall. The width of the Dam wall is unknown; however impacts can be reduced using a bridging beam/pile system.
- Potential impacts to buildings occupied by Chinese people, which may have greater archaeological potential.

**Summary**
The Assessment concludes that there is potential for substantial non-indigenous archaeological impacts as a result of the Concept Proposal. However, it is noted that the likely impacts are only indicative at the Concept Proposal stage and appropriate mitigation measures can be put in place. These mitigation measures will be further developed during the detailed design of the Stage 2 DA, when the true impacts of the proposal will become clearer.

A summary of the key mitigation measures for the Concept Proposal is provided below. For further detail, refer to the Non-Indigenous Archaeological Assessment and Impact Statement at **Appendix D**.

## Mitigation Measures

In order to minimise impacts to known and potential archaeological resources the following mitigation measures are proposed by Casey and Lowe:

- Archaeological remains of State significance within The Haymarket area should be retained *in situ*, utilising the strategies outlined in the Assessment.
- Archaeological testing shall be undertaken prior to the preparation of detailed designs.

- Where there are impacts on archaeological remains, archaeological recording will be undertaken in accordance with Heritage Council and Heritage Branch guidelines and best practice methodologies.
- A Non-indigenous Archaeological Research Design and Management Strategy will be prepared following the preparation of detailed designs.
- Construction site protocols are to be prepared to manage and minimise intended and unintended impacts.
- Any proposed development in the vicinity of the Hay Street stormwater channel will be undertaken in accordance with engineering and heritage advice. A specific Heritage Impact Statement may be required.
- A repository for artefacts is to be provided by SHFA following the completion of the archaeological program.
- Opportunities for public interpretation of the archaeology should be provided within the redevelopment.

## 5.14 Noise and Vibration

A Noise and Vibration Assessment has been undertaken by Renzo Tonin & Associates (refer to **Appendix S**). The study has identified and investigated the following potential acoustic and vibration impacts:

- operational noise generated by the development;
- road traffic noise generated by the development;
- noise intrusion from the existing environment on the development; and
- construction noise and vibration.

The potentially affected receivers are outlined in Table 1 of the Noise and Vibration Assessment. These include, but are not limited to:

- Residential / Hotel Receivers including the Peak Apartments at 2 Quay Street (70m from the site), the Holiday Inn Hotel at 68 Harbour Street (25m from the site) and the Novotel Rockford Hotel at 17 Little Pier St (30m from the site).
- Commercial Receivers including Market City at 9-13 Hay Street (20m from the site) and The Powerhouse Museum at 500 Harris Street (20m from the site).
- Other Sensitive Receivers including the UTS building on Quay Street (15m from the site).

The existing acoustic environment has been determined using a combination of long-term and short-term noise monitoring, which was undertaken in accordance with the NSW EPA *Industrial Noise Policy* (INP). Based on the background and ambient noise monitoring carried out at the nearest affected residential locations, Renzo Tonin & Associates have developed a set of project specific noise criteria (refer to Table 5 of the Noise and Vibration Assessment).

### 5.14.1 Operational Noise

The operational noise sources associated with the development are considered to be:

- Mechanical plant and equipment, including residential air-conditioners; and
- Activity associated with restaurants, cafes and other retail uses, including patrons, music and loading docks.

### Mechanical Plant

A detailed assessment of mechanical plant noise emissions will be undertaken during the design development phase of each subsequent DA, once specifications and plant selections have been made.

### Mitigation Measures

To ensure that noise levels (both singularly and cumulatively) comply with the INP, the following measures may be adopted:

- procurement of 'quiet' plant;
- strategic positioning of plant away from sensitive neighbouring premises, maximising the intervening shielding between the plant and sensitive neighbouring premises;
- commercially available silencers or acoustic attenuators for air discharge and air intakes of plant;
- acoustically lined and lagged ductwork;
- acoustic screens and barriers between plant and sensitive neighbouring premises; and/or
- partially-enclosed or fully-enclosed acoustic enclosures over plant.

### Retail Operations

It is anticipated that the ground floor uses of the proposed buildings in The Haymarket will include a range of retail use. This may include liquor licensed venues, cafes, restaurants and retail shops. As the specific uses are not defined at this stage, the uses will be subject to separate development applications at a later date.

In regards to noise management, current noise policy places the onus of noise control on the noise generator, and therefore the proposed ground floor retail uses would need to give consideration to potential impact upon any existing and future residential premises.

The Assessment notes that in regards to loading docks, all docks are to be enclosed within the lower level of each building, therefore being acoustically shielded from sensitive receivers. The loading docks are proposed to be accessed via the primary car park entries off Harbour Street, Darling Drive and Hay Street.

Notwithstanding their location, it is recommended that an assessment of each loading dock be carried out during the design development stage of each building, so as to confirm whether any additional noise control or management measures are required.

## 5.14.2 Road Traffic Noise

Noise impact as a result of increased traffic generation is required to be assessed in accordance with the EPA's *Environmental Criteria for Road Traffic Noise* (ECRTN) as prescribed in the DGRs. Although reference is made to the ECRTN, it is noted that this policy was superseded by the EPA's *Road Noise Policy* in 2011. The road traffic noise assessment has been made against the most current policy.

The RNP sets out guidelines for the assessment of traffic noise on sensitive receivers, including residential receivers and other sensitive land uses such as school classrooms (which have been adopted for adjoining UTS uses).

Road traffic generated by the Concept Proposal has been assessed in the Hyder Traffic and Transport Assessment prepared for this application. The roads providing access around the SICEEP precinct are classed as arterial and sub-arterial

roads, and will retain these classifications upon development. The roads surrounding The Haymarket include:

- Hay Street;
- Harbour Street;
- Pier Street; and
- Darling Drive.

The Assessment outlines the predicted increase in road traffic noise at these key intersections around The Haymarket. The figures demonstrate that the increase in noise level (dB) associated with the redevelopment will range from 0.5(dB) to 1.9(dB). As outlined in the RNP, an increase of up to 2dB(A) is considered acceptable even if existing noise levels exceeded the relevant criteria. On this basis, the proposed development will not result in any adverse impacts as a result of road traffic noise.

## 5.14.3 Noise Impact to the Concept Proposal

Noise from the existing environment onto the proposed Concept Proposal will be considered and assessed in the design of each future building, depending on the specific use. Noise sources for consideration include:

- Road traffic and light rail;
- Ground floor retail uses; and
- The Theatre.

Renzo Tonin & Associates have set out the relevant criteria against which each subsequent development will be assessed, including the provisions of the *Development in Rail Corridors and Busy Roads – Interim Guideline* and the relevant rail vibration guidelines.

## 5.14.4 Construction Noise and Vibration

The Noise and Vibration Assessment prepared by Renzo Tonin & Associates also addresses Construction Noise and Vibration, and the potential impact of construction activities on surrounding sensitive receivers (refer to **Appendix S**).

### Construction Noise

Construction activities related to the development of the site will be managed and assessed in accordance with the *NSW Interim Construction Noise Guidelines* and AS 2436 – 1981 "*Guides to Noise Control on Construction, Maintenance and Demolition Sites*".

Whilst the specific methodology and number of plant and equipment have not defined at this stage of project, based on the typical demolition and construction procedures and proximity of neighbouring premises, it is expected that the target levels may be exceeded during the peak demolition activities, as well as during some construction activities.

Given the proximity and potential for noise impact on adjacent receivers, consideration will be given to potential methods for noise reduction during the development of the detailed demolition and construction plans. In-principle noise management measures have been outlined below.

### Vibration

The major sources of vibration during construction include excavators / bulldozers, compactors, vibration rollers and construction (truck) traffic.

Based on these activities, and considering the distance to the vibration sensitive receivers, vibration generated from the construction of the future buildings is not expected to cause damage or adverse human impacts. On this basis, no further assessment or consideration of mitigation measures has been set out in the Assessment.

### Mitigation Measures

Renzo Tonin & Associates has outlined a number management measures which can be employed to mitigate against any construction noise and vibration impacts. These include:

- Ensuring plant and equipment are properly maintained.
- Locating noisy plant and equipment as far as possible from noise sensitive areas, optimising attenuation effects from topography, natural and purpose built barriers and materials stockpiles.
- Undertaking noise and vibration compliance monitoring for all major equipment and activities on site.
- Selecting low-noise plant and equipment and ensuring that equipment has quality mufflers installed.
- Implementing respite periods (if appropriate) with low noise/vibration-producing construction activities.

In addition to the above, the Assessment outlines the communication and complaints strategy that will be implemented. In summary, throughout the construction period:

- management procedure will be put in place to deal with noise complaints that may arise from construction activities;
- good relations will be established with people living and working in the vicinity of the construction site at the beginning of the project; and
- people will be kept informed of progress and taking complaints seriously and dealing with them expeditiously is critical.

Further details in relation to the management of construction and vibration related impacts will be addressed and detailed within future Stage 2 DAs.

## 5.15 Infrastructure and Utilities

### 5.15.1 Infrastructure

Pells Sullivan Meynink Consulting Engineers (PSM) has undertaken an assessment of the proposed development on existing significant infrastructure in the vicinity of the site. This includes the City West Cable Tunnel and trunk sewer tunnel beneath Western (Darling Drive) Development Plot, as well as the historic Hay Street – Lackey Street Stormwater Channel and Sydney Water Drain which both run adjacent to, and potentially underlie, the Haymarket Site. An assessment of the proposed development on these pieces of infrastructure is provided below and at **Appendix T**.

## Potential Impacts of the Concept Proposal

**City West Cable Tunnel (CWCT) and Trunk Sewer Tunnel**
Future Buildings in the Western Block (Darling Drive) are to be supported on piled foundations which will be founded in Hawkesbury sandstone bedrock. Preliminary design indicates that pile lengths are likely to range from 8 m to 10.6m, with a pile diameter of 1.2m. To protect the trunk sewer, the pile layout will need to avoid the sewer alignment, and also provide a separation distance between the pile and the sewer.

The CWCT is located approximately 20m below the surface, and is overlain by approximately 13m of bedrock. The preliminary pile design noted above results in pile toe levels located about RL -7.6 m, which provides approximately 10m of rock cover above the crown of the cable tunnel. Additional analysis of the cable tunnel has been carried out using assumed tunnel lining details. This analysis suggests that cracking of the lining would initially occur when the vertical convergence exceeds about 1.5 mm. Compressive spalling type failure requires at least several millimetres of convergence, and so this is considered acceptable. Further, three-dimensional finite element analysis has been undertaken of the proposed building foundations. The analysis calculates vertical convergence of the tunnel of less than 1.3 mm, which is less than the relevant adopted allowable deformation limit.

PSM conclude that the proposed student accommodation buildings can be developed over the existing tunnelled infrastructure including SWC's trunk sewer tunnel, and Energy Australia's CWCT. Modelling undertaken by PSM has demonstrated that the proposed student accommodation building structures can be designed utilising industry standard design and construction techniques and practices so that impacts on the existing tunnelled infrastructure services are retained within acceptable limits.

**Hay Street – Lackey Street Stormwater Channel and Sydney Water Drain**
The main potential impact on the historic drain is vibration during adjacent pile excavation. Other impacts are considered unlikely as the drain is located approximately 4m from the site's boundary along Hay Street, and 5 m from the closest proposed pile foundation. Further, it is noted that the historic drain has recently been rehabilitated and strengthened with an internal reinforced concrete liner. Vibration caused by pile excavation in soil and rock has been assessed on this basis, and is less than the adopted limit.

PSM conclude that the site can be developed adjacent to the existing heritage listed drain, and adjacent to and over the non-heritage SWC drainage infrastructure at the site. Any risk to SWC's existing drainage infrastructure can be managed within acceptable limits utilising industry standard design and construction techniques and practices.

## Mitigation Measures

To protect the Sydney Water drain, the pile layout will need to avoid the drain alignment, and also provide adequate horizontal separation distance between the pile shaft and the drain. Additionally, structural bridging beams may need to be constructed over the drain to support building columns. Such beams would be supported by piles on either side of the drain. Any piles located adjacent to the drain will need to be detailed so as to limit the potential for creating instability in the soils beneath the drain.

## 5.15.2 Utilities

Hyder Consulting, Lend Lease and AECOM have undertaken consultation wherever possible with the relevant authorities and utility providers in order to determine the existing utilities and arrangements, forecast demand, and any required upgrade works to accommodate the Concept Proposal. The findings of these consultations are detailed in the Services Infrastructure Report prepared by Hyder Consulting and included as **Appendix H**.

### Sewer

Sydney Water have indicated that sewer mains in the locality have adequate capacity to accommodate the Concept Proposal, however sections of the existing infrastructure will require demolition, and new reticulation pipework to be installed.

A preliminary sewer infrastructure Concept Plan has been prepared by Hyder and included as an appendix to their Services Infrastructure Report (see **Appendix H)**. The Concept Plan will be further refined as part of the Stage 2 DAs, however it is envisaged that the sewer mains running north/south through the Site will be capped off and abandoned, and new mains will be constructed from the Hay Street main, and mains to the north of the Site to service the new buildings.

The Western Plot (Darling Drive) is identified as being located over an existing concrete encased sewer trunk main, which will require further consideration during the development of the design.

### Water

Sydney Water has indicated that Site is located within the existing urban supply network. The intensification of the Site will result in increased demand; however consultation with Sydney Water has confirmed that the existing infrastructure has adequate capacity to accommodate the Concept Proposal.

Sections of the existing infrastructure will require demolition/capping off, and new reticulation pipework will be required. In addition, it has been identified that a trunk water main in the southern portion of the site will require relocation to accommodate the future buildings. These works will be carried out as part of the Stage 2 program of works.

### Stormwater

Hyder have assessed the adequacy of the existing network, and have concluded that there is insufficient infrastructure in place across the SICEEP Site to manage the quality of stormwater runoff (refer to the Services Infrastructure Report included as **Appendix H**). Principles of Water Sensitive Urban Design (WSUD) are proposed to treat stormwater runoff, which may include the provision of rain water tanks, bio swales, inlet filters, gross pollutant traps and the like. These measures will reduce the suspended solids and nutrient loads that currently discharge untreated into Cockle Bay.

The WSUD strategy will be developed further prior to the lodgement of Stage 2 DAs, and will be developed in consultation with the relevant authorities.

### Gas

Jemena own and operate the existing gas infrastructure in the vicinity of the Site, and have advised that the existing network may be expanded into the site and reticulated to supply the Concept Proposal.

Whilst infrastructure in the vicinity of the Site has capacity to meet the requirements of the Concept Proposal, the trunk mains that supply the City of Sydney in general are close to capacity. Jemena have advised that the SICEEP development will be required to contribute to the costs associated with upgrading the infrastructure.

In light of the above, it is expected that Jemena will be able to meet the gas requirements of the Concept Proposal subject to the completion of commercial negotiations. A plan of the proposed indicative gas connection and alterations has been prepared by Hyder and included in their Services Infrastructure Report (refer to **Appendix H)**.

### Telecommunications

NBN Co are afforded right of first refusal for public telecommunications wired connectivity. NBN Co has indicated that they plan to provide services to the Site subject to the receipt of a formal application.

NBN Co is able to provide services to each building and tenant, and will ensure that the infrastructure is capable of supporting 100Mbps via fibre-to-the-premises (FTTP) service.

Consultation has been initiated between the proponent and Crown Castle (as Vodafone Hutchinson Site Manager) regarding the relocation of wireless telecommunications infrastructure located within the SEC.

### Electrical

The Site is located within the Ausgrid service area. Ausgrid have prepared an indicative feasibility report which indicates they have sufficient capacity to service the SICEEP precinct.

It is anticipated that some sections of existing infrastructure will require demolition and that some diversions will be required. This will be addressed as part of the Stage 2 design process.

### Rail Corridor Utilities

The light rail corridor located in the western portion of the site contains infrastructure (e.g. electrical, signalling communications, drainage etc) that may require relocation in order to accommodate the Concept Proposal. Impacts to the light rail corridor will be addressed as part of the relevant Stage 2 DAs, and arrangements for suitable relocations will be made in consultation with RailCorp prior to lodgement.

In summary, the Report concludes that the Site can be adequately serviced subject to the Stage 2 DA designs being developed in consultation with relevant utility providers.

### Mitigation Measures

Hyder have identified a number of mitigation measures that are required in order to ensure the Site is appropriately serviced. These measures are outlined in the Services Infrastructure Report (**Appendix H**) and are summarised in Section 6 of this report.

## 5.16 Waste

A Concept Proposal Waste Management Plan has been prepared by Waste Audit and Consultancy Services and is included at **Appendix U**. The Waste Management Plan calculates the expected generation of waste resulting from the future developments (based on the illustrative design scheme) and addresses waste segregation, waste containment and waste disposal. Generated waste is likely to be managed as follows:

### Residential and Retail

- A waste room is to be provided on each level of the future mixed used residential stages which will accommodate recycling bins and a chute for general waste. Each general waste chute will feed directly into 1,100 litre bins in a dedicated garbage room. The 1,100 litre bins will then be transferred to the waste and recycling storage area for each podium to await collection.
- A separate waste storage area will be provided for retail tenancies.

### Student Accommodation and Commercial Office

- Chutes are not expected to be provided for Buildings W1 and W2 in the Western Plot (Darling Drive), or the mixed use commercial building at the North-West Plot. Rather, a waste room is expected to be provided on each level for general waste and recycling which will be managed by the cleaning contractors.

Waste storage facilities will provided at the required rates based on the predicted waste volumes contained within the Waste Management Plan. Waste collection will occur via the loading dock facility of each venue with collection frequencies to be coordinated to reflect venue usage.

In light of the above, it is expected that future waste generated by the Concept Proposal can be effectively managed and will not result in any adverse impacts. Detailed Waste Management Plans will be submitted with future DAs for the detailed designs.

## 5.17 Water Cycle Management

### 5.17.1 Flooding

A Flood Study has been prepared by Hyder Consulting (included at **Appendix V**) and presents a comprehensive technical investigation of flood behaviour of the SICEEP Project area under proposed development conditions (including consideration of the proposed concept proposal within The Haymarket). In preparing the study Hyder have followed the processes set out in the 'Floodplain Development Manual: the management of flood liable land' (April 2005) prepared by the NSW Government, and the Director General Requirements.

In particular, the Flood Study:

- Quantifies flows, water levels and hydraulic hazard categories to facilitate the setting of flood planning levels in accordance with those set by the Infrastructure NSW project brief;
- Identifies overland flow paths, underground conduit systems, and waterway works necessary to mitigate potential adverse flood impacts that may otherwise result from the proposed development; and
- Considers sensitivities in its analysis, including in relation to climate change.

The flood study acknowledges that there are a number of large Sydney Water underground culvert systems that convey the Darling Harbour catchment runoff through the SICEEP Site and into Darling Harbour and that these existing systems do not presently convey all runoff up to the 100 year ARI flood event (resulting in a number of significant overland flow paths that run through the site. On this basis, Hyder have accordingly adopted a flood assessment and design approach that retains the existing Sydney Water box culvert system to mitigate flood impacts of the SICEEP Project on overland flows based on an amplification option of the underground culvert system in addition to public domain and building design solutions such as the inclusion of the under-croft on the south-east plot . Alternative options to such amplification works will be investigated as part of future project design stages with the Stage 2 DAs.

The results from the extensive modelling undertaken by Hyder reveal that under post-development flood conditions the flood results for the proposed SICEEP Project will be as follows:

- Maximum overland flows within the site would be along the Boulevard, being up to 0.5$m^3$/s and 3.9$m^3$/s in the 20 year and 100 year respectively. Furthermore, the hydraulic hazard throughout the site would be low hazard up to the 100 year ARI, except locally over the existing large inlet pit under Pier Street (within the SHFA workshop).
- The potential culvert amplification option effectively captures and conveys sufficient overland flows that would otherwise be impeded by the proposed development and accordingly results in no adverse flood impacts on neighbouring property. For a scenario of no culvert amplification, 100 year ARI flood levels in Hay Street and Harbour Street, adjacent to The Haymarket precinct, would increase by up to 100mm (in comparison to existing conditions). Flood modelling of detailed building footprints and public domain as part of Stage 2 DAs for this precinct will confirm the need for culvert amplification or identify other options to mitigate impacts.
- There are significant areas where flood levels are reduced by 20mm to 50mm (in comparison to existing conditions), although with a few very local increases of typically less than 10mm, which are considered to be within the tolerance of model accuracy.
- The Sydney Harbour water level sensitivity analysis indicates that for the 100 year ARI event, increasing the coincident water level from 0.9mAHD to 1.435m AHD resulted in flood level increases within the SICEEP site of up to 0.2m to the south of Pier Street, and 0.1m north of Pier Street.

The DGRs also require the EIS to consider the potential impact of climate change and sea level rise on the proposed development. When the impact of climate change was factored into the flood modelling (0.9m sea level rise by 2100 and 15% increase in rainfall intensity), the results for the proposed SICEPP Project will be as follows:

- Maximum overland flows within The Haymarket Site would be along the Boulevard (south of the Chinese Gardens), being up to 4.4$m^3$/s and 12.9$m^3$/s in the 20 year and 100 year respectively. Within the PPP Site, the maximum overland flows are 0.7$m^3$/s and 4.4$m^3$/s in the 20 year and 100 year respectively.

- The potential culvert amplification option effectively captures and conveys sufficient overland flows that would otherwise be impeded by the proposed development and result in no adverse flood impacts on neighbouring property. For a scenario of no culvert amplification, 100 year ARI flood levels in Hay Street and Harbour Street, adjacent to The Haymarket precinct, would increase by up to 100mm (in comparison to existing conditions with climate change). Flood modelling of detailed building footprints and public domain as part of Stage 2 DAs for this precinct will confirm the need for culvert amplification or identify other options to mitigate impacts.
- The hydraulic hazard throughout the site would be low hazard up to the 20 year climate change, except locally over the existing large inlet pit under Pier Street (within the SHFA workshop on the boundary of the PPP Site and The Haymarket). Under the 100 year climate change flood condition there would be high hydraulic hazard along the Boulevard upstream of Pier Street within The Haymarket Site, similar to what would be experienced if the existing site improvements remained in place.
- 100 year ARI flood levels would increase by up to approximately 0.2m along the southern Hay Street site boundary of The Haymarket site in comparison to existing conditions with climate change, with a maximum increase within the site of up to 0.4m under Pier Street on the boundary of the PPP Site and The Haymarket.
- There are significant areas where flood levels are reduced by 20mm to 50mm (in comparison to existing conditions with climate change), although with a few very local increases of typically less than 10mm, which are considered to be within the tolerance of model accuracy.

### Flood Planning Levels

Hyder have undertaken flood mapping in order to set concept design planning levels. In accordance with the Floodplain Development Manual 2005 and the INSW Project Brief, Flood Planning Levels have been set as 1% AEP Plus 0.5m freeboard.

### Flood Evacuation

Hyder advise that under the Probable Maximum Flood (PMF) conditions much of the Haymarket Site would be high hazard. This situation reflects both existing and future conditions post development. Due to the small catchment size flood warning would not be adequate and there would be no response time for the short duration storms that would potentially produce significant flows. Therefore Hyder consider the only realistic safe option in extreme flood events is for occupants of the site to seek refuge within the proposed buildings and elevated public domain areas for the duration of the flood event. Due to the short flood dispersal times within the catchment, this management strategy would not inhibit evacuation of the site following the storm event.

### Summary and Mitigation Measures

Hyder advise that:

- The flood mapping prepared is adequate to set concept design planning levels;
- Model results indicate the impact of the proposed development, with the modelled culvert amplification option, would result in negligible flood impacts;
- All overland flow paths are to remain unobstructed and ground levels are to be consistent with the proposed flood modelling.
- A formal floodplain risk management plan with respect to evacuation and refuge is to be developed.

- Buildings and structures are to be designed for hydraulic loadings up to the PMF event.

### 5.17.2 Stormwater

Hyder have prepared a concept design of the proposed minor (underground conduit) drainage system for the SICEEP Site (including covering the Haymarket). This concept design includes the following features:

- Retaining all existing box culvert systems throughout the existing precinct.
- Re-use of existing stormwater drainage systems where possible.
- Wherever possible, retaining of existing local drainage pipe connections into the existing box culverts. However, where assessed as necessary, providing additional/larger connections in a manner approved by the asset holder (Sydney Water).
- Where necessary, providing new/additional stormwater systems to manage the proposed building structure and open space drainage.
- Provision of open space surface drainage systems with a focus on public safety, giving careful consideration to inlet type and location, and options of porous pavement areas.
- Consideration of existing and future overland flow paths throughout the SICEEP Precinct.
- Subsoil drainage, as required under pavement areas to ensure appropriate drainage to all areas of subgrade, sub-base and base areas.

Detailed Stormwater Drainage Plans for The Haymarket precinct will be provided with relevant future Stage 2 DA(s) and will demonstrate that the drainage system will be able to convey the necessary rainfall events.

### 5.17.3 Water Quality

The incorporation of appropriate Water Sensitive Urban Design measures will detailed within future Stage 2 DAs. Potential measures to be incorporated include:

- Rainwater tanks;
- Stormwater reuse;
- Bio-retention systems;
- Green roofs; and
- Water quality devices.

Future Stage 2 DAs will also include results from modelling of water quality to demonstrate how the proposal responds to relevant targets.

Stormwater quality during the future construction phase will be safeguarded through the implementation of measures detailed in Erosion and Sediment Control Plans to be submitted with future Stage 2 DAs. These plans will be prepared in accordance with the 'Blue Book' which is considered to be industry best-practice for construction-phase stormwater control.

## 5.18 Air Quality

An Air Quality Assessment has been prepared by AECOM Australia to assess the impact of emissions from the Cross City Tunnel ventilation stack located to the south of the IMAX theatre between the Western Distributor westbound viaducts (refer to **Appendix W**). The Air Quality Assessment considers existing monitoring data of air quality in the vicinity of the site, including monitoring undertaken in Tumbalong Park as part of post-commissioning testing following the opening of the Cross City Tunnel in 2005/06.

Ambient air quality is most affected within a 100 metre radius of tunnel ventilation stacks, with the impact of increased pollutant concentrations between 100 metres and 1 kilometre of these stacks being generally negligible. This affects only a small portion of the SICEEP site, being existing areas of public domain which are proposed to be upgraded as part of the overall SICEEP project. The Haymarket precinct is located 400-600 metres to the south of the ventilation stack.

### Existing Air Quality Conditions

Monitoring of air quality in the vicinity of the SICEEP site (within Tumbalong Park) was undertaken for a period of 12 months between September 2005 and August 2006. The monitoring results from the Cross City Tunnel post-commissioning tests are taken to be an accurate reflection of air quality impacts of the tunnel ventilation stack within the broader SICEEP precinct. During this time period, the relevant criteria for Nitrogen Oxides and Carbon Monoxide were not exceeded. Particulate Matter criteria were exceeded on a total of five (5) occasions, however these exceedances were found to be related to external events unrelated to the ventilation of the Cross City Tunnel (e.g. Sydney Basin-wide events including bushfires and localised effects of fireworks).

### Mitigation Measures

No mitigation measures are required as future occupants of proposed developments within the SICEEP precinct will not be subject to air pollution in exceedance of the NSW EPA '*Approved Methods for the Modelling and Assessment of Air Pollutants in NSW*' as a result of the site's proximity to the Cross City Tunnel ventilation stack.

## 5.19 Geotechnical Issues

The soil and geotechnical conditions of the site are summarised in Section 2.3 of this report, and detailed in the Coffey Geotechnics Preliminary Geotechnical Assessment included as **Appendix F**.

The Geotechnical Assessment determines that the Concept Proposal is feasible from a geotechnical perspective, subject to the adoption of a number of recommendations addressing excavation, contingency planning, and seismic design.

Mitigation Measures
Site specific investigations for the various individual structures will be carried out and submitted with the Stage 2 DAs, in order to manage geotechnical risk.

## 5.20 Contamination

The Site has been used for a wide variety purposes since the land was first put to use for industry in 1813. Many of these uses had the potential to contaminate the Site, including milling and brewing, iron works, and storage uses amongst other things. In addition to chemicals potentially leaching into the ground from past uses, it is also known that there are significant amounts of fill present on the Site, associated with the reclamation of Cockle Bay. It is also known that PASS and ASS are likely to be present in the natural alluvial deposits.

In view of the Site's known history, an Overarching Remedial Action Plan has been prepared by Coffey Environments and included as **Appendix K**. The Action Plan identifies areas of contamination and outlines an overarching strategy to ensure the following:

- the safety of construction workers and neighbours during the construction phase;
- that the Site can be suitably remediated and made suitable for mixed use residential development; and
- that the Concept Proposal is capable of being carried out in accordance with the requirements of SEPP 55.

Coffey Environments have undertaken widespread site testing to ascertain if contamination levels on site would require any remediation before the site could be considered suitable for the proposed development. Boreholes were established in 52 locations within the site, providing a total of 39 sampling locations (given some boreholes were in relatively close proximity to one another). These locations were grouped into 12 locations spread across the Site. Coffey environments consider that the density of the investigation location meet the minimum requirements set out in the NSW EPA Sampling Design Guidelines, within practical limits.

Additionally, eight (8) groundwater monitoring wells were installed around the perimeter of the Site, and including two (2) at targeted locations at the northern boundary. Samples were collected during four (4) groundwater monitoring events.

All soil samples were tested for the COPCs identified above, with the results summarised as follows:

- TPH was detected at levels above Health Investigation Levels (HILs) in eight (8) out of 12 locations;
- benzo(a)pyrene (PAH) was detected at levels above HILs in eight (8) locations;
- Total PAH was detected at levels above HILs in eight (8) locations;
- 4-nitrophenol (SVOC) was detected at levels above HILs in one (1) location;
- 2-naphthylamine (SVOC) was detected at levels above HILs in one (1) location;
- g-BHC lindane (SVOC) was detected at levels above HILs in one (1) location;
- lead (heavy metal) was detected at levels above HILs in one (1) location; and
- amosite and chrysolite asbestos fibre bundles were detected one (1) location.

Coffey Environments advise that whilst some concentrations of TPH exceed the HIL which is endorsed by NSW EPA, the HIL relates to sensitive land uses and may not be appropriate in this instance. Consequently, Coffey Environments consider that the approach described in CRC CARE Technical Report No. 10 may be adopted for health risk screening regarding the presence of petroleum hydrocarbons in the subsurface, within the limitations of that report. Using the Health Safety Levels identified in the CRC CARE Technical Report No. 10, Coffey advise that exposure to hydrocarbon impacted soils is unlikely to pose an unacceptable health risk during the remediation, construction, or operational phases.

With regard to lead and asbestos detections, it is anticipated that the single lead detection above HILs was an isolated occurrence, given levels taken from other samples from the same borehole were within acceptable levels, as were other samples taken elsewhere on Site. Asbestos was found in only three (3) samples total, taken from two (2) boreholes.

COPCs within groundwater samples were generally within acceptable limits, with the exception of the following:

- copper and zinc levels was detected in at least one (1) sample above adopted investigation levels during all monitoring events;
- lead and chromium were detected in once sample at slightly above Groundwater Investigation Levels (GILs );
- arsenic was detected at levels slightly above the low reliability trigger value.

Coffey Environments advise that the heavy metals encountered above are widely used in industry and are commonly found at slightly elevated concentrations in urban environments. They conclude that the levels of groundwater contamination are not significant enough to warrant detailed investigation or remediation.

The investigations also revealed that PASS is present in natural alluvium where it occurs on the site.

In summary, the following contamination sources have been identified on the Site:

- Localised TPH (as oil) and PAH contamination encountered in unsaturated fill materials.
- Localised lead contaminated fill.
- Volatile hydrocarbon contamination.
- Asbestos containing materials encountered in shallow fill materials.
- Potential and actual acid sulfate soils.

Coffey Environments advise that the necessary remediation works could be integrated with an early stage of construction works rather than a separate phase of remediation.

## Mitigation Measures

In order to mitigate potential impacts to human health and aquatic ecology during the construction phases of the Stage 2 DAs mitigation measures will be required. Based on the Site conditions and the likely extent of remediation required, Coffey Environments has selected a remediation strategy that involves excavation to remove contamination, and the use of cover layers. Specific measures associated with this approach are outlined in the Overarching Remedial Action Plan included as **Appendix K**, and Section 6 of this report.

It is evident from the Overarching Remedial Action Plan that the Site can be made suitable for the proposed uses in accordance with SEPP 55 (in satisfaction of the DGRs in relation to contamination).

## 5.21 Construction Management

Construction Management Plans will be prepared for each Stage 2 DA for The Haymarket. Each CMP will outline:

- the construction planning and staging methodology for each building;
- details of the site hoarding locations and overall site establishment;
- the deliveries and materials handling strategies;
- the Environmental Health & Safety management approach to be adopted;
- waste management strategies to be adopted;
- stormwater and erosion control measures to be implemented;
- noise and vibration management;
- air and water quality management;
- traffic, parking and pedestrian management, and
- a complaints management process to be adopted during construction.

The CMPs will address the site subject to the Stage 2 DA in its own right as well as in the context of construction activities that will be occurring elsewhere within the SICEEP precinct or the adjacent locality. Consistent construction management strategies and processes will be adopted (to the extent reasonably possible) between sites under the control of the same contractor.

## 5.22 Socioeconomic and Cultural Issues

### 5.22.1 Economy and Employment

The NSW Government's number one priority is to restore economic growth and establish NSW as the first place in Australia to do business. The SICEEP Project forms a central part of achieving this ambition of "making NSW number one again" and reinforcing Sydney's status as Australia's global city.

Sydney's ability to attract and host international and national business and industry leaders is a key driver of economic value to the state, with national and international delegate expenditure generating significant direct and indirect economic benefits. For example, international delegates typically spend around $6,000 during their stay in Sydney.

With the delivery of new world class convention, exhibition and entertainment facilities, re-positioning Sydney as the major events and business venue in the Asia Pacific, it will alone generate $200 million annual economic benefit for NSW, equating to more than $5 billion over the course of the 25-year operation (contractual) period of the new facilities.

Business, education and industry also benefit from knowledge sharing that is often a result of conventions, exhibitions and business events.

Tourism spending is also significant in the Sydney and NSW economy. The Darling Harbour area already receives over 25 million visitors per annum and is one of the most visited and popular precincts of Sydney.

The SICEEP Project supports the NSW Government's policy to double the NSW visitor economy by 2020 and will serve to strengthen Sydney's image as a premium tourist destination for local, interstate and international visitors. For example:

- By improving connectivity to surrounding areas and making visitors experience of Sydney more enjoyable and accessible.
- Through a significant investment in expanding and re-invigorating the public domain, making Darling Harbour (and Sydney) a more appealing destination — encouraging Sydney visitors to stay longer.
- Establishing a new Hotel Complex (subject of a separate future DA) providing up to 900 hotel rooms with a selection of price points – offering a broad market appeal and attracting many new visitors.

The Haymarket will create approximately 2,100 new jobs during construction, with ongoing employment opportunities for over 2,000 people.

The new residential population to be established within The Haymarket along with the new workers will also generate direct expenditure on retail within the vicinity of their place of residence and work.

While some of this expenditure would be captured by the new retail to be provided across the SICEEP Site (in particular The Haymarket), the SICEEP Site is not expected to provide a full range of comparison goods or dining/entertainment. This means that the new population would increase the expenditure available for retail tenancies elsewhere in the locality.

### 5.22.2 Housing Supply and Choice

Once fully developed The Haymarket (based on the indicative design scheme) is expected to accommodate approximately 2,360 dwellings (comprising 1,360 residential apartments and 1,000 student beds) with a resident population in the order of 3,400 – 3,700.

The Haymarket will accommodate a mix of housing types, including as noted options for student housing accommodation. By providing several residential typologies and a range of apartment sizes (details of which are to be the subject of detailed Stage 2 DAs), the proposal seeks to meet the City of Sydney's vision for a diverse and vibrant community. Underpinning the type and size of dwellings to be provided is supporting attainable city apartment living, targeted at young professionals and students.

Located on the edge of the City Centre, with a high level of public transport accessibility, proximity to employment and activity centres, and access to extensive areas of open space, The Haymarket supports key Local and State Government strategic planning objectives and contributes towards achieving housing targets.

### 5.22.3 Community Services and Facilities

In additional to delivering world-class facilities, the SICEEP Project is also a major urban renewal project that will deliver significant benefits for the entire City. Key benefits to the community of the SICEEP Project include:

- Providing an enhanced, enlarged and dynamic public domain to be enjoyed by residents and visitors alike.
- Providing improved permeability and better connections to surrounding areas (including overcoming existing poor east-west connections between Pyrmont and the CBD).
- Creating a vibrant and activated precinct for Sydneysiders and visitors to enjoy, with a mix of retail shops, public spaces, dining areas, a hotel and other accommodation.

- Exploring an 'IQ Hub' within The Haymarket — providing low-cost rental studio and collaborative spaces to support tech-industry start-ups.
- Exploring a new child care facility within The Haymarket.
- Providing for a new Library within The Haymarket (subject to Council agreement and funding).
- Providing free Wi-Fi throughout the SICEEP Site.
- Offering local community groups' access to meetings rooms within the Convention/Exhibition Centre free of charge.
- Prioritising employment requests from suitably qualifies and experienced applicants who are residents of the local community and surrounding areas.
- Establishing working relationships and ongoing support to selected local schools (e.g. providing the opportunity for students to attend appropriate events within conferences/exhibitions that have educational benefits, assisting with fundraising initiatives).
- Offering community cooking initiatives (e.g. providing lessons in basic nutrition, healthy eating, and affordable meals for those in the local community most in need).
- Increased safety and security in the surrounding public domain.

### 5.22.4 Cultural Impacts

The Concept Proposal will facilitate the development of The Haymarket in a manner that considers the various demographic and cultural groups that will form the existing and future community, whilst respecting the cultural heritage significance of the Site. In this regard, the extension of the Chinatown Precinct into The Haymarket and opportunities to showcase Aboriginal culture and history will be key considerations during the development of the Stage 2 designs.

More specifically, it is envisaged that public art will be provided within The Haymarket which may reflect heritage and cultural theme, and that an urban water stream will be installed as part of the public domain works, which will interpret the Site's former location within Cockle Bay.

It is also envisaged that a number of cultural programs may be accommodated within the Haymarket, including multicultural film screening and food fares, a permanent home for the Chinese Markets, and a 'living gallery', which will draw upon the collections of local museums to interpret local stories, and will include digital and interactive installations within programmable spaces.

In summary, the indicative cultural initiatives envisaged for The Haymarket have the potential to greatly increase the cultural significance of the locality and its wider vicinity, and are therefore considered to have a positive cultural impact.

## 5.23 Crime Prevention through Environmental Design

A Key objective of the SICEEP redevelopment project is to create a 'welcoming and safe place'. The principles of Crime Prevention through Environmental Design (CPTED) are useful crime preventative tools in designing a safe built environment, and have been fully considered when designing the Concept Proposal.

A Crime Prevention through Environmental Design (CPTED) Report has been prepared by Harris Crime Prevention Services as is provided at **Appendix M**, which assesses the Concept Proposal against the Safer-by-Design principles, as required by the DGRs. The safer-by-design principles are based upon the CPTED principles of Territorial Definition, Access Control, Natural Surveillance, Activity Support, and Target Hardening. The report draws the following key conclusions:

- High levels of activity generation during the day and night will encourage passive surveillance and public 'ownership' of the different built forms and public domain spaces. This, in turn, will encourage zero tolerance of unacceptable anti-social or criminal behaviour.
- The master plan embraces CPTED principles through attention to connectivity, permeability, legibility, liveliness and maximising activity generation appropriate to each amenity.
- The Concept Proposal provides a 'welcoming and safe place' foundation for future DAs, noting there are opportunities to refine territorial definitions, to clarify questions of legitimate access and to prompt awareness of access boundaries.
- The Concept Proposal envisages maximum surveillance options, especially natural and social surveillance, thereby minimising the need for obtrusive and/or unnecessary surveillance technology.

The report concludes that the Concept Proposal is consistent with the DGRs, the policies of the Sydney Harbour Foreshore Authority, the City of Sydney, and the NSW Police in promoting safer-by-design strategies.

### Mitigation Measures

The following mitigation measures are recommended for implementation at the Stage 2 design phase:

- lighting and landscaping should be designed to provide for diverse and safe activation;
- noise attenuation measures should be incorporated in and around Haymarket Square to encourage safe, time-extended social engagement with the locality and surrounding components of the public domain;
- ongoing engagement with surrounding precincts should be undertaken in order to ensure a holistic approach to CPTED is adopted; and
- CPTED Principles should be considered when:
  - locating lobbies, loading, and parking facilities;
  - selecting treatments to access points, set-backs, under-crofts and facades;
  - designing landscaping, lighting and signage; and
  - designing strategies for public transport, and road and street corridors servicing the precinct.

## 5.24 Environmental Sustainability

A wide variety of sustainability initiatives are proposed for the Haymarket Site, which are detailed within the Haymarket Site Wide Sustainability Plan prepared by Lend Lease and included as **Appendix L**. The key sustainability measures proposed will ensure The Haymarket is capable of being developed and operated in a sustainable manner. More specifically:

- Enhanced connections and public transport links will be provided that will result in the Light Rail Stations being more readily identifiable, making it a more obvious choice for residents and visitors alike;
- An electric car-share scheme is proposed that will reduce the cost of car ownership and will minimise embodied energy by reducing the number of cars on the road. In addition, by providing electric cars carbon emissions and local air pollution can be reduced.
- Passive signage and dynamic information systems and technology will serve to educate residents and visitors about sustainable design, and encourage wider interest in sustainability initiatives.

In addition to the above, aspirational measures being investigated for the Site have the potential to provide significant sustainability benefits, these include:

- Recycled water potentially imported from Barangaroo South. This has the potential to result in a significant reduction in water mains use by providing an alternative water source for flushing toilets, washing machines, cooling towers, and irrigation.
- Potential extension of the precinct thermal plant into the Haymarket. This would minimise materials used in providing electrical infrastructure and reduce greenhouse gas emissions.

In addition, the proponent aims to achieve the following standards in relation to the future buildings proposed for The Haymarket:

- 5 Star Green Star Office – as built v3 rating for the commercial component;
- 4 Star Green Star Multi Unit Residential – as built v1rating on all residential towers; and
- 4 Star Green Star custom for student accommodation.

## 5.25 Ecologically Sustainable Development

Ecologically sustainable development requires the effective integration of economic and environmental considerations in decision-making processes. Ecologically sustainable development can be achieved through the implementation of the following principles and programs.

### 5.25.1 Precautionary principle

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

This EIS has not identified any serious threat of irreversible damage to the environment and therefore the precautionary principle is not relevant to the proposal.

### 5.25.2 Integration principle

The integration principle holds that decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations. The design of the Concept Proposal has been developed to with due consideration the short and long term effects of economic, environmental and social impacts to The Haymarket, Darling Harbour, and the wider region.

### 5.25.3 Intergenerational equity

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

- maintaining heritage listed items for future generations to appreciate and enjoy;
- implementing safeguards and management measures to protect environmental values.
- facilitating job creation and the provision of housing in close proximity to public transport; and
- Improving the public domain and amenity in The Haymarket precinct.

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

### 5.25.4 Conservation of biological diversity and ecological integrity

The principle of biological diversity upholds that the conservation of biological diversity and ecological integrity should be a fundamental consideration.

The proposal would not have any significant effect on the biological diversity and ecological integrity of the study area.

### 5.25.5 Improved valuation, pricing and incentive mechanisms

The principles of improved valuation and pricing of environmental resources requires consideration of all environmental resources which may be affected by a proposal, including air, water, land and living things. Mitigation measures for avoiding, reusing, recycling and managing waste during construction and operation would be implemented to ensure resources are used responsibly in the first instance.

Additional measures will be implemented to ensure no environmental resources in the locality are adversely impacted during the construction or operational phases.

## 5.26 Development Contributions

The proposed development will deliver long lasting and significant public benefits to Sydney and NSW (refer to Section 4.0 for further details), and therefore the burdening of the development with additional contributions undermines the objectives of supporting the development of the Darling Harbour area – an area of state significance. The SICEEP Site is specifically excluded from all City of Sydney S94 Contributions Plans as well as any contributions under S61 of the *City of Sydney Act 1988*. The exclusion of the SICEEP Site (and broader Darling Harbour Precinct) reflects that it has its own special planning regime that applies, and that the State Government has since the 1980s (originally as part of the State's Bicentennial Program) set out to promote and encourage a variety of tourist, educational, recreational, cultural and commercial facilities across Darling Harbour. There is therefore no formal mechanism to levy development across the SICEEP Site.

Accordingly there are no grounds for the imposition of development contributions in relation to the proposal.

## 5.27 Site Suitability

Having regard to the characteristics of the site and its location, the Concept Proposal is considered suitable for the Site as it:

- will repair the urban fabric in a poorly connected area of the CBD;
- Will create a vibrant neighbourhood through the provision of a mix of complementary land uses and new and improved public spaces;
- is capable of being developed in a manner that will minimise impacts to the natural, historical, and environmental qualities of the Site;
- will result in only minor environmental impacts that can be appropriately managed and mitigated; and
- will facilitate the renewal of the Site with considerable benefits to the local community.

Conversely, the Site is considered suitable for the Concept Proposal in that:

- the location of the Site at the edge of the Sydney CBD and in the vicinity of existing transport, tourism and business infrastructure is considered to be a most appropriate location for a major new mixed use residential precinct;
- the Site is disconnected from the urban grain of surrounding precincts (including Chinatown) and is in need of urban renewal;
- it is capable of being appropriately serviced to accommodate future development;
- has excellent access to a wide range of services and facilities that will support future occupants of The Haymarket;
- provides opportunities for future residents to live and work in the CBD;
- is well served by public transport; and
- is in close proximity to high quality public open space (existing and proposed), and employment and education opportunities.

## 5.28 Public Interest

The Concept Proposal is considered to be in the public interest as it will:

- develop The Haymarket into one of Sydney's most innovative residential and working districts;
- create approximately 2,100 new jobs during construction, with ongoing employment opportunities for over 2,000 people;
- provide opportunities for public activity and enterprise within The Haymarket to provide a catalyst for future growth and expansion in the area;
- improve housing supply, choice and affordability in the City of Sydney LGA by accommodating approximately 2,360 dwellings (comprising 1,360 residential apartments and 1,000 student beds) upon completion with a resident population in the order of 3,400 – 3,700;
- provide for attainable city apartment living, suitable for young professionals and students;
- facilitate a greater number of people living close to their place of work or study, including staff and students of the education and health precinct;
- minimise urban sprawl and the costs to society associated with this inefficient form of growth;
- encourage sustainable travel behaviour by providing a significant quantum of dwellings close to public transport;
- providing opportunities to provide community uses for the benefit of existing and future residents;
- embrace and respect the vitality and character of the neighbouring Chinatown precinct;
- provide a quality visitor experience and establish The Haymarket as a distinctive destination within a revitalised quarter of the City;
- create new functional, vibrant and connected public open spaces;
- support Sydney's development as a compact and well-connected city;
- increase and improve connections with Chinatown, Ultimo, the CBD and the south of the City; and
- repair the urban fabric of this part of the City restoring street grain and connectivity.

# 6.0 Mitigation Measures

The collective measures required to mitigate the impacts associated with the proposed works are detailed in **Table 13** below. These measures have been derived from the previous assessment in Section 5.0 and those detailed in appended consultants' reports.

**Table 13** – Mitigation Measures to be implemented

| Mitigation Measures |
|---|
| **Traffic Generation**<br>▪ The following improvement measures should be considered in order to achieve satisfactory performance for intersections directly adjacent the Haymarket Site:<br>– minor adjustment to the signal layout and operation to the Darling Drive / Hay Street intersection; and<br>– signal coordination of the Harbour Street / Pier Street / Goulburn Street intersection with adjacent signals. |
| **Accessibility**<br>▪ Ensure the podium entry stairs from the adjoining pedestrian footpaths, are recessed a minimum 900mm from the transverse path of travel (The Boulevard, pedestrian footpaths), in accordance with AS1428.1-2009.<br>▪ Ensure the student housing has a minimum of 19 accessible sole-occupancy units plus 1 additional accessible sole-occupancy unit for every 50 units or part thereof in excess of 500, in accordance with DDA Access Code 2010 Clause D3.1.<br>▪ Ensure accessible sanitary facilities are provided in the student housing, retail, community and commercial areas, in accordance with DDA Access Code 2010.<br>▪ Provide a continuous accessible path of travel from the accessible pedestrian entrance of the residential buildings to at least one floor containing sole-occupancy units and to the entrance doorway of each sole-occupancy unit located on that level, in accordance with DDA Access Code 2010 and BCA.<br>▪ Ensure 1% of the commercial office car parking bays are allocated for people with a disability, in accordance with DDA Access Code 2010.<br>▪ Ensure 1% of the public car parking bays are allocated for people with a disability, in accordance with DDA Access Code 2010. |
| **Non-Indigenous Heritage**<br>An interpretation Strategy for the entire SICEEP Site is to be prepared in accordance with the NSW Heritage Manual and the OEH's Heritage Interpretation Policy. SHFA's 2008 publication '*Telling the Stories of Darling Harbour*' is an interpretation strategy based on ten distinct themes. Themes relevant to the Haymarket Site and potential opportunities for their interpretation are reproduced below:<br>▪ Gathering Cockles- the first people, and European Settlement.<br>– Place in the paving quotes and thoughts describing the original natural landscape.<br>– Use installations to showcase the range of traditional lifestyle skills including collecting foods, making tools and raising families.<br>– Mark in the paving the outline of the harbour and creek line prior to reclamation.<br>– Mark in the paving the Hay Street stone culvert alignment and discuss the loss of natural creek lines and the decline in urban water quality.<br>▪ Steaming ahead – the industrial revolution comes to Sydney.<br>– Mark the Hay Street sewer and discuss public health issues prior to sewers – the sewer in Darling Harbour is one of the world's first.<br>– Identify the Dickson's Mill site with a focus on Dickson and describe the first applications of his own |

designed steam engines in the process of timber milling, brewing and foundry works.

- Power to the people – how Darling Harbour powered Sydney with electricity, lit it with gas, provided the power to drive its trams and hydraulic lifts.
  - Focus on the Pumphouse by presenting plans of the city showing network of pipes and images of typical lifting devices, particularly steam driven bank vault doors.
- Decline and rebirth – Darling Harbour's transformation from port and industrial area to leisure tourism precinct.
  - Present chronological images showing the transformation from its early colonial natural state to its shipbuilding and wharf period, its peak industrial period and its conversion to a public landscape.

The SOHI recommends that the Interpretation Strategy *'Telling the Stories of Darling Harbour'* should be incorporated into the detailed design of the SICEEP redevelopment, and that the process should include consultation with relevant stakeholders. The interpretation strategy would be complemented by appropriate interpretative devices, as outlined in the Strategy.

**Archaeology**

**Indigenous Archaeology**

In order to mitigate any impacts to potential aboriginal archaeological deposits, Comber Consultants advise that archaeological testing, recording and salvage should occur in areas where piling or any other ground disturbance that will penetrate the fill is to be undertaken within the area of the original foreshore. In addition, the following measures are proposed:

- Prior to commencement of the monitoring and testing, a research design and management strategy should be prepared.
- Monitoring, recording and testing should be undertaken in partnership with the Metropolitan Local Aboriginal Land Council.
- If any Aboriginal "objects" (as defined under the National Parks & Wildlife Act 1974) are located during the course of the testing program, the Metropolitan Local Aboriginal Land Council should apply for a Care Agreement with the Department of Environment and Heritage to enable them keep the objects.
- The program of sub-surface testing should be coordinated with Casey & Lowe, the archaeologists undertaking testing/recording in respect of the historical archaeology.
- If any previously undetected Aboriginal "objects", artefacts or sites are uncovered, work must cease in the vicinity of that object, artefact or site and further advice sought from the archaeologist who undertook the program of sub-surface testing.

**Non-Indigenous archaeology**

In order to minimise impacts to known and potential archaeological resources the following mitigation measures are proposed by Casey and Lowe:

- Archaeological remains of State significance within The Haymarket area should be retained in situ, utilising the strategies outlined in the Assessment.
- Archaeological testing shall be undertaken prior to the preparation of detailed designs.
- Where there are impacts on archaeological remains, archaeological recording will be undertaken in accordance with Heritage Council and Heritage Branch guidelines and best practice methodologies.
- A Non-indigenous Archaeological Research Design and Management Strategy will be prepared following the preparation of detailed designs.
- Construction site protocols are to be prepared to manage and minimise intended and unintended impacts.
- Any proposed development in the vicinity of the Hay Street stormwater channel will be undertaken in accordance with engineering and heritage advice. A specific Heritage Impact Statement may be required.
- A repository for artefacts is to be provided by SHFA following the completion of the archaeological program.

- Opportunities for public interpretation of the archaeology should be provided within the redevelopment.

**Noise and Vibration**

**Operational Noise**

To ensure that noise levels (both singularly and cumulatively) comply with the INP, the following measures may be adopted:

- procurement of 'quiet' plant;
- strategic positioning of plant away from sensitive neighbouring premises, maximising the intervening shielding between the plant and sensitive neighbouring premises;
- commercially available silencers or acoustic attenuators for air discharge and air intakes of plant;
- acoustically lined and lagged ductwork;
- acoustic screens and barriers between plant and sensitive neighbouring premises; and/or
- partially-enclosed or fully-enclosed acoustic enclosures over plant.

**Construction Noise**

The following management measures can be employed to mitigate against any construction noise and vibration impacts. These include:

- Ensuring plant and equipment are properly maintained.
- Locating noisy plant and equipment as far as possible from noise sensitive areas, optimising attenuation effects from topography, natural and purpose built barriers and materials stockpiles.
- Undertaking noise and vibration compliance monitoring for all major equipment and activities on site.
- Selecting low-noise plant and equipment and ensuring that equipment has quality mufflers installed.
- Implementing respite periods (if appropriate) with low noise/vibration-producing construction activities.

The Noise Assessment outlines the communication and complaints strategy that will be implemented. In summary, throughout the construction period:

- management procedure will be put in place to deal with noise complaints that may arise from construction activities;
- good relations will be established with people living and working in the vicinity of the construction site at the beginning of the project; and
- people will be kept informed of progress and taking complaints seriously and dealing with them expeditiously is critical.

**Infrastructure and Utilities**

**Infrastructure**

To protect the Sydney Water drain, the pile layout will need to avoid the drain alignment, and also provide adequate horizontal separation distance between the pile shaft and the drain. Additionally, structural bridging beams may need to be constructed over the drain to support building columns. Such beams would be supported by piles on either side of the drain. Any piles located adjacent to the drain will need to be detailed so as to limit the potential for creating instability in the soils beneath the drain.

**Utilities**

- The sewage collection pipework shall be designed in accordance with WSA Sewerage Code of Australia Sydney Water Edition 1- Version 3.
- The new sewer collection system and diversions shall be designed and constructed in accordance with Sydney Water requirements which when completed will become Sydney Water assets.
- A building over sewer application will be required if Sydney Water approve building over the existing sewer on the south west section of the site.
- Any capital works associated with the stages of the development will be in accordance with the relevant Section 73 Notice of Requirements from Sydney Water.

- The reticulation pipework shall be designed in accordance with Water Supply Code of Australia (WSA)– Sydney Water edition 2012, suitable for the water loading and fire requirements for the development.
- Water infrastructure works will maintain service to the SEC while construction is proceeding on the western section of the site, until operations at the SEC cease in December 2013.
- Pathways solely servicing the buildings which are nominated for demolition during this development are to be decommissioned and where practicable, telecommunications cable in a reusable condition shall be pulled back and coiled at the site boundary.
- Where telecommunications diversion works are required, the proposed alternate pathway will be established prior to decommissioning the existing pathway in consultation with the relevant service provider. All required cut-overs shall be programmed at times to limit the disruption of service to existing subscribers.
- The quantity and locations of fibre optic cabling shall be determined during tenant consultation with minimum provisions as per the requirements of the PCA Guide to Office Building Quality 2012.
- The design and installation of the electrical infrastructure (new and/or augmented) will be undertaken by Level 3 and Level 1 and/or 2 Accredited Service Providers to the requirements of Ausgrid.

**Water Cycle Management**

- All overland flow paths are to remain unobstructed and ground levels are to be consistent with the proposed flood modelling.
- A formal floodplain risk management plan with respect to evacuation and refuge is to be developed.
- Buildings and structures are to be designed for hydraulic loadings up to the PMF event.

**Contamination**

- Maintain a secure boundary fence;
- Provide appropriate personal protective equipment during ground works;
- Implementation of good health, safety and welfare facilities and practice during ground works;
- Implement dust suppression techniques during ground works ;
- Undertake boundary monitoring for vapours, dusts and fibres;
- Segregate contaminated materials following excavation.
- Undertake on-site treatment of contaminated soils and/or disposal to licensed landfill;
- Backfill excavation with suitably validated material, and clean imported materials;
- Reinstate cover layer to separate receptors from residual ground conditions;
- Develop a detailed Environmental Management Plan (EMP) to mitigate potential environmental risks associated with future ground maintenance events;
- Redevelop the site with hard surfaces and site drainage thereby reducing infiltration;
- Prepare an ASS Management Plan (ASSMP);
- Co-ordinate construction excavation and dewatering activities alongside the ASSMP;
- Allow for on-site treatment of ASS; and

Undertake remediation in accordance with the approach and design outlined in the Overarching Remedial Action Plan, prepared by Coffey Environments, report date 15 March 2013.

**CPTED**

- lighting and landscaping should be designed to provide diverse and safe activation;
- noise attenuation measures should be incorporated in and around Haymarket Square to encourage safe, time-extended social engagement with locality and surrounding components of the public domain.

- CPTED Principles shall be considered when:
  - locating lobbies, loading, and parking facilities
  - selecting treatments to access points, set-backs, under-crofts and facades;
  - designing landscaping, lighting and signage; and
  - designing strategies for public transport, and road and street corridors servicing the precinct.
- Ongoing engagement with surrounding precincts is required in order to ensure a holistic CPTED design is developed.

# 7.0 Conclusion and Justification of the Proposal

This Environmental Impact Statement (EIS) has been prepared to assess the environmental, social and economic impacts of the proposed Stage 1 Concept Proposal for the Haymarket Site (Southern Precinct of the SICEEP Project. The EIS has addressed the issues outlined in the Director-General's Requirements (**Appendix A**) and accords with Schedule 2 of the *Environmental Planning and Assessment Regulation 2000* with regards to consideration of relevant environmental planning instruments, built form, social and environmental impacts including traffic, noise, construction impacts and stormwater.

It is considered the project warrants approval for the following reasons:

- The Concept Proposal is permissible with consent and meets the requirements of the relevant statutory planning controls;
- The proposal is consistent with the principles of ecological sustainable development as defined by Schedule 2(7)(4) of the *Environmental Planning and Assessment Regulation 2000*;
- The area and shape of the site allows for the provision of the proposed Concept Proposal, which meets the special design requirements established by Infrastructure NSW whilst not resulting in any unacceptable adverse impacts on surrounding buildings and uses;
- The proposed development will provide a significant public benefit through the provision of a renewed public domain and the potential for the provision of community uses such as a library and/or childcare for the benefit of the local community;
- The site is adequately serviced with potable water and stormwater infrastructure and electrical and communication services;
- The development will not generate a significant impact on the general operational and construction to the HKH; and
- The provision of a vibrant mixed use precinct will further support and strengthen the liveability of Sydney.

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