

Re: 15-206074_SE Plot Red_Haymarket_160216_R04.Docx

Sydney International Convention, Exhibition and Entertainment Precinct (SICEEP)

Darling Square: South East Plot Building Code of Australia 2015 Report for DA

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DOCUMENT ACCEPTANCE

	Name	Date
Prepared by	Robert Marinelli	16/02/2016

REVISION HISTORY

Revision No.	Prepared by	Description	Date
R01	Robert Marinelli	Draft Design Report	23/12/2015
R02	Robert Marinelli	Design Report	31/1/2016
R03	Robert Marinelli	Revisions to Design Report	12/02/2016
R04	Robert Marinelli	Issued Design Report	16/02/2016



1.0 Introduction

This report supports a State Significant Development (SSD) Development Application (DA) submitted to the Minister for Planning pursuant to Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

The Application (referred to as SSDA 9) follows the approval of a staged SSD DA (SSDA 2) in December 2013. SSDA 2 sets out a Concept Proposal for a new mixed use residential neighbourhood at Haymarket referred to as “Darling Square”, previously known as “The Haymarket”. Darling Square forms part of the Sydney International Convention, Exhibition and Entertainment precinct (SICEEP) Project, which will deliver Australia’s global city with new world class convention, exhibition and entertainment facilities and support the NSW Government’s goal to “make NSW number one again”.

More specifically this subsequent DA seeks approval for mixed use development within the South East development plot of Darling Square and associated public domain works. The DA has been prepared and structured to be consistent with the Concept Proposal DA.

1.1 Overview of Proposed Development

The proposal relates to a detailed (‘Stage 2’) DA for a mixed use residential development in the South East Plot of Darling Square together with associated public domain works. The Darling Square Site is to be developed for a mix of residential and non-residential uses, including but not limited to residential buildings, commercial, retail, community and open space. The South East Plot is one of six development plots identified within the approved Concept Proposal.

Under the Concept Proposal, the South East Plot is planned to accommodate a mixed use podium and three residential buildings (SE1, SE2, and SE3) above and within the podium structure. More specifically, this SSD DA seeks approval for the following components of the development:

- Demolition of existing site improvements, including the existing Sydney Entertainment Centre (SEC);
- Associated tree removal and planting;
- Construction and use of a predominantly 6 storey mixed use podium, including:
 - retail floor space, residential lobbies and IQ hub lobby on Ground Level;
 - above ground parking;
 - residential apartments; and
 - communal facilities.
- Construction and use of three residential buildings above podium;
- Public domain improvements adjacent to the site;
- Provision of vehicle access to the development from Harbour Street;
- Landscaping works to the podium roof level; and
- Extension and augmentation of physical infrastructure / utilities as required.

1.2 Background

The NSW Government considers that a precinct-wide renewal and expansion of the existing convention, exhibition and entertainment centre facilities at Darling Harbour is required, and is committed to Sydney reclaiming its position on centre stage for hosting world-class events with the creation of SICEEP.

Following an extensive and rigorous Expressions of Interest and Request for Proposals process, a consortium comprising AEG Ogden, Lend Lease, Capella Capital and Spotless was announced by the NSW Government in December 2012 as the preferred proponent to transform Darling Harbour and create SICEEP.



Key features of the Preferred Master Plan include:

- Delivering world-class convention, exhibition and entertainment facilities, including:
 - Up to 40,000m² exhibition space;
 - Over 8,000m² of meeting rooms space, across 40 rooms;
 - Overall convention space capacity for more than 12,000 people;
 - A ballroom capable of accommodating 2,000 people; and
 - A premium, red-carpet entertainment facility with a capacity of 8,000 persons.
- Providing a hotel complex at the northern end of the precinct.
- A vibrant and authentic new neighbourhood at the southern end of the precinct, now called 'Darling Square', including apartments, student accommodation, shops, cafes and restaurants.
- Renewed and upgraded public domain that has been increased by a hectare, including an outdoor event space for up to 27,000 people at an expanded Tumbalong Park; and
- Improved pedestrian connections linking to the proposed Ultimo Pedestrian Network drawing people between Central, Chinatown and Cockle Bay Wharf as well as east-west between Ultimo/Pymont and the City.

On 21 March 2013 a critical step in realising the NSW Government's vision for the SICEEP Project was made, with the lodgement of the first two SSD DAs with the (now) Department of Planning and Environment. The key components of these proposals are outlined below.

1.3 Public Private Partnership SSD DA (SSD 12_5752)

The Public-Private Partnership (PPP) SSD DA (SSDA 1) includes the core facilities of the SICEEP Project, comprising the new, integrated and world-class convention, exhibition and entertainment facilities along with ancillary commercial premises and public domain upgrades. SSDA1 was approved on 22 August 2013.



1.4 Concept Proposal (SSD 13_5878)

The Concept Proposal SSD DA (SSDA 2) establishes the vision and planning and development framework which will be the basis for the consent authority to assess detailed development proposals within the Darling Square Site. SSDA2 was approved on 5 December 2013. The Stage 1 Concept Proposal approved the following key components and development parameters:

- Indicative staging of demolition and development of future development plots;
- Land uses across the site including residential and non-residential uses;
- Street and laneway layouts and pedestrian routes;
- Open spaces and through-site links;
- Six separate development plots, development plot sizes and separation, building envelopes, building separation, building depths, building alignments, and benchmarks for natural ventilation and solar access provisions;
- A maximum total gross floor area (non-residential and residential GFA);
- Above ground car parking including public car parking;
- Residential car parking rates;
- Design Guidelines to guide future development and the public domain; and
- A remediation strategy.

The Concept Proposal was modified on 26 November 2015 to increase the amount of non-residential GFA. This minor increase in GFA was allocated to the approved North-West Plot building to meet tenant requirements. In addition to the approval of SSDA2, the following approvals have been granted for various stages of Darling Square site:

- Darling Drive (part) development plot (SSDA3) for the construction and use of a residential building (student accommodation) and the provision of associated public domain works approved on 7 May 2014;
- North-West development plot (SSDA4) for the construction and use of a mixed use commercial development and public car park building and associated public domain works approved on 7 May 2014; and
- South-West development plot (SSDA5) – construction and use of a mixed use residential development and associated public domain works approved on 21 May 2014.
- North-East development plot (SSDA7) – construction and use of a mixed use residential development and associated public domain works approved on 16 April 2014.

Approval was also granted on 15 June 2014 for SSDA6 which includes the construction and use of the International Convention Centre (ICC) Hotel and provision of public domain works. Approval was also granted for SSDA8 on 16 October 2015 which comprised the ICC Hotel fit out, external lighting and subdivision.

This report has been prepared to support a detailed Stage 2 SSD DA for mixed use development and associated public domain works within Darling Square (SSDA 9), consistent with the Concept Proposal (SSDA 2).

1.5 Site Description

The SICEEP Site is located within Darling Harbour. Darling Harbour is a 60 hectare waterfront precinct on the south-western edge of the Sydney Central Business District that provides a mix of functions including recreational, tourist, entertainment and business.



With an area of approximately 20 hectares, the SICEEP Site is generally bound by the light rail Line to the west, Harbourside shopping centre and Cockle Bay to the north, Darling Quarter, the Chinese Garden and Harbour Street to the east, and Hay Street to the south (refer to **Figure 1**).

The Darling Square Site is:

- located in the south of the SICEEP Site, within the northern portion of the suburb of Haymarket;
- bounded by the Powerhouse Museum to the west, the Pier Street overpass and Little Pier Street to the north, Harbour Street to the east, and Hay Street to the south; and
- irregular in shape and occupies an area of approximately 43,807m².

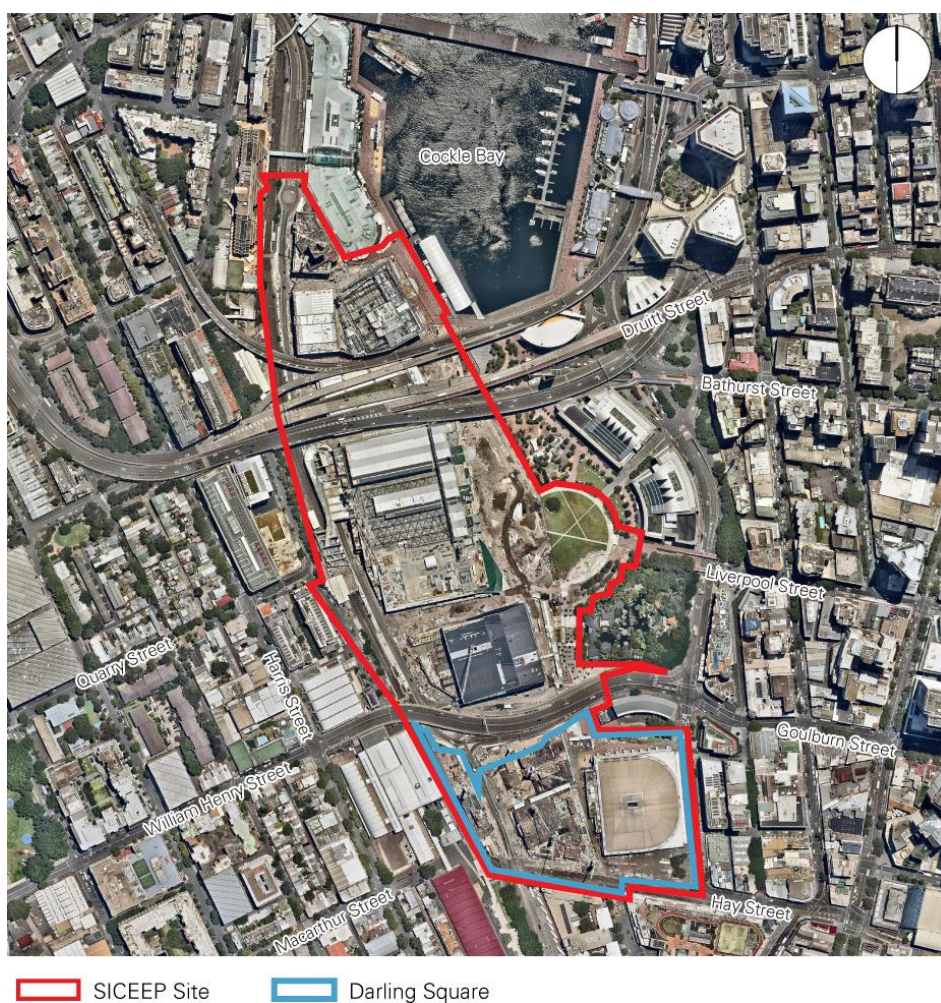


Figure 1 – Aerial Photograph of the SICEEP Site

The Concept Proposal DA provides for six (6) separate development plots across the Darling Square Site (refer to **Figure 2**):

1. North Plot;
2. North East Plot;
3. South East Plot;
4. South West Plot;
5. North West Plot; and
6. Western Plot (Darling Drive).



The Application Site area relates to the South East Plot and surrounds as detailed within the architectural and landscape plans submitted in support of the DA.

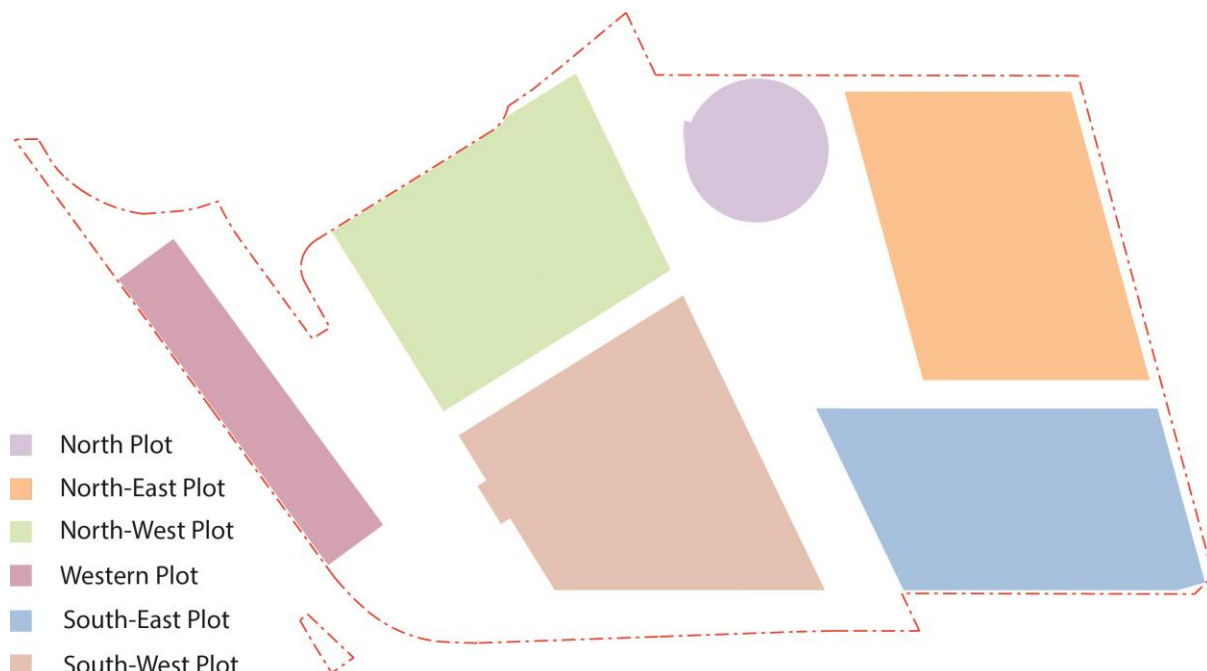


Figure 2 – Concept Proposal Development Plots

1.6 Planning Approvals Strategy

The SICEEP Project has resulted in the lodgement of numerous SSD DAs for the various components of the redevelopment project. Future applications will continue to be lodged in accordance with the Concept Proposal SSD DA for the remaining development plots of Darling Square Site.



2.0 Capability, Brief and Documentation

This report is the result of the review of the below listed architectural drawings as available at the time of assessment against the requirements of the Building Code of Australia 2015 however will also be reviewed in due course against Building Code of Australia 2016 (BCA). The report overviews the design philosophy and provides information for the designers to incorporate into the design as well as identify areas that do not meet the BCA requirements and may require some revision, additional detail or alternative solutions. Methodology is principally inspection of the available documentation.

We have reviewed the submitted documentation for compliance with the deemed-to-satisfy provisions of the Building Code of Australia and the relevant major Australian Standards referenced by this code. Where compliance with the deemed to satisfy provisions is not possible, alternative solutions will be required. This report is for the exclusive use of the client and cannot be used for any other purpose without prior permission from Philip Chun & Associates Pty Ltd. The report is valid only in its entire form.

2.1 Documentation and Drawings

Architectural documentation reviewed is listed as follows prepared by FJMT:

Drawings

FJMT-DA-R0001 - Rev 04 - Cover Sheet
FJMT-DA-R0002 - Rev 06 - Legend and Abbreviations
FJMT-DA-R0003 - Rev 04 - Key Plans
FJMT-DA-R1001 - Rev 05 - Site Plan
FJMT-DA-R1002 - Rev 05 - L00 Podium Ground
FJMT-DA-R1003 - Rev 05 - L01 Mezzanine
FJMT-DA-R1004 - Rev 05 - L02 Podium - Residential
FJMT-DA-R1005 - Rev 05 - L03 Podium - Residential
FJMT-DA-R1006 - Rev 02 - L04 Podium - Residential
FJMT-DA-R1007 - Rev 02 - L05 Podium - Residential
FJMT-DA-R1008 - Rev 05 - L06 SE1 Setback, SE2 ComSp1 SE3 & Rf Gdns
FJMT-DA-R1009 - Rev 05 - L07 SE1 Low Rise, SE2 ComSp2 & SE3 Setback
FJMT-DA-R1010 - Rev 05 - L08 SE1 Low Rise, SE2 Pent 01 & SE3 Top
FJMT-DA-R1011 - Rev 05 - L09 SE1 Low Rise & SE2 Pent 02
FJMT-DA-R1012 - Rev 05 - L10 SE1 Low Rise & SE2 Plant
FJMT-DA-R1013 - Rev 05 - L11-L27 SE1 Tower Typical
FJMT-DA-R1014 - Rev 05 - L28-L29 SE1 Penthouse
FJMT-DA-R1015 - Rev 05 - SE1 Plant
FJMT-DA-R1016 - Rev 05 - Roof Plan
FJMT-DA-R1017 - Rev 05 - Adaptable SE1 L03-05.01
FJMT-DA-R1018 - Rev 05 - Adaptable SE1 L06.08 & 09
FJMT-DA-R1019 - Rev 05 - Adaptable SE3 L03-05.08
FJMT-DA-R2001 - Rev 05 - South Elevation
FJMT-DA-R2002 - Rev 05 - North Elevation
FJMT-DA-R2003 - Rev 04 - East Elevation
FJMT-DA-R2004 - Rev 04 - West Elevation
FJMT-DA-R2005 - Rev 04 - SE1 East Elevation
FJMT-DA-R2093 - Rev 04 - SE3 West Elevation
FJMT-DA-R2007 - Rev 04 - SE2 South Elevation
FJMT-DA-R2008 - Rev 04 - SE2 Without 0.per-ahie.Scnaen-
FJMT-DA-R2009 - Rev 04 - SE1 Elevation
FJMT-DA-R2501 - Rev 05 - Ground Plane Detail Elevations
FJMT-DA-R3001 - Rev 04 - GA Sections 01
FJMT-DA-R3002 - Rev 04 - GA Sections 02
FJMT-DA-R3003 - Rev 04 - Podium Sections 01
FJMT-DA-R3004 - Rev 04 - Podium Sections 02
FJMT-DA-R3005 - Rev 04 - Public Interface Sections 01
FJMT-DA-R3006 - Rev 04 - Public Interface Sections 02
FJMT-DA-R4001 - Rev 04 - Apartment Natural Ventilation Diagrams
FJMT-DA-R4002 - Rev 04 - South Facing Apartments
FJMT-DA-R4003 - Rev 04 - Apartment Solar Access-2 Hour GF-L30 (Roof)
FJMT-DA-R4004 - Rev 04 - Apartments With No Solar Access



2.2 Alternate solutions and performance based assessment

Where compliance with the deemed to satisfy provisions is not readily achievable, performance based assessment and alternative solutions will be used to demonstrate compliance with the BCA. Those identified to date in the design, have been scheduled within the body of this report and referred to in the relevant section.

This comes about due to the generic and prescriptive nature of the BCA with respect to the deemed to satisfy provisions and the inability for the document to be ultimately flexible for all building types and applications. This is the main reason the document allows alternate solutions, where meeting the performance requirements, are deemed to also be compliant with the BCA.

Current anticipated alternate solutions

1. Distance of travel to the landscaped floor at L06 to exceed 20 metres to a point of choice, 40 metres to an exit and 60 metres between exits, including the roof deck and pool area.
2. Some of the points on the floors of the loading dock, common areas the carpark levels to have areas and rooms where the distance of travel will exceed 40 metres to an exit and travel will be greater than 60 metres between exits.
3. Distance of travel to an exit in the residential floors to exceed 6 metres.
4. Distance of travel to a point of choice to an exit in the residential floors to exceed 6 metres.
5. Distance of travel to an exit from the non residential areas of the residential floors to exceed 20 meters to an exit in building SE2.
6. Fire rating of the retail and carpark compartments including combined with storage and ancillary plant exceeding 10 % to be an FRL of 120/120/120.
7. Fire rating of the storage area to the mezzanine floor to be reduced to an FRL of 120/120/120.
8. The provision of a single exit to part of the building where the effective height will be greater than 25 metres due to the two storey penthouses.
9. To allow more than 2 doors opening into a fire passageway whereby there will not be an exit pressurization system provided, nor smoke lobbies to D2.6 at ground floor level of SE2.
10. Shielding to the boosters to be less than that required by the Australian Standard 2419.
11. Point of discharge of the southern fire isolated stairs to the tower to be within an undercroft where greater than 6 metres to the street or open space.
12. Fire control room to be greater than 300mm above the finished ground level.
13. Distance of travel between the alternate storage area mezzanine floor exits to be less than 9 metres.
14. Distance to an exit to the plant room on the mezzanine level to exceed 20 metres.
15. Provision of a single exit to the mezzanine plant room.
16. Provision of a single exit to the plant room at the roof level of SE2.
17. Deletion of the smoke doors to corridors where they are greater than 40 metres in length.
18. Shielding of sprinkler heads in bathrooms contrary to AS2118.1.
19. Deletion of fire collars to the balcony storm water downpipes where passing through the balcony slabs.
20. Re-entry to the fire isolated stairs to vary from the requirements of D2.22.
21. External doors to some tenancy areas to swing against the direction of exit travel.
22. Doors to the fire isolated passageway to SE2 to swing against the direction of travel where opening into the exit.

The above issues will be discussed, where relevant, with Fire and Rescue NSW to mitigate any of their concerns.



2.3 Building Code of Australia 2015 Classifications

According to the Building Code of Australia the following definitions assist in the classification of the buildings and their various parts.

Def - A3.1 Principles of classification

The classification of a building or part of a building is determined by the purpose for which it is designed, constructed or adapted to be used.

Def - A3.2 Classifications

The different parts of the building are classified as follows as they relate to the overall complex :

Class 2:

a building containing 2 or more sole-occupancy units each being a separate dwelling.

Class 6: - a shop or other building for the sale of goods by retail or the supply of services direct to the public, including—

- (a) an eating room, café, restaurant, milk or soft-drink bar; or*
- (b) a dining room, bar area that is not an assembly building, shop or kiosk part of a hotel or motel; or*
- (c) a hairdresser's or barber's shop, public laundry, or undertaker's establishment; or*
- (d) market or sale room, showroom, or service station.*

Class 7: - a building which is—

- (a) Class 7a — a carpark; or*
- (b) Class 7b — for storage, or display of goods or produce for sale by wholesale.*



3.0 Building Code of Australia Assessment

3.1 Use and Class of the building

The development comprises of a new mixed use residential complex, including a podium building with components of retail and carpark together with three towers erected thereon.

Building Classification and Use

Class and use of the various levels of the building are as follows:-

Level	Proposed Use	BCA Class
Ground Level		
Podium	Residential entry lobbies Retail Plant Carpark Loading Dock	Class 2 Class 6 Ancillary to carpark - Class 7a Class 7a Ancillary to carpark - Class 7a
Level 01		
Podium (mezzanine)	Storage Plant	Class 7b Ancillary to retail - Class 6
Level 02		
Podium	Residential apartments Carpark and apartment storage	Class 2 Class 7a and 7b
Level 03 – 05		
Podium	Residential apartments Carpark and apartment storage	Class 2 Class 7a and 7b
Level 6		
Podium Roof	Residential apartments, Community Space, Pool and Landscaping	Class 2
Level 7		
Tower SE1	Residential apartments	Class 2
Tower SE2	Residential apartments and Community Space	Class 2
Tower SE3	Residential apartments	Class 2
Level 8		
Tower SE1	Residential apartments Low Rise	Class 2
Tower SE2	Residential apartments (including some penthouse lower level only)	Class 2
Tower SE3	Residential apartments	Class 2
Level 9		
Tower SE1	Residential apartments Low Rise	Class 2
Tower SE2	Residential apartments (upper level penthouse) Plant	Class 2 Ancillary to Apartments - Class 2
Tower SE3	Residential apartments	Class 2
Level 10		
Tower SE1	Residential apartments Low Rise	Class 2
Tower SE3	Plant	Ancillary to Apartments - Class 2
Level 11 - 27		
Tower SE1	Residential apartments	Class 2
Level 28 – 29		
Tower SE1	Residential apartments	Class 2
Level 30		
Tower SE1	Plant	Ancillary to Apartments - Class 2

The building will be documented so that it will comply with the requirements of Type A construction. The required fire ratings are specified in the following report.



Rise in Storey and effective height

The rise in storey of the building complex overall is 29 given the connected nature of the towers and podium according to BCA C1.2, and as stated above Type A Construction is therefore required. The effective height of the building is greater than 50 metres.



3.2 Construction and Fire Resistance Ratings

3.2.1 Construction

The building is to be constructed of structural reinforced concrete construction with an external facade of precast concrete, cladding and glazing.

3.2.2 Fire Ratings

The fundamental concept of fire rating for the building complex will be as per the following tables:

Building Component	Class 2	Class 6	Class 7b	Class 7a
External walls (load-bearing)	90/60/30	180/120/90	240/180/90	120/60/30
Fire walls	90/90/90	180/180/180	240/240/240	120/120/120
Shaft walls (lift and stairs)	90/90/90	180/120/120	240/120/120	120/120/120
Service shafts	90/90/90	180/120/120	240/120/120	120/90/90
Between sole occupancy units (load-bearing)	90/90/90	180/-/-	240/-/-	120/-/-
Between sole occupancy units (non-load bearing)	-/60/60	-/-/-	-/-/-	-/-/-
Load-bearing columns, internal walls, internal beams and trusses	90/-/-	180/-/-	240/-/-	120/-/-
Floors	90/90/90	180/180/180	240/240/240	120/120/120

3.2.3 Specific fire rating application

Level	Proposed Use	Building Code of Australia Class	Generic FRL	Final fire rating proposed
Ground Level				
Podium	Residential entry lobbies Retail Plant Carpark Loading Dock	Class 2 Class 6 Class 7a Class 7a Class 7a	90/90/90 180/180/180 120/120/120 120/120/120 120/120/120	120/120/120 reduced through fire engineering
Level 01				
Podium (mezzanine)	Storage Plant	Class 7b Class 6	240/240/240 180/180/180	120/120/120 to all non residential areas – revised through fire engineering, all other areas will be separated with a fire wall of 120/120/120
Level 02				
Podium	Residential apartments Carpark and apartment storage	Class 2 Class 7a and 7b	90/90/90 120/120/120	120/120/120 to all non residential areas, 90/90/90 to residential areas, separated with a fire wall of 120/120/120
Level 03 – 05				
Podium	Residential apartments Carpark and apartment storage	Class 2 Class 7a and 7b	90/90/90 120/120/120	120/120/120 to all non residential areas 90/90/90 to residential areas, separated with a fire wall of 120/120/120
Level 6				
Podium Roof	Residential apartments, Community Space, Pool and Landscaping	Class 2	90/90/90 120/120/120	120/120/120 to all non residential areas 90/90/90 to residential areas Floor of podium landscape level is to be 120/120/120
Level 7				
Tower SE1	Residential apartments	Class 2	90/90/90	90/90/90
Tower SE2	Residential apartments and Community Space	Class 2	90/90/90	90/90/90



Level	Proposed Use	Building Code of Australia Class	Generic FRL	Final fire rating proposed
Tower SE3	Residential apartments	Class 2	90/90/90	90/90/90
Level 8				
Tower SE1	Residential apartments Low Rise	Class 2	90/90/90	90/90/90
		Class 2		
Tower SE2	Residential apartments (including some penthouse lower level only)	Class 2	90/90/90	90/90/90
Tower SE3	Residential apartments	Class 2	90/90/90	90/90/90
Level 9				
Tower SE1	Residential apartments Low Rise	Class 2	90/90/90	90/90/90
Tower SE2	Residential apartments (upper level penthouse) Plant	Class 2	90/90/90	90/90/90 or 120/120/120 if plant is housing essential equipment.
Tower SE3	Residential apartments	Class 2	90/90/90	90/90/90
Level 10				
Tower SE1	Residential apartments Low Rise	Class 2	90/90/90	90/90/90.
Tower SE3	Plant	Class 2	90/90/90	90/90/90 or 120/120/120 if plant is housing essential equipment.
Level 11 - 27				
Tower SE1	Residential apartments	Class 2	90/90/90	90/90/90.
Level 28 – 29				
Tower SE1	Residential apartments	Class 2	90/90/90	90/90/90.
Level 30				
Tower SE1	Plant	Class 2	90/90/90	90/90/90 or 120/120/120 if housing essential equipment.

Different occupancy classes are to be fire separated via a firewall or alternatively adjoining use compartments may adopt the higher FRL requirements. This applies to the podium levels of the building including the lower floor levels where the apartment, carpark, storage, retail and loading docks are located and where the uses are joined through voids. Variances to the fire rating can be assessed according to fire engineering.

Load-bearing internal walls are to be constructed of concrete or masonry.

The roof covering is to be non-combustible construction where the building is provided with sprinkler protection.

The following services are to be separated from the remainder of the building via a 120/120/120 FRL:-

- Switchrooms
- Lift motor rooms
- Boilers
- Essential services generator systems
- Exit pressurisation systems
- Kitchen Exhaust systems
- Fire Control Rooms

The **electrical substation** located on the ground floor level of the building must be separated from any other part of the building by construction having an FRL of not less than -/180/180 and have self closing fire doors with a fire rating of -/180/30 (this will be an Energy Australia requirement rather than a BCA requirement, however should be confirmed with the electricity authority).



3.2.4 Spandrels

Spandrel separation under C2.6 does not apply to sprinkler protected buildings.

3.2.5 Fire compartment areas and volumes

The maximum area and maximum volume of fire compartments allowed as specified in Part C2.2 of the BCA for Type A construction is 5,000m² and 30,000m³ respectively for the class 6 and 7b parts of the building.

The carpark levels have in excess of 40 cars, together with areas dedicated for cycle parking, service vehicles, loading docks and plant areas. As the building is greater than 25 metres the building will require sprinkler protection. A sprinkler protected carpark has no compartment size limit, however if it is combined with storage greater than 10%, it will attract an alternate solution. This will be validated at design development stage.

3.2.6 Smoke doors in public corridors in Class 2 buildings

In a Class 2 or 3 building, a public corridor, where more than 40 m in length, must be divided at intervals of not more than 40 m with smoke-proof walls complying with Clause 2 of Specification C2.5. Current design shows compliance where corridors are in excess of 40m and these may be subject to an alternate solution. (see Section 2 above)

3.2.7 Connection of floors

In parts of the building where void connects various levels, the fire rating of the higher fire load applies. This applies therefore to Ground Level to Level 01 given that the carpark entry, loading dock and general back of house connects up into the carpark levels. Connection internally between the carparks also requires the higher FRL to be applied.

3.2.8 Protection of Openings

The site appears to be bounded by public roads and public thoroughfares on all sides hence exposure to fire source features will not apply.

3.2.9 External Protection to exits

From the design to date there are only the paths to the north from the SE2 building that lead from the fire isolated stairs at ground discharge level that will necessitate passing within 6 metres of the building. These walls will be protected in accordance with the requirements of the Building Code of Australia.



3.3 Access and Egress

3.3.1 Principles

The buildings' egress system has been assessed and designed to ensure compliance with the following principles:

- Every floor of the building is provided with at least two exits to where the storeys are over an effective height of 25 metres.
- To non residential areas the maximum distance of travel to an exit to floors is to be 40 metres, and to a point of choice is to be 20 metres.
- The maximum distance of travel to an exit within the residential floors and residential common areas is to be not greater than 6 metres to a single exit or 6 metres to a point of choice to two exits.
- The distance between alternate exits will not exceed 45 metres for residential areas.
- The distance between alternate exits is not to exceed 60 metres to other areas.
- The distance between alternate exits is to be not less than 9 metres.
- The construction and discharge of stairs, landings, thresholds, balustrades and handrails will need to meet the requirements of the BCA.
- Fire corridors provided for egress will achieve the same fire rating as that provided to their associated fire-isolated stairs.
- The point of discharge of the fire-isolated stairs is to be to open space and not to an undercroft area.
- All paths of travel are to be a minimum of 1000mm in clear width.
- All fire stair doors require re-entry mechanisms operating on a fire trip (D2.22) and an intercom system if the doors are to be secured from inside the stair. It is proposed to vary this requirement by fire engineering to allow a break glass on every 4th floor from within the fire isolated stairs.

Where these are not met, an alternate solution will be provided to justify the variances according to fire engineering. (See Section 2)

3.3.2 Populations and aggregate exits

Given the number of exits and use of the building, the population requirements of the BCA will not be exceeded on base building design. Further review to be undertaken once tenancies are determined so that any risk areas are mitigated.



3.3.3 Access Part D3

The access provisions for Class 2 buildings are less than the other classifications however they need to be carefully reviewed.

The access consultant is to assess and review the access requirements to the building complex as part of the SSDA9 application hence their reporting will bear on the design outcomes and suitability on the design.

Currently this is a high level review and a more detailed assessment will follow in the next stages of design. For this reason only the main issues have been raised in this report.

3.3.3.1 Requirements for access

The following are the applicable requirements to be provided to the building.

For the Class 2 areas

From a pedestrian entrance required to be accessible to at least 1 floor containing sole-occupancy units and to the entrance doorway of each sole-occupancy unit located on that level.

To and within not less than 1 of each type of room or space for use in common by the residents, including a cooking facility, sauna, gymnasium, swimming pool, common laundry, games room, individual shop, eating area, or the like. Access is required to the podium roof.

Where a ramp complying with AS 1428.1 or a passenger lift is installed—

- (a) to the entrance doorway of each sole-occupancy unit; and
- (b) to and within rooms or spaces for use in common by the residents, located on the levels served by the lift or ramp.

Class 6

To and within all areas normally used by the occupants.

Class 7a

To and within any level containing accessible carparking spaces.

Class 7b

To and within all areas normally used by the occupants.

3.3.3.2 Accessible carparking

The building needs to be provided with accessible carparking as per the following

Class 6

- (a) Up to 1000 carparking spaces; and 1 space for every 50 carparking spaces or part thereof.
- (b) for each additional 100 carparking spaces or part thereof in excess of 1000 carparking spaces.

Application of this clause should be referred to the access consultants as it may be reasonable to define the portion per classification to identify the numbers actually applicable. An accessible path of travel is to be provided from the proposed accessible carparking spaces to the entrances of each SE1, SE2 and SE3 - current plans show a split level carpark.



3.4 Fire Systems

The following is a status of the services required and to be provided to the building.

3.4.1 Fire services

Fire Hydrants Fire hydrants are to be provided throughout to AS 2419. A ring main will be required to the building.

The hydrant booster location within 10 metres of a building is to be protected by a 90 minute fire rated wall extended 2 metres either side of booster and 3 metres above ground level.

The location of the boosters needs to be approved by the NSW Fire Brigade if it departs from the Australian Standards.

The fire hydrants to the building will be located within the fire isolated stairs of the building.

Fire Hose-Reels Fire hose-reels should be arranged to provide for full coverage to the building in accordance with AS 2444.

Fire hose-reels are to be located within 4 metres of an exit or a fire hydrant.

This is in all areas except the residential floors where fire extinguishers must be used rather than fire hose reels.

Sprinklers A sprinkler system complying with AS 2118.1 is to be provided. Ensure the control valves do not control an area greater than that permitted for each applicable occupancy class.

Location of the sprinkler valve room needs to be directly to the street or open space.

Sprinklers - External Wall Wetting Any openings within the prescribed distances in BCA for openings in different compartments, facing each other may be protected with external wall wetting sprinkler heads. Currently this is not required.

Further, where glazing is located adjoining the point of discharge of the fire isolated stairs necessitating passing past the glass, the glazing will need to be provided with wall wetting sprinklers.

3.4.2 Fire Control Room

The Fire Control Room for the building needs to be provided to incorporate all applicable requirements of the BCA. Clearances to the panels need to be observed and provided to ensure compliance for attending NSW Fire Brigades personnel. Works are to comply with Specification E1.8.

Any variations from Spec E1.8 will need to be referred to Fire and Rescue NSW and need an alternative solution. (see section 2 above).



3.4.3 Smoke hazard management

The following criterion applies to the building in terms of smoke hazard management and covers the various uses of the building.

Fire isolated exits	Requirements
A fire isolated stairway including any associated fire isolated passageway or fire isolated ramp serving – (i) any storey above an effective height of 25m; or (ii) more than 2 below ground storeys, not counted in the rise in storeys in accordance with C1.2, must be provided with an automatic air pressurisation system for fire isolated exits in accordance with AS/NZS 1668.1	The fire stairs to SE1 and SE3 will require an automatic air pressurisation system as they are serving parts of the floor over 25 metres
Buildings more than 25m in effective height	Requirements
A Class 2 and 3 building or part of a building and Class 4 part of a building- (a) must be provided with an automatic smoke detection and alarm system complying with Specification E2.2a; and	Needs a smoke detection and alarm system in accordance with E2.2a
A Class 7a building (Carpark portion), including a basement, provided with a mechanical ventilation system in accordance with AS 1668.2 must comply with Clause 5.5 of AS/NZS 1668.1 and— (a) fans with metal blades suitable for operation at normal temperature may be used; and (b) the electrical power and control cabling need not be fire rated.	Smoke detectors in accordance with Clause 4.10.1 shall be installed in the supply air system in accordance with Clause 4.10.5(b).
A Class 5, 6, 7b, 8 and 9b building or part of a building must be provided with a zone smoke control system in accordance with AS/NZS 1668.1 Note 2 – This requirement does not apply to a single Class 5, 6, 7b, 8 or 9b fire compartment in an otherwise Class 2, 3, 4, 9a or 9c building.	The building at the ground floor level does not need a zone smoke control system as the compartment is less than 2000m² and forms part of a class 2 building overall.

3.4.4 Lift systems

A minimum of two emergency lifts will need to be provided to each of the buildings as the effective height is greater than 25 metres, with the exception of SE2 where 1 is acceptable. The emergency lifts may be combined with the passenger lifts as the passenger lifts serve every storey.

The proposed lifts will require details to ensure compliance as to which ones are the designated Emergency Lifts. Two emergency lifts must serve every level of the building including the lower levels (that is two lifts to each level as a minimum that comply with the requirements for an Emergency Lift). All lift cars must be provided with fire service controls in accordance with AS 1735.2.

All lifts must be accessible for people with disabilities and provided with the following:

- Fitted with car control buttons and handrails complying with AS 1735.12.
- Internal floor dimensions not less than 1400mm x 1100mm.
- Clear opening of the doorway to be not less than 900mm.
- Fitted with door opening sensory devices.

BCA 2015 will have additional requirements and these will be incorporated in the lift design at the next stage of design.

3.4.5 Emergency Lighting, Exit Signs and Warning Systems

Exit and emergency lighting A system of emergency lights and exit signage will be installed in the buildings to AS2293.

Sound systems and intercom systems for emergency purposes A system complying with AS 1670.4 is to be provided to the buildings.



3.5 Health and Amenity

3.5.1 Sanitary facilities

The following criteria detail the required sanitary facilities to be provided.

The populations for the building levels have been derived from the designers in consultation with the client and cross checked to meet the BCA.

3.5.2 Facilities to non residential areas

The following table identifies the requirements for the building that will apply for the staff to the retail areas of the building.

Retail area and office employees only - (based on sanitary facility numbers provided)

Level	Sex	WC	Urinals	Basins	Max Persons per fitting
Ground Level	Males	Actual 4* (Counted as 5 due to unisex accessible sanitary facility)	Actual 3* (Counted as 4 due to unisex accessible sanitary facility)	Actual 4* (Counted as 5 due to unisex accessible sanitary facility)	100 for WCs 200 for Urinals 150 for basins Max males is 100
	Females	Actual 4* (Counted as 5 due to unisex accessible sanitary facility)	0	Actual 4* (Counted as 5 due to unisex accessible sanitary facility)	75 for WCs 150 for basins Max females is 75
	Accessible	1		1	* See note below

*As per F2.2 (c), in calculating the number of sanitary facilities to be provided, a unisex sanitary facility required for people with disabilities, may be counted once for each sex.

A facility for the building caretaker is to also be provided to the ground floor level.

3.5.3 Facilities to residential areas

The requirements under the Building Code of Australia are as follows.

For each SOU provide—

Within each sole-occupancy unit, provide—

- (a) a kitchen sink and facilities for the preparation and cooking of food; and
- (b) a bath or shower; and
- (c) a closet pan and washbasin.

Laundry facilities, provide either—

(a) in each sole-occupancy unit—

- (i) clothes washing facilities, comprising at least one washtub and space for a washing machine; and
- (ii) clothes drying facilities comprising—
 - (A) clothes line or hoist with not less than 7.5 m of line; or
 - (B) space for one heat-operated drying cabinet or appliance in the same room as the clothes washing facilities; or

Note: A kitchen sink or washbasin must not be counted as a laundry washtub.

(b) a separate laundry for each 4 sole-occupancy units, or part thereof—

- (i) clothes washing facilities comprising at least one washtub and one washing machine; and
- (ii) clothes drying facilities comprising—
 - (A) clothes line or hoist with not less than 7.5 m of line per sole-occupancy unit; or
 - (B) one heat-operated drying cabinet or appliance for each 4 sole-occupancy units.



3.5.4 Facilities for persons with disabilities

In the **class 2** areas the following applies:-

Where sanitary compartments and showers are provided in common areas, not less than 1 for each, therefore in the pool area there will be the requirement for a unisex accessible WC and accessible shower if any are provided.

In the **Other areas** the following applies:-

The following need to be provided to the public banks of sanitary facilities all to which access for people with disabilities is required,

- (i) **minimum of one unisex closet pan and washbasin;** and
- (ii) **one ambulant WC within the male and one in the female toilets.**

3.5.5 Swing and operation of doors to the WC's

Doors to fully enclosed sanitary compartments to open outwards, or slide or have 1.2 metres clear space between door and closet pan or be readily removable from the outside of the sanitary compartment.

3.5.6 Light and ventilation

Ventilation All classes of buildings	Natural ventilation in accordance with F4.6 or mechanical ventilation to AS 1668.2 is to be provided. This is readily achievable.
Apartments Natural lighting	Natural light must be provided in Class 2 buildings to all habitable rooms and is to be provided in accordance with F4.2 of the Building Code of Australia.
Carparks	Every storey of the carpark must have a system of ventilation complying with AS 1668.2 or an adequate system of permanent natural ventilation. The building is proposed to be provided with a complying ventilation system to AS1668.1 and 2.

3.5.7 Room Sizes

The ceiling minimum height of 2.4m is required to areas except corridors, sanitary facilities and storage areas, where it may be 2.1m. Compliance is readily achievable. Plant rooms need to be checked and the correct heights allowed in the design. Carpark areas are permitted under the building code to have a minimum ceiling height of 2100mm, except where there is the necessity to access the carparks provided for persons with disabilities.



3.6 Sound Transmission and Insulation

The following criteria detail the required sanitary facilities to be provided.

All parts of the residential component of the building that separate sole-occupancy units, or separate a sole-occupancy unit from a common space or part of another classification within the building is to be constructed to prevent undue sound transmission.

A report from a qualified acoustic engineer will need to be provided to validate compliance with the BCA or the performance requirements therein.

3.7 Energy Efficiency and BASIX

The residential portion of the building will need to comply with the requirements of BASIX and an assessment will need to be carried out for the design to validate compliance.

As this is required for the major portion of the building the energy consultant would also complete assessment of the remainder of the building according to the requirements of Section J. A report is to be furnished validating the Section J requirements prior to completion of design development.