



BUILDING CODE OF AUSTRALIA REPORT

**C3 Commercial Building
Barangaroo South**

Dated: **August 2011**

Prepared for: **Lend Lease (Millers Point) Pty. Ltd.**

Prepared by: **McKenzie Group Consulting (NSW) Pty Ltd
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Executive Summary

As Accredited Certifiers, we have reviewed the concept report documentation for the C3 Commercial Building located within the Barangaroo South site against the relevant provisions of the Building Code of Australia.

It is anticipated that due to the size and nature of the building, there will be alternate solutions that address non-compliances with the deemed to satisfy provisions of the BCA. The alternate solutions will be assessed against the relevant Performance Requirements of the BCA by suitably qualified persons.

Where items for which an alternate solution is prepared relate to Category 2 items under the Environmental Planning & Assessment Regulation 2000, approval will be required by the NSW Fire Brigade as part of the Construction Certificate process.

The application for Construction Certificate shall be assessed under the relevant provisions of the Environmental Planning & Assessment Act 1979 (As Amended) and the Environmental Planning & Assessment Regulation 2000.

Assessed By

Brigitte Thearle



1.0 Introduction

This report supports a Project Application submitted to the Minister for Planning pursuant to Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The Application seeks approval for construction of a commercial building (known as Building C3) and associated works at Barangaroo South as described in the Project Description section of this report.

1.1 Background

The 22 hectare Barangaroo site has been divided into three distinct redevelopment areas (from north to south) – the Headland Park, Barangaroo Stage 2 and Barangaroo Stage 1 (herein after referred to as Barangaroo South).

Lend Lease was successfully appointed as the preferred proponent to develop Barangaroo Stage 1 (otherwise known as Barangaroo South) on 20 December 2009.

1.2 Purpose of this Report

This report has been prepared to accompany the Project Application for the C3 Commercial Building and associated works at Barangaroo South. It addresses the relevant Director-General Requirements for the project. These Director-General Requirements are discussed in the Environmental Impact Assessment (EAR) that has been prepared to support the application.

1.3 Planning History and Framework

On 9 February 2007 the Minister approved a Concept Plan for the site and on 12 October 2007 the land was rezoned to facilitate its redevelopment. The Approved Concept Plan allowed for a mixed use development involving a maximum of 388,300m² of gross floor area (GFA) contained within 8 blocks on a total site area of 22 hectares.

Modification No. 1 was approved in September 2007 which corrected a number of minor typographical errors.

On 25 February 2009 the Minister approved Modification No. 2 to the Concept Plan. The Approved Concept Plan as modified allowed for a mixed use development involving a maximum of 508,300m² of gross floor area (GFA) contained within 8 blocks on a total site area of 22 hectares.

On 11 November 2009 the Minister approved Modification No. 3 to the Concept Plan to allow for a modified design for the Headland Park and Northern Cove. The Approved Concept Plan as modified allows for a mixed use development involving a maximum of 489,500m² of gross floor area (GFA) across Barangaroo as a whole.

On 16 December 2010 the Minister approved Modification No. 4 to the Barangaroo Concept Plan. The Approved Concept Plan as modified allows for approximately 563,965sqm Gross Floor Area of mixed use development across the entire Barangaroo site.

This Project Application forms one of a series of individual Applications that Lend Lease will be submitting to deliver Barangaroo South. This Project Application is consistent with the established planning framework for the site, including the approved Concept Plan (as modified).

A Project Application (MP10_0023) has been approved for the bulk excavation and construction of a basement car park to accommodate up to 880 car parking spaces and associated services and infrastructure to support the initial phases of the future development of Barangaroo South. A Section 75W Modification Application was subsequently submitted seeking to modify MP10_0023 to extend



the area of the approved basement to the south. This modification was approved by the Minister for Planning on 3 March 2011.

A further Section 75W application has been submitted to the Department of Planning and Infrastructure (the Department) and is currently being assessed, which seeks the Minister's approval to modify the depth of the excavation and change the reduced levels of the basement structure, using the same construction methodology as detailed and approved as part of the original project application. This includes:

- reduced excavation and bulk earthworks;
- reduced structural works – foundations, basement levels, perimeter retention system etc; and
- installation of associated services and infrastructure to support the initial phases of the future development of Barangaroo South.

A project application for the first commercial building, known as C4, was submitted to the Department of Planning on 29 October 2010. This application sought consent for construction and use of a new commercial Building C4 with a maximum 98,514m² GFA accommodating commercial and retail uses, a child care centre, bicycle parking and associated use and operation of car parking and loading facilities in the basement. Consent was issued by the Minister on 3 March 2011.

A Section 75W application has been submitted to the Department and is currently being assessed which seeks the Minister's approval to modify certain elements of the approved C4 building, including:

- mix of the uses within the building;
- total GFA;
- shape of floor plates of the podium and the tower elements of the building;
- facade details;
- roof treatment; and
- basement layout.

1.4 Site Location

Barangaroo is located on the north western edge of the Sydney Central Business District, bounded by Sydney Harbour to the west and north, the historic precinct of Millers Point (for the northern half), The Rocks and the Sydney Harbour Bridge approach to the east; and bounded to the south by a range of new development dominated by large CBD commercial tenants.

The Barangaroo site has been divided into three distinct redevelopment areas (from north to south) – the Headland Park, Barangaroo Stage 2 (also known as Barangaroo Central) and Barangaroo South.

The area of land within which development is proposed under this Development Application extends over land generally known and identified in the approved Concept Plan as Block 3 which comprises Lot 5 in DP 876514.

1.5 Project Description

This Project Application seeks approval for the construction of a 49 storey building, comprising ground floor retail, a commercial lobby, childcare, podium and office tower, provision for associated cars and bicycle parking and the construction of the surrounding ancillary temporary public domain which includes access streets and landscaping.



2.0 Building Assessment Data

Summary of Construction Determination: -

Classification	5, 6, 7a
No. of Storeys	51
Rise in storeys	49
Type of Construction	A
Effective Height (m)	<50m

Note: The effective height may alter as the design progresses, depending on the lowest egress point from the building.

Summary of the floor areas and relevant populations where applicable: -

Part of Project	Classification	Use
Building C3	5, 6, 7a	Commercial, Retail, Carpark

3.0 Fire Resistance

The buildings should be constructed generally in accordance with Part C of the Building Code of Australia.

The building has been assessed on the basis of the following fire separation / compartmentation within the development;

- Separation between the carpark levels and the retail portions
- Separation between the retail levels and the commercial portions
- Fire compartmentation of the building at each floor level as appropriate.

Other passive fire protection issues that will need to be addressed in detailed documentation phase include:

- Lift motor rooms,
- Emergency power supply,
- Emergency generators,
- Electricity supply,
- Boilers or batteries,
- Hydrant Pump rooms,
- Sprinkler Pump Rooms,

To be separated from the remainder of the building by construction achieving a minimum fire resistance level of 120 minutes.

The fire hazard properties of fixed surface linings and mechanical ductwork will also need to be addressed within the detailed documentation phase pursuant to Specification C1.10 Building Code of Australia.



4.0 Egress

The egress provisions from the proposed building are provided in fire isolated stairways and external perimeter doorways.

The locations of the proposed exits would appear to indicate that the travel distances, distances between alternative exits and egress widths will comply with the BCA.

Other detailing issues that will need to be addressed include:

- Door Hardware
- Exit door operation
- Stair construction
- Handrail and balustrade construction
- Details of Separation of rising & descending Stairs
- Discharge from the Fire Isolated Exits
- Details of the egress provisions to the Road.

4.1 Access for Persons with a Disability

Access for people with disabilities shall be provided to and within the building in accordance with the requirements of Part D3 of the BCA. Parts of the building required to be accessible shall comply with the requirements of AS1428.1-2009.

Where the main public entrance is via a ramp, tactile indicators shall be provided in accordance with AS 1428.4 at the top and bottom. Parking shall be provided for people with disabilities in accordance with in accordance with Part D3 of the BCA. Facilities services and features of the building accessible to people with disabilities shall be identified by signage complying with Part D3 of the BCA.

General

Access to be provided to and within the building pursuant to AS1428.1-2009 as follows:

- Via the principle public entry and at least 50% of all other entrances
- From designated car parking spaces for the use of occupants with a disability.
- From another accessible building connected by a pedestrian link.
- All areas used by the public.

5.0 Fire Services & Equipment

The following fire services will need to be provided throughout the building:

- An automatic sprinkler system in accordance with the relevant provision of Part E of the BCA
- Fire hydrants in accordance with the BCA
- Fire hose reels in accordance with the BCA
- Portable Fire Extinguishers in accordance with BCA
- Sound System and Intercom System for Emergency Purposes in accordance with the BCA.
- Emergency lighting, exit signage and directional exit signage is required throughout the building in accordance with Part E of the BCA

A fire control room shall be provided to Building C3 in accordance with Part E of the BCA.



6.0 Ventilation and Smoke Hazard Management

Smoke hazard management shall be provided throughout the building by means of:

- An automatic air pressurisation system to the fire isolated exits
- Zone smoke control system.
- An automatic smoke exhaust system to BCA Part E.

Throughout the development the provision of natural or mechanical ventilation is required to all habitable rooms in accordance with Part F of the Building Code of Australia.

7.0 Lift Services

The passenger lifts to be installed are to be: -

- Fitted with warning signs, fire service controls in accordance with AS 1735.2
- Stretcher facilities are to be provided within the emergency lifts with minimum dimensions of 600mm wide, 2000mm long and 1400mm high.
- An emergency lift with stretcher facilities in accordance with part E of the BCA and AS 1735.2.
- Provided with the following: -
 - A handrail in accordance with AS 1735.12
 - Minimum internal floor dimensions as specified in AS 1735.12,
 - Fitted with a series of door opening sensory devices which will detect a 75mm diameter rod across the door opening between 50mm and 1550mm above floor level,
 - Have a set of buttons for operating the lift located at heights complying with AS 1735.12.

Where two or more passenger lifts are installed and serve the same storeys, at least two emergency lifts must be provided to serve those storeys and, if located within different shafts, at least one emergency lift must be provided in each shaft.

An emergency lift must be contained within a fire-resisting shaft in accordance with the requirements of Part C.

8.0 Sanitary Facilities

The sanitary facilities for the commercial areas will generally be required at the rate of 1 WC per 20 males and 1 WC per 15 females. Urinals will be required to the male facilities at the rate of 1 per 50 occupants. Basins will be required for each sex at the rate of 1 per 30 occupants.

For the retail portions, facilities are required for patrons where the number of patrons exceeds 600. Staff facilities to the retail portions are to be provided at the same rate as those for the commercial areas.

Sanitary facilities will be provided to the project as per the requirements of BCA Part F2.

Please note the Unisex facilities provided for people with disabilities may be counted once for each sex. These facilities are to be provided in accordance with AS1428.1-2001.



9.0 Energy Efficiency

The building is required to comply with the energy provisions of the BCA. It is proposed that the ESD assessment shall incorporate the relevant part J provision of the BCA as part of the construction certificate process.

Options available are:

- Comply with either JV3
- Or
- Comply with the deemed to satisfy provisions in relation to:
 - Building Fabric
 - External Glazing
 - Building dealing
 - Air movement
 - Air conditioning and ventilation systems
 - Artificial light and power
 - Hot water supply

Certification from an appropriately qualified engineer should be provided for either option with a report/computations outlining how compliance is achieved.

10.0 Access for Maintenance

The following criteria must also be observed in the special design of the plant areas.

NSW J8.2 Access for maintenance

Access for maintenance must be provided to—

- a) adjustable or motorised shading devices; and
- b) time switches and motion detectors; and
- c) room temperature thermostats; and
- d) plant thermostats such as on boilers or refrigeration units; and
- e) motorised air dampers and control valves; and
- f) reflectors, lenses and diffusers of light fittings; and
- g) heat transfer equipment; and
- h) plant that receives a concession under verification method JV3(b) for the use of energy obtained from—
 - i). a source that is renewable on-site such as solar, geothermal or wind; or
 - ii). another process as reclaimed energy.



Appendix A - Draft Fire Safety Schedule

Items to be inspected or tested as nominated by the relevant authority	Installation standard/code/conditions of approval
1. Access Panels, Doors and Hoppers	BCA Clause C3.13
2. Automatic Fail Safe Devices	BCA Clause D2.19 & D2.21
3. Automatic Fire Detection and Alarm System	BCA Spec. E2.2a & AS 1670 – 2004
4. Automatic Fire Suppression System	BCA Spec. E1.5 & AS 2118.1 – 1999
5. Building Occupant Warning System activated by the Sprinkler System	BCA Spec. E1.5 & AS 1670 – 2004
6. Emergency Lifts	BCA Clause E3.4 & AS 1735.2 – 2001
7. Emergency Lighting	BCA Clause E4.2, E4.4 & AS/NZS 2293.1 – 2005
8. Exit Signs	BCA Clauses E4.5, E4.6 & E4.8 and AS/NZS 2293.1 – 2005
9. Fire Control Room	BCA Spec. E1.8
10. Fire Dampers	BCA Clause C3.15, AS 1668.1 – 1998 & AS 1682.1 & 2 – 1990
11. Fire Doors	BCA Clause C3.2, C3.4, C3.5, C3.6, C3.7 & C3.8 and AS 1905.1 – 2005
12. Fire Hose Reels	BCA Clause E1.4 & AS 2441 – 2005
13. Fire Hydrant System	Clause E1.3 & AS 2419.1 – 2005
14. Fire Seals	BCA Clause C3.15 & AS 1530.4 – 1997
15. Fire Shutters	BCA Spec. C3.4 & AS 1905.2 – 1989
16. Fire Windows	BCA Spec. C3.4
17. Mechanical Air Handling System	BCA Clause E2.2, AS/NZS 1668.1 – 1998 & AS 1668.2 – 1991
18. Paths of Travel	EP&A Reg 2000 Clause 186
19. Portable Fire Extinguishers	BCA Clause E1.6 & AS 2444 – 2001
20. Pressurising Systems	BCA Clause E2.2 & AS/NZS 1668.1 – 1998
21. Required Exit Doors (power operated)	BCA Clause D2.19(d)
22. Smoke Exhaust	BCA Part E2 & AS/NZS 1668.1 – 1998
23. Smoke Hazard Management System	BCA Part E2 & AS/NZS 1668.1 – 1998
24. Sound System for Emergency Purposes	BCA Clause E4.9 & AS 1670.4 - 2004
25. Warning and Operational Signs	Section 183 of the EP & A Regulations 2000, AS 1905.1 – 2005, BCA Clause C3.6, D2.23, E3.3AS



Items to be inspected or tested as nominated by the relevant authority	Installation standard/code/conditions of approval
	1905.1 – 1997, BCA Clause EP3

