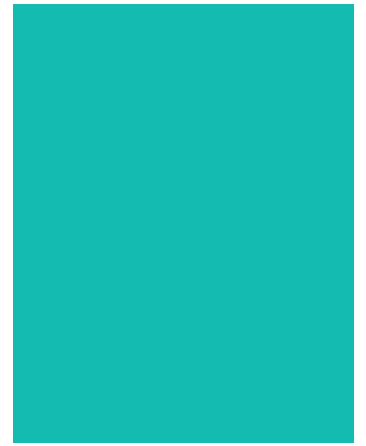


Concept Plan MOD8

Barangaroo South

Sustainability Report – Section 75W Modification
October 2014



Document History

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Technical Enquiries	General Enquiries
Name: Stacey Johnson	Name: Graham Carter
Position: Sustainable Design Consultant	Position: Sustainable Design Manager
Telephone: (02) 9277 2321	Telephone: (02) 9236 6347
Email: stacey.johnson@lendlease.com	Email: graham.carter@lendlease.com

ABN 97 000 098 162
Level 4, 30 The Bond
30 Hickson Road
Millers Point NSW 2000
Australia

Telephone +61 2 9236 6111
Facsimile +61 2 9383 8133
www.lendlease.com

EXECUTIVE SUMMARY

This ESD summary report has been produced by Lend Lease Design to describe the initiatives that are to be included within the Barangaroo South precinct and has been updated to incorporate the concept plan Mod 8 development proposals. The Barangaroo South project aims to deliver a sustainable precinct, with low operational energy consumption, reduced potable water use, minimisation of waste to landfill and appropriate materials selection while at the same time maintaining a high level of indoor environmental quality through appropriate mechanical design, façade configuration and materials selection.

The Barangaroo South precinct has many sustainability initiatives such as the district cooling plant, on-site renewables strategy and precinct recycled water plant. These initiatives are essential to ensure the precinct achieves the many sustainability targets such as:

- Minimal operational energy consumption off-set by offsite renewable energy to ensure a carbon neutral precinct.
- Exporting more water than importing of potable water to ensure a positive water impact.
- Zero waste.
- 20% reduction in embodied carbon (cradle to gate) not including tenant fit outs.
- On site renewables of an amount to offset public realm and recycled water treatment plant energy use.
- Green Star Design and As-Built ratings for all eligible buildings within the precinct.

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1.0 INTRODUCTION

This report supports a modification to Concept Plan (MP06_0162) submitted to the Minister for Planning and Infrastructure pursuant to Section 75W of Part 3A of the Environmental Planning and Assessment Act 1979 (EP&A Act).

The proposed application is the outcome of negotiations between Lend Lease and the NSW Government, including the Barangaroo Delivery Authority, to relocate the approved landmark hotel building site from a pier over Sydney Harbour to a location on land elsewhere on the Barangaroo South site. It also incorporates a number of consequent and related changes to the urban design guidelines that are required to maintain an appropriate built form and public domain outcome for the Barangaroo South site.

This Sustainability report has been produced by the Lend Lease Sustainable Design Team to describe the principles to be incorporated into the design, construction and ongoing operation phases of the project to minimise its impact on the environment.

1.1 Site Location

Barangaroo is located on the north western edge of the Sydney Central Business District. It is 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 a range of development dominated by large CBD commercial tenants to the south.

The Barangaroo site has been divided into three distinct redevelopment areas (from north to south) - the Headland Park, Barangaroo Central and Barangaroo South. Concept Plan (Mod 8) relates to Barangaroo South only as shown in Figure 1.



Figure 1: Indicative Site Boundary for Barangaroo South (existing)

1.2 Project Description

The proposed modification to the Concept Plan seeks to:

- relocate the landmark building (Block Y) from the harbour onto the land in the Barangaroo South site in front of the existing Blocks 4A, B and C;
- revise the layout of Blocks 4A-C;
- amend the size and location of the Southern Cove and public domain;
- redistribute the GFA, public domain and land uses across development blocks 1-3, 4A-C, X and Y;
- increase the maximum GFA on the site to provide for additional GFA within the hotel building and redistribution of land uses;
- increase the height of the buildings within modified 'Block 4' and the relocated Block Y; and
- amend the conditions of the Concept Approval to reflect the modifications to development.

It is also proposed to amend Part 12 of Schedule 3 of the Major Development SEPP to reconcile the SEPP with the modifications to the Concept Plan, including amending the location of the RE1 and B4 Mixed Use zone boundaries.

1.3 Purpose of This Report

This report has been prepared to accompany the application for the modification to Concept Plan (MP06_0162) works at Barangaroo South. It addresses the relevant Director-General Requirements for the project, outlines the targets proposed for the Barangaroo South development and in particular demonstrates consistency with the relevant Statement of Commitments included in the current approved Concept Plan.

The ESD initiatives for the Barangaroo South development aim to be world class, and will provide support for and complement work by the Council of the City of Sydney on its Sustainable Sydney 2030 plans. The overall Barangaroo South development aims to provide:

- Inspiring architecture with healthy, light filled homes and workplaces;
- Low energy buildings that respond to the environment and the people within;
- Transport links and options that make it easy to leave the car at home;
- A mixed use precinct with outdoor spaces that everyone can share and enjoy;
- Centralised precinct services that support a carbon neutral, water positive and zero waste outcome;
- A long term Governance structure that also delivers carbon reduction and community benefits;
- A focused approach on delivering social initiatives that will assist in establishing a healthy and happy community integrated into the Sydney CBD; and
- A broad based skill development program that will meet a wide range of learning and skilling needs – from blue and white collar to green.

2.0 Precinct Initiatives

The Barangaroo South precinct has established a range of significant sustainability targets that will be delivered progressively throughout the development phase – there has been no alteration to these targets from those previously approved under Mod 4, Mod 6 and Mod 7. This short overview provides the context for considering the modification application against the aspirations of the broader project. The descriptions in the section below are provided for information only and will be subject to more detailed reports and approvals as part of the subsequent building works applications. The proposed precinct wide targets are:

Healthy Buildings:

- 6 Star Green Star Design and As-Built ratings for Office buildings;
- 5-Star Green Star Design and As-Built ratings for Multi-Unit Residential buildings;
- Tuned to Sydney's climate and connected to outdoors;
- Passive design, ultra-low energy buildings; and
- Use of some sustainable materials, including recycled content and low emissions.

Energy and Carbon:

- A carbon neutral outcome supported by the use of offsite new renewable energy generation;
- Significant reduction in building energy consumption, reflected in a base building equivalent to a 5 Star NABERS Energy + 30% improvement, subject to tenancy behaviour;
- 20% reduction in embodied carbon within the built form;
- Efficient precinct infrastructure using central cooling plant and harbour heat rejection; and
- Onsite photovoltaic generation sized for the public domain and blackwater treatment system.

Water Positive:

- A water positive outcome – where more water is exported than potable water is imported;
- On-site waste water treatment and water recycling;
- Capacity to export recycled water allowing neighbours to reduce their potable water demands; and
- Sewer mining to reduce network demands.

Zero Waste:

- Greater than 90% diversion of construction waste from landfill; and
- Greater than 80% diversion of operational waste from landfill

Sustainable Transport:

- A new connection/entry point for the CBD (with provision for light rail, ferries, and the Barangaroo Pedestrian Link);
- Car parking ratios resulting in less car parking spaces than normally provided for a CBD commercial building;
- Infrastructure and support for cyclists and pedestrians;
- Real-time commuter updates;
- Green travel plan to promote vehicle sharing, small cars and electric cars; and
- Safe, low-speed onsite environment.

Landscape and Biodiversity:

- Use of native flora and encourage habitats for fauna;
- Inclusion of water-sensitive urban design;
- Landscaping to suit future climate change; and
- Landscaped public spaces and selected green roof features.

Many of these targets involve various third parties and authorities, and will need partnerships, and involve commitments to work with and toward these targets. These world leading initiatives will be evaluated, measured and reviewed progressively throughout the project life.

3.0 Sustainability Contribution

The proposed modification will address the sustainability commitments included in the Statement of Commitments of the approved Concept Plan. There is no alteration to the sustainability targets or commitments approved previously under Mod 4, Mod 6 and Mod 7.

The Concept Plan MOD 8 application will increase the GFA for the precinct. This has potential impacts on the following sustainability commitments through the increase in water and carbon consumption:

- 6 Star Green Star Design & As Built for all eligible Commercial buildings
- 5 Star Green Star Design & As Built for all eligible Residential buildings
- 5 Star NABERS Base Building Energy for all eligible Commercial buildings when modelled with a standard tenant profile.
- Water positive precinct
- On-site renewables sized to offset the energy from the recycled water treatment and the public domain

The following precinct infrastructure items are key to achieving the above sustainability commitments:

- District cooling plant
- Recycled water treatment plant
- On-site solar photovoltaics

The increase in loads as a result of the GFA increase will be accommodated where possible as part of the planned infrastructure. Where necessary the infrastructure will be increased to accommodate the area changes through the detailed design process. This will ensure that all of the targeted sustainability commitments can still be met under the MOD8 scheme.

The table below summarises these commitments and confirms how the project will address each statement of commitment.

Category	Commitment	Approved Concept Plan Mod 7	Assessment of consistency for Concept Plan Mod 8
General ESD	78	There is to be an environmental focus on strategies for Water, Energy, Micro-Climate, Environmental Quality / Amenity, Landscape, Transport, Waste and Materials for the development. Each building on site will achieve the primary benchmark of a "5 star" standard of : Green Star 5 star, and Residential: Green Star Residential score >60, and each development will be required to demonstrate how it satisfies each of the following Key Performance Indicators for each of the ESD focus areas referred to below.	<p>The commercial, residential and hotel buildings will all target high Green Star ratings.</p> <p>The commercial buildings will be designed and constructed to achieve 5 Star + 30% NABERS Energy and 6 Star Green Star Office ratings.</p> <p>The residential buildings will be designed and constructed to achieve 5 Star Green Star Multi-Unit residential ratings (minimum of 60 weighted points).</p> <p>The hotel building is still undergoing detailed designed and this application provides for block form approval only. It is intended that the building design and detailed development application will document how the building will achieve the sustainability requirements.</p> <p>Connection to the key infrastructure items will ensure that the key performance indicators for each focus area can be</p>

Category	Commitment	Approved Concept Plan Mod 7	Assessment of consistency for Concept Plan Mod 8
			achieved.
Water	79	There is to be a 35% reduction in Potable Water Consumption compared to a standard practice development and a 40% reduction in flow to sewer compared to a standard practice development.	All applicable buildings including commercial, residential and hotel will target high Green Star ratings which reward reductions in potable water and flow to sewer against standard practice. The basement provides the spatial allocation for the precinct recycled water plant. This plant will be designed to a capacity that allows a Water Positive outcome (i.e. that produces more recycled water than potable water imported onto site) which far exceeds the potable water and flow to sewer reductions against standard practice. This plant will be utilised by all buildings on the Barangaroo South precinct and will be sized to ensure it has the capacity to meet the targets stated in the commitments.
Energy	80	There is to be a 35% reduction in Greenhouse Gas Emissions compared to a standard practice development. 20% of power is to be purchased from low impact, renewable sources or alternatively there should be a 20% reduction in GHG emissions through carbon offsets. The purchase of renewable energy should be at World Best Practice level.	The commercial buildings will be designed to achieve 5 Star + 30% NABERS Energy ratings which equates to more than a 60% improvement against average existing building performance which is defined as 3 Star NABERS. The residential buildings will be designed to ensure that greenhouse gas emissions are minimised, whilst also providing a high level of servicing and amenity to residents. The basement provides for a centralised chilled water plant and harbour water heat rejection which will support all buildings. The residual greenhouse gas emissions will be offset through the use of both on and off site renewable sources, supporting the precinct ambition of a carbon neutral outcome.
Micro-Climate	81	Key public open spaces (parks and squares) are to receive direct sunlight in mid-winter.	Solar access in mid-winter will be available to key public open spaces on the ground plane.
Landscape	82	Primarily non-invasive plant species are to be used on the site.	This requirement will be met through the choice of appropriate plant species.
Transport	83	Ensure that there is sufficient public transport to achieve points under the public transport credit for Green Star Rating Tools for buildings and a future Green Star Tool for residential buildings.	Proximity to Wynyard station trains and buses within short walking distances will ensure a high score in the Green Star public transport credit. In addition the public transport score will benefit from the proposed ferries available from 2016.
Waste	84	Centralised recycling areas are to be provided in all buildings and	Waste collection areas in the basement have been provided allowing for the

Category	Commitment	Approved Concept Plan Mod 7	Assessment of consistency for Concept Plan Mod 8
		100% of waste bins for public use are to allow for waste separation.	streaming of waste and recyclables from all precinct buildings.
Wind	85	Wind tunnel modelling and verification of proposed treatments will be carried out at the building design application stage due to the significant exposure of the site to the southerly and westerly winds. Any development proposal for the southern portion of the site should be subjected to a wind tunnel study, carried out in accordance with the procedures outlined in industry recognised guidelines such as the Australasian Wind Engineering Society Quality Assurance Manual.	A wind study has been undertaken for the proposed Concept Plan Mod 8.

4.0 Conclusion

The proposed modification to the Concept Plan will not impact the sustainability aspirations set for the Barangaroo South precinct. The precinct wide sustainability initiatives such as the district cooling plant, on-site renewables strategy and precinct recycled water plant are supported within this modification. These initiatives are essential to ensure the precinct achieves the many sustainability objectives.

This project aims to deliver sustainable buildings, with low operational energy consumption, reduced potable water use, minimisation of waste to landfill and appropriate materials selection while at the same time maintaining a high level of indoor environmental quality through appropriate mechanical design, façade configuration and materials selection.