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# **Sustainability Report**

Lendlease Integrated Solutions

# BARANGAROO SOUTH

Concept Plan MOD 10

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**SUSTAINABILITY REPORT**

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**lendlease**

# Barangaroo South Concept Plan Mod 10 Sustainability Report



## Document History

<b>Prepared By</b>	Daniel Grunbaum
<b>Checked By</b>	Daniel Andjelic
<b>Approved By</b>	Graham Carter
<b>Project Manager</b>	
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## Technical Enquiries

Daniel Andjelic	Daniel Grunbaum
Lendlease Integrated Solutions	Lendlease Integrated Solutions
Telephone: 0400 164 755	Telephone: 0412 447 511
Mobile: 0400 164 755	Mobile: 0412 447 511
Email: Daniel.Andjelic@lendlease.com	Email: Daniel.Grunbaum@lendlease.com

## General Enquiries

## **1.0 Executive Summary**

This sustainability report has been produced by Lendlease Integrated Solutions to describe the initiatives that are to be included within the Barangaroo South precinct and has been updated to incorporate the concept plan Mod 10 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 adopted and will continue to develop 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:

- Minimising operational energy consumption to ensure a viable carbon neutral precinct.
- Having the capacity to export more water than imported potable water to ensure a positive water impact.
- Zero waste aspiration including significant diversions of construction and operational waste from landfill.
- 20% reduction in embodied carbon (cradle to gate) not including tenant fit outs.
- On site renewables generating an amount of electricity equal to the public realm and recycled water treatment plant electricity use.
- Green Star Design and As-Built ratings for all eligible buildings within the precinct.



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## **3.0 Introduction**

This report supports a Section 75W Modification to Concept Plan Approval MP06\_0162 (known as Modification 10) pursuant to clause 3C, Schedule 2 of *Environmental Planning and Assessment (Savings, Transitional and Other Provisions) Regulation 2017* (Savings and Transitional Regulation).

### **3.1 Overview of Proposed Modification**

Concept Plan (Mod 10) seeks to increase the height of the Building Envelope Plan for R4B to RL 235 and increase the GFA of Blocks 4A and 4B by a total of 8,000m<sup>2</sup>.

In order to support the above changes, the following modifications are proposed:

- increase the Concept Plan maximum GFA for Block 4A from 86,979m<sup>2</sup> to 92,629m<sup>2</sup> and the State Significant Precincts SEPP (SSP SEPP) Block 4A maximum GFA from 94,740m<sup>2</sup> to 100,390m<sup>2</sup>;
- increase the Concept Plan maximum GFA for Block 4B from 19,158m<sup>2</sup> to 21,508m<sup>2</sup> and the State Significant Precincts SEPP (SSP SEPP) Block 4B maximum GFA from 20,970m<sup>2</sup> to 23,320m<sup>2</sup>;
- increase the Concept Plan residential maximum GFA of Block 4A from 86,166m<sup>2</sup> to 91,816m<sup>2</sup>;
- increase the Concept Plan residential maximum GFA of Block 4B from 18,287m<sup>2</sup> to 20,637m<sup>2</sup>; and
- increase the Concept Plan maximum height on the Building Envelope Plan for R4B from RL 210 to RL 235, noting Block 4A currently provides for a maximum height of RL 250 under the SSP SEPP.

This Modification also seeks to amend the condition to align the time for delivery of Key Worker Housing at Barangaroo South and off site. This is to reflect that it will be completed prior to the issue of the occupation certificate for Building R5.

The changes described above necessitate modifications to the existing Instrument of Approval, Statement of Commitments and Barangaroo South Built Form Principles and Urban Design Controls for the Concept Plan as well as the relevant provisions of the State Significant Precinct SEPP.

### **3.2 Site Location**

Barangaroo is located on the north western edge of Central Sydney, 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 King Street Wharf to the south.

The Barangaroo site has been divided into three distinct redevelopment areas (from north to south) – the Barangaroo Reserve, Central Barangaroo and Barangaroo South. Concept Plan (Mod 10) relates to Barangaroo South only.

### 3.3 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 current known 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 sustainability 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 outcome as well as water positive and zero waste aspirations;
- 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.

## **4.0 Precinct Initiatives**

The Barangaroo South precinct has established a range of significant sustainability targets that will be delivered progressively throughout the development phase to contribute to the broader Barangaroo Concept Plan Commitments. This 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 Residential buildings;
- Attuned to Sydney's climate and connected to outdoors
- Passive design, 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 on and offsite new renewable energy generation
- Significant reduction in commercial office building energy consumption, reflected in a base building target equivalent to a 5 Star NABERS Energy + 30% improvement, subject to tenancy behaviour
- Significant reduction in residential building energy consumption relative to existing comparative developments.
- 20% reduction in embodied carbon within the built form
- Efficient precinct infrastructure using a district cooling plant and harbour heat rejection; and
- On site renewables generating an amount of energy equal to the public realm and recycled water treatment plant energy use.

### **Water Positive:**

- Water positive capable – where the precinct is capable of exporting more water than potable water imported;
- On-site waste water treatment and water recycling;
- Capacity to export recycled water allowing neighbours to reduce their potable water demands; and
- Capacity for sewer mining, reducing network demands.

### **Zero Waste:**

- Greater than 97% 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 third parties and authorities, and will require 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.

## 5.0 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, Mod 7 and Mod 8.

The Concept Plan MOD 10 application will increase the GFA for the precinct, however the following targeted commitments remain:

- 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.
- A precinct capable of being Water Positive
- On site renewables generating an amount of energy equal to the public realm and recycled water treatment plant energy use.

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

- District cooling plant
- Recycled water treatment plant
- On-site renewable energy systems

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

Category	Clause	Approved Concept Plan	Assessment of consistency for Concept Plan Mod 10
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 and residential 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 Design &amp; As Built ratings.</p> <p>The residential buildings will be designed and constructed to achieve 5 Star Green Star Design and As Built ratings.</p> <p>Connection to the key infrastructure items will ensure that the key performance indicators for each focus area can be achieved.</p>

Category	Clause	Approved Concept Plan	Assessment of consistency for Concept Plan Mod 10
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.	<p>All applicable buildings including commercial and residential will target high Green Star ratings which reward reductions in potable water and flow to sewer against standard practice.</p> <p>The existing basement includes a precinct recycled water plant. This plant has been designed to a capacity that enables a potential Water Positive outcome (i.e. that produces more recycled water than potable water imported onto site) . This far exceeds the potable water and flow to sewer reductions against standard practice commitments. This plant will be utilised by all buildings in the Barangaroo South precinct and has been sized to ensure it has the capacity to meet the targets stated in the commitments.</p>
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.	<p>The commercial buildings have been designed to achieve 5 Star + 30% NABERS Energy target, subject to tenant behaviour, which equates to more than a 60% improvement against average existing building performance which is defined as 3 Star NABERS.</p> <p>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.</p> <p>The basement includes a centralised chilled water plant and harbour water heat rejection which will support all buildings.</p> <p>The residual greenhouse gas emissions will be minimised and then offset through the use of both on and off site renewable sources and Australian Carbon Credit Unit (ACCU) offsets supporting the precinct ambition of a carbon neutral outcome.</p>
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.

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Category	Clause	Approved Concept Plan	Assessment of consistency for Concept Plan Mod 10
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, ferry services are in operation to the precinct and a future Sydney Metro station currently planned within the precinct.
Waste	84	Centralised recycling areas are to be provided in all buildings and 100% of waste bins for public use are to allow for waste separation.	Waste collection areas in the basement have been provided allowing for the 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 10.

## **6.0 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.