

# PUBLIC DOMAIN BARANGAROO SOUTH STAGE 1B



SUSTAINABILITY REPORT – DEVELOPMENT APPLICATION

JANUARY 2017

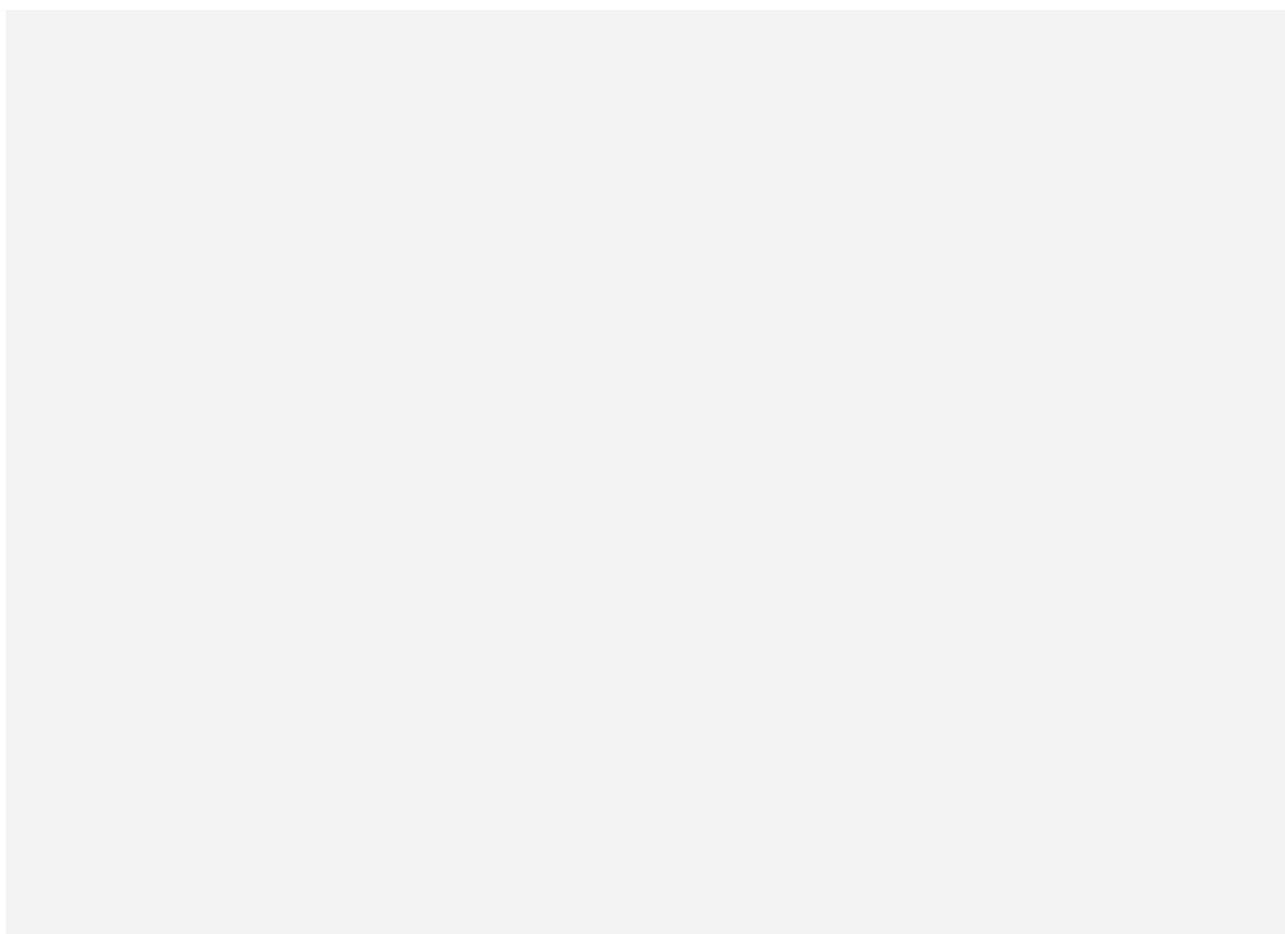


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## Document History

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## 1.0 Introduction

This report supports a State Significant Development Application (SSDA) (SSD 7944) submitted to the Minister for Planning and Infrastructure pursuant to Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act). The SSDA seeks approval for public domain works within Stage 1B at Barangaroo South as described in the Overview of Proposed Development section of this report.

This Sustainability Report has been produced by Lendlease Design 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, 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 CBD commercial tenants.

The Stage 1B Public Domain site is generally located to the north of the Stage 1A site, on land identified as public domain between and around Blocks 4A, 4B and Y in the approved Concept Plan (Mod 8), as shown in Figure 1. The majority of the site is legally described as Lot 212 in DP 1217691 but also includes an area of Darling Harbour. It is noted that an additional area of Darling Harbour was added to the site by the Planning Assessment Commission in their determination of Concept Plan MOD 8. This additional area is reflected in the site area identified in Figure 1.

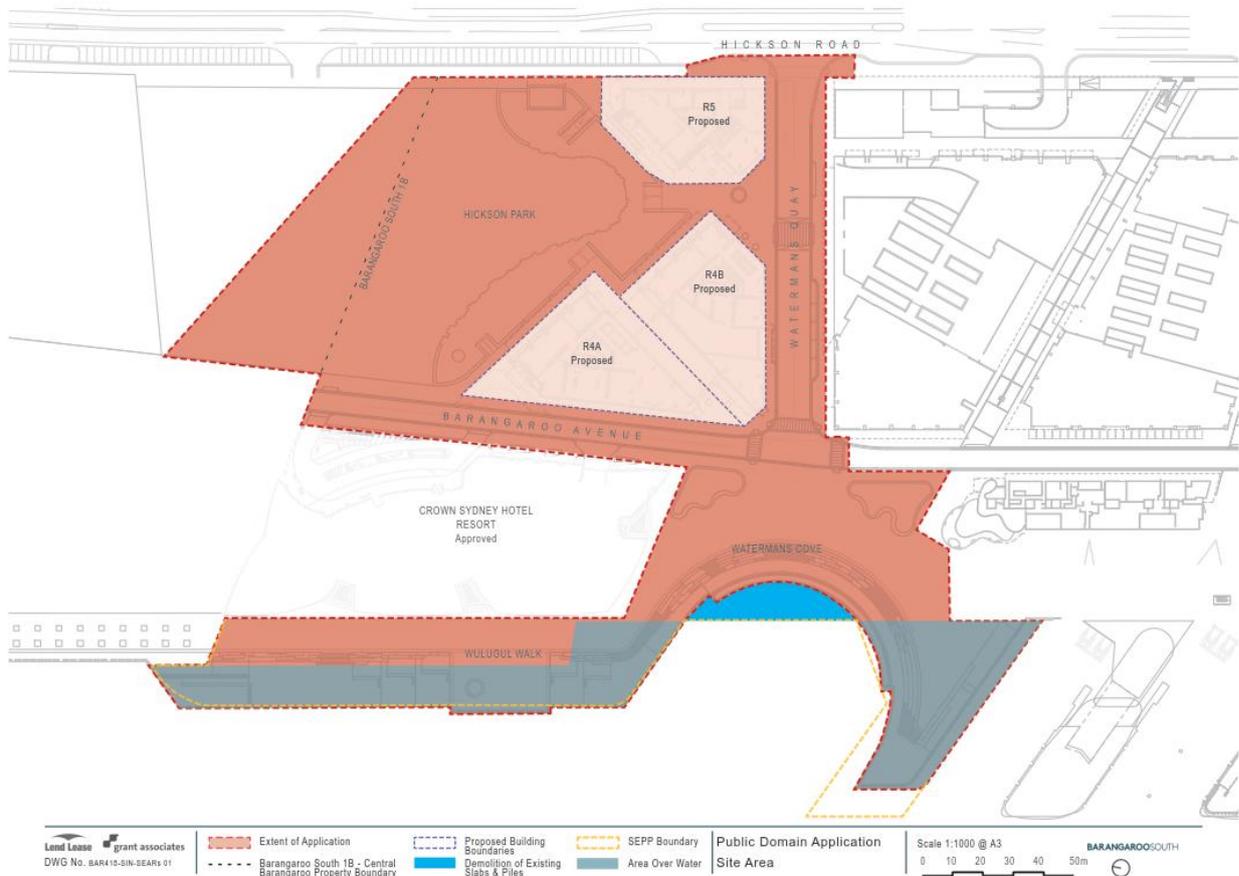


Figure 1: Site Plan

## 1.2 Overview of proposed development

The SSD application will seek consent for all public domain works within 'Stage 1B' of the Barangaroo South Site, as well as the additional area of Hickson Park, added through Concept Plan MOD 8. The extent of public domain works is illustrated on the site plan prepared by Lendlease in Figure 1.

The public domain works include the construction of Waterman's Cove and public pier along the foreshore, (including for the potential provision of a community facility on the public pier) public domain works associated with Hickson Park as well as all typical public domain features such as trees and other landscape features, walkways, street paving, street furniture, lighting, roads and planting. Various services and infrastructure such as power and water with Landowner consent will also be included in the public domain to enable it to be used for a range of different activities. Opportunity for boat set down/pick up (i.e. no berthing), including the potential for water taxi drop off and pick up is also included in the design.

Staging of the proposed public domain works will be a key component in order to accommodate the efficient and timely construction of the works and to integrate with the construction of the residential buildings R4A, R4B and R5 located within the Stage 1B Site and The Crown Sydney Hotel Resort.

## 1.3 Purpose of This Report

This report has been prepared to accompany the SSDA for the Stage 1B public domain works at Barangaroo South. It outlines the targets proposed for the precinct, which contribute to the achievement of the broader sustainability commitments for the Barangaroo Site under the Concept Plan. It also addresses the relevant Secretary's Environmental Assessment Requirements (SEARs) for the project, in particular demonstrating the compliance of the works with the relevant requirements from the Statement of Commitments of the approved Concept Plan (Mod 8) and identifying how the development will incorporate ESD principles in the design, construction and operation phase of the development (Item 13 of the SEARs).

The ESD initiatives for the 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 Relevant 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 short overview provides the context for considering the Stage 1B public domain application against the aspirations of the broader precinct. The descriptions in the section below are provided for information only and will be subject to more detailed reports and approvals for detailed design, prior to the issue of construction and occupation certificates, as necessary. The proposed precinct wide targets relating to the Stage 1B Public Domain are:

### **Energy and Carbon:**

#### *Target:*

- 20% reduction in embodied carbon within the built form.
- Carbon neutral precinct

#### *Public domain response:*

- Use of sustainable materials within the public domain will be considered in the detailed design process. These include recycled timber, reduced cement content in concrete and responsibly sourced materials.
- Low energy public domain lighting.
- Onsite photovoltaic generation (on the buildings within the precinct) sized to generate an amount of energy that is more than the public domain and the recycled water treatment system energy use.

### **Water Positive:**

#### *Target:*

- 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.

#### *Public domain response:*

- Exceeding National Best Practice standards of 80% reduction in total suspended solids, 45% reduction in nitrogen and 45% reduction in phosphorous for site stormwater run-off.
- The stormwater quality is achieved by treatment of the site stormwater (up to 3 monthly flow) via the following measures in the public domain:
  - Tree pits
  - GPTs
  - Proprietary tertiary treatment measures such as cartridge filtration (e.g. Stormwater360 Stormfilter).
- Hickson Park permeable surfaces have been maximised by designing a large open expanse of grass with all hardstand areas to the periphery. This will allow stormwater to permeate the ground, provide irrigation to landscaped areas, and capture of storm water by the subterranean drainage cells.

### **Zero Waste:**

#### *Target:*

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

#### *Public domain response:*

- Minimisation of and diversion from landfill of construction waste in line with the Stage 1B Spoil and Waste Management sub-plan
- Operational waste to landfill reduction strategies through onsite separation of waste.

## **Sustainable Transport:**

### *Target:*

- A new connection/entry point for the CBD (with provision for light rail, ferries, and the Barangaroo Pedestrian Link).
- Infrastructure and support for cyclists and pedestrians.

### *Public domain response:*

- Provision of pedestrian circulation and recreation spaces.
- Safe, low-speed onsite environment.
- Integration with surrounding pedestrian, cycle and public transport networks.

## **Landscape and Biodiversity:**

### *Target:*

- Inclusion of water-sensitive urban design.
- Planning for climate change.

### *Public domain response:*

- Use of native flora and encourage habitats for fauna.
- Landscaped public spaces and selected green roof features.
- Establishment of the ground level at Barangaroo South has considered the impact of predicted sea level rise due to climate change. The ground plane has been predominantly set at 2.575m AHD allowing for a 2100 predicted 0.9m sea level rise over and above Sydney Harbour Foreshores Development Control Provisions. Some boardwalk elements are below this level at 1.5 to 2.0 m AHD.

### 3.0 Sustainability Contribution

The proposed Stage 1B Public Domain will appropriately contribute towards the achievement of the sustainability requirements included in the Statement of Commitments of the approved Concept Plan (Mod8) and address item 13 of the SEARs to identify the sustainability commitments relating to the design, construction and operation of the Stage 1B public domain.

Category	Clause	Statement of Commitment Approved Concept Plan	Stage 1B Public Domain Commitment		
			Design	Construction	Operation
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.	The Green Star building ratings are not directly relevant to the public domain.  Sustainable materials within the public domain will be considered in the detailed design process. These include recycled timber, reduced cement content in concrete and responsibly sourced materials.	Inclusion of sustainability criteria in the procurement process for key materials and packages.	Selection of materials to minimise maintenance
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.	The Barangaroo South recycled water treatment plant (RWTP) plant has been designed to a capacity that allows a Water Positive outcome (i.e. that produces more recycled water than potable water imported onto site). This plant will be utilised by all buildings within the Barangaroo South precinct.  Amenities within the public domain will utilise the recycled water infrastructure.  Selection of plant species will be predominantly low maintenance native species. Irrigation will be via passive means with the use of recycled water being considered for active sub-surface irrigation.	Works undertaken in line with Environmental, Construction, and Site Management Plan	Features included within the design will lead to low potable water use for the public domain and support Barangaroo South in being Water Positive.
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 public domain lighting will be designed with energy efficiency in mind using LED lamp technology. Public domain energy consumption will be offset by the provision of onsite renewable energy systems located on the Barangaroo South buildings.	NA	The solar photovoltaic systems within the Barangaroo South precinct will generate an amount of energy that is equal to or greater than the Stage 1B public domain energy use.
Micro-Climate	81	Key public open spaces (parks and squares) are to receive direct sunlight in mid-winter.	Hickson Park has been designed to be north facing to allow for unimpeded solar access in the winter months. Signature trees have been designed to be located in expanses of paved areas to provide shade and reduce heat island effects.  Materials and finishes will be selected to mitigate urban heat island effects including the use of lighter coloured hardstand surfaces and timber boardwalks. Combined with shading from trees, this will provide for a high level of thermal amenity within the public domain.	NA	As per design
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.	NA	As per design
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.	NA	As per design and location
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 bins in the public domain will allow for waste separation	Minimisation of and diversion from landfill of construction waste in line with the Stage 1B Spoil and Waste Management sub-plan. Existing concrete hardstand surfaces will be the main source of potential waste which will be removed and separated in a way to divert the steel and concrete away from landfill.	The Stage 1B public domain waste management will be part of the Barangaroo South waste management system which will achieve Zero Waste by procuring carbon offsets as part of the waste management contract for residual emissions arising from waste to landfill.
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.	Trees have been located along western and southern sides of Hickson Park to protect against cooler winter winds. This will provide amenity from the wind at the public domain areas at the base of the residential towers.	NA	On going maintenance of the trees will be carried out to ensure this wind mitigation is always achieved.



## 4.0 Conclusion

The proposed SSDA 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 plan. These initiatives are essential to ensure the precinct achieves the many sustainability objectives.

The Stage 1B public domain aspects of the precinct support the site wide aspirations through the use of renewable energy, water sensitive urban design and selection of environmentally responsible materials and plant species.