

Stockland

Ecologically Sustainable Development Report

Waterloo South Concept SSDA

March 2026



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Ecologically Sustainable Development Report Waterloo South Concept SSDA

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Executive summary

The concept Ecologically Sustainable Development (ESD) Strategy for the redevelopment of Waterloo South is presented in this ESD Strategy Report. This ESD strategy is consistent with Waterloo South achieving required Environmental Sustainability Benchmarks to the extent they are applicable to the Concept SSDA.

Strategic context and frameworks

The ESD strategy for Waterloo South has been developed to align with planning and project requirements, including the NSW Secretary's Environmental Assessment Requirements (SEARs), the *State Environmental Planning Policy (Sustainable Buildings) 2022*, the Waterloo Estate (South) Design Guide 2022, and the City of Sydney Development Control Plan. The ESD strategy aligns with global, national, and local sustainability frameworks, providing assurance of relevance to the Waterloo South context.

Themes

The ESD strategy is underpinned by four themes that illustrate its holistic application to the project.

1. Upfront Carbon, Embodied Emissions and Energy
2. The Resilient Neighbourhood
3. Culture, Place and Identity / Designing with Country
4. Nature Positivity and Biodiversity

ESD Strategy and Commitments

The ESD strategy is built on comprehensive, holistic sustainability commitments that guide the Waterloo South development through its lifecycle. These commitments ensure the practical implementation of ESD principles across the project. Delivery of these commitments will be measured and verified through recognised sustainability ratings and performance targets.

Sustainability Ratings and Targets: Key compliance targets include achieving minimum levels of performance for Green Star, BASIX, NatHERS and NABERS.

- **Green Star:**
 - 6 Star Green Star Communities rating for the precinct;
 - 5 Star Green Star Buildings rating for all residential block elements.
- **BASIX** (for residential building components):
 - Satisfy BASIX minimum Energy efficiency requirements.
minimum score 61 (buildings 4-5 storeys), **60** (buildings 6-20 storeys), **63** (buildings >20 storeys)
 - Satisfy BASIX minimum Water efficiency requirements
minimum score 40
 - Pass BASIX Thermal Comfort requirements
 - Report BASIX Materials data
- **NatHERS:**
 - 7 star NatHERS building average for all residential buildings.
- **NABERS:**
 - 5 star NABERS Energy for retail spaces where applicable.
 - 4 star NABERS Water for retail spaces where applicable.

The content of this report expands this summary in greater detail, with all commitments applicable for the Concept SSDA listed in Section 5 ESD Strategy.

1 Introduction

This ESD Strategy Report is submitted to the Department of Planning, Housing and Infrastructure (the Department) on behalf of Stockland and NSW Land and Housing Corporation (the Applicant) in support of a concept State Significant Development Application (SSDA) for the redevelopment of the site within the Waterloo Estate (South) Precinct Area, hereby known as “Waterloo South”.

In this report reference to “Homes NSW” or “the Applicant” shall also be taken to mean “New South Wales Land and Housing Corporation (LAHC)” who is the registered owner of 93 per cent of land within the Waterloo South Precinct Area. Any reference to “Waterloo South” in this report should be read as the redevelopment of land owned by LAHC and associated public land (such as roads) throughout the Precinct Area.

The concept development is categorised as State Significant Development (SSD) as per Section 26, Schedule 1 of State Environmental Planning Policy Planning Systems 2021 (Planning Systems SEPP) as the project includes housing development carried out by or on behalf of the LAHC, with an estimated development cost (EDC) of more than \$30 million.

The concept, in summary, aims to deliver:

- High quality mixed tenure housing in the context of a rapidly transforming area.
- Approximately 3,300 new dwellings, of which a minimum 30% will be social housing, approximately 20% will be affordable housing, and a maximum 50% will be market housing (measured as a percentage of the total residential gross floor area).
- Publicly accessible open space and public realm activation.
- An authentic mixed-use precinct, with housing co-located with non-residential uses, community facilities, essential services, and access to public transport.

The concept SSDA will guide the detailed design of future buildings, open spaces, and the public realm within the Waterloo South site. The concept SSDA seeks development consent for key planning metrics, including maximum building envelopes, building heights, setbacks, vehicular access points and road network, and the distribution of floor area across different land uses and residential tenure types.

A state-assessed rezoning application has also been prepared and submitted concurrently to give effect to this concept SSDA. The state-assessed rezoning application seeks amendments to the Sydney Local Environmental Plan 2012 (SLEP 2012) and the Waterloo Estate (South): Design Guide 2022 (2022 Design Guide) to align with the maximum building envelopes sought in this concept SSDA. Notably no additional gross floor area (GFA) or density is sought under the state-assessed rezoning application than is currently permissible on the site under the SLEP 2012.

1.1 Relevant SEARs

This ESD Strategy Report addresses the following relevant Secretary’s Environmental Assessment Requirements (SEARs) set out in the table below.

Table 1.1 SEARs Compliance Table

SEARS Request Environmental Impact Assessment Requirements	Response / Location in Report
Key Issue 13: Ecologically Sustainable Development • Identify how ESD principles (as defined in section 193 of the EP&A Regulation) are incorporated in the design and ongoing operation of the development. Supporting documentation: ESD Report	— Section 2.1.1: Principles of Ecologically Sustainable Development — Section 5: ESD Strategy. The principles are identified using tags [p1], [p2], [p3] & [p4]

SEARS Request Environmental Impact Assessment Requirements	Response / Location in Report
Key Issue 13: Ecologically Sustainable Development • Provide an assessment of the development against the standards for non-residential development set out in Chapter 3 of State Environmental Planning Policy (Sustainable Buildings) 2022. Supporting documentation: ESD Report	— Section 2.1.2: State Environmental Planning Policy (Sustainable Buildings) 2022 — Section 5.5.3: SEPP (Sustainable Buildings) 2022

1.2 The Site

The Waterloo South Precinct Area comprises approximately 123,149m² across 10 street blocks in the City of Sydney Local Government Area (LGA), generally bounded by Cope, Raglan, George, Wellington, Gibson, Kellick, Pitt and McEvoy Streets.

The Waterloo South site area, excluding any privately owned properties within the Waterloo South Precinct Area, comprises approximately 114,822m², or just over 93 per cent of the land within the Precinct Area. The legal description of Waterloo South Precinct Area is detailed in Table 1.2

Table 1.2 Legal Description of Waterloo South

Address	Lot / DP
Lots owned by NSW Land and Housing Corporation (land is subject to both the rezoning and the concept SSDA)	
209-219 Cope Street, Waterloo	Lot 1 DP 217386
238-246 George Street, Waterloo	Lot 1 DP 225159

Address	Lot / DP
229-231 Cope Street Waterloo	Lot 3 DP 10721
6 John Street, Waterloo	Lot 1 DP 533762
97-109 Cooper Street, Waterloo	Lot A DP 105916, Lot B DP 105916, Lot C DP 105916, Lot 14 DP 10721,
248-254 George Street, Waterloo	Lot 2 DP 533678
232 Pitt Street, Waterloo	Lot 11 DP 635663, Lot 10 DP 635663
74-76 Wellington Street, Waterloo	Lot 1 DP 224728
331-337 George Street, Waterloo	Lot 3 DP 533680
247-251 Cope Street, Waterloo	Lot 1 DP 533679
339-341 George Street, Waterloo	Lot 1 DP 77168
250 Pitt Street, Waterloo	Lot 313 DP 606576
Cooper Street, Waterloo	Lot 3 DP 217386
Lots owned by others (land that does <u>not</u> form a part of the concept SSDA)	
221-223 Cope Street, Waterloo	Lot 6 DP 10721, Lot 7 DP 10721, Lot 9 DP 10721, Lot 8 DP 1147179
225-227 Cope Street, Waterloo	Lot 5 DP 10721, Lot 4 DP 10721
233 Cope Street, Waterloo	Lot 12 DP 1099410, Lots 1-41 SP 79210
116 Wellington Street, Waterloo	Lot 10 DP 10721, Lot 11 DP 10721
111 Cooper Street, Waterloo	Lot 15 DP 10721
291 George Street, Waterloo	Lot 10 DP 1238631, Lots 1-20 SP 96906
110 Wellington Street, Waterloo	Lot 101 DP 1044801, Lots 1-58 SP 69476
336 George Street, Waterloo	Lot 3 DP 10686
213-215 Cope Street, Waterloo	Lot 2 DP 217386

1.3 Site and Surrounding Context

The suburb of Waterloo is located within the City of Sydney Local Government Area (LGA) and is located 3km south of Sydney Central Business District. The site is part of the broader Waterloo Estate, which comprises the northern, central, and southern precincts and accommodates a significant community residing in social housing.

The Waterloo South Precinct Area is predominantly owned by LAHC, however, as outlined in Table 1.2, the site, the subject of this report, excludes several privately owned lots located within the boundary of the broader Waterloo South precinct outlined in Figure 1.1. The privately owned lots are currently used for residential, office, light industrial, and



Figure 1.1 Aerial view of the Waterloo Estate and the Waterloo Estate (South) Precinct Area

Source: Six Maps, modified by Beam Planning

infrastructure uses. The LAHC owned sites are currently used almost exclusively for the provision of social housing, with ancillary offices and community facilities. Overall, Waterloo South currently contains a total of 750 social housing dwellings and 120 private dwellings.

As shown in Figure 1.1, surrounding suburbs include Redfern to the north, Green Square to the south, Alexandria to the west and Zetland to the east. This broader area has been subject to significant change over the last 10 years with projects such as South Eveleigh, Redfern North Eveleigh Precinct Renewal, Waterloo Metro Quarter and over station development (OSD) all contributing to the changing character of the area.

These broader renewal projects are supported by proximity to a range of public transport services, including Redfern Station, Green Square Station, and Waterloo Metro Station, all of which are within walking distance of Waterloo South.



Figure 1.2 Waterloo Estate (South) Project Area

Source: SJB

1.4 Project Vision and Intended Outcomes

The vision for the site is to create a unique and vibrant mixed-tenure housing precinct that supports the needs of the community and delivers much needed housing in response to National and State Government priorities.

The Vision is:

To create a new and unique urban village on the Project Land (Gadigal Land) which: delivers new homes, community places and green spaces with diverse housing choice and amenity; prioritises the health and wellbeing of residents; and offers an authentic sense of place and mixed and more sustainable local and mixed communities.

The proposed redevelopment seeks to respond to this vision by creating a unique and vibrant neighbourhood that can deliver significant social benefits to residents, visitors, and workers in the Waterloo area and broader City of Sydney LGA. The co-location of community uses with housing and employment will ensure the redevelopment is an integrated, accessible and connected precinct that supports the social needs of community.

1.5 Proposed Concept SSDA

The concept SSDA seeks concept approval in accordance with section 4.22 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) for the comprehensive redevelopment of the Waterloo South site.

The concept proposal, if approved, will guide the detailed design of future buildings, public open spaces, and the public realm within Waterloo South. It will seek concept development consent for key planning metrics for the precinct as generally described in Table 1.3 (indicative figures).

Table 1.3 Key development metrics

Descriptor	Project Details
Project Area	<ul style="list-style-type: none"> — Waterloo South has a developable site area of 114,822m² / 11.5ha — The Waterloo South Precinct Area, which includes all LAHC owned and privately owned properties and roads within the precinct, has a site area of 123,149m² / 12.3ha
Project Description	<ul style="list-style-type: none"> — Maximum building envelopes, including maximum building heights, street-wall heights and ground and upper-level setbacks. — Distribution of gross floor area (GFA) across the Waterloo South development blocks. — Indicative allocation of floor space between social, affordable and market housing, as well as non-residential community uses across the Waterloo South Precinct Area. — Loading, vehicular, pedestrian, and active transport access arrangements — Public domain upgrades and new public domain and publicly accessible areas. — Indicative subdivision plan, staging plan and delivery sequencing for development. — Approval of the following management plans and strategies to inform future stages of the development: <ul style="list-style-type: none"> — Updated Design Excellence Strategy — Design with Country strategy — Preliminary Public Art Strategy — Contamination Strategy — Flood Management Strategy — Stormwater Management and Drainage Strategy

	<ul style="list-style-type: none"> — ESD Strategy — Strategies for utilities and service provision including service infrastructure lead-in enabling works — Tree Retention Strategy
Land Uses	<p>Residential</p> <ul style="list-style-type: none"> — Social housing: no less than 30% of residential GFA — Affordable housing: ~20% of residential GFA (balance between the delivery of minimum 30% social housing, and the maximum 50% market housing) — Market housing: no greater than 50% of residential GFA <p>Non-residential</p> <ul style="list-style-type: none"> — A total of 15,000m² of GFA, of which at least 5,000m² of GFA is to be delivered as ‘Community Uses’ (which can include child care, health, education or community facilities).
Gross Floor Area	Up to 282,485m ²
Building Heights	Between 2 and 33 storeys
Car Parking	Approximately 1,500 spaces (across all land uses), excluding on-street car parking spaces
Staging/ Phasing	It is expected that the redevelopment will occur in seven (7) stages (inclusive of the delivery of the large park on Block 1), however this staging remains indicative.

2 Sustainability Strategic, Planning & Compliance Context

This section provides an outline of relevant ESD project policy and planning requirements for Waterloo South.

2.1 NSW Secretary's Environmental Assessment Requirements (SEARs)

This report addresses the SEARs Key Issue Item – 13 Ecologically Sustainable Development:

- Identify how ESD principles (as defined in section 193 of the EP&A Regulation) are incorporated in the design and ongoing operation of the development.
- Provide an assessment of the development against the standards for non-residential development set out in Chapter 3 of *State Environmental Planning Policy (Sustainable Buildings) 2022*.

2.1.1 Principles of Ecologically Sustainable Development

For this report, the ESD principles are defined in accordance with section 193 of the *Environmental Planning and Assessment Regulation 2021* (EP&A Regulation) as follows:

- The **precautionary principle [p1]** is that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

- The principle of **inter-generational equity [p2]** is that the present generation should ensure the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations.
- The principle of the **conservation of biological diversity and ecological integrity [p3]** is that the conservation of biological diversity and ecological integrity should be a fundamental consideration.
- The principle of **improved valuation, pricing and incentive mechanisms [p4]** is that environmental factors should be included in the valuation of assets and services

The text tags [p1], [p2], [p3] and [p4] will appear against themes listed in Section 4: ESD Themes and commitments listed in Section 5: ESD Strategy to assist in identifying how these ESD Principles are to be incorporated in the design of the development.

2.1.2 State Environmental Planning Policy (Sustainable Buildings) 2022

SEPP (Sustainable Buildings) 2022 applies to the proposed development and establishes sustainability performance requirements for both residential and non-residential buildings. Residential components are assessed using the BASIX tool, while non-residential elements must comply with Chapter 3 of the Policy.

Detailed responses to the non-residential requirements of this SEPP are provided in Section 5.5.3 SEPP (Sustainable Buildings) 2022 under the Compliance section of the ESD Strategy.

2.2 Waterloo Estate (South) Design Guide 2022

The Waterloo Estate (South) Design Guide 2022 (the Design Guide) provides detailed planning and design controls for the Waterloo South precinct, supporting the overarching rezoning and redevelopment framework under the *Sydney Local Environmental Plan 2012*. The Design Guide adopts the provisions of *Sydney Development Control Plan 2012* (Sydney DCP2012) in accordance with Section 3.43(3) of the Act. If there is an inconsistency between the Design Guide and the provisions of Sydney DCP 2012, the Design Guide prevails to the extent of the inconsistency.

The Design Guide sets out ESD objectives for the Waterloo South precinct:

- Minimise energy use, water use, waste generation and urban heat effects.
- Maximise on-site renewable energy generation, water re-use and waste recycling.
- Ensure the efficient use of resources in building design, construction and operation.
- Ensure that development is resilient against the effects of climate change.

These objectives have informed the ESD approach and responses to relevant provisions in the Design Guide.

Project-specific responses are reflected in the ESD commitments listed in Table 5.4 under Design Guide Responses in Section 5 ESD Strategy.

2.3 National Construction Code – Section J

In NSW, the Class 2 single occupancy units (SOUs) of residential development must satisfy the minimum requirements of BASIX to demonstrate that the design is compliant with Section J for those SOUs.

The non-residential parts of the masterplan development, including non-SOU class 2 spaces, must satisfy the minimum compliance requirements of Section J Energy Efficiency in the National Construction Code (NCC) 2022 Volume 1 (or the release of Code in effect at time of applying for a Construction Certificate).

Table 2.1 summarises the key Section J parts for which minimum compliance is to be demonstrated.

Table 2.1 Section J compliance requirements

Parts	Requirements
J4 Building fabric	Thermal performance of opaque elements and glazing
J5 Building sealing	Airtightness & sealing for energy efficiency of services
J6 Air-conditioning and ventilation	Performance for all HVAC-associated services
J7 Artificial lighting and power	Efficiency measures for lighting, boiling & chilled water storage, lifts/escalators
J8 Heated water supply & swimming pool/spa plant	Heated water systems for food / sanitation to requirements of plumbing code Performance targets for pool & spa heating and pumping systems
J9 Energy monitoring & on-site distributed energy resources	Metering, monitoring & minimum facility (board & sizing) provisions, including for PV / EV / battery systems

3 Ecologically Sustainable Development Strategy Framework

3.1 Frameworks for ESD strategy

The ESD strategy for Waterloo South is informed by a hierarchy of recognised frameworks, including global sustainability principles, federal and state government initiatives and Stockland’s corporate commitments.

These frameworks reinforce that sustainable development extends beyond energy, water and waste efficiency. The scale and strategic objectives for Waterloo South, create opportunities to deliver sustainability outcomes across the public realm, built environment and community domains.

National Frameworks

The National Strategy for Ecologically Sustainable Development (1992) set goals for ESD described as “*development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends*”, finding implementation at National, State and Local Government in key legislation:

- The Federal Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).
- The NSW Environmental Planning & Assessment Act 1979 (EP&A Act) and the **NSW EP&A Regulation 2021** (to which the project SEARs refer for the definition of ESD principles as described in 2.1.1 above).
- The NSW Local Government Act 1993.

Global Frameworks

In September 2015, world leaders from 193 countries committed to the 17 **United Nations Sustainable Design Goals (SDGs)** under the 2030 Agenda for Sustainable Development, through a treaty mechanism commonly known as the **Paris Agreement**. Together, they represent the most pressing challenges facing sustainable development globally, including the stated aim to limit global temperature rise to 1.5°C.



Figure 3.1 UN Sustainable Development Goals

<https://www.un.org/sustainabledevelopment/>. The content of this publication has not been approved by the United Nations and does not reflect the views of the United Nations or its officials or Member States

Stockland’s Sustainability Approach

Stockland has established a corporate decarbonisation pathway that aligns with the goals of the Paris Agreement to limit global temperature rise to 1.5°C.

Stockland is committed to reducing both operational and embodied carbon emissions across its portfolio through energy efficiency, electrification, renewable energy procurement, materials optimisation and credible offsetting.

This project will be guided by Stockland’s sustainability strategy to ensure that its design, construction, and operational outcomes actively contribute to achieving Net Zero carbon across the development lifecycle. Table 3.1 describes key Stockland targets that align to the project commitments.

Table 3.1 Key Stockland corporate decarbonisations targets

Stockland Target	Description
Net Zero Scope 1 and 2 Operational Emissions	Delivering renewable electricity to 100% of post-construction operations.
Upfront Carbon Emissions Reduction	Following Life Cycle Assessment (LCA) methodology, minimum 40% reduction in upfront embodied carbon (LCA modules A1–A5) compared to a standard reference case, with offset of remaining emissions.
Material Efficiency	Prioritise low-carbon materials, reuse and recycling, and minimise construction waste to landfill.

3.2 Waterloo South Sustainability Framework Commitments

The Sustainability Framework Commitments (SFC) for Waterloo South provide a structure for delivering the project vision and aligning outcomes across environmental, social, cultural and economic performance. This framework comprises five Key Moves with corresponding commitments. The Key Moves are:

- Key Move 1 (KM1): Providing secure, appropriate housing that is aligned with the priorities and needs of Aboriginal people
- Key Move 2 (KM2): Pathways into health, education & employment opportunities aimed to build capacity and self-determination
- Key Move 3 (KM3): Creating an authentic place through community-informed design
- Key Move 4 (KM4): Creating an economically sustainable community
- Key Move 5 (KM5): Creating an environmentally sustainable community.

KM5 specifically addresses the project’s ESD commitments.

Outcomes sought under KM5 are:

- KM5.01 Resilience
- KM5.02 Carbon Reduction.

3.3 Disciplines and Stakeholders

Application of ESD strategy and principles to the project seeks to guide and influence design disciplines through multidisciplinary collaboration and an integrative design approach.

Design disciplines that are relevant and contributing to the Waterloo South ESD strategy include:


- Architecture
- Urban design
- Public Domain and Landscape
- Ecological Assessment
- Indigenous Executive Architect and First Nations Advisor
- Transport and Traffic
- Services
- Utilities
- Waste Management

A large team of disciplines are involved with a precinct of the scale of Waterloo South, and while all disciplines have relevant obligations to consider the project's ESD commitments, these disciplines are generally key to developing a sustainable precinct strategy at this stage in planning.

Numerous stakeholder groups exist for the Waterloo South development, and the active input of stakeholders is ongoing for the project to gain a broad range of perspective and insights on issues significant to the development. These insights both directly and indirectly play a role in determining ESD strategy for Waterloo South.

Groups regularly consulted during the planning process include:

- The Community Housing Providers consortium led by Stockland
- LAHC
- The City of Sydney Council
- Community stakeholder groups through a planned community engagement process
- Local First Nations Elders and traditional custodians

A close-up photograph of a green leaf, showing a detailed network of veins. The veins are a reddish-brown color, contrasting with the deep green of the leaf's surface. The veins form a complex, branching pattern across the leaf. The lighting is soft, highlighting the texture of the leaf's surface.

A low carbon, resilient community precinct with strong connections to Country, positive water, energy and nature outcomes and a place to live that sustainably delivers health, wellbeing and a defined sense of place.

4 ESD Themes

Together, the frameworks, commitments, and collaborative processes outlined in Section 3: Ecologically Sustainable Development establish the foundation for Waterloo South’s ESD strategy.

This section introduces four ESD themes that organise how the project's sustainability outcomes are framed and then delivered through the commitments in Section 5: ESD Strategy. Each theme sets out the ESD initiatives for consideration, and points to the mechanisms by which ESD outcomes will be implemented and verified.

Four ESD Themes for Waterloo South

1. **Upfront Carbon, Embodied Emissions and Energy** - Strategies to reduce carbon impacts and improve energy efficiency.
2. **The Resilient Neighbourhood** – Future-proofing buildings and communities against climate change
3. **Culture, Place, Belonging** – People-centred design that connects community, culture and Country.
4. **Nature Positivity and Biodiversity** – Restoring biodiversity and strengthening ecological connections in urban places.

4.1 Upfront Carbon, Embodied Emissions and Energy

Purpose: Establish the approach to greenhouse gas emissions associated with materials (upfront and embodied) and building operation.

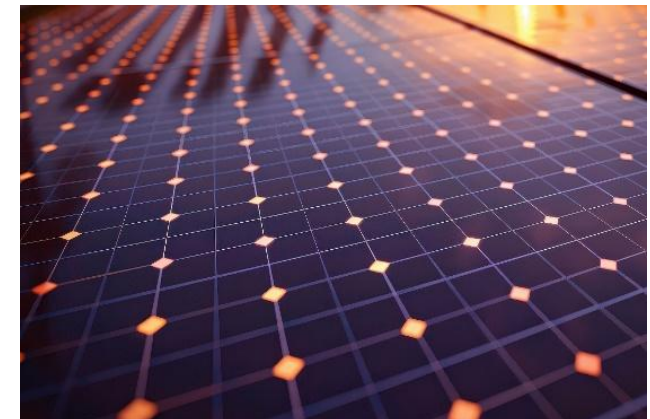
ESD initiatives for consideration:

- Upfront and embodied carbon associated with construction materials and systems (LCA modules A1–A5).
- Operational energy performance of residential and non-residential uses.
- Electrification of building services and provision for on-site renewable energy.
- Metering and monitoring to support performance management over time.

Mechanisms and verification: Outcomes under this theme are implemented and verified through the Green Star Communities and Green Star Buildings rating tools, BASIX and NatHERS for residential elements, and NABERS for applicable non-residential spaces.

Detailed benchmarks, targets and commitments are set out in Section 5.

This theme reflects the incorporation of ESD principles [p1] and [p2] in design of the Waterloo South development.



4.2 The Resilient Neighbourhood

Purpose: Address climate and environmental resilience measures at precinct and building scale,

ESD initiatives for consideration:

- Passive design measures and building fabric performance that support resilient and comfortable indoor environments.
- Heat mitigation and climate adaptation measures appropriate to the precinct context.

Mechanisms and verification: Relevant Green Star categories such as Resilient and Healthy, the thermal comfort provisions of BASIX, and project-specific resilience commitments provide pathways for delivery and evidence of resilient neighbourhood outcomes.

Detailed benchmarks, targets and commitments are set out in Section 5.

This theme reflects the incorporation of ESD principles [p1], [p2] and [p4] in the design of the Waterloo South development.



4.3 Culture, Place, Belonging

Purpose: Embed Designing with Country principles and culturally led governance into ESD delivery.

ESD initiatives for consideration:

- Application of the Waterloo South Designing with Country Strategic Framework to inform precinct planning, design decisions and long-term management.
- Culturally informed principles that guide environmental outcomes (e.g. nature, water, materials, community health).

Mechanisms and verification: Engagement and governance processes are established through project frameworks and carried forward via ESD commitments and related technical documentation.

Detailed benchmarks, targets and commitments are set out in Section 5.

This theme reflects the incorporation of ESD principles [p2], [p3] and [p4] in design of the Waterloo South development.



Figure 4.1 Reading of Country prepared by Nguluway (Source: Stockland Design Brief)

4.4 Nature Positivity and Biodiversity

Purpose: Protect and enhance ecological values and deliver nature-positive outcomes at precinct and building scale.

ESD initiatives for consideration:

- Protection and enhancement of local ecological communities and habitat connections.
- Water-sensitive urban design and water-quality outcomes that support ecological function.
- Integration of landscape and biodiversity measures within public realm and building design.

Mechanisms and verification: Outcomes are supported by ecological assessments, landscape strategies, and water management strategies, with specific commitments identified in Section 5. Cultural relationships with water and Country are respected and embedded through the Designing with Country framework referenced in Section 4.3.

Detailed benchmarks, targets and commitments are set out in Section 5.

This theme reflects the incorporation of ESD principles [p2], [p3] and [p4] in design of the Waterloo South development.



5 ESD Strategy

The commitments outlined below put into effect the four ESD themes described in Section 4: ESD Themes.

5.1 Establishing an ESD Strategy

The NSW Government’s vision for Waterloo South is the delivery of a precinct “*which delivers new homes, community places and green spaces with diverse housing choice and amenity; welcomes neighbours and visitors; prioritises the health and wellbeing of residents; and offers an authentic sense of place*”. The strategic and planning context defined in Section 2 provides a structure for Ecologically Sustainable Development outcomes that supports this vision.

The implementation of ESD outcomes that deliver the strategy is achieved through fulfillment of defined commitments to ESD over the life cycle of the project, from initial planning through to delivery and operating principles.

This Concept SSDA ESD Strategy report sets out the commitments for delivery of ESD outcomes at the Waterloo South project’s initial planning stage.

5.2 Overview of Commitments

All commitments to deliver ESD outcomes for the project are described within this ESD Strategy section. Fulfillment of these commitments will implement ESD outcomes drawn from primary sources that include:

- objectives described in Key Issue 13 of the project SEARs, identified in Table 1.1 above.
- relevant planning, legislative and regulatory requirements
- benchmarks, targets and outcomes for ESD proposed by the project

The overlay of ESD themes described in the preceding section provides additional context for the selection and integration of the commitments made in the pursuit of the Waterloo South ESD Strategy.

Text tags [p1], [p2], [p3] and [p4] appear against commitments listed here, to assist in demonstrating how ESD Principles, described in Section 2.1.1: Principles of Ecologically Sustainable Development above, are incorporated in the design of the development.

5.3 Sustainability Benchmarks

Third party rating systems, such as Green Star, provides a structured framework across the entire project lifecycle to ensure sustainability is embedded in every decision of the precinct development.

The key ESD benchmarks for the project are summarised in Table 5.1.

Table 5.1 Sustainability benchmark commitments summary

Rating System / Benchmark	Rating requirement
Green Star Communities v1.1 (13 September 2016) [p1], [p2], [p3], [p4]	6 Star Green Star Communities rating for the Waterloo South project
Green Star Buildings v1 rev C (18 October 2023) [p1], [p2], [p3], [p4]	5 Star Green Star Buildings rating for each Social Housing Unit Building and each Non-Social Residential Unit Building, rated on a block-by-block basis.
BASIX † [p2], [p4]	<p>Energy: Minimum score of 61 (buildings 4-5 storeys) Minimum score of 60 (buildings 6-20 storeys) Minimum score of 63 (buildings >20 storeys)</p> <p>Water: Minimum score of 40</p> <p>Thermal Comfort: Pass</p> <p>Materials - report construction embodied emissions</p>
NatHERS [p2], [p4]	NatHERS 7 star average for all residential buildings

Rating System / Benchmark	Rating requirement
NABERS [p1], [p4]	<p>NABERS Energy 5 star rating for retail spaces where applicable, subject to NABERS definitions, scope, and assessment criteria for a 'Retail' space.</p> <p>NABERS Water 4 star rating for retail spaces where applicable, subject to NABERS definitions, scope, and assessment criteria for a 'Retail' space.</p>
Other [p1], [p2], [p4]	As part of the Green Star Climate Positive Pathway, quantify upfront and embodied carbon and embed reduction strategies into the Waterloo South precinct, also supporting the Stockland 2030 corporate Paris-aligned target.

† BASIX score targets are current at the date of this report and may be subject to change over time in accordance with changes to the SB SEPP. BASIX targets for a building are locked in at the time of first BASIX certificate lodgement.

5.4 Rating tools and systems

As part of the project’s ESD commitments, recognised third-party sustainability rating tools are used to demonstrate achievement against key ESD requirements. These include the Green Star rating tools administered by the Green Building Council of Australia (GBCA) and the NABERS tools for operational energy and water performance.

The Green Star Communities tool will be applied to assess the overall Waterloo South precinct, while the Green Star Buildings tool will be applied to assess the social and non-social residential buildings within the precinct on a block-by-block basis. Where applicable, NABERS Energy and NABERS Water will be used to assess the operational performance of retail spaces.

5.4.1 Green Star

Green Star, operated by the Green Building Council of Australia (GBCA), is Australia’s recognised third-party verification framework for the design, construction and operation of healthy, resilient and positive buildings and communities.

The Green Star rating tools are intended to encourage practices that:

- reduce the impact of climate change;
- enhance health and quality of life;
- restore and protect biodiversity and ecosystems;
- drive resilient outcomes for the built environment; and
- contribute to market transformation and a more sustainable economy.

The Climate Positive Pathway (CPP), introduced through the Green Star Buildings tool, provides a structured mechanism to drive reductions in carbon emissions in the built environment. The pathway uses credits within the Positive category to address

different sources of carbon impacts and encourages progressively higher levels of achievement over time, based on the project’s registration date with the GBCA.

The Green Star Communities and Green Star Buildings tools categories have internal alignment. For Waterloo South, the concurrent pursuit of both ratings enables consistency and harmonisation of sustainability approaches across precinct-scale and building-scale assessments (Table 5.2). The ESD themes outlined in Section 4 provide additional context for the application of Green Star categories across the project.

Table 5.2 Alignment of Green Star Categories and ESD themes

Green Star Communities	Green Star Buildings	ESD Theme
Environment	Responsible Positive Climate Positive Pathway (CPP)	Upfront Carbon, Embodied Emissions and Energy
Governance, Liveability	Resilient Healthy People Places	The Resilient Neighbourhood
Liveability Economic Prosperity	People Places	Culture, Place and Identity
Environment	Nature Healthy	Nature Positivity and Biodiversity

Green Star Communities

Green Star Communities is a precinct scale sustainability rating tool that guides the planning, design and delivery of healthy, resilient and inclusive neighbourhoods. It supports outcomes that enable communities to thrive socially, environmentally and economically.

A 6 Star (World Leadership) Green Star Communities rating is achieved by meeting all minimum category requirements and achieving a minimum overall score of 75 points.

The proposed development responds to the provisions of the *Waterloo Estate (South) Design Guide 2022*, which includes a requirement to achieve a 6 Star Green Star Communities rating, committing the project to delivering leading sustainability outcomes at a precinct scale.

Green Star Buildings

Green Star Buildings is a sustainability rating tool for new buildings and major refurbishments. At a building scale, it drives projects to achieve sustainability outcomes beyond minimum regulatory compliance, while aligning with the National Construction Code and NABERS protocols where applicable.

A 5 Star Green Star Buildings rating demonstrates Australian Excellence as a high environmental performer. Achieving a 5 Star rating requires all Minimum Expectations to be met, alignment with the Green Star Buildings tool's internal Climate Positive Pathway, and a minimum score of 35 points across the rating categories.

All buildings for social housing and non-social housing units within the Waterloo South precinct will target a 5 Star Green Star Buildings rating on a block-by-block basis.

5.4.2 NABERS

The National Australian Built Environment Rating System (NABERS) is an operational performance rating system for the built environment. NABERS rates the measured performance of buildings on a scale of one to six stars across specific sustainability metrics, enabling consistent assessment of in-use performance over time.

NABERS Energy

NABERS Energy assesses the operational energy efficiency of a building and the associated greenhouse gas emissions arising from its operation. The rating is based on measured energy consumption data and provides an objective benchmark for comparing energy performance and identifying opportunities for improvement.

NABERS Water

NABERS Water measures a building's operational water usage against a baseline consumption benchmark. In operation, the NABERS rating assists building owners and managers to understand building water use and provides insights into areas where water usage can be reduced.

5.4.3 Provisions for Rating Tool Updates

If a sustainability rating system changes or the organisation (e.g. the GBCA or NABERS) that issues the rating ceases to do so, the project must still meet the same standard or may choose to adopt a later version at Stockland's discretion. If assessing against an obsolete rating tool, an independent expert nominated by Stockland will be appointed to confirm that the project meets an equivalent rating.

5.5 Compliance

5.5.1 BASIX

Residential parts of Waterloo South will demonstrate compliance with Section J through BASIX certification. The BASIX tool assesses Class 1 and Class 2 residential buildings against targets for Water, Energy, Thermal Comfort and Materials embodied impacts.

Energy and Water performance is assessed against minimum score requirements, through a combination of services efficiency measures, fixture ratings, on-site measures such as PV and rainwater capture & reuse, and inclusions for dwellings & common spaces.

Thermal Comfort assesses building fabric performance and passive design features to demonstrate that minimum acceptable levels of occupant thermal comfort are achieved. Thermal Comfort compliance is assessed through modelling undertaken using NatHERS-approved software.

The Materials index captures information on the embodied impacts from constructions and materials for all elements of the residential buildings.

The BASIX targets set out in Table 5.3 are to be achieved. Evaluation of the initiatives most effective in meeting these targets will be undertaken during design development for the relevant buildings. The initiatives listed in Table 5.3 are indicative and demonstrate the types of responses that may be employed to achieve BASIX compliance.

Table 5.3 BASIX targets

Part	Targets *	Initiatives that can support BASIX targets
Energy	61 minimum (4-5 storeys)	High efficiency DHW and HVAC systems where installed
	60 minimum (6-20 storeys)	High star-rated appliances, where installed Onsite renewables – rooftop PV supplying common area services
	63 minimum (> 20 storeys)	Efficient common area services Effective energy controls
Water	40 minimum	Water efficient fixtures & fittings, and appliances where installed Rainwater capture & reuse (irrigation of common area landscaping)
Thermal Comfort	Individual dwellings & building averages pass BASIX minimum thermal comfort criteria.	Performance facades Shading elements Openable windows to dwellings for effective natural ventilation Ceiling fans for enhanced air movement Effective levels of thermal insulation
Materials	Report all constructions	Selection of low embodied impacts / low emissions factor materials. Optimised structure for reduced materials overall.

* targets stated are in effect at the date of writing and may change in future in accordance with legislation.

5.5.2 NatHERS

The Nationwide House Energy Rating Scheme (NatHERS) is a system in Australia that rates the ability of residential dwellings to achieve acceptable thermal comfort within benchmarked heating, cooling and total loads, on a scale from 0 to 10 stars. A high star rating indicates that a dwelling requires minimal heating or cooling to maintain comfort, leading to lower energy bills and reduced carbon emissions.

Key factors that influence NatHERS outcomes include passive design principles, adequate fabric and glazing thermal performance, and effective natural ventilation.

Modelling for NatHERS is used to determine thermal comfort compliance of the residential dwellings in BASIX.

Waterloo South will meet the minimum BASIX requirements for thermal comfort and deliver at least NatHERS 7 stars average performance for each Social Housing and each non-Social unit building. [p2], [p4]

5.5.3 SEPP (Sustainable Buildings) 2022

The State Environmental Planning Policy (Sustainable Buildings) 2022 (the SB SEPP) establishes the overarching statutory framework for minimum ESD requirements in NSW. It integrates the BASIX framework for residential development and introduces sustainability standards for non-residential building classes.

The SB SEPP seeks to consistently address minimum requirements for general sustainability by asking consent authorities to consider how demolition and construction waste minimisation, peak electricity demand reduction, renewable energy generation & storage, passive design principles, energy metering and monitoring and potable water consumption minimisation are enabled at the building design level.

Additionally, the SB SEPP requires measurement and reporting of embodied emissions associated with the construction materials inputs to a building using a standardised reporting mechanism published through NABERS. (For residential buildings, this reporting is achieved through completion of the BASIX certificate’s Materials section.)

Non-residential state significant developments are required to prepare a Net Zero Statement that provides an estimate of scope 1 and 2 emissions up to 2050, with a plan for either full electrification of services, or a plan to transition from fossil-fuel dependent systems to operation without them by 2035. Information is to be provided about onsite renewable generation, implementation of passive design principles and other energy performance-improving infrastructure incorporated.

Large Commercial developments further need to meet minimum Energy and Water Standards. The Large Commercial designation only applies to the following types of building:

- Offices (base building) with at least 1,000m² NLA
- Hotels or motels (whole building) with at least 100 rooms
- Serviced apartment buildings with at least 100 apartments

For the purposes of this Concept SSDA ESD Strategy, the requirements of the SB SEPP are acknowledged at a precinct scale. Detailed assessment against the SB SEPP will be undertaken in future planning submissions at the individual building stage, when building designs are sufficiently developed.

[p1], [p2], [p3], [p4]

There is no requirement to submit an assessed response to the SB SEPP at The Concept stage.

5.6 Design Guide Responses

The project responses listed in Table 5.4 demonstrate ESD commitments aligned to the relevant provisions of the Waterloo Estate (South) Design Guide 2022

Table 5.4 Project commitments in response to provisions in the Design Guide

Design Guide provision	Waterloo South Project response
Sustainability Ratings 1) Development is to achieve a 6-star Green Star Communities rating [p1], [p2], [p3], [p4]	As noted in Sustainability Benchmarks above, Waterloo South will target a 6 Star Green Star Communities v1.1 rating

Design Guide provision	Waterloo South Project response
<p>Sustainability Ratings</p> <p>2) Plans submitted with development applications and construction certificate applications are to ensure all BASIX commitments are shown.</p> <p>[p2], [p4]</p>	<p>The project will meet and document all requirements for Energy, Water, Thermal Comfort and Materials commitments under BASIX for the residential parts of the development, as noted in Sustainability Benchmarks and Compliance above.</p>
<p>Green Infrastructure</p> <p>1) Recycled water - Where there is a commitment to provide a recycled water network, all buildings are to be constructed to be capable of providing a dual reticulation water system for water services and be capable of fully connecting to a non-potable recycled water network and configured to supply all toilets, washing machine taps, car wash bays, cooling towers and irrigation usage.</p>	<p>The water conservation strategy for Waterloo South focuses on practical measures:</p> <ul style="list-style-type: none"> • Rainwater harvesting in each building block, primarily serving retail areas and then irrigation, reducing reliance on mains water for landscaping. • Water-efficient fixtures in all apartments to minimize consumption.

Design Guide provision	Waterloo South Project response
<p>Green Infrastructure</p> <p>1) Recycled water (cont'd)</p> <p>[p2], [p4]</p>	<p>By using rainwater harvesting for targeted uses and efficient fixtures - and excluding dual pipework - the project achieves water efficiency without unnecessary complexity.</p> <p>The project does not include a recycled water network; all water services will be supplied through a single potable water system in line with Sydney Water requirements.</p> <p>There are currently no Sydney Water-owned or privately operated recycled water assets or networks in the areas surrounding the proposed Waterloo South site to connect into, and therefore no provision for recycled water has been included.</p>
<p>Green Infrastructure</p> <p>2) Operational Waste - Provisions relating to waste management in the Sydney DCP 2012 apply to Waterloo South. [p4]</p>	<p>Waterloo South will prepare a comprehensive operational waste management plan in accordance with the requirements of City of Sydney DCP 2012.</p>
<p>Green Infrastructure</p> <p>3) Vehicle Charging - Buildings are to be equipped with sufficient electricity supply to enable future electric vehicle charging for all vehicle parking in the development.</p> <p>[p1], [p4]</p>	<p>All buildings shall include the necessary electrical infrastructure provisions to enable future installation of electric vehicle charging facilities</p>

Design Guide provision	Waterloo South Project response
<p>Resource Use</p> <p>1) Buildings are to reduce the environmental impact of new building materials by maximising the use of reused or recycled materials through:</p> <ul style="list-style-type: none"> a) substituting industrial waste products or oversized aggregate for Portland cement; b) reusing steel or substituting post-consumer recycled content in steel; c) reusing timber or substituting post-consumer recycled timber; and d) replacing any other materials with reused or recycled material 	<p>The project will undertake full consideration of the materials embodied impacts and best opportunities for waste avoidance and materials reuse in its design.</p> <p>Through the relevant benchmarks and targets that form part of this ESD strategy, impacts from construction inputs will be quantified and addressed at the appropriate project phases.</p>

[p1], [p2], [p4]

5.7 Project additional ESD Commitments

Table 5.5 articulates further project commitments that complete the holistic approach to project ESD strategy, additional to those identified from benchmarks and targets, rating tools, regulations and legislative compliance in the preceding sections.

Table 5.5 Summary of additional project ESD commitments

Commitment	Source & References
<p>Minimum 40% reduction in upfront embodied carbon (LCA modules A1–A5) compared to a standard reference case, with offset of remaining emissions.</p> <p>Prioritise low-emission material approaches by investigating and applying feasible strategies to reduce embodied carbon and environmental impacts of materials</p> <p>[p1], [p4]</p>	<p>As described in 3.1 Frameworks for ESD strategy – Stockland’s Upfront Carbon Emissions Reduction target</p> <p>Green Star CPP</p>
<p>Delivering renewable electricity to 100% of post-construction operations.</p> <p>Providing a mechanism for Social Housing residents to access electricity at a discounted to standard retail rates.</p> <p>[p1], [p2], [p4]</p>	<p>As described in 3.1 Frameworks for ESD strategy - Stockland’s Net Zero target</p> <p>Green Star CPP</p>
<p>Full electrification of building services</p> <p>[p1], [p2], [p4]</p>	<p>Green Star CPP</p>
<p>Metering and monitoring of energy consumption</p> <p>[p4]</p>	<p>Green Star minimum expectation</p> <p>Support NABERS Energy for retail spaces</p>

Commitment	Source & References
<p>Engage with and be guided by local Elders and traditional custodians in the design process</p> <p>[p2]</p>	<p><i>Waterloo South Designing with Country Strategic Framework</i> - NDI</p> <p>Sustainability Framework Commitments</p> <p>Culture, Place, Belonging theme</p>
<p>First Nations input to the shaping of precinct management for Social Housing</p> <p>[p2]</p>	<p>Sustainability Framework Commitments</p> <p>Culture, Place and Belonging theme</p>
<p>Planting, tree protection and retention in accordance with canopy targets.</p> <p>[p2], [p3], [p4]</p> <p>Refer to the Urban Design Strategy and Landscape Strategy reports for related discussion and responses to this commitment.</p>	<p><i>Planning Proposal and Concept SSDA Urban Design Report</i> - SJB</p> <p><i>Waterloo South Renewal Public Domain & Landscape report</i> – Aspect Studios</p> <p>Nature Positivity & Biodiversity theme</p>
<p>Provide Community Uses</p> <p>[p2], [p4]</p>	<p><i>Planning Proposal and Concept SSDA Urban Design Report</i> - SJB</p> <p><i>Waterloo South Estate Renewal Social Impact Assessment and Social Impact Management Plan</i> – Urbis</p>

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