

Ecologically Sustainable Development SSDA Report

**250711 GREEN SQUARE
STAGE 3**

Client:
Mirvac Development Pty. Ltd.

Revision:
E

Date:
31/07/2026

REPORT INFORMATION

Project	Green Square Stage 3
Title	Ecologically Sustainable Development SSDA Report
Client	Mirvac Development Pty. Ltd.
Revision	E
Revision Date	31/07/2026
Prepared By	LCI Consultants Sydney Office Level 8, 73 Miller Street North Sydney, NSW 2060
ABN / ACN	92 124 107 973 / 124 107 973
Author	Micha Middlebrook

REVISION SCHEDULE

Revision	Date	Issue Name	Author	Authorised
A	11/11/2025	Draft Issued for Comment	Micha Middlebrook	A
B	10/12/2025	Final Issue	Micha Middlebrook	B
C	23/06/2026	RtS Response	Micha Middlebrook	C
D	10/07/2026	Draft Issued for Comment	Micha Middlebrook	D
E	31/07/2026	Final Issue	Micha Middlebrook	E

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1 Introduction

This Ecologically Sustainable Development (ESD) Report has been updated in response to the public submissions and agency advice received for SSD-83899206, being the Mixed-Use Development at Green Square Town Centre - Sites 7,17 and 18. This report provides an assessment of the amended design for the development following SSD lodgement.

The proposal aims to:

- Respond to the housing challenges facing Sydney through the delivery of diverse housing types in a highly accessible location;
- Demonstrate the strategic and site-specific merit of accommodating the proposed height and FSR of development on the site;
- Contribute to the establishment of Green Square as a town centre through a mixed-use approach and use urban design principles to integrate residential and non-residential land uses;
- Improve the pedestrian connectivity throughout the site, while encouraging the direct connections to public transport and the existing street network; and
- Appropriately respond to neighbouring development and public domain within the GSTC through podium and tower forms with appropriate massing, which protect solar access and minimise environmental impacts.

2 Background – Housing Delivery Authority

On 19 December 2024, the Housing Development Authority (HDA) was established by DPHI to accelerate the delivery of housing across NSW, under the Environmental Planning and Assessment (Housing Delivery Authority) Order 2024. This has provided a new State Significant Development pathway in which the proposed redevelopment can be undertaken through.

The site was declared State Significant Development (SSD) pursuant to State Significant Declaration Order 2025 (No 2) issued on 26 February 2025. The order specifies development in EOI application 232525 dated 17 January 2025, including development for the purposes of mixed use development comprising commercial premises and residential accommodation with the provision for affordable housing and Build to Rent (BTR) at 960A Bourke Street, 6 Geddes Ave and 411 Botany Road, Zetland as identified in Schedule 18, is declared to be SSD.

The HDA SSD pathway has been established to accelerate delivery of housing and requires that the subject SSD is lodged within 9 months from receipt of the Secretary's Environmental Assessment Requirements (SEARs). Current SEARs for the project were issued for Early Works on 15 April 2025 (SSD-82328958) (SSDA 1), Sites 7, 17 and 18 on 15 May 2025 (SSD-83899206) (SSDA 2) and for Sites 8 and 19 on 15 May 2025 (SSD- 84322496) (SSDA 3).

The key features of the Mirvac Green Square HDA proposal are:

- Detailed development consent for the purposes of a mixed use development, with significant residential components comprising build to sell and build to rent dwelling stock and ground floor non-residential uses.
- Delivery of between 1,000 to 1,200 dwellings across 9 buildings in low rise and high rise tower formats.
- Delivery of Affordable Housing dwellings.
- Delivery of the components in two-stage detailed SSDA process.

In conjunction with the SSDA, a State-assessed rezoning process is intended to facilitate the proposed development.

This SSDA forms the second application as part of broader HDA declared development and forms the main works to develop sites 7, 17 and 18 of the GSTC.

3 Site Description

The site is located at 960A Bourke Street, Zetland and is located within the GSTC. It is situated within the Sydney Local Government Area (LGA) and is located approximately 3.5km south of the Sydney CBD and within immediate proximity of the Green Square Railway Station. The site forms the northern component of the Mirvac HDA proposal, consisting of one lot which is legally described as Lot 6, DP 1199427. An aerial photo of the site is shown at Figure 1 below.

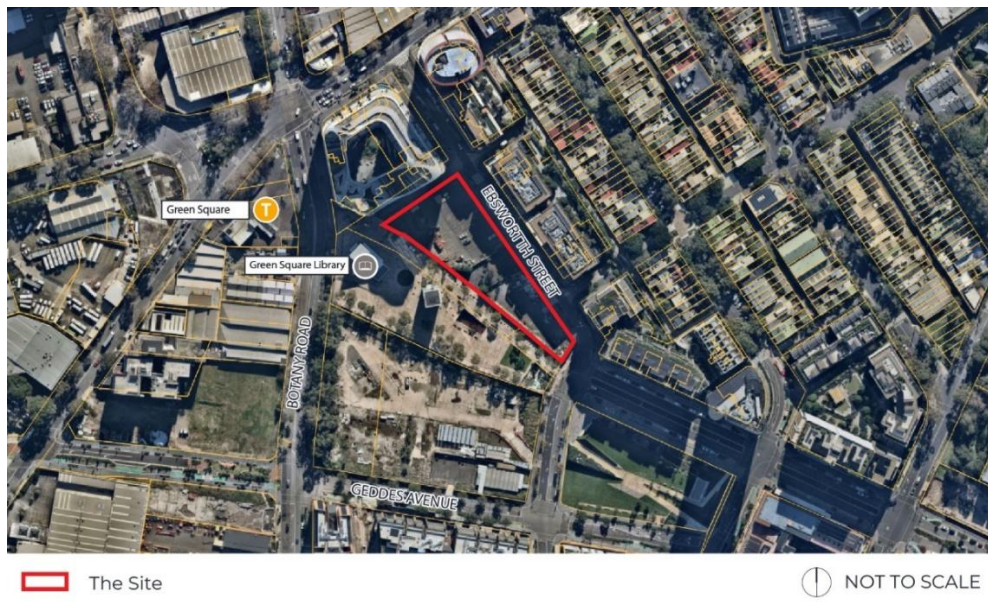


Figure 1 Sites 7, 17 and 18 Site Aerial, source: Nearmap, Colliers Urban Planning edits.

3.1 Overview of the Proposed Development

The proposed development seeks to deliver the construction of three BTR buildings which will integrate residential, retail, resident amenity and public domain uses. Specifically, the proposal seeks approval for:

- Excavation and enabling works.
- Construction of 3 mixed use BTR buildings up to 21 storeys in height, comprising:
 - 504 BTR dwellings including a variety of dwelling types including Studio, 1, 2 and 3-bedroom apartments, a portion of which will be affordable housing.
 - Shared internal and external residential amenity space.
 - Non-residential floor space including retail, food and beverage tenancies, BTR staff offices and BTR resident lobbies
 - A shared basement level, incorporating loading zones, waste collection and servicing.
 - Car parking and bike parking to service the proposed development.
- Public domain and landscaping improvements, including:
 - External pedestrian laneways, pathways and through-site links.
 - Tree removal, protection, new plantings and landscaping works.
- Utility and stormwater connections to support the new development.
- Concurrent amendments to the Sydney Local Environmental Plan (Green Square Town Centre) 2013 to facilitate the SSDA.

4 Secretary's Environmental Assessment Requirements

In accordance with section 4.39 of the Environmental Planning & Assessment Act 1979 (EP&A Act), Secretary's Environmental Assessment Requirements (SEARs) (SSD-83899206) have been issued. This report has been prepared to respond to the issued SEARs, as set out in the table below.

Table 1: SSD-83899206 SEARs

SEAR	Where addressed in this report
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.	See Section 4.1 for responses to each of these principles of ecologically sustainable development.
Where relevant, 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. .	See Section 4.6, which outlines Green Square's compliance with the requirements of Chapter 3 of the SEPP (Sustainable Buildings) 2022.

4.1 Summary of mitigation measures

Table 2: Mitigation measures

ID	Mitigation measure
Construction Management	
CM001	Implement a Construction Environmental Management Plan (CEMP) including waste diversion targets (minimum 90% from landfill).
CM002	Dust suppression measures during excavation and demolition to minimise air quality impacts.
CM004	Contractor education on sustainability practices and climate change mitigation.
Design and Operation	
D/O001	All-electric building design; no natural gas connection to support NSW Net Zero Strategy.
D/O002	Achieve minimum 6-star NatHERS rating per apartment and 7.5-star average across SOUs.
D/O003	Install solar PV arrays on rooftops to maximise on-site renewable energy generation.
D/O004	Procure 100% renewable electricity for common areas and offset refrigerants to achieve net zero operational energy.
D/O005	Target 20% reduction in upfront carbon emissions compared to a reference building through responsible material selection.
D/O006	Implement water-saving fixtures and dual reticulation for non-potable water reuse (toilet flushing, irrigation and washing machines).
D/O007	Provide dedicated recycling facilities and waste separation systems for operational phase.
D/O008	Integrate native landscaping and biophilic design to enhance biodiversity and occupant wellbeing.
D/O009	Develop an EV charging strategy and provide secure bicycle parking to encourage sustainable transport.

5 SSDA Assessment Requirements

Department of Planning, Housing and Infrastructure (DPHI) has issued Secretary's Environmental Assessment Requirements (SEARs) to the applicant for the preparation of an Environmental Impact Statement (EIS) for the proposed development. This section of the report addresses these requirements.

5.1 Section 193 EP&A Regulation

The ESD principles that are to be incorporated into the proposed development must be aligned with Section 193 – Environmental Planning & Assessment Regulation. The ESD principles are listed below:

- (a) **the precautionary principle**, namely, 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. In the application of the precautionary principle, public and private decisions should be guided by:
 - (i) careful evaluation to avoid, wherever practicable, serious, or irreversible damage to the environment, and
 - (ii) an assessment of the risk-weighted consequences of various options,
- (b) **inter-generational equity**, namely, that the present generation should ensure that the health, diversity, and productivity of the environment are maintained or enhanced for the benefit of future generations,
- (c) **conservation of biological diversity and ecological integrity**, namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration,
- (d) **improved valuation, pricing and incentive mechanisms**, namely, that environmental factors should be included in the valuation of assets and services, such as:
 - (i) **polluter pays**, that is, those who generate pollution and waste should bear the cost of containment, avoidance, or abatement,
 - (ii) **the users of goods and services should pay** prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste,
 - (iii) **environmental goals**, having been established, should be pursued in the most cost-effective way, by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.

5.1.1 The Precautionary Principle

The project team for Green Square Stage 3 is adopting a responsible and precautionary approach to minimise potential environmental impacts throughout the design, construction, and operational phases. The development will transform a currently undeveloped site through rezoning for mixed-use purposes, helping to address the shortage of housing opportunities in the area. Site preparation works—including excavation, remediation, and public domain upgrades—will precede construction of new multi-residential towers.

A comprehensive sustainability strategy will guide the project, aligned with Mirvac's corporate objectives of decarbonisation, circular economy, and renewable energy integration. Decarbonisation is Mirvac's primary priority, and the project is targeting a 20% reduction in upfront carbon emissions compared to a standard reference building. Materials will be procured responsibly, with a focus on products containing recycled content and those manufactured under certified sustainable practices.

At least 90% of construction and demolition waste will be diverted from landfill. To achieve this, the main contractor will implement an Environmental Management System (EMS) in accordance with NSW EMS Guidelines, ensuring best-practice resource efficiency and waste management.

Energy efficiency and renewable energy integration are also central to the project's sustainability strategy. Each apartment will achieve a NatHERS rating of at least 6 stars, with an overall average of 7.5 stars, while retail areas will consume at least 20% less energy than a standard reference building. The building will be fully electric, and the operator will procure 100% renewable electricity for all common areas under their control. On-site renewable energy generation will be maximised through the installation of solar photovoltaic panels on the tower roofs. Retail and residential tenants will be encouraged to procure renewable energy or GreenPower from their retailer of choice.

Finally, Mirvac Development has ambitious sustainability targets, with the project aiming for a minimum 5 Star Green Star Buildings rating (Australian Excellence).

5.1.2 Inter-Generational Equity

Following on from the above response, to uphold inter-generational equity, the proposed development minimises the consumption of natural resources, water and energy while reducing waste and emissions. In doing so, reduces the pressures on the environment. The project will also be enhancing its biodiversity on site by increasing the canopy cover when compared with its current state.

This project itself is an investment for future generations, attracting a diverse range of residents by designing for inclusion. The development also provides more housing supply for the area and creates employment opportunities in the retail precinct and building operations.

5.1.3 Conservation of Biological Diversity and Ecological Integrity

The project's ESD principles to reduce energy, water and waste consumption have an indirect impact to conserve biodiversity and ecological integrity to the surrounding area. The ecological value of the site post construction will exceed that of preconstruction due to the planting proposed with an emphasis on native trees and plants. This improves habitat for local fauna and increases a connection to nature and Country for occupants.

5.1.4 Improved Valuation

The design of the project will meet the National Construction Code (NCC) and achieve a certified Green Star Buildings rating, which establishes clear environmental performance goals for the development. These goals incorporate environmental factors into the valuation of assets and services by requiring responsible material selection, waste minimisation, and energy efficiency measures.

In line with the "polluter pays" principle, contractors will bear the cost of managing construction waste and implementing resource recovery strategies, including comingled recycling with off-site sorting. Operational waste systems will also be designed to encourage recycling and reduce landfill disposal costs.

The project adopts a life-cycle approach to pricing by prioritising durable, low-carbon materials and systems that minimise long-term environmental and financial costs. Environmental objectives—such as delivering a 20% reduction in upfront carbon emissions and enabling pathways for low-energy operation—will be achieved through integrated design strategies and market-based incentives, including Green Star certification.

5.2 Framework to Reflect Best Practice Sustainable Design Principles

5.2.1 Green Star Buildings – 5 Star Minimum

The development will be registered with the Green Building Council of Australia and is targeted to achieve a 5 Star Green Star Buildings rating. Green Star Buildings is a recently updated, holistic building sustainability rating tool where a 5 Star Rating is considered current Australian excellence. This outcome meets or exceeds the relevant industry recognised sustainability and environmental performance standard.

This tool includes targets that directly address the UN Sustainable Development Goals and encourages ambitious building design to significantly reduce the impact the built environment has on aggravating climate change. This new tool aligns to meet the Paris Agreement (2021) on climate change, create clear expectations for new buildings and ensures transparency in supply chains to ensure complete understanding of materials and products used in the project.

The Green Star Buildings rating system assessing buildings through the following categories:



Points are awarded for a project's ability to secure as many credits as possible from each category. Each credit targets the environmental impact of a specific design feature. The total number of points awarded determines the level of certification. A 5 Star building requires a minimum of 35 points, see the below table which breaks up the pathways per category.

Table 3 – Green Star Points per Category

	Points Available	Project Strategy
Responsible	17	8
Healthy	14	4
Resilient	8	1
Positive	30	16
Places	8	6
People	9	4
Nature	14	4
Sub-total	100	44
Leadership	10	0
Total	110	44

This table is indicative of level of outcome that the project will pursue but exact selection of credits may change through the design and construction process.

5.3 Resource efficiency



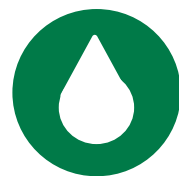
The project will not utilise gas from the grid for building operations, aligning with NSW Net Zero Strategy. Furthermore, the project will procure 100% renewable electricity in operation for all common areas. These measures support low-carbon operation and align with best-practice sustainability principles.



Onsite electrical generation through Solar PV arrays will be maximised while still ensuring the architectural intent remains. The building will be designed to achieve a NatHERS energy rating of at least 6 stars for each apartment and a weighted-area average of at least 7.5 stars. Other areas of the development will be designed to consume at least 20% less energy than a standard reference building in operation. LED lighting will be used throughout with appropriate monitoring strategies to create an efficient and responsive lighting design.



Although the project will be procuring 100% renewable energy for common areas, this energy is still drawn from the grid which still has carbon intensive energy emissions. By reducing the demand of the building, it allows further uptake of renewable energy occurring in the grid by other buildings.



The project is targeting a 20% reduction in upfront carbon equivalent emissions when compared to a standard practice reference building. To achieve this target, the project will procure responsible materials for the finishes where possible.

Water is considered a vital resource in the project, with a strong emphasis on conservation and efficient use. Sanitary fixtures and fittings will feature low flow rates to minimise the consumption of potable water for sanitary functions. The site will also incorporate a non-potable water main connection to support a range of uses, including toilet flushing, irrigation, washing machines.

5.4 NCC – Section J – Energy Efficiency

The development will meet the Section J requirements of the National Construction Code (NCC) Volume 1, 2022. Section J of the NCC outlines performance requirements to ensure that the building facilitates the efficient use of energy. During the detailed design stage, the architectural design of non-residential portion of the project will be assessed to develop thermal requirements for all the aspects of the building envelopes, such as glazing performance, façade & roof colouring, shading, and insulation.

5.5 Residential ESD Compliance Targets

In addition to the previously mentioned targets under SEARs, the residential towers are required to comply with NSW legislated Building Sustainability Index (BASIX) requirements. As part of that process, all Single Occupancy Units (SOUs) are required to achieve satisfactory thermal comfort targets using NatHERS software. Common areas not covered by the BASIX certificate are assumed to have similar fabric requirements to the SOUs. Common areas may also be subject to other, non-fabric NCC Section J 2022 requirements for equipment such as AC units, pumps, fans, and lights.

The development must demonstrate a score of at least 40% for Water and 63% for Energy and meet thermal comfort heating and cooling caps that equate to 6 Stars as a minimum for each SOU and 7.5 Stars on average across all SOUs. Green Square Stage 3 will achieve these requirements, along with the required BASIX scores for Energy and Water.

5.6 Sustainable Buildings SEPP (2022)

The Sustainable Buildings SEPP encourages the design and delivery of more sustainable buildings across NSW. It sets sustainability standards for residential and non-residential development and starts the process of measuring and reporting on the embodied emissions of construction materials. The Sustainable Buildings SEPP (2022) establishes mandatory sustainability standards for both residential and non-residential development. The development is subject to the provisions of:

a) Residential development – Chapter 2:

The residential portion of the development is subject to the BASIX standards under Section 2.1 of SEPP 2022. The project has been designed to meet the following:

- Thermal Performance: All residential units achieve a minimum 6-star NatHERS rating and a weighted-area average of at least 7.5 star, ensuring improved thermal comfort and reduced reliance on mechanical heating and cooling.
- Energy Efficiency: The design incorporates energy-efficient lighting, appliances, and HVAC systems, contributing to a reduction in greenhouse gas emissions in line with the updated BASIX energy targets.
- Water Conservation: Fixtures and fittings meet BASIX water targets, and rainwater harvesting systems are included to reduce potable water consumption.
- Embodied Carbon: The development includes reporting on embodied emissions of key building materials, supporting transparency and alignment with NSW's net zero goals.

Under the new BASIX Materials Index, the calculation and reporting of embodied emissions will be undertaken and formally documented as part of the project submission. The tool will do this by estimating the volume of different materials used in construction and applying standard emissions factors for the materials. There is no limit on embodied emissions of building materials. A limit (or standard) may be applied in future after a period of collecting comprehensive data on the embodied emissions of new developments built to the upcoming standards.

b) Non-Residential Development – Chapter 3

The commercial and retail components of the development meet the sustainability obligations under Chapter 3 of SEPP 2022, including:

General Sustainability Measures:

- A reduction in the reliance on artificial lighting and mechanical heating and cooling through passive Design: The building layout incorporates natural daylight access, external shading, and façade articulation to enhance thermal performance and reduce demand for active systems.
- Integration of renewable energy generation and storage infrastructure.
- Metering and monitoring of energy and water consumption.
- The minimisation of waste from associated demolition and construction, including by the choice and reuse of building materials. A Construction and Demolition Waste Management Plan will be implemented to support resource recovery. The design also prioritises materials with recycled content and durable construction.

Embodied Emissions Reporting:

- Disclosure of quantities and associated emissions of key materials is required at DA and CC stages.
- Reporting uses the NABERS Embodied Emissions Materials Form

State Significant Development (SSD) Requirements:

In accordance with the Sustainable Buildings SEPP (2022), for State Significant Development, the consent authority must consider whether the proposal will minimise the use of on-site fossil fuels, supporting NSW's broader objective of achieving net zero emissions by 2050. To demonstrate this, a Net Zero Statement has been prepared which outlines how the development is designed to reduce fossil fuel reliance and enable full electrification. This includes the provision of supporting infrastructure and transition strategies for any remaining fossil fuel-dependent systems.

These measures ensure that the development contributes meaningfully to NSW's climate targets and deliver long-term environmental, social, and economic benefits.

6 City of Sydney Council - Sustainability Planning

The proposed development is located within the City of Sydney Local Government Area and acknowledges the sustainability objectives outlined in the Sydney Development Control Plan (DCP 2012), particularly Section 3.6 – Ecologically Sustainable Development and related provisions for energy, water, materials, and waste.

As this project is classified as State Significant Development (SSD), the City of Sydney Design for Environmental Performance Report is not required. However, the project team has voluntarily addressed the relevant sustainability provisions of the DCP within this ESD report to demonstrate alignment with best practice and City of Sydney objectives.

The site is also located within the Green Square Town Centre, and the design responds to the sustainability principles and environmental management provisions outlined in the Green Square Town Centre DCP (GSTC) in Section 8, including energy efficiency, water-sensitive urban design, biodiversity, and waste minimisation.

This approach complements the commitments outlined in Section 4 of this report, including:

- Targeting a 5 Star Green Star Buildings rating (Australian Excellence).
- Net Zero Operational Energy for common areas from practical completion.
- 20% reduction in upfront carbon emissions compared to a reference building.

6.1 Energy (DCP Clause 3.6.1 & GSTC 8.2)

- All-electric design: No natural gas connection; supports NSW Net Zero Strategy.
- Renewable energy procurement: 100% renewable electricity for common areas; tenants encouraged to procure GreenPower.
- On-site generation: Solar PV arrays installed on roof where feasible.
- High-performance building envelope: Compliance with NCC Section J and BASIX targets.
- NatHERS compliance: Minimum 6-star rating per SOU, 7.5-star average across apartments.
- Green Star Buildings: Targeting 5 Star rating, addressing energy credits and operational carbon reduction.

6.2 Water (DCP Clause 3.6.2 & GSTC 8.5)

- BASIX compliance: Minimum 40% water reduction.
- Efficient fixtures: All taps, showers, and toilets meet highest WELS ratings.
- Non-potable water reuse: Dual reticulation via the City recycled water network for toilet flushing, irrigation and cleaning.
- Stormwater management: WSUD principles applied for stormwater quality and integration with landscape.

6.3 Materials (DCP Clause 3.6.5 & GSTC 8.3)

- Responsible materials: Preference for products with EPDs, recycled content, and low embodied carbon.
- Low-VOC finishes: At least 95% of internal finishes comply with VOC and formaldehyde limits.
- Design for durability and adaptability: Structural systems allow future reuse and recycling.

6.4 Waste (DCP Clause 3.14 & GSTC 8.4)

- Construction waste: Minimum 90% diversion from landfill; detailed Waste Management Plan implemented.
- Operational waste: Dedicated recycling facilities and waste separation systems provided.

6.5 Biodiversity (DCP Clause 3.5 & GSTC 8.6)

- Native landscaping: Planting strategy prioritises indigenous species to enhance habitat.
- Connection to nature: Biophilic design integrated into communal spaces.

The proposed development not only meets but exceeds the minimum sustainability requirements of the City of Sydney DCP and Green Square Town Centre DCP. By targeting 5 Star Green Star certification, achieving Net Zero Operational Energy for common areas, and committing to a 20% reduction in upfront carbon emissions, the project demonstrates leadership in sustainable design and aligns with the SSD SEARs and NSW Net Zero objectives.

7 Sustainable Design Principles

The following sustainable design principles have been proposed Green Square Stage 3 and can be addressed through the categories outlined within the Green Star Buildings rating system. It is the most stringent sustainable buildings tool recognised by the NSW government. The rating system is broken into the following categories.

7.1 Responsible

The Responsible category recognises activities that ensure the building is designed, procured, built and handed over in a responsible manner.

Materials - This category has a strong focus on the materials that have been used in a building. The building's finishes will be selected based on their responsible product value. The vision of the responsible product framework is to drive the supply chain to deliver transparent, healthy, low-impact, and net zero carbon products that are part of a circular economy. Not only does this reduce the resource consumption impact of the project but also ensures clean and sustainable supply chains, something that the building industry has turned a blind eye to for a long time.

Waste - The responsible category also looks at waste, both in the building's construction and operation. The project will divert at least 90% of construction and demolition waste from landfill. The building will also be designed for a functional waste system with recycling systems, adequate space and appropriate pick-up locations.

Education and Information - Education and information are notions that are carried within the responsible category. The head contractor when the building is in construction phase will educate the workers on site around climate change and the importance of sustainable design, construction and operation is critical in climate change mitigation. Information about the projects build and associated costs towards sustainability will be disclosed to the Green Building Council to further understand the response and viability of their framework.

7.2 Healthy

Building occupant health is a primary objective for Green Square Stage 3. The desire is for residents to feel comfortable in the space. Healthy conditions and comfortable conditions exist in parallel.

Clean Air - The project will provide a 50% improvement of outdoor air to all non-residential portions of the building to ensure occupants have plenty of fresh air and do not have a feeling that the environment is stuffy or odorous. Residential portions of the building will be provided with outdoor air as per the NCC and also have adequate distance separation between discharge and intakes of outdoor air.

Light Quality - Where appropriate the façade will accommodate for generous natural daylight to improve occupant wellbeing. Artificial lighting will be flicker free with appropriate lux levels and uniformity per space.

Acoustic Comfort - Green Square Stage 3 will implement an Acoustic Comfort Strategy to ensure a high standard of acoustic performance for residents. The strategy will address quiet enjoyment, privacy, noise transfer and control of intrusive noise, and will outline applicable standards, proposed performance metrics and design solutions.

Exposure to toxins - Low-VOC products and finishes will be specified throughout the project to minimise the release of indoor pollutants and ensure a healthy indoor environment. It is anticipated that at least 95% of all internally applied materials will comply with low-VOC and formaldehyde emission limits.

Amenity - Residents will benefit from a high level of amenity through a wide range of shared facilities, including an on-site Commercial/Recreation Facility (indoor), swimming pool, dining areas, and a wellness

centre. In addition, accessible green spaces will be provided at the ground level, podium, and mid-level terraces, allowing residents to enjoy outdoor areas and enhance their connection with nature.

Connection to Nature – A biophilic connection has proven to reduce stress and improve mental wellbeing. By implementing nature inspired design and integrated landscape into the project, the occupants will feel a sense of connection to place.

Accessible green spaces will be provided at the ground level, podium, and roof, allowing residents to enjoy outdoor areas and enhance their connection with nature.

7.3 Resilient

A building's resilience is a major lens to assess how sustainable the development will be over time. Buildings that are not resilient to external pressures are usually first to be rebuilt, shortening the life of the building. As a result, all embodied material within the building may not have reached its service life and the emissions per year for each material increases. Also, future costs to uplift a building to withstand external changes is an expensive exercise. To ensure the project is resilient to future pressures a range of assessments and modelling will be completed, with design elements to be incorporated to address these changes.

Climate Change Assessment - will be made highlighting components of the buildings design where risks lie. A follow up plan for mitigating these risks from the design will then be implemented. This will attempt to future proof the development from climate pressures such as floods, high temperatures, drought and storms.

Community resilience - Opportunities to foster social cohesion and local engagement will be explored. This may include supporting local employment and providing educational initiatives to strengthen the building's role within the community, enhancing its longevity and relevance.

Urban Heat Island - To prevent the urban heat island effect locally onsite, vegetation and materials with a low solar reflective index will be investigated.

7.4 Positive

Net Zero Operational Energy – Green Square Stage 3 project is committed to achieving net-zero carbon emissions in its operations for all common areas by avoiding the use of grid supplied natural gas and instead procuring 100% renewable electricity and offsetting the building's refrigerants. This goal will be achieved from the project's practical completion, well ahead of the grid's decarbonisation.

Onsite solar PV arrays will be maximized. The building will be designed to achieve a NatHERS energy rating of at least 6 stars for each apartment and a weighted-area average of at least 7.5 stars. Other areas of the development will be designed to consume at least 20% less energy than a standard reference building in operation. LED lighting will be used throughout, with efficient monitoring strategies to ensure responsiveness.

Upfront Carbon Reduction - The project aims to reduce upfront carbon emissions by 20% compared to a standard reference building. This will be achieved through the procurement of responsibly sourced materials, prioritizing products with Environmental Product Declarations (EPDs), recycled content, and low embodied carbon. Design strategies will also focus on efficient structural systems, minimizing material waste, and selecting suppliers committed to sustainable manufacturing practices. These measures aim to significantly reduce the building's initial carbon footprint while supporting broader decarbonization goals.

Water Conservation - Water conservation is a crucial aspect of Green Square development. The project acknowledges the importance of preserving this vital resource and has designed measures to minimise the building's potable water usage. Low flow rate end uses will be implemented throughout the building to reduce unnecessary water wastage, especially for sanitary needs.

In addition to reducing potable water demand, the site will integrate a non-potable water main connection to support a variety of uses, including toilet flushing, irrigation, water features, and street cleaning. This

approach will significantly reduce reliance on potable water for landscape irrigation and other functions, while also contributing to the mitigation of the urban heat island effect through the maintenance of healthy vegetation.

7.5 People and Place

Movement and Places - The project encourages sustainable transport through accessible showers, lockers, secure bike parking, and a Sustainable Transport Plan. Its location near Green Square train station and the future Waterloo Metro station provides excellent public transport access, further supporting low-carbon mobility and reduced car use.

Enjoyable Places and Contribution to Places - The project enhances both user experience and the surrounding urban environment by providing welcoming, well-designed spaces that promote comfort, social interaction, and connection with nature. Through active frontages, quality landscaping, and accessible communal areas, the development contributes positively to the local character and creates an inclusive, vibrant, and enjoyable place for all users.

History & Culture - A sense of place is integral for a building to have a prosperous long life. A building designed with a sense of place can enhance the social sustainability of a community by providing a space that reflects the local culture and history. This approach can help to strengthen the community's identity and promote a sense of pride in the local area. By creating a building that is responsive to its context, the project can contribute to the social, economic, and environmental well-being of the surrounding area.

Indigenous Design - By aligning the design method with the principles of the Australian Indigenous Design Charter, a true representation of Aboriginal heritage can be evoked in the design. This reminds visitors that the land they are on was habited tens of thousands of years before their arrival. By integrating this with aspects of developed Sydney (relatively new), Indigenous cultural can be spread to a greater audience and educate immigrated Australians on the rich history of this country.

7.6 Nature

Impacts to Nature - The project is located on a previously developed urban site, ensuring no disturbance to areas of high ecological value. All external lighting will comply with AS/NZS 4282:2019 to minimise light pollution to the night sky. Native landscaping will be incorporated to enhance biodiversity and create a resilient urban environment. These measures demonstrate the project's commitment to protecting nature and meeting Green Star requirements.

8 Conclusion

This Ecological Sustainable Design (ESD) Report has been prepared to by LCI in support of a State Significant Development Application for a new build-to- Rent housing development at Green Square Stage 3. The proposed development has undertaken an extensive amount of work to establish and integrate sustainable design and principles into the building design.

Sustainable design initiatives include:



Development to be all-Electric



Renewable energy procurement for common areas to be “net zero energy” equivalent in operation



20% Reduction in Upfront Carbon and, at minimum, 90% of construction waste diverted from landfill



Sole occupancy units (SOUs) will meet thermal comfort heating and cooling caps that equate to 6 Star as a minimum and 7.5 stars on average across all SOUs under NSW BASIX



Target 5 Star Green Star Buildings



Inclusion of solar photovoltaic panels



Develop an EV Strategy



Biodiversity and Connection to Nature through external landscaping



Indigenous Engagement and cultural diversity strategies

Sustainable principles, covering environmental, social, and economic well-being outcomes, will continually be investigated and integrated, where possible, into the project design and operation of the building to create a market leading build-to-rent housing development.

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www.lciconsultants.com.au

**MELBOURNE**

Level 17/242 Exhibition St,
Melbourne, VIC 3000
P: (03) 9230 5600

SYDNEY

Level 8/73 Miller St,
North Sydney, NSW 2060
P: (02) 9157 0570

BRISBANE

Level 1/293 Queen St,
Brisbane City, QLD 4000
P: (07) 3831 3300

PERTH

Level 9/108 St Georges Tce,
Perth, WA 6000
P: (08) 9242 5857

CANBERRA

Level 2/1 Farrell Pl,
Canberra, ACT 2601
P: (02) 9157 0570

ADELAIDE

Level 4/91 King William St
Adelaide, SA, 5000
P: (08) 7078 8896