

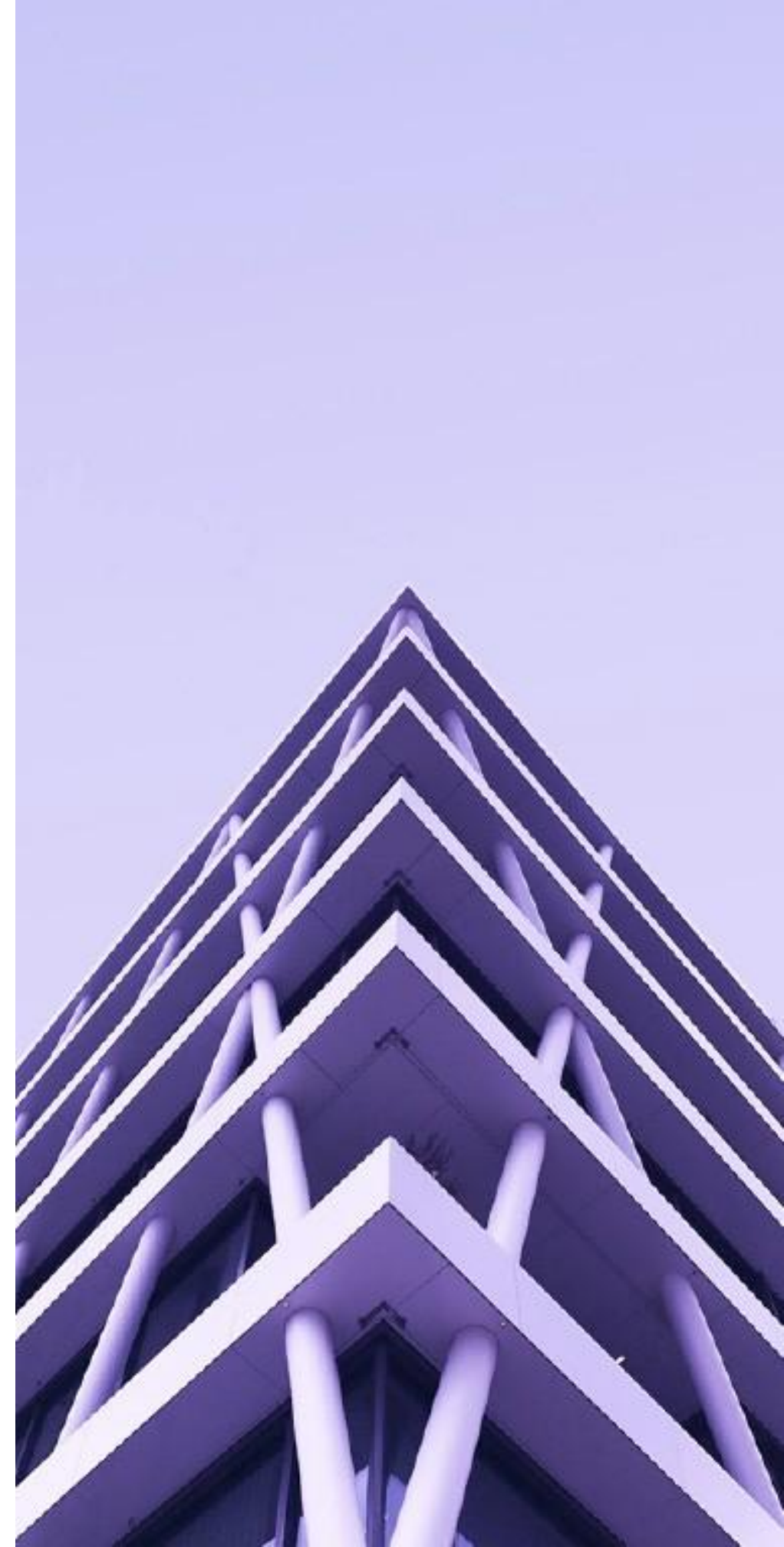
Sustainability Strategy

Telopea Concept Masterplan

Project No. P02571
Revision 002
Issued 04 September 2025
Client Homes NSW



E-LAB Consulting
Where Engineering and Science Inspire Design.





Issue and Revision Record

Revision	Date	Author	Approver	Description
001	11.08.2025	JJ	BL	For Review
002	04.09.2025	JJ	AK	Update

Engineering Lab NSW Pty Ltd

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1 Introduction

1.1 Purpose

This Sustainability Strategy has been prepared by E-LAB Consulting on behalf of Homes NSW to explore and outline the key environmental and sustainable objectives for the Telopea Concept Masterplan redevelopment in Telopea.

1.2 Project

The Telopea Concept Masterplan comprises a proposed mixed use redevelopment in Telopea, NSW including:

- Social, affordable, and market dwellings
- Retail precinct
- Childcare,
- Combined library and community centre
- Church, residential aged care facility, and independent living units

Stage 1A of the broader Telopea Masterplan, located at Lots 5-7, consists of a series of multi-storey residential buildings arranged around landscaped communal spaces, delivering an indicative 452 units in a mix of 1-bedroom, 2-bedroom, 3-bedroom, and studio apartments. This stage of the development plays a critical role in the precinct's revitalisation strategy, contributing high-quality, medium-density housing to support the growing demand in the Parramatta LGA.

1.3 Drivers

The sustainability strategy for the project is driven by the following frameworks:

- National Construction Code (NCC) 2022 - Section J Energy Efficiency
- State Environmental Planning Policy (SEPP) 2022 - Sustainable Buildings
- City of Parramatta Development Control Plan (DCP) 2023
- City of Parramatta Local Environmental Plan (LEP) 2023
- NSW Environmental Planning and Assessment (EPA) Regulation 2000



2 SEARs

2.1 Response to SEARs

This report responds to the requirements contained within the Secretary’s Environmental Assessment Requirements (SEARs) dated 1st April 2021 and issued for SSD-14378717, namely, the following:

SEARs Requirement	Response Response
Identify how ESD principles (as defined in clause 7(4) of Schedule 2 of the Regulation) will be incorporated into the design, construction and ongoing operation of the development	Refer to table on the next page detailing the projects response to the ESD Principles
Demonstrate how future buildings will meet or exceed the relevant industry recognised building sustainability and environmental performance standards	Refer to Residential and Non-Residential Sustainability Frameworks in Section 3 for relevant performance standards
Demonstrate how the proposal incorporates measures to minimise carbon emissions, and the consumption of resources, water (including through water sensitive urban design) and energy.	Refer to Section 4 detailing ecologically sustainable design concepts integrated into the design

2.2 NSW EPA Regulation 2000

Schedule 2 Clause 7(4)

The principles of ecologically sustainable development are as follows -

ESD Principles

Project Response

- (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,

The project will employ relevant environmental protection measures and risk assessments to ensure no irreversible environmental harm is acted as a result of the construction or operation of the development.

During construction, it is intended the main contractor will implement an independently certified Environmental Management System (EMS) that will demonstrate a formalised systematic and methodical approach to planning, implementing and auditing for environmental management. During operation, adherence to procedures that account for environmental risk and mitigation measures will be met.

- (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,

The design team will address key elements such as energy, potable water and material use to do all which is within the project's control to ensure future generations have equal opportunity and access to the environment. Refer Section 4.

- (c) **Conservation of biological diversity and ecological integrity**, namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration,

The site can be considered to have low-ecological value and biodiversity significance as it is already developed and within an urban area.

In response to this, the project is committed to planting a high proportion of native vegetation to improve site ecology and biological diversity, while also managing stormwater runoff from the site to minimise onset impacts. Refer Section 4.4.

- (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

The project is committed to achieving a high construction waste diversion target of 90% from landfill as well as developed specific project waste management strategies. The project shall ensure the full life cycle impacts of goods and services employed throughout the project have been considered. Further, it will be designed to minimise operational energy and water consumption.

3 Strategy

3.1 Overview

The proposed strategy has been developed through considering how Homes NSW's vision responds to the aforementioned drivers, positioning the project to support a decarbonising world, as well as providing a healthy space for residents to thrive.

The project will strive to achieve exemplary sustainability performance, with a focus on energy and water efficiency, indoor environment quality, sustainable transport, and carbon management for whole life net zero ready outcomes.

A three tiered approach is presented below, stepping through the hierarchy to reduce, eliminate, and offset the project's resource use and demand which will be used to guide the design principles detailed on the following pages.



Build using responsible and low embodied products



Deliver energy efficient buildings that reduce the stress on a decarbonising grid



Create a walkable and accessible precinct promoting active and low carbon transport options

Reduce



Take advantage of a decarbonising grid by providing a fully electric development



Deploy on-site active generation and storage systems, where feasible.
Supply all energy uses with renewable electricity

Eliminate



Offset any residual carbon with nature-based solutions

Offset

3.2 Residential Sustainability Framework

To meet regulatory provisions and ensure wholistic sustainable design, the residential aspects of the project must respond to the following framework.

Design Aspect	Residential Response	Basis
BASIX	- Energy: 60% - Water: 40% - Materials Index	- SEPP Sustainable Buildings - Parramatta LEP
NatHERS	- Avg. 7.0 Star - Min. 6.0 Star	- SEPP Sustainable Buildings - NCC 2022
Energy Use	- All electric building, no gas connection, no residual fossil fuel based systems - Maximise solar PV systems across the available roof area (subject to feasibility) - Incorporate efficient and centralised heating, cooling, and ventilation systems - Sub-metering, measurement, and reporting systems to drive continual improvement	- Parramatta DCP - Parramatta LEP
Water Use	- Efficient fixtures, fittings, and appliances - Rainwater harvesting, storage tanks, and reuse system to supplement non-potable water service - Dual water reticulation for all inside and outside water uses, supporting a future connection to a recycled water network - Sub-metering, measurement, and reporting systems to drive continual improvement	- Parramatta DCP - Parramatta LEP
Upfront Carbon Emissions	- Embodied carbon emissions quantified	- SEPP Sustainable Buildings
EV Infrastructure	- EV Ready for at least one car space per residential dwelling - Car share and visitor spaces must have a Shared EV connection	- Parramatta DCP - NCC 2022
Sustainable Transport	- Preparation of a Sustainable Transport Travel Plan - Support the reduction in private vehicle use and encourage sustainable transport	- Parramatta DCP
Heat Resilience	- 50% of accessible roof area to be shaded/vegetated - All non-accessible roof area (excl. Solar PV and heat rejection systems) and vertical facades must meet SRI provisions - Mitigate solar reflectivity impacts at grade and podium roof level - Assess the integration of green roofs and walls	- Parramatta DCP
Solar Access	- Private dwellings living and open areas must meet minimum daylight requirements	- Parramatta DCP
Future Proof	- Transition planning for residual high impact refrigerant based systems	- Parramatta DCP

3.3 Non-Residential Sustainability Framework

To meet regulatory provisions and ensure wholistic sustainable design, the non-residential aspects of the project must respond to the following framework.



Design Aspect	Non-Residential Response	Basis
Energy Use	- 4.5 Star NABERS Energy rating for retail developments with a GLAR above 15,000 m² - All electric building, no gas connection, no residual fossil fuel based systems - Maximise solar PV systems across the available roof area (subject to feasibility) - Incorporate efficient and centralised heating, cooling, and ventilation systems - Sub-metering, measurement, and reporting systems to drive continual improvement	- Parramatta DCP - Parramatta LEP - SEPP Sustainable Buildings
Water Use	- 3.5 Star NABERS Water rating for retail developments with a GLAR above 15,000 m² - Efficient fixtures, fittings, appliances, and irrigation systems - Rainwater harvesting, storage tanks, and reuse system to supplement non-potable water service - Dual water reticulation for all inside and outside water uses, supporting a future connection to a recycled water network - Sub-metering, measurement, and reporting systems to drive continual improvement	- Parramatta DCP - Parramatta LEP - SEPP Sustainable Buildings
Upfront Carbon Emissions	- Embodied carbon emissions quantified	- SEPP Sustainable Buildings
EV Infrastructure	- 1 Shared EV connection for every 10 commercial car spaces - Car share and visitor spaces must have a Shared EV connection	- Parramatta DCP - NCC 2022
Sustainable Transport	- Preparation of a Sustainable Transport Travel Plan - Support the reduction in private vehicle use and encourage sustainable transport	- Parramatta DCP
Heat Resilience	- 50% of accessible roof area to be shaded/vegetated - All non-accessible roof area (excl. Solar PV and heat rejection systems) and vertical facades must meet SRI provisions - 75% of open site area must incorporate shading, vegetation, or water bodies - Mitigate solar reflectivity impacts at grade and podium roof level - Assess the integration of green roofs and walls	- Parramatta DCP
Solar Access	- Protect solar access to the public domain	- Parramatta DCP
Future Proof	- Transition planning for residual high impact refrigerant based systems	- Parramatta DCP

4 Concepts

4.1 Summary

The following pages outlines the sustainable design concepts that should be incorporated into the design to meet the objectives in the previous section, covering energy use, health and wellbeing, water use, materiality and embodied carbon, thermal comfort, and social sustainability.

4.2 Energy Use

A reduced demand for energy consumption will be paramount to meeting the projects sustainability strategy. The development will achieve a decreased energy use and a carbon neutral development through:

Fully Electrified Development - No fossil fuels used onsite, allowing for operational net zero. This should include:

- HVAC Equipment
- Domestic Hot Water
- Cooking Equipment



Efficient and Optimised Building Systems - Including heating, cooling, ventilation, and lighting systems.



Energy metering, monitoring, and controls - Reduce unnecessary energy consumption and allowing energy demands to be better managed across the development.

Renewable Energy - Installing solar photovoltaic systems to the exposed roof areas allowing the development to generate renewable electricity to offset peak demand, reducing GHG, and minimising stress on the grid.



4.3 Health & Wellbeing

To create a space that prioritises the healing and wellbeing of its occupants, the following initiatives should be implemented:

Low VOC Materials - Ensuring paints, adhesives, sealants, floor coverings, carpets and engineered wood are selected appropriately to provide a healthier indoor environment.



Daylight and Views - Maximising high-quality light across the floor plate, with views to the sky and nature where possible. The design should balance thermal performance, glazing clarity, and glare mitigation to provide high levels of daylight throughout the space.



Urban Heat Island Effect - Mitigated through cool roofs, reflective materials, green roofs, and shaded landscaping improves outdoor thermal comfort and lowers cooling energy demand – particularly important in dense precincts



Acoustic Excellence - Deliberate material selection, acoustic attenuation and designing the shape of the building and openings accordingly to achieve acoustic comfort. Sufficient acoustic separation of spaces ensuring acoustic privacy and enhancing occupant experience.



Transport and Connectivity - Secure bicycle parking and high quality end-of-trip facilities should be provided to cater for the various users, including occupants and visitors. Enhance accessibility to public transport (bus and train) by providing new publicly accessible through site pedestrian links. Implementing a site-specific Green Travel Plan and future proofing parking facilities with the inclusion of EV charging.



4.4 Water Use

To achieve responsible water consumption and water sensitive urban design required by governing ESD policies and performance requirements, best practice water-saving initiatives will be implemented throughout the project such as:



Efficient Water Fixtures and Appliances - To reduce potable water consumption. All taps and water demanding equipment/appliances are to be of the highest Water Efficiency Label Scheme (WELS) rating.

Water Metering and Monitoring - Reducing unnecessary demand by providing usage data and trends, as well as providing alerts to any system leaks



Rainwater Tank - Harvesting water from non-trafficable roof areas for reuse in, at minimum, washdown and landscape irrigation, reducing demand on mains water supply. Rainfall supply potential should be modelled to investigate the potential benefit of recirculating rainwater to toilet flushing.



Efficient Irrigation Systems - Including sub-surface drip systems, moisture sensors, and the prioritization of native plants. Native plants have evolved to thrive in the Australian environment and are typically more resilient than their exotic counterparts, they typically require less water and are more likely to survive the predicted increase in extreme drought conditions due to climate change.

4.5 Materiality & Embodied Carbon

The project will have a significant focus on the whole of life impacts of material choices and embodied emissions, as well as the responsible procurement for both the construction and operational phases of the development. Emissions and waste will be kept to a minimum through the following initiatives:

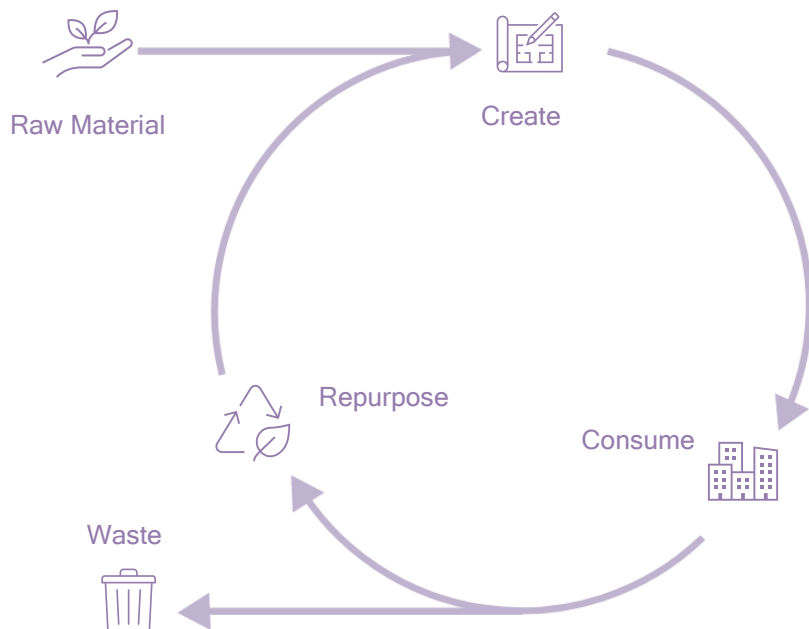
Separation of Operational Waste Streams - Separation on-site allows for the effective recycling of useful material and minimises the amount of waste sent to landfill.



Construction and Demolition Waste - Set a target for, at minimum, 90% of construction and demolition waste to be diverted from landfill.



Embodied Carbon Accounting and Reduction - Minimising the lifecycle emissions of construction materials through strategies like material reuse, low-carbon product selection, and structural efficiency – helping future-proof the development against tightening climate regulations and investor expectations.



4.6 Thermal Comfort

Appropriate mix of vernacular design, high-performance windows, and mechanical systems will be implemented to maximise thermal comfort within the development.



NatHERS - To provide a high level of thermal comfort to residents of the development, an average NatHERS rating of 7 Stars will be targeted and optimised through detailed modelling during the design phase. Ceiling fans should be considered to meet the targets.



Double Glazing - Decreases unwanted heat transfer through the façade, enhancing thermal comfort and energy efficiency while also providing increased noise reduction.



Façade - The façade system must consider thermal bridging, air infiltration, and moisture ingress.

Natural Ventilation - Reducing reliance on mechanical ventilation systems, natural ventilation solutions will be developed that may fit within the ceiling cavities of apartments, within the depth of the mullion of a curtain wall, and other external facades. This will achieve an acoustically appropriate plenum without undue strain on the footprint of the development.

4.7 Social Sustainability

To demonstrate meaningful and effective social sustainability outcomes, the development must prioritise design that actively supports the long term wellbeing of residents and the broader community. This people centred approach ensures that homes and shared spaces are not only functional and attractive, but also inclusive, equitable, and supportive of healthy, connected lifestyles.

By embedding principles of inclusivity and accessibility into the design process, the development will foster a sense of belonging for people from diverse backgrounds and with varying needs. This includes thoughtful consideration for neurodiversity, physical and cognitive disabilities, and cultural sensitivity; ensuring that all residents and visitors can navigate and enjoy the environment safely, comfortably, and with dignity.

Adopting a community-focused layout, such as a precinct or village style approach, further strengthens social sustainability by promoting a sense of community and belonging. Rather than isolating dwellings from shared amenities, this model integrates communal green spaces, walking paths, recreation areas, and flexible community facilities to encourage social interaction, neighbourly connections, and active lifestyles. These elements contribute to a supportive and vibrant neighbourhood culture.

Ultimately, socially sustainable residential design fosters environments where individuals and families thrive, not just through quality housing, but through inclusive design, meaningful social connection, and a sense of place and purpose within a broader, engaged community



Strategies to incorporate social sustainability within the development include the following:

Inclusivity

- Engage future residents and local community members in the co-design of shared spaces and amenities
- Incorporate spaces for quiet reflection, prayer, meditation, and cultural practice
- Ensure signage, public information, and artwork reflect the cultural and social diversity of the broader community

Accessibility

- Use clear and consistent signage and wayfinding strategies
- Incorporate sensory-friendly design features such as quiet rooms, calming zones, and adaptable lighting to support neurodiverse residents
- Include assistive technologies such as voice-command systems, hearing loops, and visual aids to enhance access and independence

Social Responsibility

- Facilitate community programs, workshops, and wellness initiatives that promote mental health, wellbeing, and social connection
- Partner with local businesses, trades, and social enterprises to create local job opportunities and support inclusive economic development
- Prioritise ethical procurement, sustainable materials, and local suppliers during both construction and ongoing operations

Community-Centred Design

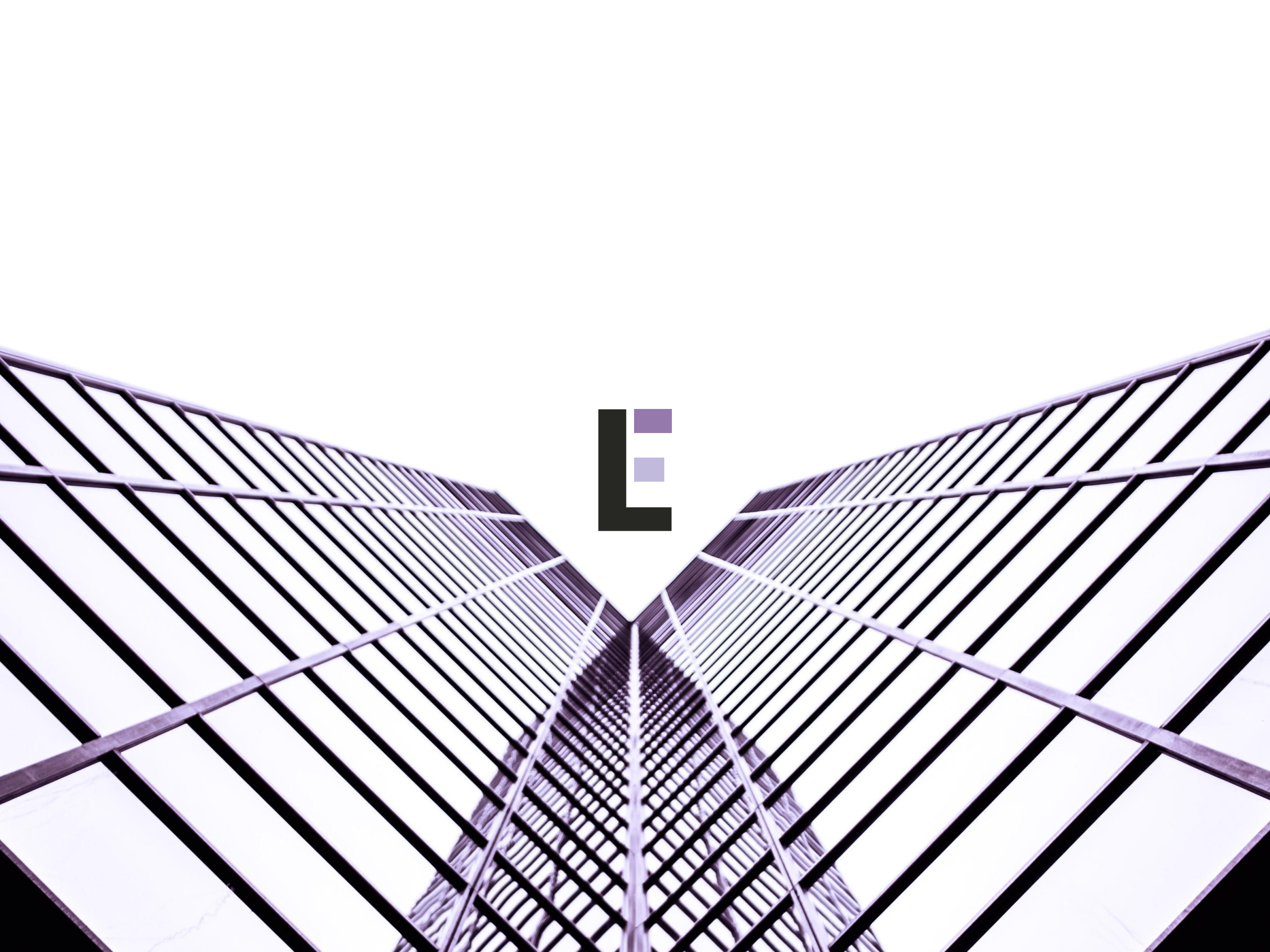
- Plan the development with communal courtyards, and pedestrian-friendly pathways to foster a village-like atmosphere
- Incorporate flexible, shared spaces such as cafés, gardens, libraries, maker spaces, and art studios to support social and creative engagement
- Use biophilic design principles, such as natural materials, vegetation, and views of nature, to enhance wellbeing and reduce stress
- Encourage casual social interaction through safe, inviting, and well-designed communal areas that support neighbourliness and inclusion

5 Summary

5.1 Targets

The following table outlines the proposed targets derived from the sustainability strategy for the Telopea Concept Masterplan.

	Residential	Non-Residential
Energy	- BASIX Energy 60% - All electric development - Aim to include maximum PV	4.5 Star NABERS Energy rating for retail developments above 15,000 m² - All electric development - Aim to include maximum PV
Thermal Comfort	7 Star NatHERS average throughout - Ceiling fans - Double glazed throughout - Optimised shading	- Section J Part 4 Building Fabric compliance - Optimised shading
Water	- BASIX Water 40% - Best practice fixtures and fittings - Rainwater collection and reuse to be explored - Dual reticulation	3.5 Star NABERS Water rating for retail developments above 15,000 m² - Best practice fixtures and fittings - Rainwater collection and reuse to be explored - Dual reticulation
Materiality	BASIX Materials Index	Embodied carbon accounting



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