Attachment E

ESD Report

Sustainability Strategy Overview

505-523 George Street in Sydney will establish a benchmark for sustainability in super high-rise buildings in Australia.

505-523 George Street, Sydney is located within Central Sydney in a block bound by Bathurst Street to the north, George Street to the east, Liverpool Street to the south and Kent Street to the west.

VPA Requirements

In accordance with the Planning Agreement dated August 2015 the project will exceed the minimum BASIX targets, which in 2019 are:

- Energy 25
- Water 40

A benchmarking review of best practice sustainability in super high-rise residential buildings in Australia and internationally was undertaken, and this informed the development of the sustainability strategies for the building. The proposed sustainability initiatives for 505-523 George Street meet or exceed those found in the benchmarking review.

Third Party Certification

The building will achieve a 5 star Green Star Design & As-Built version 1.2 rating, certified by the Green Building Council of Australia. This represents Australian Excellence.

Key Sustainability Initiatives

The project will develop the following initiatives during the detail design phase:

- No natural gas supplied to any apartments (induction cooktops instead of gas), heat pumps for domestic hot water generation (with gas boost) and a strategy to phase out the use of fossil fuels in central plant for the apartments.
- A high performing façade with vertical columns, horizontal shades and double glazed low-e glazing with high visible light transmission.
- Innovative vertical ventilation slots to provide safe and controlled natural ventilation to high rise apartments.
- An average 7-Star NatHERS ratings for the apartments.
- Provision of energy efficient appliances (fridges, washing machines, condensing clothes dryers and dishwashers) to all apartments.
- Regenerative lifts with best-in-class energy efficiency performance.
- Extensive roof gardens, sky gardens and green wall to reduce urban heat island effect, increase habitat and provide connectivity to nature for residents, workers, customers and visitors.
- Rainwater and condensate water from selected building areas for collection and reuse. Consideration of the City of Sydney's future recycled water infrastructure in George Street.
- Electric vehicle charging for 5% of car spaces on practical completion, with capacity to increase over time to reflect the car fleets of the future.
- Consideration of an embedded network for the whole building to facilitate procurement of discounted more sustainable electricity for all or part of the building (residential, retail, child care, central services) in the future.
- A strategy to reduce peak electrical demand in the building with infrastructure provided to allow key loads to be managed (which may include chillers, heat pumps, apartment air-conditioning units and electric car charging), and space allocated for the future installation of batteries (should these eventually become a commercially viable approach in high density CBD buildings).
- An R&D trial of shower heat recovery in end-of-trip facilities.
- A Safe Cities strategy to go beyond minimum CPTED requirements to deliver best practice safe place design and operation in mixed use precincts.
- A Climate Adaptation Plan to inform the design of the project in accordance with international guidelines.
- Waste recycling facilities to minimise waste to landfill including standard recyclables, organic waste, food collection (from retailers), batteries, e-waste and a "recycling room" for residents to leave furniture and whitegoods for collection by others.
- Energy metering and benchmarking for apartment owners to encourage responsible use of resources.

The building also includes a range of other sustainability initiatives to achieve the BASIX targets and the Green Star rating that are too numerous to list here. These are described in the Green Star pathway appended to this report, and in the separate BASIX report submitted as part of the Development Application.

Sustainability Framework

A Sustainability Framework has been used to identify and track the sustainability objectives and initiatives for the project. This captures all of the sustainability categories that apply to the project as set out in:

- BASIX Energy and Water
- The Design Competition Jury's comments
- Planning Agreement dated August 2015
- Mirvac's "This Changes Everything" strategy
- Coombes Property Group's sustainability strategy

The framework also responds to the following:

- Green Star
- City of Sydney's Guide for Excellence in New Build
- Relevant UN Sustainable Development Goals

The framework will be used throughout the design and construction stages to inform and refine sustainability solutions.

1.0 Introduction

1.1 This Report

This report describes the sustainability strategy, targets and initiatives for 505-523 George Street in the Sydney CBD. It addresses all of the drivers and requirements for sustainability set out in Section 1.3 and covers the following:

- Sustainability Framework
- International best practice
- BASIX overview *
- NCC Section J overview *
- Green Star
- Sustainability Initiatives proposed

** - for detail refer to the separate reports provided*

1.2 The Project

505-523 George Street, Sydney is located within Central Sydney in a block bound by Bathurst Street to the north, George Street to the east, Liverpool Street to the south and Kent Street to the west.

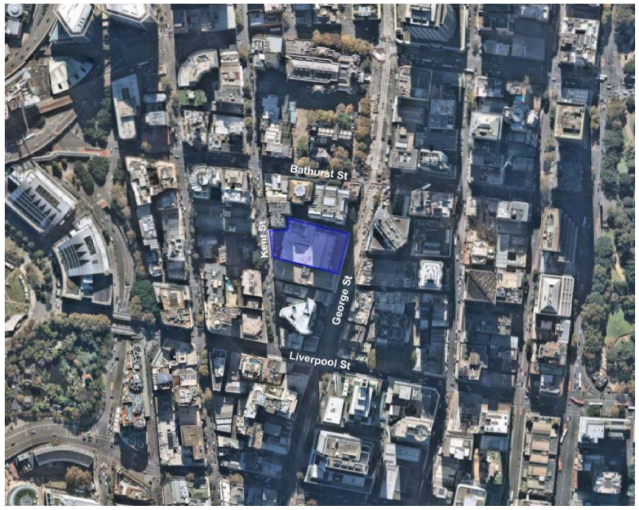

Figure 1.1: Site Location

The site has an area of approximately 4,308m² and is legally described as Lot 1 in Deposited Plan 573250. The site is currently occupied by Event Cinemas, a number of supplementary retailers and a college. Primary pedestrian access to the site is provided via George Street and secondary access, including vehicular access, is provided via Kent Street to the west.

The site is well serviced by public transport and is within walking distance to Town Hall Station and will benefit from the future George Street light rail.

The proposed development will include an approximately 270m tall tower comprising residential apartments (with a time limited approval for use as serviced apartments) above a mixed-use podium incorporating retail, serviced apartment lobby and porte cochere, serviced apartment ancillary facilities, and a residential lobby. The proposed development will include basement loading for service vehicles and car parking.

The Development Application seeks consent for residential accommodation with a time limited condition of consent for use as serviced apartments over all or part of the tower.

Table 1..1 summarises the project parameters used in the sustainability reporting and analysis including BASIX and Section J.

Project Parameters	
Landowner	Coombes Property Group
Development Manager	Mirvac
Architect	Ingenhoven & Architectus
Site Area	4,308 m²
Residential / Serviced Apartment Yield	507 apartments
Residential / Serviced Apartment Mix	Studio – 55 apts (11%) 1 Bedroom – 144 apts (28%) 2 Bedroom – 224 apts (44%) 3 Bedroom – 84 apts (17%)
Basement Levels	8 levels – L01 (subterranean) & B01 – B07
Podium Levels	5 levels – L02 – L06
Tower Levels	74 levels – L07 – L80 (final habitable level)
Building Height	270 m (including 10m architectural roof feature)
GFA – Retail	6,743 m²
GFA – Cinema	205 m²
GFA – Residential / Serviced Apartments	58,095 m²
GFA – Community Meeting Facility	259 m²

Table 1.1: Key Project Parameters

1.3 Drivers and requirements for sustainability

The sustainability strategy for the development responds to:

- The aspirations of the developer and building owner.
- The Planning Agreement dated August 2015.
- The 2018 Design Competition Jury comments
- City of Sydney's Guide for Design Excellence in New Buildings.

1.3.1 Coombes Property Group (CPG)

CPG intend to maintain long-term ownership of all of the development. In addition to the broader sustainability objectives set out in this report, key priorities include:

- Life cycle cost benefits.
- Durability and ease of maintenance.
- Usability and practicality.
- Flexibility around separation of stratums (retail, serviced apartments, residential and community).

1.3.2 Mirvac – This Changes Everything

Mirvac has two key drives for sustainability on their projects:

- **Customers –** deliver energy efficient buildings with exceptional indoor environment quality and appropriate green certification to attract and retain customers and increase the value of the asset.
- **Corporate –** deliver the 'This Change Everything' strategy and targets through consideration of resources, community, smarter thinking and shaping place.

This Changes Everything by mirvac

1.3.3 Planning Agreement

The Planning Agreement between CFT No.4 Pty Ltd and the Council of the City of Sydney dated 7th August 2015 set out the following requirements for sustainability:

- Exceed minimum BASIX requirements.
- Provide a detailed report covering:
  - Analysis of international best practice for buildings of a similar scale, use, constraints and nature.
  - Environmental opportunities explored for the Proposed Development.
  - Environmental initiatives proposed to be incorporated into the Proposed Development.

1.3.4 Design Competition Jury Comments

The Architectural Design Competition Report submitted to the City of Sydney dated 17 August 2018 contained the following requests from the Jury:

- That the design, including ESD initiatives (proposed by the competition winner), be further developed to align with the design objective to create a timeless and elegant building form with a façade that minimises unnecessary lifecycle maintenance.
- That appropriate consideration be given to the ESD strategies proposed by the Competition Winner.
- That the Competition Winner should seek to achieve the ESD strategies in the context of Section 4.3 of the Competition Brief.

Section 4.3 of the Design Competition Brief related to Commercial Objectives and included the following related to sustainability:

- Maximise outlooks and views from all apartments.
- Maximise the efficiency of services, particularly vertical transportation.
- Minimise maintenance intensity and overall operating costs through the selection of durable, low maintenance and suitable materials.
- Section 4.3.9 – Sustainability
  - The sustainability strategy should aim to achieve excellence for environmentally sustainable design for a project of this type and scale.
  - The sustainability strategy should address all key environmentally sustainable design aspects such as carbon emissions, water, waste, materials, transport, pollution and biodiversity, in addition social and economic sustainability should be addressed.
- Section 4.3.10 – Servicing
  - Satisfy legislative environmental design criteria, such as SEPP 65 and BASIX, whilst incorporating high efficiency water and energy initiatives into the design.

1.3.5 City of Sydney Guide for Design Excellence

The City of Sydney's Environmental Action Plan 2016 – 2021 includes a guide for excellence in new building design. This proposed benchmark options and design features that could assist in achieving excellence in building performance for:

- Energy and Greenhouse Gas Emissions.
- Water Efficiency.
- Materials and Resource Recovery.
- Landscaping, biodiversity and community garden.

2.0 Sustainability Framework

2.1 Introduction

A modified version of the One Planet Living framework, originally developed by BioRegional and World Wildlife Fund, is being used as the framework for the Sustainability Strategy on this development – refer Figure 2.1. This has been used on a wide range of projects internationally, and also by companies and councils in Australia.

Table 2.1 – Sustainability Framework categories

Table 2.3 (next page) provides a summary of the framework and how it aligns with the drivers and requirements for sustainability in Section 1.3, the relevant United Nations Sustainable Development Goals (UN SDGs) and the Green Star rating tool developed by the Green Building Council of Australia.

2.2 Setting Priorities

During the first project ESD Workshop on the 18th February 2019 the attendees were asked to complete an initial survey to prioritise the various impacts from the perspective of the developer and the customer. The methodology was based on allocating a total of 100 points against the 12 categories. The results were collated and are summarised in Table 2.2.

The aim of the preliminary survey was to identify key areas of focus, however this did not limit the consideration or implementation of initiatives in any category. As the project evolves these priorities might change. Ultimately each initiative under any impact category will be considered on its merits and the benefit it brings to the project or the client.

Impact	Developer	Customer
Zero Carbon Energy	17	11
Sustainable Water	16	10
Health & Wellbeing	9	18
Travel & Transport	11	11
Community & Culture	9	11
Zero Waste	11	11
Climate Risk & Adaptation	7	5
Pollution	6	4
Equity & Economy	4	7
Materials & Supply Chain	6	3
Sustainable Food	3	5
Land & Nature	2	5

Table 2.2: Summary of sustainability impact survey

2.3 Sustainability Initiatives Matrix

Initiatives will be implemented under each impact category with a focus on energy and greenhouse gas emissions.

The tracker is used to identify and evaluate the status of all initiatives

Refer to Appendix B for a copy of Sustainability Initiatives Tracker.

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	Impact	Objective	Alignment with UN SDG	Green Star Design & As-Built	BASIX	City of Sydney Design Excellence Guide	Design Competition & Jury Response
	Zero Carbon Energy	Making buildings and infrastructure energy efficient and phasing out use of fossil fuels.		• Energy • Management	• Energy	• BASIX Energy • Section J • Suggested design features	• High energy efficiency • Carbon emissions
	Sustainable Water	Using water efficiently, protecting local water resources and reducing flooding, drought and water pollution.		• Water • Emissions	• Water	• BASIX Water • Suggested design features	• High water efficiency
	Health & Wellbeing	Encouraging active, social, meaningful lives and providing the buildings, infrastructure and spaces to support good health and wellbeing for all ages.		• Indoor Environment Quality	• Thermal Comfort		• Social aspects
	Travel & Transport	Reducing the need to travel and encouraging walking, cycling and low carbon transport.		• Transport			• Transport
	Community & Culture	Nurturing local identity and heritage, empowering communities and promoting a culture of sustainable living.					• Social aspects
	Zero Waste	Reducing consumption and re-using and recycling to work towards zero waste to landfill.		• Management • Materials		• On-site composting of kitchen & garden waste	• Waste
	Climate Risk & Adaptation	Applying practical actions to manage risks from climate impacts, protecting communities and strengthening the resilience of the local economy.		• Management		• Tree shading	
	Pollution	Minimising air, noise, land, water and night sky pollution.		• Emissions			• Pollution
	Ethics & Equity	Creating safe, just and equitable places to live, work, learn & trade, and supporting local prosperity and fair trade.					• Social Aspects
	Materials & Supply Chain	Using materials from sustainable sources, applying circular economy principles and prioritising products with transparent, ethical supply chains.		• Materials		• Certified timber • Low CO2 concrete • Reduce natural aggregates	• Materials
	Sustainable Food	Promoting sustainable humane farming and healthy diets high in local, seasonal organic food and vegetable protein.					
	Land & Nature	Restore, preserve and protect land, biodiversity and natural capital for the benefit of people and wildlife.		• Land Use & Ecology		• Suggested design features	• Biodiversity

Table 2.3: Sustainability Framework Alignment with Other Frameworks

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3.0 International Best Practice

3.1 Introduction

The Planning Agreement dated August 2015 required that a detailed report be prepared covering the analysis of international best practice for buildings of a similar scale, use, constraints and nature. A brief overview of the analysis is provided below together with the response of 505-523 George Street to this.

Please refer to the International Best Practice – Environmental Analysis Report for further detail.

The following selection criteria were used to determine Australian and International buildings of similar scale, use, constraint and nature to include in the benchmarking analysis:

- Greater than 200m tall
- Primarily residential
- Have a completion date after 2014

3.2 Buildings in study

Australian Projects

- Australia 108, 70 Southbank Road, Melbourne – 312m tall
- Skytower, 222 Margaret Street, Brisbane – 266m tall
- Prima Pearl, 35 Queensbridge Square, Melbourne – 244m tall
- Victoria One, 452 Elizabeth Street, Melbourne – 232m tall
- Greenland Tower, 115 Bathurst Street, Sydney – 230+m tall
- North Tower Residences, The Star, Jones Bay Road, Pyrmont – 237 m tall
- One Central Park, 28 Broadway, Chippendale – medium rise (117m tall), highest rated Green Star As-Built residential in Australia
- Shout Ridge, Crimson Hill, Lindfield – low rise, highest rated Green Star Design multi-residential in Australia

International Projects

- NEMA Chicago, Chicago – 273m tall
- Astaka Tower A, Johor Bahru – 263m tall
- 56 Leonard, New York - 250m tall
- One Bennett Park, Chicago – 227m tall
- 111 Murray Street, New York – 223m tall

3.3 Summary of analysis

The following key sustainability features were reviewed for each project:

- Double glazing
- External shading
- External naturally ventilated spaces
- Natural ventilation of apartments
- Full mechanical air supply
- Heat recovery on HVAC
- Exhausts, central or local
- Regenerative lifts
- On-site renewable energy
- Rainwater re-use
- Grey/black water treatment
- Energy efficient whitegoods

Additional ESD initiatives to those listed above are identified and recorded separately.

Following benchmarking analysis, sustainability features were subdivided into '*most common included*', '*other sustainability features included*' and '*less common included*'.

The most common sustainability features were:

- Double glazing
- Natural ventilation of apartments
- Full mechanical air supply
- Regenerative lifts

Other sustainability features included:

- External shading
- Energy efficient whitegoods
- Bike storage
- Low flow water fixtures

Less common features included:

- Rainwater harvesting
- Heat recovery on HVAC
- Condensate water reuse
- Smart meters & controls
- Body corporate privately owned network
- Green roofs

Some projects have received or are pursuing third party rating for one certification, under the following:

- Green Star (Australia)
- LEED (US)
- GBI (Malaysia)

The rating achieved and/or targeted is noted.

3.4 Comparison to 505-523 George Street

505-523 George Street apartments adopted all *most common* and *other* sustainability features included in benchmarking analysis. In addition, the project is targeting the following as a minimum:

- 5 star Green Star Design & As Built v1.2
- BASIX Water score 40
- BASIX Energy score 25
- NCC Section J Compliance
- City of Sydney Design Guide requirements

4.0 Section J & BASIX overview

4.1 Introduction

The proposed development will comply with the National Construction Code (NCC) 2016 Section J for energy efficiency. As part of the detailed design phase of the development an assessment will be conducted of the performance requirements to comply with the NCC 2019, noting that the glazing calculator for the NCC 2019 has not yet been released by the Australian Building Codes Board (ABCB).

New Class 1 and Class 2 residential developments in NSW must comply with BASIX requirements developed by the Department of Planning and Environment. This replaces Section J of Volume 1 of the Building Code of Australia for Class 2 buildings. There are three components with minimum compliance targets varying by type of building and location: Energy, Water and Thermal Comfort.

This project, due to the time limited use proposal as serviced apartments, will be designed to comply with both Section J and BASIX.

- Class 2 & 3 – BASIX and NatHERS
- Other classifications – Section J

Refer to separate reports for:

- BASIX and NatHERS Compliance
- Section J Compliance

The building is located at National Construction Code (CC) Climate Zone 5 (warm temperate) for Section J modelling and NatHERS Climate Zone 17 for cooling and heating load requirements.

4.2 BASIX for Tower

BASIX compliance is achieved for the project.

Please see the BASIX Report for full BASIX certification including BASIX Certificate, NatHERS Thermal Comfort Certificate and Certified Stamped Drawings.

4.3 Section J

A preliminary Section J assessment has been undertaken for the tower using the JV3 methodology, in order to confirm that the façade is capable of complying.

A preliminary Section J assessment has been undertaken for the podium using the Deemed-to-Satisfy methodology, in order to confirm that the façade is capable of complying.

Please refer to the Section J Report.

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5.0 Green Star

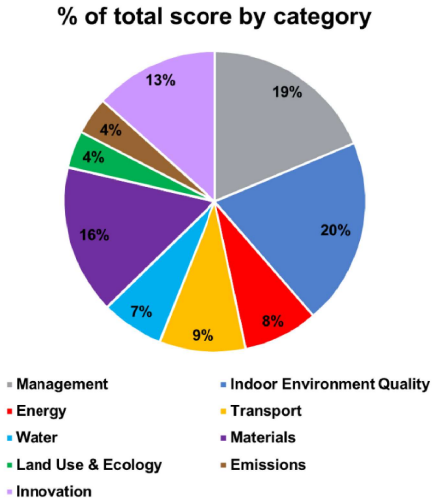
5.1 Introduction

The building will achieve a 5 star Green Star Design & As-Built version 1.2 rating, certified by the Green Building Council of Australia. This represents Australian Excellence.

To achieve a 5 star Australian Excellence rating the project must achieve a minimum of 60 points.

5.2 Pathway

The Green Star Pathway provided in Appendix C outlines notional points targeted to achieve a 5-Star rating. The strategy will be developed during detailed design and points may vary from those shown.



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6.0 Sustainability Initiatives

6.1 Introduction

The Planning Agreement dated August 2015 required that a detailed report be prepared covering:

- Environmental opportunities explored for the Proposed Development
- Environmental initiatives proposed to be incorporated into the Proposed Development.

The sustainability initiatives tracker details an extensive list of sustainability initiatives that were explored for the project and states which initiatives are being further considered during detailed design and which initiatives have been confirmed for adoption. Please refer to Appendix B for a copy of Sustainability Initiatives Tracker.

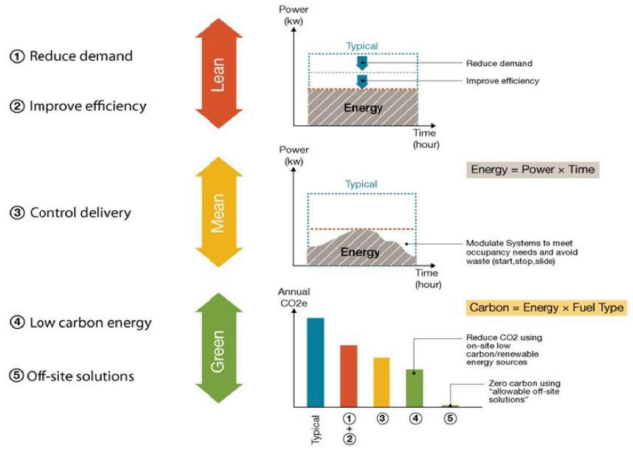
6.2 Proposed Initiatives

The following pages provide a summary of the initiatives proposed for the development listed under the sustainability framework categories:

- Zero Carbon Energy
- Sustainable Water
- Health & Wellbeing
- Materials & Supply Chain
- Zero Waste
- Land & Nature
- Community & Culture
- Travel & Transport
- Climate Risk & Adaptation
- Ethics & Equity
- Sustainable Food
- Pollution

6.3 Energy & GHG Strategy

A key focus of the development has been to reduce energy and greenhouse gas emissions during building operation. Strategies have been developed in accordance with the diagram below to reduce energy consumption then seek options to minimise the use of fossil fuels to provide this energy.



Reduce Demand

The demand for heating and cooling energy has been reduced by developing a high performance façade with horizontal and vertical shading, double glazing with low SHGC and effective natural ventilation strategies. The demand for lighting energy is reduced though the selection of glazing with a high visible light transmission and avoiding over-lighting apartments and podium spaces.

Improve Efficiency

Energy efficient systems and equipment are provided as standard throughout the development. This includes LED lighting, energy efficient appliances, regenerative lifts, energy efficient fans and pumps and water cooled chillers and VRF units.

Control Delivery

The energy systems will be designed to operate at optimum efficiency at part loads, to modulate up and down to suit demand, and to turn off when not needed. This will be thorough a combination of a BMS controlling central plant, and simple controls in apartments.

To reduce the demand for peak electricity generation and supply from the national grid a strategy to manage key loads will be developed. The infrastructure will be put in place to allow the property manager to shift peaks through a combination of chiller staging, heat pumps with thermal storage for hot water, apartment air-conditioning unit demand response modes and/or electric car charging staging. During detail design phase, space allocated for the future installation of batteries (should these eventually become a commercially viable approach in high density CBD buildings) will be considered.

Low carbon Energy

Options to incorporate renewable on-site energy generation were investigated but no simple option was found using current technologies and with limited roof area.

the project will

The following options were initially investigated:

- The roof gardens and plant (cooling towers and BMUs) limit the available roof space for PV panels.
- The podium has a roof garden and play area for the child care centre, and is also extensively shaded by the tower and adjacent buildings.
- Analysis of the integration of PV panels in to the solar shading on the north façade of the tower showed that:
  - the vertical column fins would provide significant shading or partial shading of panels reducing the solar irradiance to less than half that of a conventional roof top system
  - flexible thin film PV suitable for use on the shading has a significantly lower efficiency compared to standard production PV panels
  - the structure, floor by floor wiring, and on-going maintenance of a PV system between 100m and 250m above ground creates additional risk and disproportionate costs compared to the electricity that could be generated.
- Gas cogeneration uses a natural gas and is not renewable.
- Biofuel cogeneration is not commercially viable in buildings and the fuel is better used in transport to reduce that sector's emissions.
- Wind turbines on the roof are not spatially or aesthetically acceptable

As a result of this analysis, it was decided to install PV panels to provide the building with renewable energy.

Off-site solutions

The electricity market is undergoing constant change as the grid decarbonises and energy retailers create new methods for the procurement of low carbon electricity. It is impossible to predict what this will look like in 2025 as this depends on market forces and government regulation.

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During detailed design phase, infrastructure for an embedded network to enable the bulk purchase of low carbon electricity in the future, should this be commercially viable, will be assessed.

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Zero Carbon Energy

Objective

Making buildings and infrastructure energy efficient and supplying energy with renewables.

Goals / Targets

- BASIX Energy 25 for Apartments
- Minimise use of fossil fuels

Initiatives

- No natural gas supplied to any apartments (induction cooktops instead of gas)
- Heat pumps for domestic hot water generation (with gas boost) and a strategy to phase out the use of fossil fuels in central plant in the future.
- A high performing façade with vertical columns, horizontal shades and double glazed low-e glazing with high visible light transmission.
- An average 7 star NatHERS ratings for the apartments.
- Provision of energy efficient appliances (fridges, washing machines, condensing clothes dryers and dishwashers) to apartments.
- Regenerative lifts with best-in-class energy efficiency performance.
- Assessment of an embedded network for the whole building to facilitate procurement of discounted more sustainable electricity for all or part of the building (residential, retail, child car, central services) in the future.
- Peak electrical demand reduction infrastructure and strategy.
- An R&D trial of shower heat recovery in end-of-trip facilities.
- Energy metering with data and benchmarking for apartment owners to encourage responsible use of resources.
- Photovoltaic panels generating renewable energy for the building.

Sustainable Water

Objective

Using water efficiently, protecting local water resources and reducing flooding, drought and water pollution.

Goals / Targets

- BASIX Water 40
- Collect most rainwater (particularly from podium roof areas) and reuse

Initiatives

- Rainwater collection for irrigation of the landscaping, vehicle wash down and podium toilet flushing.
- Provision for connection to the City of Sydney's future recycled water infrastructure in George Street.
- 4 star WELS rated washing machines in apartments
- 4 star taps and toilets
- 3 star showers
- Best practice cooling tower water management

Health & Wellbeing

Objective

Encouraging active, social, meaningful lives and providing the buildings, infrastructure and spaces to support good health and wellbeing for all ages.

Goals / Targets

- Achieve 70% of Indoor Environment Quality points available in Green Star
- Fitness facilities accessible to all residents and guests

Initiatives

- Vertical ventilation slots to provide safe and controlled natural ventilation to high rise apartments.
- Maximise daylight and artificial light comfort
- A high performing façade with vertical columns, horizontal shades and double glazed low-e glazing with high visible light transmission to provide thermal comfort, access to high quality views and daylight and minimise noise pollution
- No natural gas supplied to any apartments and installation of exhausts for pollutants and moist removal
- End of trip facilities and bike storage
- Gym and fitness facilities
- External playground for the childcare
- Low VOC paint, carpets, sealants and adhesives
- Low formaldehyde wood products
- Incorporation of green roof on tower, sky gardens, podium roof garden and potential green walls

Materials & Supply Chain

Objective

Using materials from sustainable sources, applying circular economy principles and prioritising products with transparent, ethical supply chains.

Goals / Targets

- Selection of materials and products that are certified, reused or contain recycled content (> 3% by cost)
- More responsible material selection

Initiatives

- Conduct a life cycle assessment (LCA) to identify possible improvements during design
- Concrete mix to reduce Portland Cement content and sourced from energy efficient supplier
- All timber is FSC certified, or equivalent
- Hazardous material risk assessment to reduce use of toxic materials
- Best practice PVC compliance for formworks, pipes, flooring, blinds & cables

Zero Waste

Objective

Reducing consumption and re-using and recycling to work towards zero waste to landfill.

Goals / Targets

- > 95% of construction & demolition waste diverted from landfill
- Facilities to enable > 80% of operational waste to be diverted from landfill

Initiatives

- Waste recycling facilities to minimise waste to landfill including:
  - standard recyclables
  - organic waste
  - food collection (from retailers)
  - batteries
  - e-waste
- A "recycling room" for residents to leave furniture and whitegoods for collection by others.
- Demolition and Construction Waste Minimisation Plan to Best Practice Green Star standards.

Land & Nature

Objective

Restore, preserve and protect land, biodiversity and natural capital for the benefit of people and wildlife.

Goals / Targets

- Increase site ecological value
- Total area of planting and roof garden to exceed site plot area

Initiatives

- Roof garden on top of tower
- Two sky gardens in the tower
- Podium roof garden
- Select a high proportion of native plant species

Community & Culture

Objective

Nurturing local identity and heritage, empowering communities and promoting a culture of sustainable living.

Goals / Targets

- Integrate Public Art
- Encourage creation of Tower Residential community

Initiatives

- Child care centre
- Public art
- Provide facilities and spaces that encourage community interaction incl. community meeting rooms
- A Safe Cities strategy to go beyond minimum CPTED requirements to deliver best practice safe place design and operation in mixed use precincts.

Safer Cities Strategy

505-523 George Street will set the standard for safe places in Sydney. The development has been designed to support the City of Sydney's vision for 'A City for All', which focuses on the following 4 areas:

Safe streets and Spaces

Increase actual and perceived public safety in Sydney's streets and spaces. This includes the management of lighting, CCTV, parks, footpaths, graffiti and waste management.

Crime Prevention and Response

Contributing to reducing local crime and supporting initiatives that address domestic and family violence, sexual assault and safeguarding children from abuse.

Ready and Resilient

Working together to better prepare for and respond to emergencies that may arise and strengthening community resilience.

A Safe Global Destination

Helping visitors and international students to feel welcome and experience the city safely, and promoting Sydney as a safe place to visit, study and invest.

The principles of Crime Prevention Through Environmental Design (CPTED) underpin the security strategy for the development, however, there are other guiding principles in use globally and in Australia that when combined with CPTED, provide a comprehensive approach to security and safety in the public domain. In putting together the Safer Cities Strategy for 505-523 George Street, Cundall have considered the following security guidelines and principles:

- Crime Prevention Through Environmental Design (CPTED).
- The City of Sydney's 'Safe City Strategy' and 'Community Safety Action Plan'.
- The Committee for Sydney's 'Safety after dark' report.
- 'Designing Out Crime' and 'Safer by Design' guidelines.

Our aim is to provide the project with a solid foundation of security principles, on which to build a development that will set a benchmark for safe places in Sydney.

Please refer to document number *1022560-RPT-01-ST-A 505-523 GS CPTED Safer Cities Report* for more information.

Travel & Transport

Objective

Reducing the need to travel and encouraging walking, cycling and low carbon transport.

Goals / Targets

- Encourage cycling by residents, workers and visitors
- Support and encourage use of low carbon vehicles

Initiatives

- End-of-trip facilities with secure cycle storage, showers and lockers.
- Electric vehicle charging for 5% of car spaces on day 1, with capacity to increase over time to reflect the car fleets of the future.
- Consideration of bike-for-hire storage stations to be assessed during DD phase
- Easy access to public transport (i.e. various bus lines, Town Hall train station and future Sydney Light Rail) and high walkability score

Climate Risk & Adaptation

Objective

Applying practical actions to manage risks from climate impacts, protecting communities and strengthening the resilience of the local economy.

Goals / Targets

A Climate Adaptation Plan will inform the design of the project in accordance with international guidelines.

Initiatives

- Reduce heat island effect through green roofs and cooler roofing
- Climate Adaptation Plan Implementation

To be considered during detail design phase:

- Stormwater systems designed for increased storm intensity.
- A/C pipework designed for increased cooling loads.
- Plant rooms designed for potential for larger chillers after 25 years to reflect increased air temperatures.

Ethics & Equity

Objective

Creating safe, just and equitable places to live, work, learn & trade, and supporting local prosperity and fair trade.

Goals / Targets

- More responsible procurement policies
- Targets for employment during construction

Initiatives

- Develop a sustainable procurement policy addressing modern slavery, child labour and other social equity and ethics issues.
- Set targets for employment of disadvantaged groups during construction
- Consider partnership with the Australian Supply Chain Sustainability School

Sustainable Food

Objective

Promoting sustainable humane farming and healthy diets high in local, seasonal organic food and vegetable protein.

Goals / Targets

- Encourage retailers to provide healthy food options
- Urban food production

Initiatives

- Food & beverage to prioritise healthy and organic food outlets is practical.
- Include healthy eating tips in the building user information.
- Consider partnership with a food rescue charity during operation

Pollution

Objective

Minimising air, noise, land, water and night sky pollution.

Goals / Targets

- Eliminate night sky pollution.
- Reduce noise and air pollution during construction.

Initiatives

- Best practice management during construction to minimise impact on neighbours
- Set targets for stormwater pollution reduction in line with Green Star criteria
- Adoption of international dark sky principles
- No obtrusive light to night sky