

Attachment A7

ESD Report



ESD Report

383 Kent Street, Sydney

Charter Hall
Revision 08

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Revision Information

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Contents

Executive Summary.....	5
<i>Sustainability Vision</i>	<i>5</i>
<i>Environmental Certifications</i>	<i>6</i>
<i>Sustainability Strategy.....</i>	<i>6</i>
1 Introduction.....	8
1.1 <i>Planning Proposal and Development.....</i>	9
2 Project Vision	10
2.1 <i>Project Specific Targets and Benchmarks</i>	11
3 Sustainability Commitments.....	12
3.1 <i>Energy Efficiency</i>	14
3.2 <i>Water Efficiency.....</i>	15
3.3 <i>Renewable Energy.....</i>	16
3.4 <i>Materials.....</i>	16
3.5 <i>Transport.....</i>	17
3.6 <i>Healthy Workplace.....</i>	17
4 Framework to Reflect Best Practice Sustainable Commitments	18
4.1 <i>Sydney Local Environmental Plan 2012.....</i>	18
4.2 <i>Sydney Development Control Plan 2012</i>	18
4.3 <i>Green Star Buildings – 6 Star Target</i>	19
4.4 <i>NABERS Operational Sustainable Building Rating Scheme</i>	20
4.5 <i>WELL Rating</i>	21
4.6 <i>NCC – Section J – Energy Efficiency.....</i>	21
5 Sustainable Design Principles	22
5.1 <i>Responsible.....</i>	22
5.2 <i>Healthy.....</i>	22
5.3 <i>Resilient</i>	23
5.4 <i>Positive</i>	24
5.5 <i>People and Place</i>	25
5.6 <i>Nature</i>	25

Executive Summary

This Ecological Sustainable Design Report has been prepared by LCI Consultants in support of a Planning Proposal to amend the Sydney Local Environmental Plan 2012 (Sydney LEP). This report has been prepared on behalf of Charter Hall Holdings (the Proponent) and it relates to a single development lot identified as Lot 1 in DP 778342 or 383 Kent Street, Sydney (the site).

To support the City of Sydney's requirements to achieve net zero carbon by 2050, zero water and water efficiency, Charter Hall's new development is proposed to showcase industry-leading performance in sustainable design, construction and operation.

Sustainability Vision

The new 383 Kent Street will provide a focal point for commerce and a benchmark for city life on the CBD's Western Edge. The scale and location of the project creates an opportunity to significantly reshape people's experience of a part of the city, continuing strategic efforts to shift the perception of the Western Edge into a desirable and lively slice of the CBD.

By embracing the eclecticism of the city in a blended precinct of public amenity, fine-grain retail and sustainable office space, 383 Kent Street will help establish a publicly activated and charismatic building that exemplifies Sydney's west side story of renewal, rejuvenation, and reinstated relevance.

383 Kent Street will be embedded with industry leading sustainable design and construction principles for a changing climate. An extensive amount of work has been undertaken to date to establish and integrate sustainable design and principles into the building design creating alignment with the City of Sydney Guidance on Sustainable Development.

Sustainable design initiatives include:



Development to be all-Electric



Renewable energy procurement for a period of at least 5 years equivalent to be "net zero energy" in operation



20% Reduction in Embodied Carbon and 90% construction waste diverted from landfill



Target 5.5 Star NABERS Office Base Building Energy rating +25%



Target 6 Star Green Star Buildings v1



WELL Gold (Core) rating commitment, with a target to achieve a WELL Platinum (Core) Rating



Consideration of On-Site Solar



Net removal of 729 public car parking spaces, including development of EV strategy of car charging



Biodiversity and Connection to Nature through inclusion of outdoor green spaces for every season



Indigenous Engagement and Gender Diversity Strategies



Universal Design criteria

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 building in Sydney's commercial sector.

Environmental Certifications

The following ESD certifications are proposed to be targeted by the new commercial tower development:

- 6-Star Green Star Building v1 certified rating
- 5.5 Star NABERS Office Base Building Energy rating (Commitment Agreement)
- 4 Star NABERS Water rating (Target)
- 5 Star NABERS Indoor Environment (Target)
- WELL Core Gold (Target) commitment; with a target to achieve a WELL Core Platinum rating.
- 100% renewable energy in operation.

Sustainability Strategy

The following summary outlines at high level the ESD strategies and initiatives proposed to be considered for the new development organised under the categories of the holistic Green Star – Building v1 tool. The development is targeting a 6 Star rating, with strategies meeting and in some cases exceeding the latest City of Sydney zero energy development requirements introduced in January 2023.

➤ Responsible

The building construction and operational waste management will be designed to optimise the diversion of waste from landfill and function with a recycle collection system in operation.

Materials will be responsibly procured during construction to drive supply chains to holistically consider the impact of products and lead to more transparent reporting.

Education programs will be provided to worker during construction on climate change and the importance of sustainable principles. Information about the projects associated sustainability costs will be disclosed to the Green Building Council to further assist with transparency and the viability of their framework.

> Healthy

The building will be designed with the following features to improve occupant wellbeing:

- improved outdoor air rates,
- natural daylight to the perimeter of floor plates,
- artificial lighting, which is flicker free and provides sufficient lux levels,
- an acoustic comfort strategy,
- low VOC and formaldehyde materials, and
- outdoor terraces.

> Resilient

The building will undertake a climate change, operational and community resilience assessment to inform the design and form resilience plans to ensure the project is prepared for potential future pressures.

> Positive

Through the design of an electric building and commitment to purchasing 100% renewable electricity, the project will be net zero in operation. In addition, the building will be designed to achieve 5.5 Star NABERS Base Building Energy Office rating and have a 20% reduction in upfront carbon emissions when compared to a standard reference building.

> Place and People

Lower carbon emission and active modes of transport will be encouraged through the removal of an existing 800 bay car park, the provision of electric vehicle infrastructure and end of trip facilities. The design will engage with appropriate consultants to inform the design to reflect Indigenous design principles and a sense of the local history and culture to reflect the sites context and also contribute to the social, economic and environmental wellbeing of the surrounding area.

> Nature

To protect the local ecology, the project will minimise light pollution and promote ecological value using plants where possible.

1 Introduction

This Ecological Sustainable Design Report has been prepared by LCI Consultants in support of a Planning Proposal to amend the Sydney Local Environmental Plan 2012 (Sydney LEP). This report has been prepared on behalf of Charter Hall Holdings Pty Ltd (Charter Hall) (the Proponent) and it relates to a single development lot identified as Lot 1 in DP 778342 or 383 Kent Street, Sydney (the site).

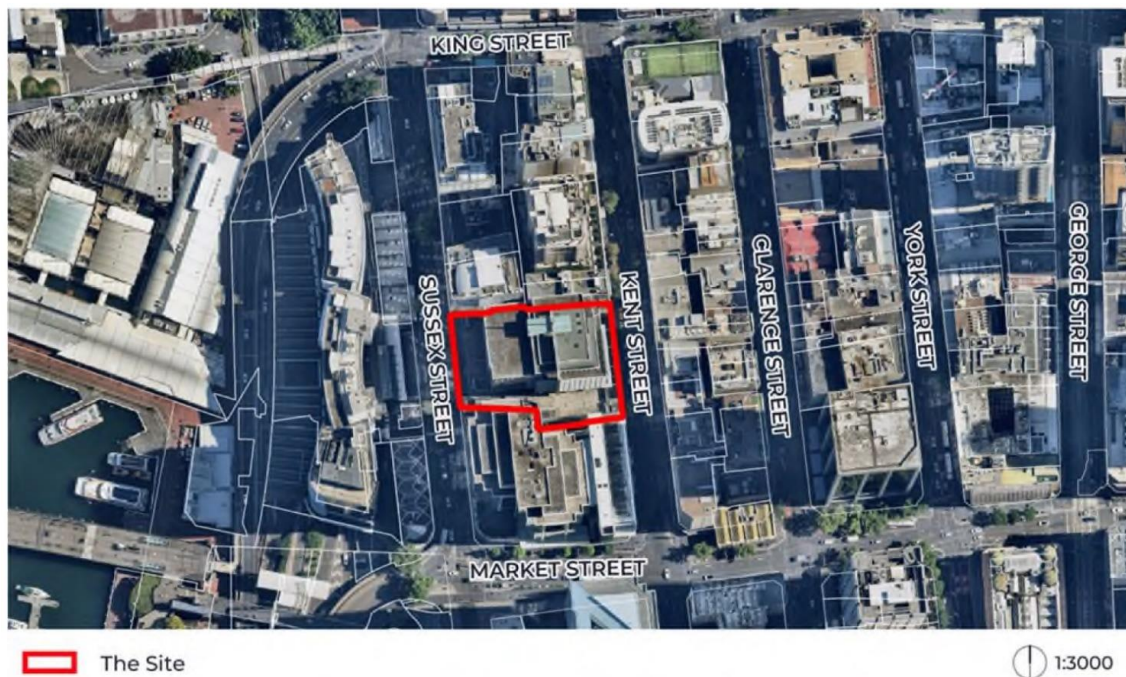


Figure 1: Aerial Map (Source: Nearmap, edits by Ethos Urban)

The purpose of this Planning Proposal is to amend the site's maximum Height of Building development standard and maximum Floor Space Ratio (FSR) development standard to unlock additional floor space to be used exclusively for employment generating land uses, consistent with the vision and intent of the Central Sydney Planning Strategy (CSPS) for tower cluster sites. This Planning Proposal will also seek to facilitate significant public benefits through additional site activation by way of a new pedestrian through-site link, shared loading dock facility and delivering on sustainable initiatives to contribute to the City of Sydney's vision to achieve net zero energy buildings.

The proposed Sydney LEP amendment is part of the broader redevelopment plan for the site to demolish the existing structure on the site (including the existing 10 storey car park), and construct a new 42 storey commercial office tower with a total maximum FSR of 20:1 (circa 73,000m² GFA).

The uplift being sought is consistent with the strategic intent of the CSPS for tower cluster sites within Central Sydney, which contains the City's requirements and expectations for projects pursuing this pathway. Following the Planning Proposal, the planning approval pathway involves a competitive design process and a detailed Development Application (DA). As such, this report reflects the concept stage of the proposal, and may be embellished as the detailed design and required works evolve.

1.1 Planning Proposal and Development

This Planning Proposal is accompanied by amendments to the Sydney Development Control Plan 2012 (Sydney DCP). The site specific DCP amendments reflect the proposed outcome to create a new commercial office tower that reintroduces a fine grain texture to the city by way of a new through-site link and retail activation at each ground floor interface to the public domain. This is reflected in the accompanying reference design prepared by FJC which serves as a baseline proof of concept for this Planning Proposal. This large strategic site presents a unique opportunity to deliver a landmark tower site that will exhibit design excellence and redefine the western edge of the CBD, whilst offering significant employment opportunities for global Sydney. The reference scheme supporting the Planning Proposal and site specific DCP can be described as follows:

- Demolition of the existing building, including removal of the over 800 capacity public car park; and
- Construction of the following:
 - New 42-storey office tower comprising a total FSR of 20:1, up to a height of RL 189.60 (approximately 170m above Kent Street and 180m above Sussex Street).
 - New premium-grade commercial floorspace with an approximate GFA of circa 73,000m².
 - New through-site link connecting Kent and Sussex Streets, including public art activation.
 - New ground floor activation opportunities, including approximate retail GFA of circa 640m².
 - 2 levels of basement, comprising:
 - Basement Level 1 facilitating 72 car parking spaces; and
 - Sussex Street ground level shared loading dock facility including SRV and MRV short term stay bays to service retail tenancies within buildings along Kent Street (located between Market Street and King Street).
 - New end of trip facilities below the Kent Street ground level.

2 Project Vision

The new 383 Kent Street will exemplify urban symbiosis. This benchmark for city life on Sydney's Western Edge represents a bringing together of heritage and the contemporary, of restorative calm and dynamic vibrancy, of commercial and retail and of private and public. The scale and location of this project create an opportunity to reshape people's relationship with this unremarkable part of the city.

As a blended precinct of public amenity, fine-grain retail and sustainable office space, 383 Kent Street will establish a publicly activated and charismatic building. With its shared loading dock and greened tower exterior, this project exemplifies Sydney's west-side story of renewal and reinstated relevance.

Charter Hall's vision is to create an industry leading sustainable development that not only benefits occupants but also the wider City of Sydney community. The project team is looking to reduce the environmental impact of the development through sustainability initiatives being embedded through the design and construction process, initiatives include:

- > An all-Electric building,
- > Renewable energy procurement for a period of at least 5 years equivalent to be "net zero energy" in operation,
- > 20% Reduction in Embodied Carbon and 90% construction waste diverted from landfill,
- > Target 5.5 Star NABERS Office Base Building Energy rating + 25%,
- > Target 6 Star Green Star Buildings v1,
- > WELL Gold (Core) rating commitment, with a target to achieve a WELL Platinum (Core) rating,
- > Consideration of On-site Solar,
- > EV Strategy and the removal of the existing car park,
- > Biodiversity and Connection to Nature through inclusion of outdoor green spaces for every season,
- > Indigenous Engagement and Gender Diversity Strategies, and
- > Universal Design criteria.

2.1 Project Specific Targets and Benchmarks

The World Green Building Council definition for Net Zero Carbon Buildings requires that new developments and major renovations are built to be highly efficient, powered by renewables, with a maximum reduction in embodied carbon and compensation of all residual upfront emissions. This approach aligns with the City of Sydney's latest Net Zero Energy Development planning guidelines that will progressively introduce minimum ratings requirements from January 2023 and net zero operational energy use from 2026.

383 Kent Street is well aligned with the Net Zero Energy Development guidelines and will be targeting the following sustainability ratings that reward upfront low carbon design and construction methods and energy & water efficiency and healthy outcomes in operation:

- 6 Star Green Star Buildings v1 target, including commitment to 20% reduction in upfront carbon,
- 5.5 Star NABERS Office Base Building Energy Rating +25%,
- 4 Star NABERS Water Rating,
- 5 Star NABERS Indoor Environment Rating,
- WELL Core rating, Gold level commitment with a target to achieve a Platinum level rating, and
- 100% renewable energy in operation.

3 Sustainability Commitments

The operational impact of the building is to be reduced through careful consideration of passive design features of the building façades, and services design to reduce energy to operate the building. Industry leading services design and equipment selections are proposed to assist in reducing energy and water consumption throughout the building in operation.

In addition to energy and water efficient initiatives, the proposed development will be a desirable workplace for individuals through the project's holistic ESD approach which also addresses indoor environmental quality, material selections, transport, ecology and access to nature, and the developments overall sense of community.

Other elements that contribute to the sustainability strategy include the following:

- Façade with high performing glazing and external shading elements where appropriate,
- A high efficiency HVAC system including electric heat pumps will assist in achieving the 5.5 Star NABERS Office Base Building Energy rating +25% target,
- Roof top photovoltaic (PV) solar system and consideration of façade integrated PV panels to reduce carbon emissions,
- LED lighting throughout the building,
- High efficiency fixtures and rainwater harvest and storage used in a dual reticulation strategy to minimise potable water consumption,
- Daylight to floor plates on the perimeter,
- The inclusion of outdoor terraces to a number of select floors,
- Bike facilities and end of trip facilities to promote active modes of transport, and
- Removal of the existing 800 bay public car park, provision of a smaller number of parking spaces and provision of low emission vehicle infrastructure.

The Green Star rating tool was updated in 2020 with Building v1 replacing the Green Star Design and As Built v1.3 tool; this new tool is significantly more stringent and challenging when compared with the previous tool. The building will target a 6 Star rating with this new Green Star Buildings v1 tool; exceeding the Minimum Industry Compliance Standards and City of Sydney Guidance

Table 1: 383 Kent St Sustainability Initiatives

Initiative	Energy	Green Star	Indoor Environment	Waste	WELL	Water	Embodied Carbon/ Materials
							
Minimum Industry Compliance Standards	JV3 (NCC 2022) 5.5 Star NABERS (CoS DCP2012 Item 3.6.1 Rev Nov2021)	5 Star Green Star Design and As-Built v1.2 (PCA Office Grade Matrix 2019 Grade A)	Minimum 60% of IEQ points under Green Star Design & As Built v1.2	CoS DCP 2012 Green Star Design & As-Built v1.2 'Operational Waste' Credit	N/A	N/A	N/A
CoS Guidance on Sustainable Development	5.5 Star NABERS Energy Commitment Agreement (+25%), or Green Star Buildings v1 'Energy Use' – Credit Achievement, or 45 kWh/yr/m2	Certified rating under a current version of Design and As-Built – 5 star or higher	N/A	CoS Waste Guidelines	N/A	> Sydney Water's good practice standard, namely proposals without cooling towers: 0.47 kL/m2/year, proposals with cooling towers: 0.84 kL/m2/year. > Dual plumbing for non-potable water uses > Onsite rainwater capture and re-use > Connection to precinct-scale recycled water scheme where available. > Highest efficiency WELS Star rated fittings	In line with the Green Building Council of Australia's Green Star credit requirement.
383 Kent St Target	Commitment agreement for minimum NABERS 5.5 Star (+25%) All electric plant 100% renewable energy in operation	6 Star Green Star Buildings v1 (new tool).	Minimum NABERS 5 Star	Green Star Building v1 'Responsible Construction' Credit	Gold (CORE) commitment (Target to achieve a Platinum (CORE))	Minimum NABERS 4 Star Dual plumbing for non-potable water uses as flushing toilets and sub-soil irrigation. Connection to future precinct-scale recycled water scheme where available.	Charter Hall portfolio commitment for minimum 20% reduction in embodied carbon.

3.1 Energy Efficiency



383 Kent Street has incorporated a number of energy efficiency measures to enable the development to achieve a targeted 5.5 Star NABERS Energy Base Building Office rating.

Passive design considerations have been incorporated into the design including the following considerations:

- High performance glazing,
- Appropriate window to wall ratio, and
- External shading elements orientation and dimensions.

Mechanical Design

The commercial office spaces will be provided with chilled water and heating water air conditioning system. During design development the HVAC system will be optimised to consist of either a Low Temperature Variable Air Volume (LTVAV) or a Hybrid Perimeter Active Chilled Beam and centre zone LTVAV system. High efficiency water cooled chillers will provide cooling for the commercial office component development.

Heat rejection from the water-cooled chiller units will be achieved by water cooled heat rejection plant (i.e. cooling towers) located within the roof plantroom. The commercial office condenser water system will be dedicated to serve the commercial and retail components of the development.

Heating hot water will be produced by air-sourced heat pumps. Natural gas will not be used for heating or domestic hot water generation. Consideration will be given for some of the heat pumps to be upgraded to 4 pipe chillers that can operate in reverse cycle cooling to reduce water consumption when simultaneous heating and cooling loads allow high energy efficiency.

Air distribution will be via central air handling plant located to serve dedicated façade orientations. Each major façade orientation will be provided with a dedicated air handling unit to maximise operational efficiency. Air handling units will be selected to provide low energy operation through the use of plug fan technology and low velocity coils.

Mixed mode zones are proposed on dedicated floor to allow occupants to move into naturally ventilated spaces when the ambient conditions are favourable. During these times, the air conditioning systems serving these zones will shut down reducing energy consumption.

Electrical Design and Metering

The building will include LED lighting throughout with occupancy sensors or operate on a time clock to limit unnecessary energy consumption.

The metering for house services shall be installed on meter panels within the Main Switchroom associated with each substation. Metering shall be provided for all major end uses, including separate

light and power metering in accordance with the requirements of the Building Code of Australia. This will include digital multi-functional meters to be installed that can be monitored by the BMCS, and automatic reporting included to monitor building energy consumption.

In line with the latest NCC 2022 Section J requirements, the electrical infrastructure will be designed to ease later installation of Solar PV Panels (minimum 20% of available roof area), battery energy storage and Electric Vehicle (EV) Charging equipment. Widespread inclusion of energy storage devices (batteries and EVs) within an enclosed basement present issues for fire management that are still evolving and subject to review with Fire and Rescue NSW.

3.2 Water Efficiency



383 Kent Street has incorporated a number of water efficient measures to enable the development to target a 4 Star NABERS Water rating, with an aspiration to achieve 4.5 Star.

The development will incorporate the following high efficiency fixtures:

- > 6 Star WELS Taps
- > 6 Star WELS Urinals
- > 4 Star WELS Toilets, and
- > 4 Star WELS Showers installed with 5-minute timers.

A rainwater tank will also be installed for capture, storage and reuse of rainwater and mechanical condensation recovery. Potable cold-water top-up will be supplied by the domestic cold-water service with a provision to be connected to the City of Sydney Recycled Water Scheme at a future date (subject to provision by Sydney Water).

Reuse will be reticulated to the following areas:

- > Water Closets
- > Urinals; and
- > Irrigation Provisions.

An authority meter is to be provided for the building. Private water meters connected to the BMCS are to be installed and monitored on major water uses such as:

- > Base building
- > Tenancies/ Retail areas
- > Landscaping
- > Mechanical Plant and Equipment
- > Domestic Hot Water Plant
- > Commercial floors
- > End of Trip Facilities.

3.3 Renewable Energy



The building will be provided with a roof top photovoltaic array to provide solar power directly into the base building. The final capacity of the PV array will be subject to available roof area and consideration may be given to façade integrated PV, subject to the winning architectural design.

The building also utilises reverse cycle heat pumps to provide heating hot water, and domestic hot water. This removes the need for natural gas in the building (i.e. no fossil fuels)

Retail spaces on the ground floor and lower ground floors will be provided with electrical capacity sufficient for induction cooking in lieu of gas.

No wind turbines have been incorporated into the design of this building as the rotational and vibrational operational characteristics of the turbines present a negative value proposition from a safety, aesthetic, acoustic and ongoing maintenance perspective and are therefore not proposed. In addition, the anticipated energy harvested from an urban environment is considered to be too low to be effective.

In addition to Charter Hall Office platform's short-term procurement of 100% renewable electricity through GreenPower in July 2021, Charter Hall recently entered into a supply-linked Power Purchase Agreement (PPA) with global renewable energy giant, ENGIE (Australia & New Zealand). This long-term agreement will supply Charter Hall's property portfolio (including all office assets) with 100 per cent electricity from renewable sources within the National Energy Market until 2030. This building will therefore be net zero carbon in operation (scope 1 and 2) from practical completion.

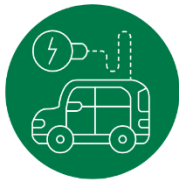
3.4 Materials



383 Kent Street will be designed to reduce embodied carbon by at least 20% when compared to a standard reference building through a combination of efficient structural design solutions and procuring responsible materials. This will be achieved through pursuing the use of products such as low carbon emission concrete and steel. Existing materials will also be reused and repurposed where possible to further reduce material consumption.

The project team will also make considered choices with regards to the procurement of materials, investigating material with a reduced raw material content and higher recycled content where possible.

3.5 Transport



383 Kent Street redevelopment works will remove the existing Wilson public car park. This car park currently contains 800 spaces which the transport consultant has estimated generates up to 320 vehicle trips per hour to/from the site. The reduced number of car parking spaces for the proposed development is expected to generate 30 vehicles per hour, significantly reducing traffic volumes generated by this site and contributing to reducing the vehicle trips into the Sydney CBD. With the removal of this public car park, it is expected to encourage a shift in behaviour of commuters to more carbon efficient modes of transport such as commuting via buses or trains.

In addition to the removal of the public car park, the development will have low emission vehicle infrastructure and an end of trip facility inclusive of bicycle parking, showers, and lockers to support and encourage lower carbon and active modes of transport.

3.6 Healthy Workplace



383 Kent Street will deliver a healthy workplace for occupants including:

- 50% improvement on outdoor air requirement and be CO₂ monitored and controlled to ensure occupants have plenty of fresh air.
- Access to the outdoor spaces adjacent to working office spaces via outdoor terraces which are designed throughout the development.
- Base building construction and plant will be designed to provide appropriate acoustic limits and separation.
- Façade design will manage thermal comfort and solar gain and accommodate generous natural daylight to further improve occupant wellbeing.

4 Framework to Reflect Best Practice Sustainable Commitments

Buildings generate waste and produce emissions during their construction and operation which contributes to global warming. A number of rating sustainability frameworks have been created to encourage buildings to minimise their environmental impact and also improve the health and comfort for occupants and local stakeholders.

These frameworks include:

- Sydney Local Environmental Plan 2012
- Sydney Development Control Plan 2012
- Green Building Council of Australia – Green Star Rating Scheme
- NABERS Operational Sustainable Building Rating Scheme
- International WELL Building Institute – WELL Rating Scheme
- Climate Active Carbon Neutral Building Certification Scheme
- National Construction Code – Section J: Energy Efficiency

This section of the report summarises the environmental certification strategies for this development.

4.1 Sydney Local Environmental Plan 2012

Clause 7.33 of the Sydney Local Environmental Plan 2012 came into effect from 1 July 2023 and denotes specific sustainability requirements for large commercial developments. The clause includes requirements for new buildings that encourage optimising energy efficient design and on-site renewable energy.

The clause also states that for Development Application's made on, or after, the 1 Jan 2026, buildings must achieve "net zero emissions from energy use". This can be achieved through the use of both on- and off-site renewable energy. It is anticipated that the project is capable of achieving net-zero emissions in operation through the ESD initiatives proposed in this report which align with the relevant performance standards applicable for office land uses, as denoted in the DCP.

4.2 Sydney Development Control Plan 2012

The City of Sydney Development Control Plan (DCP 2012) provides detailed guidance for developments. The project has, and will continue to consider initiatives, that address Section 3.6 Ecological Sustainable Development in the project design across the following areas:

- Energy efficiency through passive design measures and HVAC considerations to reduce energy consumption,
- Water efficiency through the selection of water efficient fixtures, rainwater harvesting and HVAC considerations to reduce cooling tower water consumption,
- Investigation of onsite renewable technology, and
- Continued careful selection of materials and building components to minimise embodied carbon and improve indoor quality for occupants.

City of Sydney is also proposing the Performance Standards for Net Zero Energy Buildings. The proposed performance standards aim to reduce energy consumption, greenhouse gas emissions and improve the resilience of new developments to the impacts of climate change.

The project is meeting the current applicable energy performance standards for an office base building for applications submitted between 1 Jan 2023 – 31 Dec 2025, as detailed in Table 1 of this report. In addition to the energy performance standards currently in place for applications submitted before 31 Dec 2025, the project will meet the performance standards applicable for applications made from 1 Jan 2026 through an all-electric building design and commitment to the procurement of renewable energy for at least 5 years to be equivalent to being “net zero energy” in operation.

4.3 Green Star Buildings – 6 Star Target

The development will be registered with the Green Building Council of Australia and will target a 6 Star Buildings v1 rating. Green Star Buildings v1 is a recently updated holistic building sustainability rating tool. A 5 Star Rating is considered current



Australian excellence while a 6 Star Rating is considered current world excellence. Both outcomes meet or exceed the relevant industry recognised sustainability and environmental performance standard.

The latest Green Star 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. The new tool aligns to meet the Paris Agreement 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 assesses buildings through the following categories:



Responsible

Recognises activities that ensure the building is designed, procured, built, and handed over in a responsible manner.



Places

Supports the creation of safe, enjoyable, integrated, and comfortable places.



Healthy

Promotes actions and solutions that improve the physical and mental health of occupants.



People

Encourages solutions that address the social health of the community.



Resilient

Encourages solutions that address the capacity of the building to bounce back from short-term shocks and long-term stresses



Nature

Encourages active connections between people and nature and rewards creating biodiverse green spaces in cities.



Positive

Encourages a positive contribution to key environmental issues of carbon, water, and the impact of materials.



Leadership

Recognises projects that set a strategic direction, build a vision for industry, or enhance the industry's capacity to innovate.

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 if the level of certification. A 5 Star building requires 35 points, while a 6 Star building requires 70 points. See the below table which breaks up the two pathways per category.

Table 2: Indicative Green Star points strategy

	Points Available	5 Star Strategy	6 Star Strategy
Responsible	17	5	11
Healthy	14	6	11
Resilient	8	3	8
Positive	30	16	22
Places	8	3	8
People	9	7	9
Nature	14	7	9
Sub-total	100	40	71
Leadership	10	1	4
Total	110	41	75

This table is indicative of the level of outcome that the project will pursue, however, the exact selection of credits may change through the design and construction process. The project team will continue to investigate and aspire to target 6 Star through the detailed design stage.

4.4 NABERS Operational Sustainable Building Rating Scheme

The National Australian Building Energy Rating Scheme (NABERS) is a performance-based tool used to measure the operational impacts in existing buildings. The NABERS rating scheme rates energy, water, waste and IEQ in offices, shopping centres, data centres, hotels, and apartment buildings. Depending on the building type, the base building, tenancy or whole building can be rated.



Figure 4 - NABERS Star Scale

4.4.1 NABERS Energy

The City of Sydney's new Net Zero Energy Developments requirement includes a peer-reviewed NABERS Energy Commitment Agreement of at least 5.5 Stars prior to CC approval. The commercial office portion of the proposed development will target a 5.5 Star NABERS Office Base Building Energy rating +25%.

4.4.2 NABERS Water

The commercial office portion of the proposed development will target a 4 Star NABERS Office Water rating. The building will include dual reticulation of potable and non-potable water to allow the development to access any recycled water network in the future Recycled Water Scheme which will deliver an immediate and measurable improvement in NABERS Water rating.

4.4.3 NABERS Indoor Environment

The commercial office portion of the proposed development will target a 5 Star NABERS Office Indoor Environment rating. The building will include high levels of outdoor air, CO2 sensing control, and low VOC material selection to minimise internal pollutant levels and keep air fresh in operation, demonstrated through regular onsite testing.

4.5 WELL Rating

The project is currently committed to pursuing a WELL GOLD (Core) rating and investigating opportunities to target a Platinum (Core) rating. This requires not just healthy design and material selection but also the provision of employee policies and benefits that promote ongoing health and wellbeing. A portfolio approach to WELL will be considered where Charter Hall's operational processes and policies combined with project-specific design solutions and onsite testing will deliver a WELL rating as an attractor to tenants.



4.6 NCC – Section J – Energy Efficiency

The building is seeking to meet and exceed the National Construction Code (NCC) Volume 1, 2022. Section J of the NCC outlines performance requirements so that the building and its services facilitate the efficient use of energy. During the detailed design stage, the architectural design will be assessed to develop thermal requirements for all the aspects of the building's envelope, such as glazing performance, façade & roof colouring, shading and insulation. Due to the complexity of retaining and reusing existing fabric it is unlikely to be possible to upgrade to the latest NCC standards for any fabric that may be retained (Section J1) but all new and upgraded fabric and building services will be compliant with the latest, relevant standards.

5 Sustainable Design Principles

The following sustainable design principles have been proposed for the 383 Kent St building and can be addressed through the categories outlined within the Green Star Buildings v1 rating system. Green Star Buildings v1 is a recently updated holistic building sustainability rating tool and is broken into the following categories:

5.1 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 structure, envelope, systems, and 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 transparent and equitable 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 80% of construction and demolition waste from landfill with a focus on reusing material from any demolition where possible. 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.

5.2 Healthy

Building occupant health is a primary objective for Charter Hall. Healthy conditions and comfortable conditions exist in parallel.

Clean Air - The project will be CO2 monitored and controlled to ensure occupants have plenty of fresh air and do not have a feeling that the environment is stuffy or odorous.

Light Quality - Where appropriate the façade will accommodate for generous natural daylight to improve occupant wellbeing. Within proposed occupied spaces, artificial lighting will dominate the light source in the space. Artificial lighting will be flicker free with appropriate lux levels and uniformity per space.

Acoustic Comfort – Due to the nature of a commercial building, Charter Hall will implement a design strategy to control of intrusive/ high levels of noise, privacy, noise transfer, speech intelligibility.

Exposure to toxins – Low volatile organic compound products and finishes will be used in the project to ensure toxins are mitigated from the space.

Amenity – By creating spaces that have high levels of comfort and enclosure/separation, occupants will be able to reflect and relax.

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 fulfil the sense of natural connection.

5.3 Resilient

A buildings' resilience is a major lens to assess its sustainability. Buildings that are not resilient to external pressures are usually first to be rebuilt, shortening the life of the building. By shortening the life of a building, 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 the future pressures is an expensive exercise. To ensure the project is resilient to future pressures a range of assessments will be completed.

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. Other assessments that will be undertaken include operational resilience, community resilience, heat island resilience and grid resilience.

Operational resilience - refers to large scale external factors that could influence how the building operates, this includes failure of critical infrastructure, health pandemic, natural disasters and increased energy costs.

Community resilience - needs to be assessed to ensure the needs and desires of the surrounding community. The building should foster social cohesion and provide opportunity for local employment as well as educating the neighbourhood. By considering the needs and wants of the community the building is likely to increase its visitors and extend its service life.

Urban Heat Island - To prevent the urban heat island effect locally onsite materials with a low solar reflective index will be used and street trees protected wherever possible.

5.4 Positive

Net Zero Operational Energy - The 383 Kent Street project is committed to achieving net-zero carbon emissions in its operations by avoiding the use of grid gas and instead procuring 100% renewable electricity and offsetting the building's refrigerants for a period of at least 5 years. This goal will be achieved from the project's practical completion, well ahead of the grid's decarbonisation.

The building will be designed to achieve a 5.5 Star NABERS Base Building Energy Office rating + 25%.

Onsite solar PV arrays will be maximized on non-trafficable roof surfaces and the building's energy consumption will be reduced by 20% compared to a reference building. Monitoring and metering will be critical for the building's efficient operation, with CO₂ monitoring controlling outdoor air requirements to adapt to occupancy levels, reducing HVAC loads. 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 by procuring responsible materials. Existing materials will be reused and repurposed where possible, further reducing material consumption.

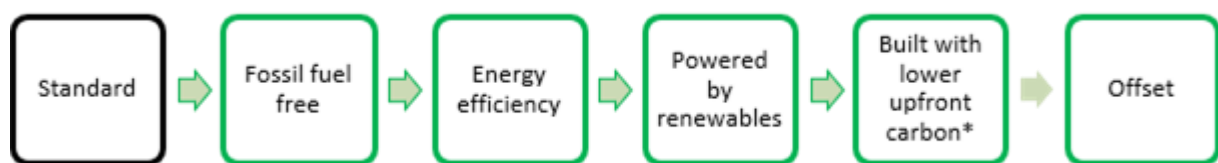


Figure 2: Climate Positive Pathway

Water Conservation - Water conservation is a crucial aspect of the project. 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 minimising potable water usage, the project has also made efforts to maximise rainwater catchment from exposed non-trafficable surfaces. This harvested water will be used to supplement toilet flushing reducing the need for potable water for this purpose.

5.5 People and Place

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's (relatively new) culture can spread this feeling of identity to a greater audience and educate all Australians on our rich history.

Transport – Through the proximity to public transport and provision of end of trip facilities, the building will encourage occupants to take shared and active modes of transport to and from site. The development will also remove an existing 800 bay public car park, replacing it with a much smaller number of parking spaces with EV charging infrastructure to further promote a shift to lower emitting modes of transport and supporting a shift in how commuters travel to and from the city.

5.6 Nature

An obvious sustainable approach to building design is integrating into the local environment as possible. By implementing native and endemic species onsite, the local ecology can be enhanced with habitat and food sources. The local ecology can extend to the waterway where the projects storm water eventually runs.

Impacts to Nature – Designing a building that conserves and protects the local environment is a key aspect of sustainable building design. The building will do this by minimising light pollution and promoting ecological value using plants wherever possible.

The building will look to further reduce its impacts to nature through material selection, investigating repurposing existing building materials, and the procurement of materials with a reduced raw material content and higher recycled content where possible. Charter Hall has an aspiration to increase the use of products with high *circularity*; that is, use materials that eliminate waste and pollution, recycle content at the highest value and regenerate nature. During the transition to a true circular economy, some form of carbon offsetting may be needed to balance carbon emissions so Charter Hall will also investigate and prioritise the purchasing of nature based Australian offsets.