

Attachment A11

<p>Ecological Sustainable Development Report</p>



West

Planning Proposal for Hunter Street Over Station

Ecologically Sustainable Design Report

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FUNCTION	POSITION	NAME	DATE
Author	Principal Sustainability Consultant	Ken Long	28 April 2022
Technical Checker	Technical Director, Sustainability	Alan Davis	28 April 2022
Technical Reviewer	Technical Director, Sustainability	Camilla Edmunds	28 April 2022
Coordination Check	Technical Director, Environment	Lucy Baker	28 April 2022
Approver	SM EDS Lead	Adrian Garnero	28 April 2022

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Glossary

TERM	DESCRIPTION
Council	City of Sydney Council
CSSI approval	Critical State Significant Infrastructure approval
DCP	Development Control Plan
DPIE	NSW Department of Planning, Industry and Environment
EP&A Act	Environmental Planning and Assessment Act 1979
ESD	Ecologically Sustainable Development
GFA	Gross Floor Area
GBCA	Green Building Council of Australia
ISD	Integrated Station Development
LEP	Local Environmental Plan
OSD	Over Station Development
PP	Planning Proposal
SEPP	State Environmental Planning Policy
SRD SEPP	State Environmental Planning Policy (State and Regional Development) 2011
Stage 1 CSSI approval	SSI-10038 approved all major civil construction works between Westmead and The Bays, including station excavation and tunnelling, associated with the Sydney Metro West metro line on 11 March 2021
Sydney Metro West	Construction and operation of a metro rail line and associated stations between Westmead and the Sydney CBD as described in Section 1.2
TfNSW	Transport for New South Wales
WSUD	Water sensitive urban design
ZCAP	Zero Carbon Action Plan

Executive Summary

Purpose

The Planning Proposal for the Hunter Street Over Station Development (OSD), has been prepared to support an amendment to the Sydney Local Environmental Plan (LEP) 2012 and is consistent with the Planning Proposal: Central Sydney.

This Ecologically Sustainable Development (ESD) report outlines a sustainability strategy as part of the indicative Hunter Street OSD design response which demonstrates the following:

- Alignment with the relevant design excellence requirements detailed in the Sydney LEP 2012, and the related objectives and controls of the *Sydney Development Control Plan (DCP) 2012*
- Consistency with sustainable development provisions with the *Central Sydney Planning Proposal* and new clause relating to the Central Sydney tower cluster areas as an amendment to the Sydney LEP 2012 (now gazetted)
- Minimum sustainability rating targets nominated have been set to meet and/or exceed the best practice energy performance nominated in clause 7.25A Sustainable development in Central Sydney tower cluster areas of the Sydney LEP 2012 (Amendment No 64)

Sustainability Rating Strategy

A sustainability rating strategy has been established for Sydney Metro West (SMW) packages and station development. Sustainability rating requirements are correlated across a range of current and emerging regulatory, policy, statutory planning and Sydney Metro requirements, and market recognised standards, drivers and trends.

The Hunter Street OSD will target the following minimum sustainability rating targets:

- 6 star Green Star Buildings
- 6 star NABERS Energy for Offices rating (base building) (Commitment Agreement) (without GreenPower)
- 4.5 star NABERS Water for Offices

Indicative Design Response

Passive and active design measures to reduce energy use intensity have been presented in Section 5 as guidelines for the indicative OSD. These also leverage facade optimisation to balance daylight access and visual comfort, thermal comfort and energy efficiency within the context of the indicative OSD.

Electrification of all energy uses of the buildings and 100% renewable electricity is considered. The capacity of on-site renewable energy systems has been evaluated and are expected to deliver approximately 3-4% of the total annual energy consumption. Passive and active design measures, and the deployment of advanced technologies aim to minimise the need for infrastructure augmentation and reduce operational costs.

Water efficiency measures and the use of alternative water sources to reduce the demand for potable water have been presented in Section 6 as guidelines to support water resilience.

Sustainable transport initiatives have been evaluated in Section 7 to reduce the emissions attributed to private vehicle use by 40% and vehicle kilometres travelled by 20%, encourage walkability by demonstrating there are a range of diverse amenities within 400m and improve active mode uses by 90%.

In alignment with Green Star requirements, at least 90% of construction and demolition waste should be diverted from landfill and a waste management plan developed to:

- Identify, quantify and classify the likely waste streams generated during construction and operation
- Promote responsible source separation to reduce the amount of waste that goes to landfill by implementing convenient and efficient waste management systems

ESD Strategy

In combination with the Sustainability Rating Strategy, the following performance targets have been identified for the Hunter Street OSD to align with the Green Star Climate Positive Pathway.



CLIMATE POSITIVE

- 40%** reduction in embodied carbon emissions
- 100%** renewable energy
- 100%** elimination / offset of other emissions
- 30%** reduction in life cycle impacts



COMMERCIAL

- 6 star Buildings
- 6 star NABERS Energy
- 4.5 star NABERS Water

1 Introduction

1.1 Purpose

The Sydney Metro West Hunter Street Station Over Station Development (OSD) planning proposal seeks to amend the maximum building height and maximum floor space ratio permitted for both the East and West sites under the Sydney Local Environmental Plan (2012). This Ecologically Sustainable Development (ESD) forms part of the planning proposal submitted for the Sydney Metro Hunter Street Station OSD.

This Ecologically Sustainable Development (ESD) report outlines a sustainability strategy as part of the indicative Hunter Street OSD design response which demonstrates the following:

- Alignment with the relevant design excellence requirements detailed in the Sydney LEP 2012, and the related objectives and controls of the Sydney Development Control Plan (DCP) 2012
- Consistency with sustainable development provisions with the *Central Sydney Planning Proposal* and new clause relating to the Central Sydney tower cluster areas as an amendment to the Sydney LEP 2012 (now gazetted)
- Minimum sustainability rating targets nominated have been set to meet and/or exceed the best practice energy performance nominated in clause 7.25A Sustainable development in Central Sydney tower cluster areas of the Sydney LEP 2012 (Amendment No 64)

1.2 Objectives and Intended Outcomes

The Planning Proposal Request has been prepared to address the following objectives for future development on the Eastern and Western sites:

- Be a catalyst for positive change by regenerating and invigorating the city with new development that engages with the precinct, raises the urban quality and enhances the overall experience of the city.
- Facilitate future development that promotes design excellence and is consistent with the objectives of the Central Sydney Planning Framework.
- Deliver high quality employment generating floorspace that aligns with the objectives for development within the tower cluster areas identified within the Central Sydney Planning Framework.
- Contribute towards the establishment of an integrated transport hub within the Sydney CBD which strengthens Sydney's rail network improving connectivity.
- Delivers employment density alongside the delivery of significant new public transport infrastructure servicing the site and surrounding precinct.

The intended outcomes of the requested amendments include:

- To amend the maximum building height and maximum floor space ratio (FSR) permitted for both the east and west sites under the Sydney Local Environmental Plan 2012 (Sydney LEP 2012) and allow an alternative approach to design excellence to deliver integrated station development that optimises the development potential of both sites
- To facilitate new development that demonstrates an appropriate distribution of built form and floor space as part of the delivery of the integrated station development.

Table 1-1 | Indicative OSD Built Form Outcomes

BUILT FORM COMPONENT	INDICATIVE OSD OUTCOME
East Site	Based on a Site Area of 3,666 sqm
Height	Building height of 257.7m (RL 269.1)
FSR	22.82:1
GFA	Up to 84,287 sqm of GFA
Land Use(s)	Non-residential land uses only
West Site	Based on a Site Area of 3,735 sqm
Height	Building height of 213.0m (RL 220.00), including a setback interface from the heritage-listed Skinner Family Hotel
FSR	18.71:1
GFA	Up to 69,912 sqm of GFA
Land Use(s)	Non-residential land uses only
Cl. 7.6 – Car Parking for Office and Business Premises	Up to 70 car parking spaces, maximum total across both the Eastern and Western sites

1.3 Planning Process

State Significant Infrastructure

SMW was declared as State Significant Infrastructure (SSI) and Critical State Significant Infrastructure (CSSI) under sections 5.12(4) and 5.13 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), respectively, on 23 September 2020.

SMW is being assessed as a staged infrastructure application under section 5.20 of the EP&A Act. The SMW Concept and major civil construction work between Westmead and The Bays, including station excavation and tunneling (Stage 1 of the planning approval process - application number SSI-10038), were approved on 11 March 2021.

Stage 2 of the planning approval process (application number SSI-19238057) includes all major civil construction work, including station excavation and tunnelling, between The Bays and Sydney CBD (an Environmental Impact Statement for this application was exhibited between 3 November and 15 December 2021). This application is relevant for this request for a PP as it seeks approval for bulk excavation and tunnelling at the Hunter Street station (Sydney CBD) sites.

Stage 3 of the planning approval process (application number SSI-22765520) is the application for the tunnel fit-out, construction of stations, ancillary facilities and station precincts, and operation and maintenance of the SMW Line. This application is notably relevant for this request for this PP as it seeks approval for the construction of the Hunter Street metro station, including above and below ground structures, public domain works, and spatial provisioning and works to facilitate the construction and operation of an OSD above the two station entries, which are described further in this report.

Over Station Development

The OSD components of the Hunter Street integrated station development are not declared as SSI or CSSI under State Environmental Planning Policy (State and Regional Development) 2011 (SRD SEPP). As such, separate development consent is required to be granted for the construction and operation of development above the Hunter Street Station.

The primary land use of the Hunter Street OSD is anticipated to be 'commercial premises' which has a capital investment value of more than \$30 million, and which are located within a rail corridor and/or are associated with railway infrastructure. Consequently, the future OSD will be classified as State Significant Development. The Sydney LEP 2012 is a relevant environmental planning instrument for the future development, though the Sydney Development Control Plan 2012 (Sydney DCP 2012) will not apply to the OSD sites.

To inform the planning controls relevant for the Hunter Street OSD sites, amendments are proposed to the Sydney LEP 2012 to provide additional Maximum Height of Building and floor space ratio (FSR) controls. Further, as the Sydney DCP 2012 does not apply to the land, the Proponent will prepare a design and amenity guideline to support the planning proposal to inform the future built form on the site including details such as street frontage heights, setbacks, massing and tapering, development adjacent to heritage items, building exteriors, and managing wind impact.

The inter-relationship of the scope of Sydney Metro EIS 3 (part of Critical State Significant Infrastructure CSSI) and this planning proposal is illustrated in Figure 1 1.

Planning Proposal

The planning proposal seeks to amend the Sydney Local Environmental Plan 2012 to enable development on the site(s) as follows:

- Establish a maximum Height of Buildings control and maximum FSR control on the identified land, being the Hunter Street Station East and West sites.
- Enable the development of a commercial office building on the Hunter Street Station East and West sites
- Integration with the Hunter Street Station, the subject of a separate application process
- Adaptive reuse of the existing Former Skinners Family Hotel within the overall development on the West site
- Include site-specific controls which ensure the provision of employment and other non-residential land uses only on both the Hunter Street Station East and West sites.
- Include a site-specific control allowing the provision of up to a maximum of 70 car parking spaces across both the Hunter Street Station East and West sites
- Include a site-specific design guideline within the site-specific controls to guide future development sought under a State Significant Development Application process.
- Establish an alternative design excellence process for the Hunter Street Station East and West sites that responds to the integration of the development with the Sydney Metro West project and specifically the Hunter Street Station.

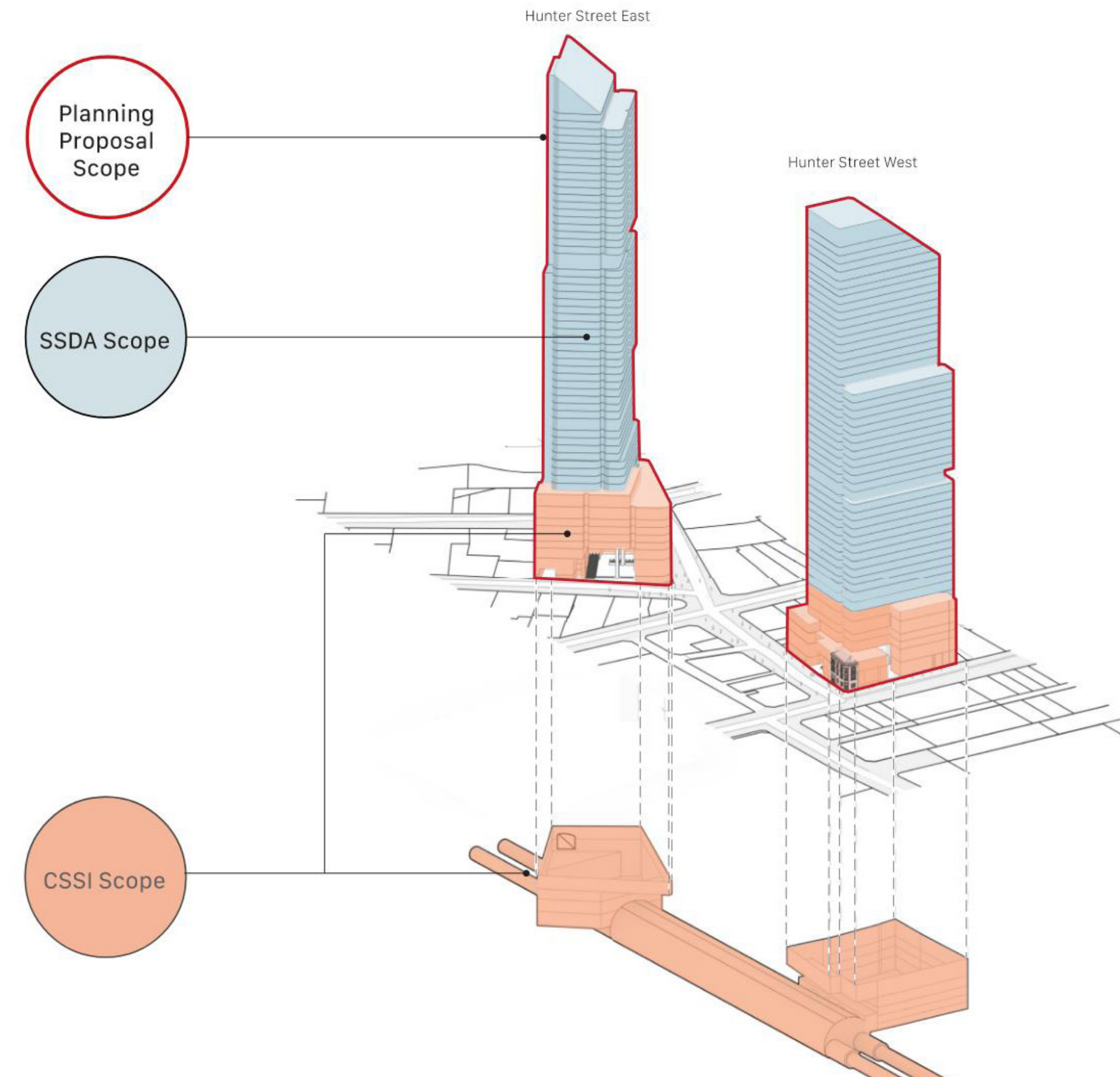


Figure 1-1 | Hunter Street Station and OSD (outlining indicative building envelope)

1.4 Site Context

The Site

The Hunter Street integrated station development is located in the northern part of the Sydney CBD, within the commercial core precinct of Central Sydney, within the Sydney Local Government Area.

The east site is located on the corner of O'Connell Street, Hunter Street and Bligh Street adjacent to the existing CBD and South East Light Rail that extends from Circular Quay to Moore Park, Kensington and Kingsford. The east site is adjacent to the new Martin Place Station which forms part of the Sydney Metro City and Southwest, Australia's biggest public transport project connecting Chatswood to Sydenham and extending to Bankstown.

The west site is located on the corner of George and Hunter Street, including De Mestre Place and land predominantly occupied by the existing Hunter Connection retail plaza.

Refer to Figure 1-2 which illustrates the location of the Hunter Street Station within its urban context.

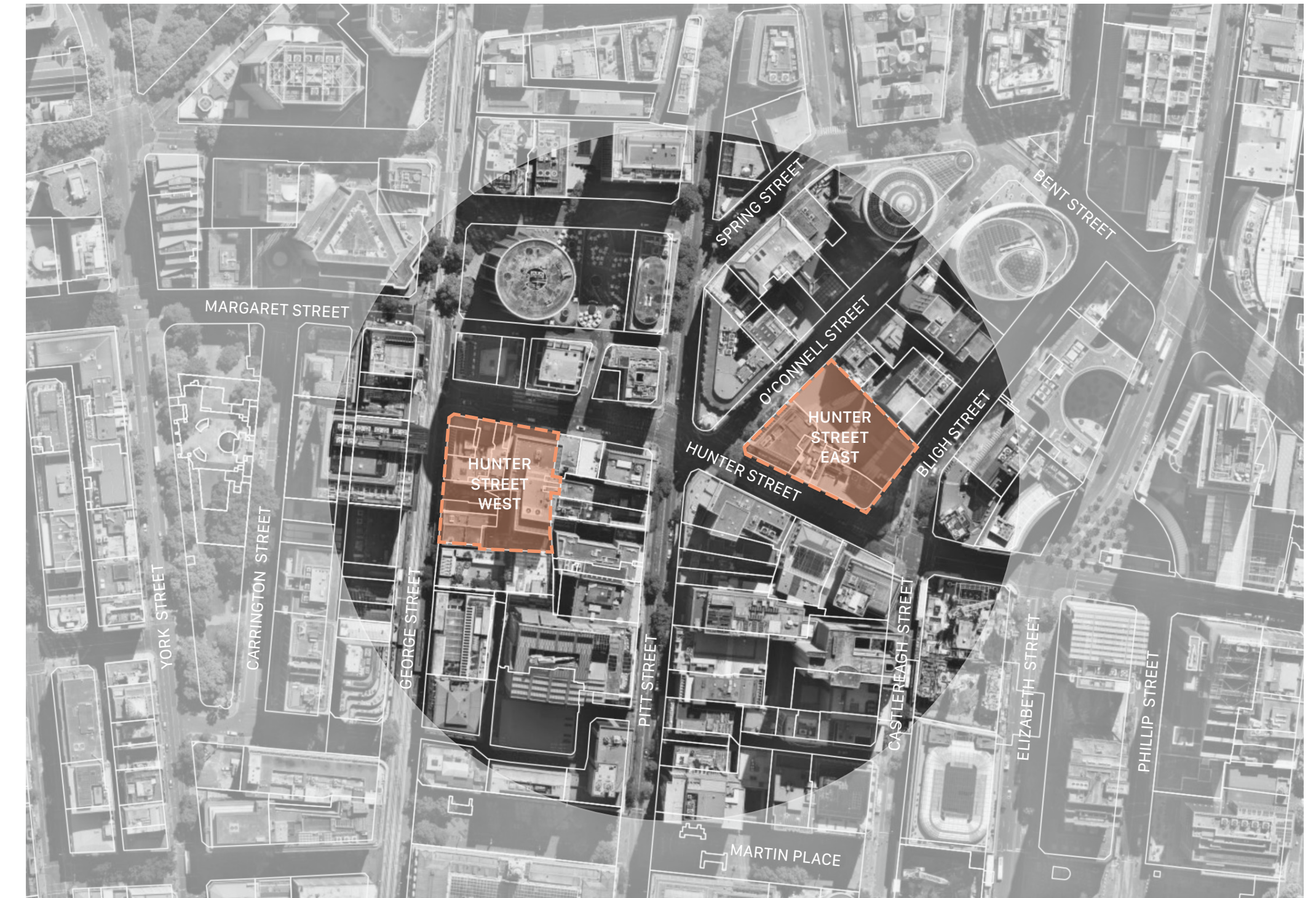


Figure 1-2 | Location of the proposed Hunter Street Station OSD sites

Local Context

The Sydney CBD is a highly developed commercial core with a wide range of commercial, retail, health, government and community-based uses, as well as high density residential developments.

A number of key commercial buildings are located in or around the Sydney CBD, including educational facilities, historic buildings and structures, law courts, public gathering spaces and places of worship. Significant areas of open space, such as the Botanical Gardens, the Domain and Hyde Park are also located within or near the Sydney CBD area, as well as the World Heritage Sydney Opera House and iconic Sydney Harbour Bridge.

Land uses surrounding the Hunter Street Station (Sydney CBD) sites include:

- North of the sites is a major commercial area comprising high density commercial towers along George Street, Pitt Street, and Bridge Street, including the MetCentre and Australia Square buildings. The area also comprises tourism and entertainment related uses including hotels, shops, restaurants, cafes, nightclubs and bars, with the area around Circular Quay and the Rocks a major tourism precinct and providing significant support for the night time economy.
- East of the sites are major commercial towers along Hunter Street, including Chifley Tower, 8 Chifley Square, Aurora Place and Deutsche Bank Place. Beyond Hunter Street, the State Library of NSW and the NSW Parliament House front onto Macquarie Street, and beyond that lies the public open space of The Domain.
- South of the sites, the land use remains predominantly multi-storey commercial offices but also includes cafes, bars and nightclubs, including the Ivy complex. Martin Place is a significant east–west pedestrian thoroughfare which contains many culturally significant buildings and structures including the Cenotaph memorial

and the General Post Office building, as well as Martin Place Station. Beyond Martin Place the Sydney CBD continues towards Town Hall, Haymarket and the Central Station precinct.

- West of the sites, the land use remains predominantly high-density commercial offices, anchored by Wynyard Station. George Street contains the Sydney Light Rail (L2 Randwick Line and L3 Kingsford Line) and is a major north–south axis through the CBD, and along with Pitt Street connects Circular Quay, Wynyard, Town Hall and Central. East of Wynyard, the CBD continues towards the major commercial and entertainment areas around King Street Wharf and Barangaroo, which also contain significant high density residential apartment buildings.

Site Description

The Hunter Street OSD relates to the following properties:

- 28 O’Connell Street, 48 Hunter Street, and 37 Bligh Street, Sydney (East Site); and
- 296 George Street, 300 George Street, 312 George Street, 314-318 George Street, 5010 De Mestre Place (Over Pass), 5 Hunter Street, 7-13 Hunter Street, 9 Hunter Street and De Mestre Place, Sydney (West Site).

Table 1-2 and Table 1-3 below set out the address, legal description and area of the parcels of land that comprise the Hunter Street Station (Sydney CBD) land that is the subject of this Planning Proposal.

Table 1-2 | Legal Description of Hunter Street Station East Site

STREET ADDRESS	LOT AND DP
28 O’Connell Street, Sydney	Lot 1, DP217112
28 O’Connell Street, Sydney	Lot 1, DP536538
28 O’Connell Street, Sydney	Lot 1, DP1107981
48 Hunter Street, Sydney	Lot 1, DP59871
48 Hunter Street, Sydney	Lot 2, DP217112
33 Bligh Street, Sydney	Lot 1, DP626651
37 Bligh Street, Sydney	CP and Lots 1-14, 21-31, 33-36, and 40, SP58859
37 Bligh Street, Sydney	CP and Lots 41-49, SP61852
37 Bligh Street, Sydney	CP and Lots 50-57, SP61922
37 Bligh Street, Sydney	CP and Lots 58-65, SP61923
37 Bligh Street, Sydney	CP and Lots 66 and 67, SP63146
37 Bligh Street, Sydney	CP and Lots 67-70, SP63147
37 Bligh Street, Sydney	CP and Lot 72, SP74004
37 Bligh Street, Sydney	CP and Lots 75-82, SP87437
37 Bligh Street, Sydney	CP and Lots 73-74, SP87628

Table 1-3 | Legal Description of Hunter Street Station West Site

STREET ADDRESS	LOT AND DP
296 George Street, Sydney	Lot 1, DP438188
300 George Street, Sydney	CP and Lots 1-43, SP596
312 George Street, Sydney	Lot 1, DP211120
314-318 George Street, Sydney	Lot 13, DP622968
5010 De Mestre Place, Sydney (Over Pass)	Lot 1, DP1003818
9 Hunter Street, Sydney	Lot 2, DP850895
5 Hunter Street, Sydney (Leda House & Hunter Arcade)	CP and Lots 1-63, SP71068
5 Hunter Street, Sydney (Leda House & Hunter Arcade)	CP and Lots 1-14, SP65054
7-13 Hunter Street, Sydney (Hunter Connection)	CP and Lots 1-53, SP50276
7-13 Hunter Street, Sydney (Hunter Connection)	Lots 57 and 58, SP61007
7-13 Hunter Street, Sydney (Hunter Connection)	Lots 54, 55 and 56, SP60441

2 Drivers

This section outlines a number of relevant Local and State regulations and plans the Hunter Street OSD sustainability strategy and indicative building envelop design has been assessed against to ensure alignment of sustainability objectives. In addition, multiple National overarching programs and regulatory requirements have also been utilised as guides in the evaluation to ensure best practice principles and performance benchmarks could be achieved.

The relevant regulations and programs which the Hunter Street OSD creates alignment with are the following:

- Sydney Local Environment Plan (LEP) 2012 - Including Amendment No.64
- Sydney Development Control Plan (DCP)
- Planning Proposal - Central Sydney
- Net Zero Energy Plan 1: 2020-2030 Implementation Update
- National Construction Code Volume 1 : 2019
- Green Star Buildings
- NABERS Energy & Water

- Consider environmental impacts, such as overshadowing and solar access, visual comfort, wind and reflectivity
- Adhere to the principles of ecologically sustainable development
- Prioritise active transport modes and improve the permeability of the pedestrian network
- Demonstrate that the development is capable of achieving best practice energy performance in the common areas of the part of the building to be used as office premises

- Reduce the need for active heating and cooling by incorporating passive design measures
- Be capable of achieving a 5.5 star NABERS Energy for Offices rating for the base building for new developments containing office premises with a net lettable area of 1,000 m² or more
- Move toward net zero carbon
- Reduce the consumption of potable water, including the harvesting and reuse of rainwater and stormwater
- Minimise waste generation, and encourage the recycling of construction and demolition waste
- Maximise recovery, recycling and reuse of operational waste
- Install dual plumbing systems and make provision for a future ready connection to a recycled water network

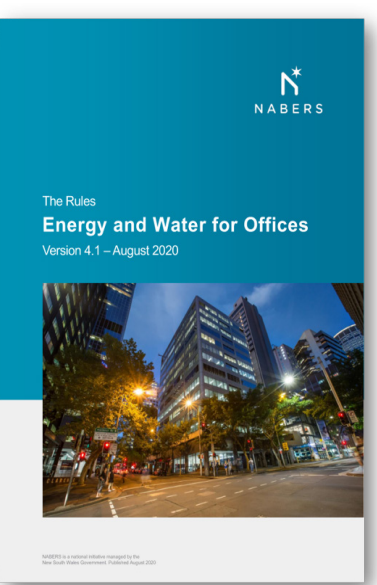
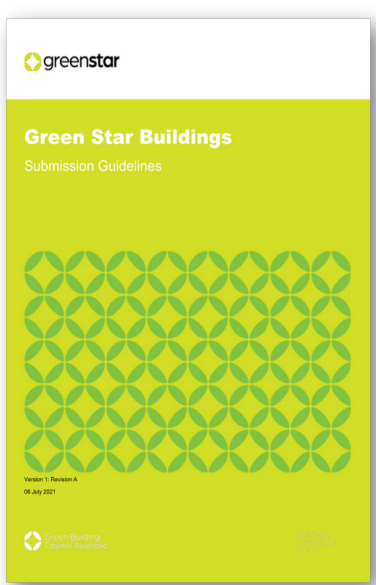
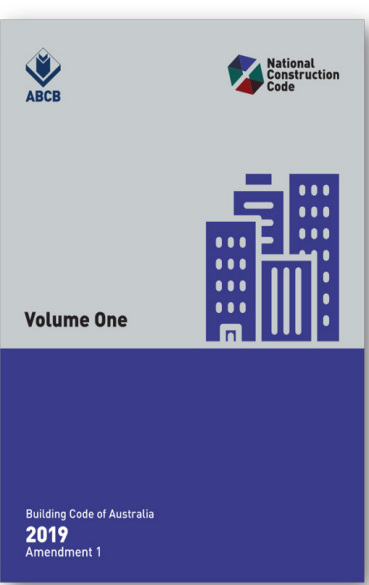
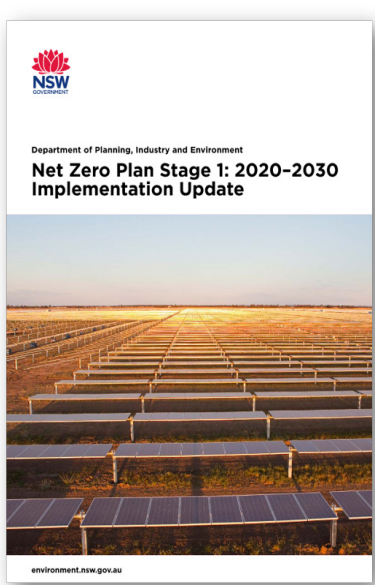
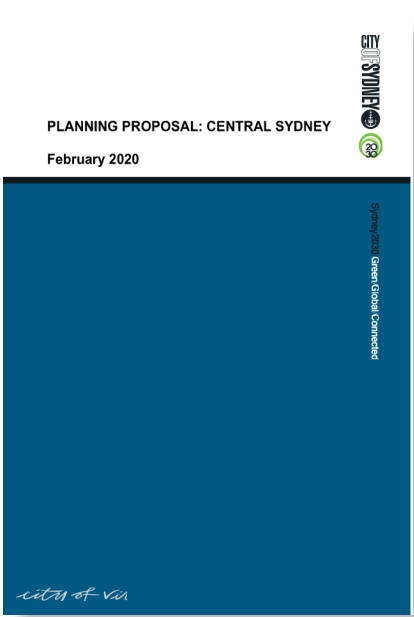
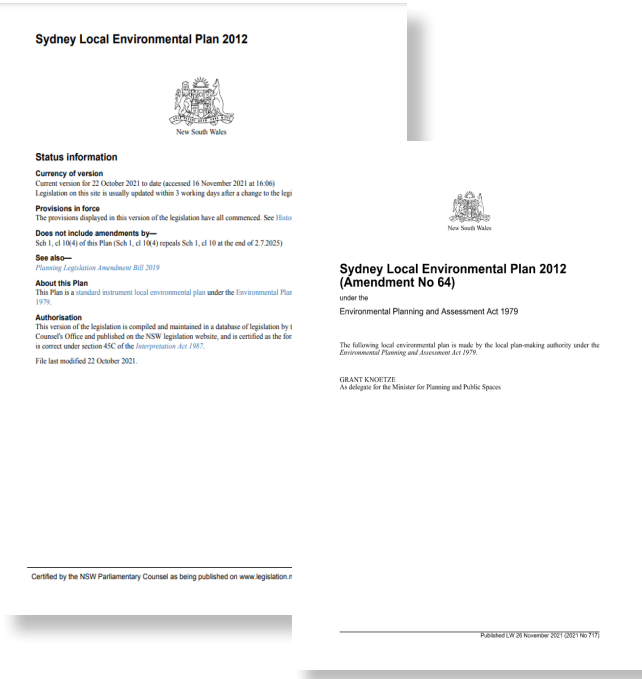
- Reduce greenhouse gas (GHG) emissions, potable water use and waste generation
- Utilise low carbon and renewable energy
- Adapt to climate change
- Increase the recycling of waste and the use of products from recycled sources
- Improve indoor environmental quality
- Minimise the environmental impact from building materials through reduction, re-use and recycling of materials, resources and building components
- Enhance biodiversity

- Drive the uptake of proven GHG emissions reduction technologies to reduce the cost
- Empower consumers and businesses to make sustainable choices
- Invest in the next wave of GHG emissions reduction innovation to ensure economic prosperity from decarbonisation
- Electrify all energy uses and supply all energy uses with renewable electricity by 2030
- Plan operational improvements and projects, and decarbonisation pathways for businesses
- Accelerate the transformation of the built environment towards net zero emissions under a range of Net Zero Buildings initiatives that leverage NABERS (embodied and operational GHG emissions), green finance mechanisms and BASIX enhancements that align with the Trajectory for low energy buildings

- Integrate features in a building's fabric and services to facilitate the efficient use of energy
- Comply with Verification Methods under Section J energy efficiency:
 - JV1 NABERS Energy for Offices - obtain a minimum 5.5 star NABERS Energy for Offices base building Commitment Agreement
 - JV2 Green Star - register for a Green Star rating and demonstrate that the annual GHG emissions of the proposed building are less than 90% of the GHG emissions of a reference building
 - JV3 Verification using a reference building - demonstrate that the annual GHG emissions of the proposed building are not more than the GHG emissions of a reference building
- Meet and exceed the deemed to satisfy (DTS) provisions of Section J Energy efficiency
- Achieve a thermal comfort level of between a Predicted Mean Vote (PMV) of -1 to +1 across not less than 95% of the floor area of all occupied zones for not less than 98% of the annual hours of operation of the building

- Register and obtain a Green Star Buildings rating
- Meet Minimum Expectations:
 - Manage environmental impacts during construction
 - Verify the effective operation of building systems
 - Enable practices that reduce operational waste
 - Improve the indoor environment quality
 - Address climate change
 - Emit less GHG emissions in construction and during operation
 - Achieve a water efficient operation
 - Promote physical activity
 - Embrace diversity
 - Protect environmentally sensitive areas
- Align with the Climate Positive Pathway:
 - Drive credible reductions in upfront and operational carbon
 - Avoid locking in fossil fuels
 - Electrify all energy uses and supply all energy uses with renewable electricity
 - Offset operational carbon that cannot be eliminated using nature-based solutions, and carbon capture and storage technologies

- Disclose the energy and water performance of assessable assets
- Demonstrate credible savings in energy and water costs through the efficient design of a building's fabric and services
- Represent good quality design and reflect market requirements



3 Climate Responsive Design

3.1 Climate Analysis

Resiliency is fundamental to decision making. Development must take account of science-based climate modelling to ensure investment in social and community infrastructure is secure and assets can serve the community long into the future.

To affect sound decision making, RCP (Representative Concentration Pathway) 8.5 (high emissions scenario) climate modelling, in line with the NARCIIM (NSW and ACT Regional Climate Modelling) Project, has been incorporated into analysis to account for future climate scenarios. A 2070 timeline horizon (far future) has been selected based on building design life of 40 years.

The following future climate projections impact are identified:

1. Maximum temperatures are projected to increase by 1.9 °C and minimum temperatures are projected to increase by 2.0 °C
2. The number of cold nights will decrease
3. The number of hot days (above 35 °C) is projected to increase up to an additional 10 - 20 days per year (refer to Figure 4-1). These increases in hot days are projected to occur mainly in spring and summer, extending into autumn.
4. Rainfall is projected in to increase in summer and autumn
5. Severe fire weather days are projected to increase in summer and spring

Figure 3-1 compares the projected increase in temperatures over current conditions.

Microclimate and building performance analysis has been conducted in evaluating how the indicative OSD and public realm can react appropriately in the face of increasing temperatures. Analysis carried out includes the following:

- **Sun Path Analysis** - tracking the sun moves throughout the year and what considerations the indicative design will need to consider in regards to the management of solar gain.

- **Solar Reflectivity** - understanding how the indicative building envelope can contribute to solar glare onto the ground level and neighbouring buildings.

- **Solar Gain** - measuring levels of direct solar gain across the indicative building envelope to assess which areas can reduce summer heat gain through shading and reduced glazed areas and allow winter heat gain to improve passive performance.

- **Visual Comfort** - analysis of daylight penetration to inform indicative building envelope form and optimisation of the facade.

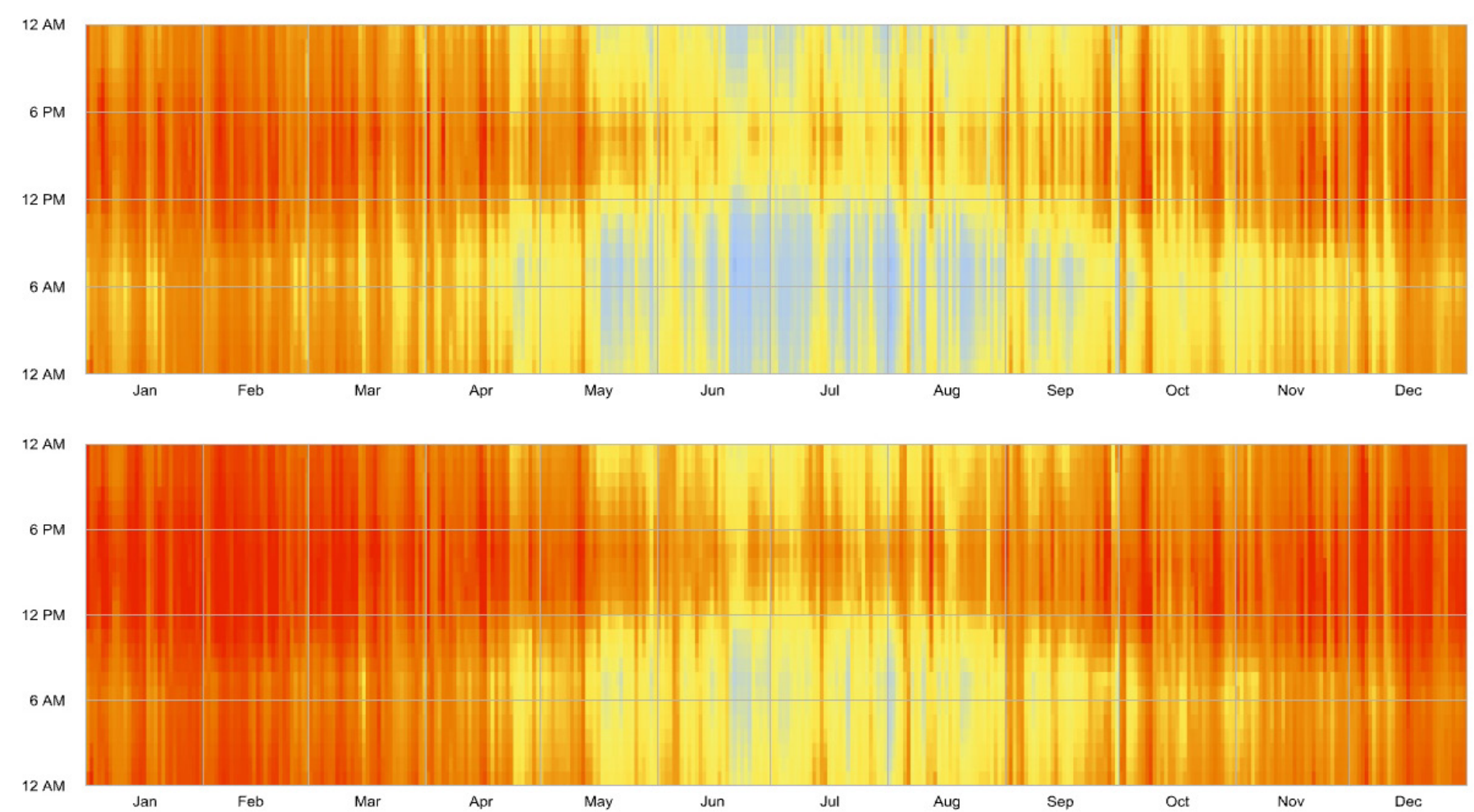


Figure 3-1 | Annual hourly ambient dry bulb temperature; [top] current; [bottom] 2070

3.2 Sun Path

Figures 3-2 and 3-3 illustrates the sun path diagram for winter, mid-season and summer for the Hunter Street OSD sites.

Richard Johnson Square, adjacent to the Hunter Street East site, maintains good levels of direct morning sunlight throughout summer. The urban massing acts to shade the public open spaces on summer afternoons, enhancing outdoor comfort and liveability.

The indicative OSD building envelopes receive good levels of direct sunlight throughout the year.

The indicative OSD building envelope for the east site receives a good level of direct morning sunlight. Lower levels are generally protected by surrounding development to the west.

The indicative OSD building envelope for the west site is exposed to low angle sunlight from the west and north west in the afternoon. Facade optimisation measures to mitigate and manage visual discomfort for commercial tenants and improve passive design is recommended.

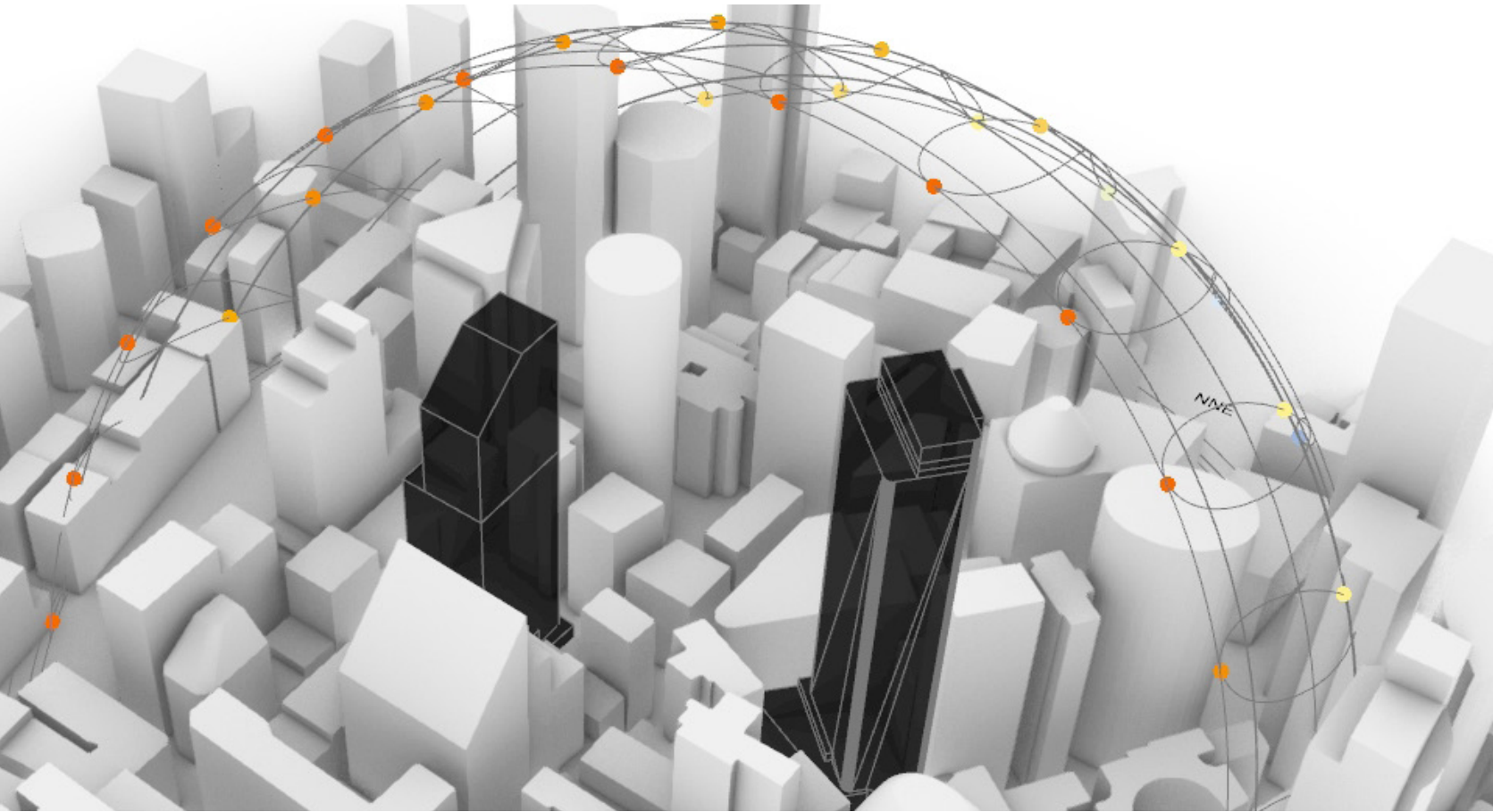


Figure 3-2 | Sun path diagram for the Hunter Street sites (south west perspective of indicative OSD building envelopes)

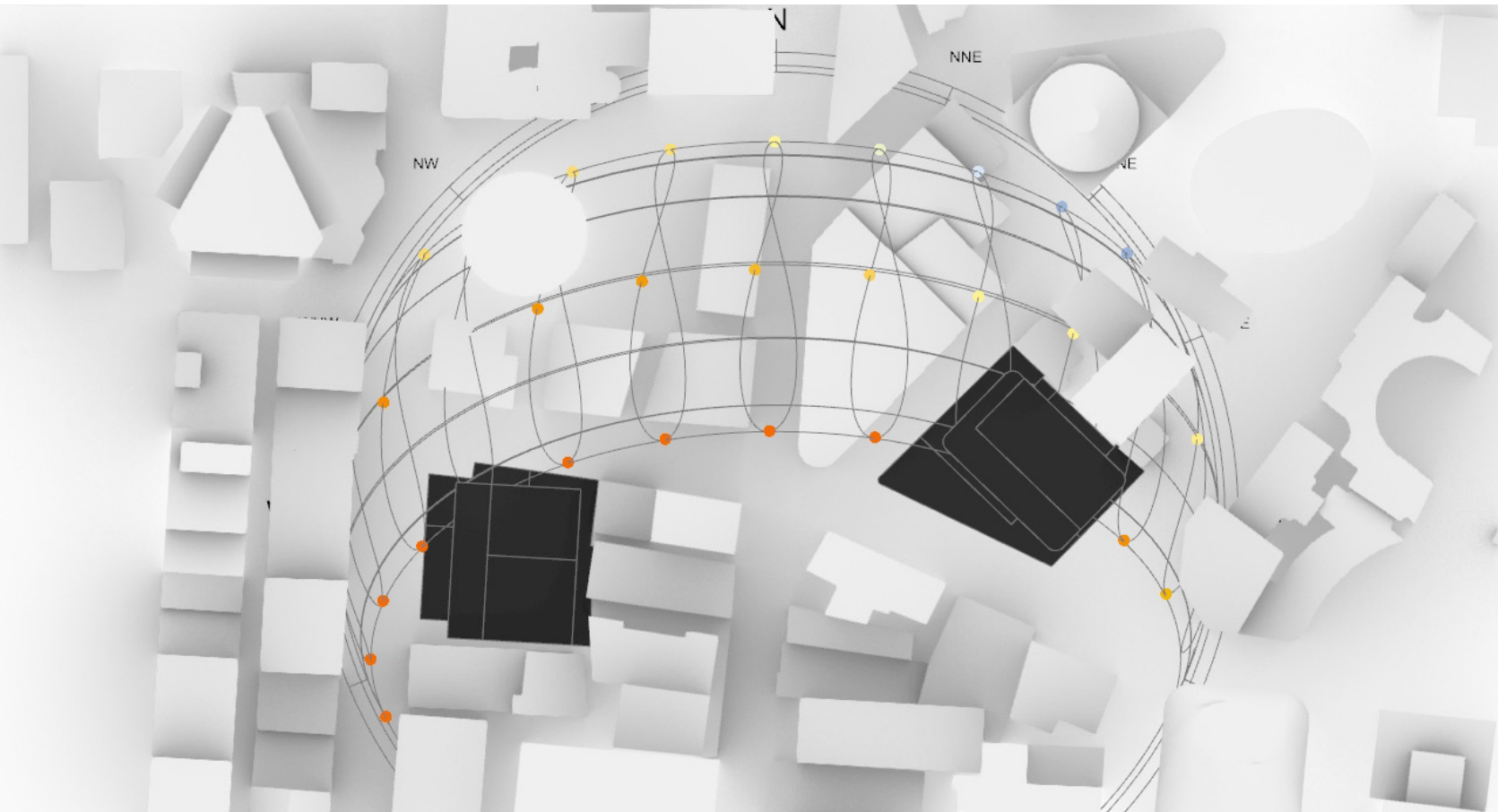


Figure 3-3 | Sun path diagram for the Hunter Street sites (plan view of indicative OSD building envelopes)

3.3 Solar Reflectivity

Reducing the solar reflectivity of buildings can help to address pedestrian visual discomfort and hazardous glare for motorists. It also assists in mitigating localised urban heat island effects.

Figures 3-4 and 3-5 illustrate direct solar reflectance to adjacent buildings and the ground plane attributed only to those elevations of the indicative OSD building envelopes deemed to pose a risk, including time of year.

The following instances occur where solar reflectivity reaches ground level:

- The south west elevation of the indicative OSD building envelope for the east site reflects direct afternoon summer sun along Hunter Street to George Street
- The north elevation the indicative OSD building envelope for the west site reflects direct midday summer sun to adjacent buildings across Hunter Street

Mitigation measures to reduce the impact of solar reflectivity and urban heat island effect attributed to the Hunter Street OSD could include one or a combination of the following:

- External horizontal and vertical shading elements
- Intrinsic features of the building form, such as reveals and returns
- Utilisation of matte or non-reflective materials, where possible

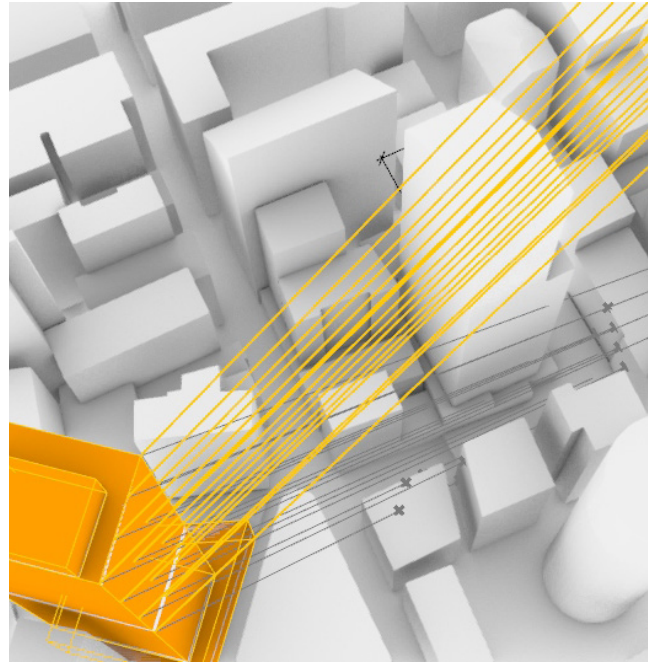
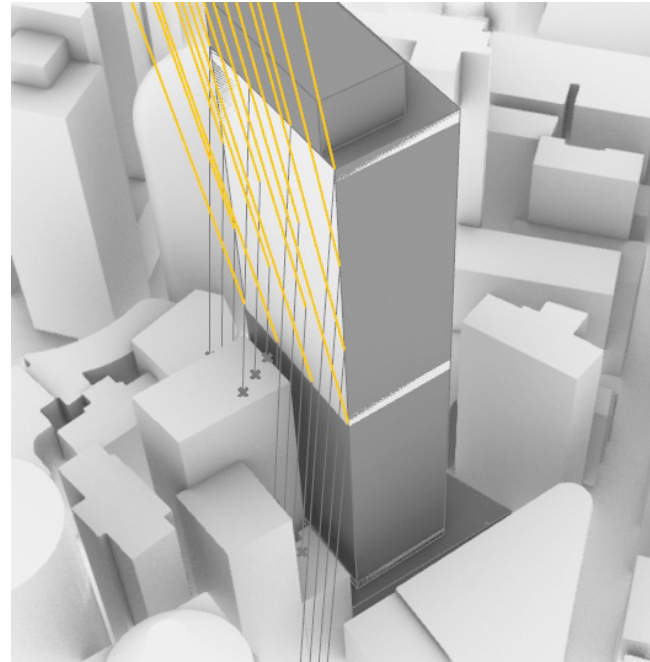
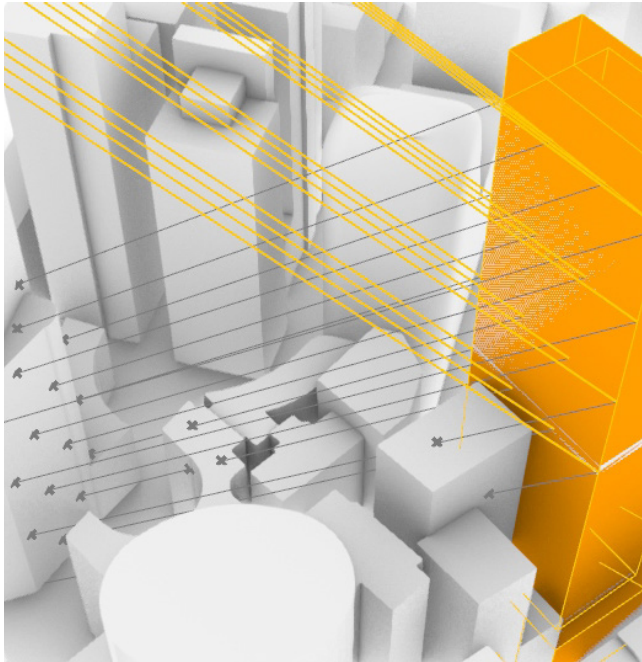


Figure 3-4 | Solar reflectivity attributed to the indicative OSD building envelope (east site) - summer; [left, middle and right] 8am, 12pm and 4pm

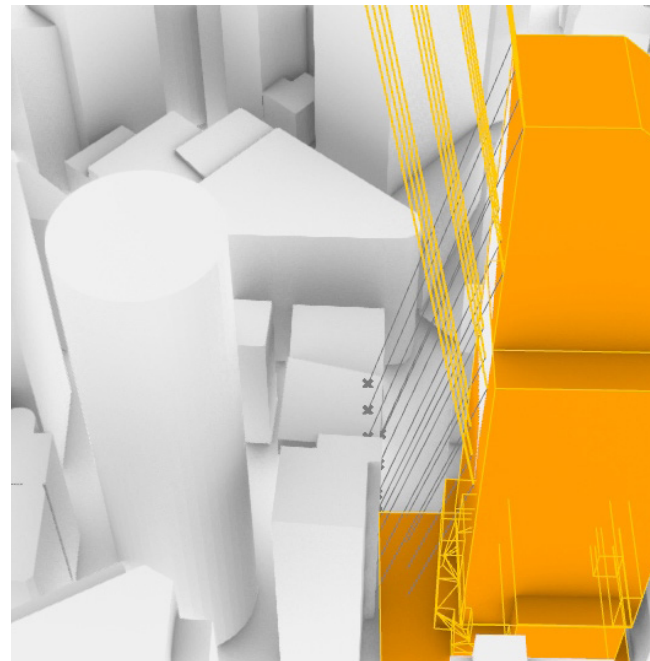
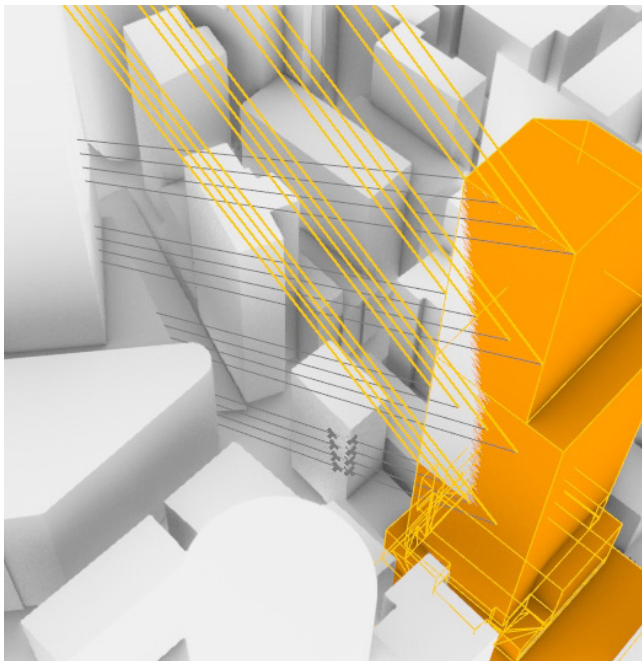


Figure 3-5 | Solar reflectivity attributed to the indicative OSD building envelope (west site) - summer; [left, middle and right] 8am, 12pm and 4pm

3.4 Sun Hours

A sun hours analysis was conducted to assess direct sunlight exposure to the indicative OSD building envelopes and public open spaces. Figures 3-6 to 3-9 illustrate the number of direct sunlight hours received by the indicative OSD building envelopes for the west and east sites throughout the year.

The Hunter Street OSD is within a highly dense and extensively overshadowed urban environment. The intent is to utilise and maintain sun access, wherever possible.

Public open spaces in summer see a balanced combination of shaded and partially exposed areas, creating diversity of street typology for activation.

The indicative OSD building envelope for the east site receives high levels of direct sunlight to the upper north east and north west elevations throughout the year. To balance solar exposure across the upper and lower elevations, the facade design should integrate climate responsive measures to optimise performance.

The indicative OSD building envelope for the west site receives good levels of direct sunlight to the north elevation throughout the year. The west elevation is extensively overshadowed in winter by neighbouring development on George Street.

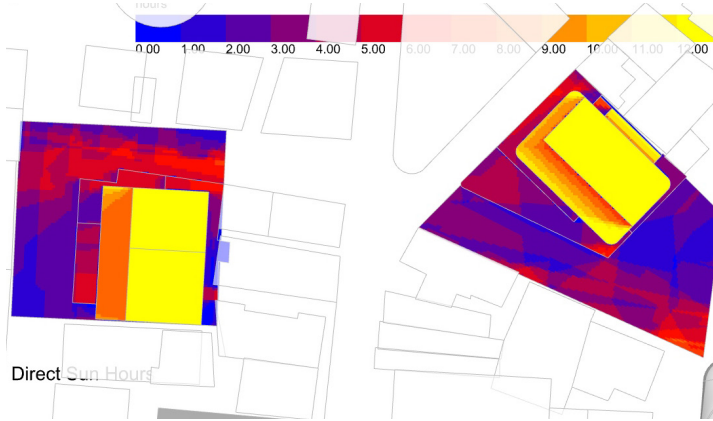


Figure 3-6 | Sun hours analysis - summer; plan view

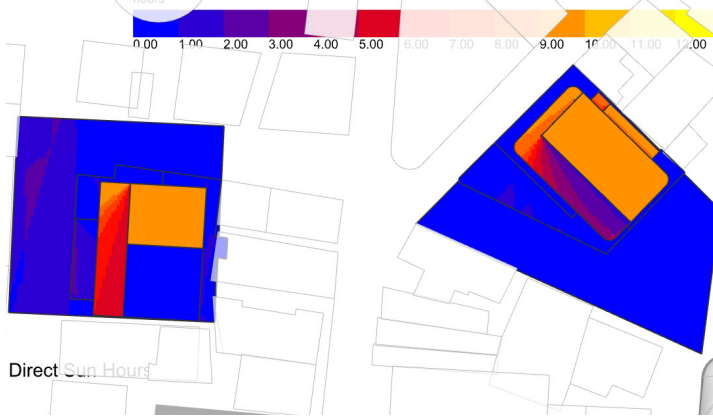


Figure 3-7 | Sun hour analysis - winter; plan view

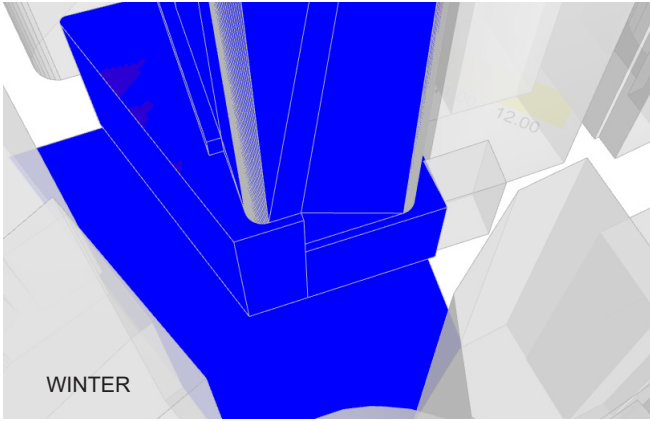
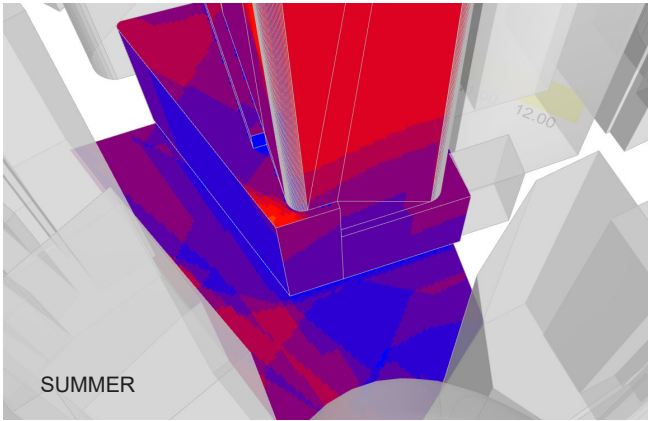
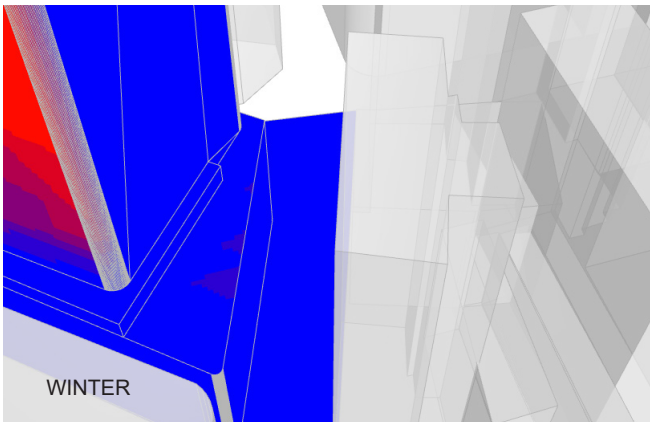
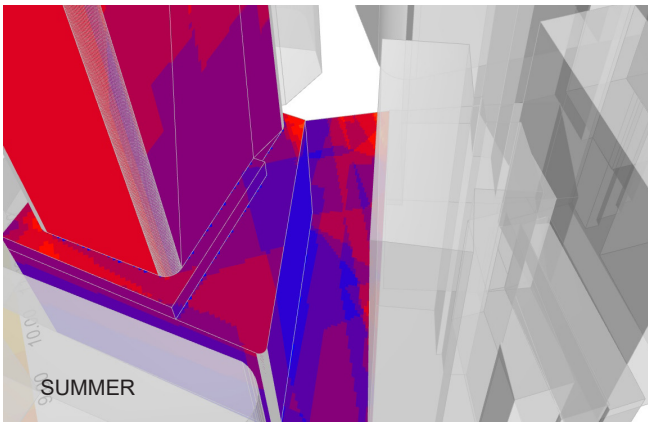


Figure 3-8 | Sun hours analysis - indicative OSD building envelope - east site; [top left and right] south west; [bottom left and right] east

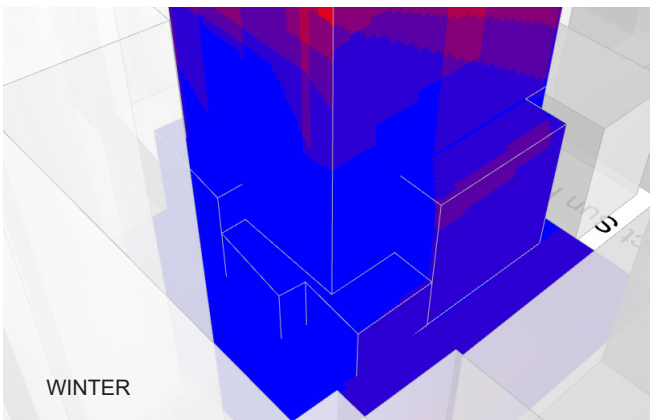
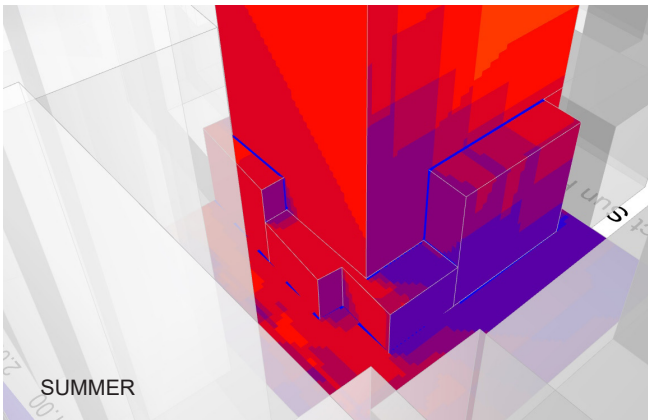
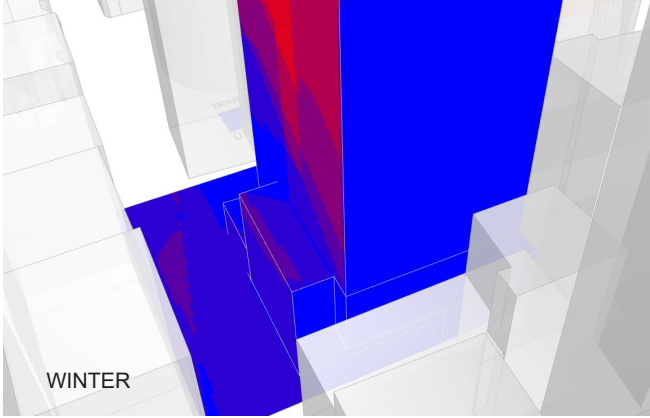
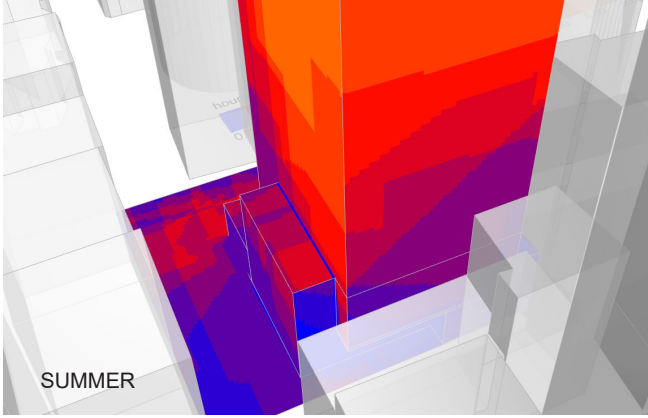


Figure 3-9 | Sun hours analysis - indicative OSD building envelope - west site; [top left and right] south west; [bottom left and right] east

3.5 Visual Comfort

Indoor environmental quality and access to daylight is essential to showcase design excellence. Visual comfort analysis has been conducted to identify whether the indicative OSD buildings envelopes receive good levels of daylight access.

The indicative OSD building envelopes experience a varying daylight access performance at lower and upper levels, primarily due to overshadowing from adjacent buildings (see Figures 3-10 and 3-11).

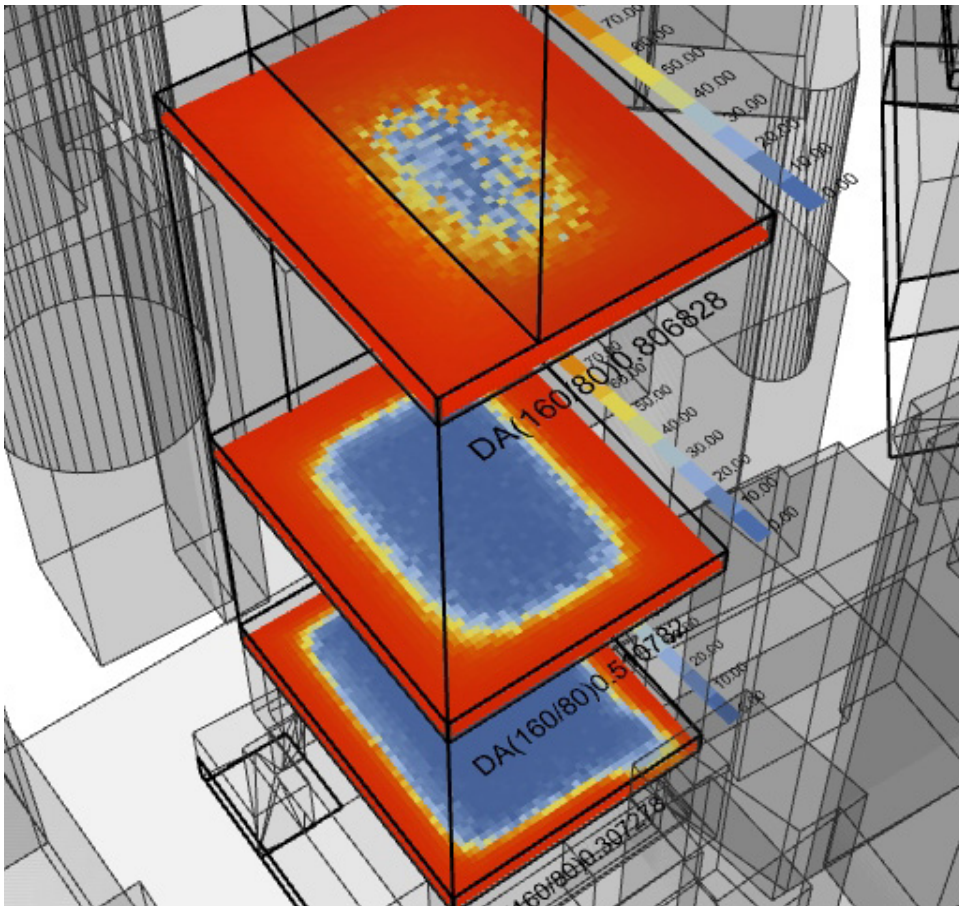


Figure 3-10 | Daylight Autonomy - indicative OSD building envelope - east site

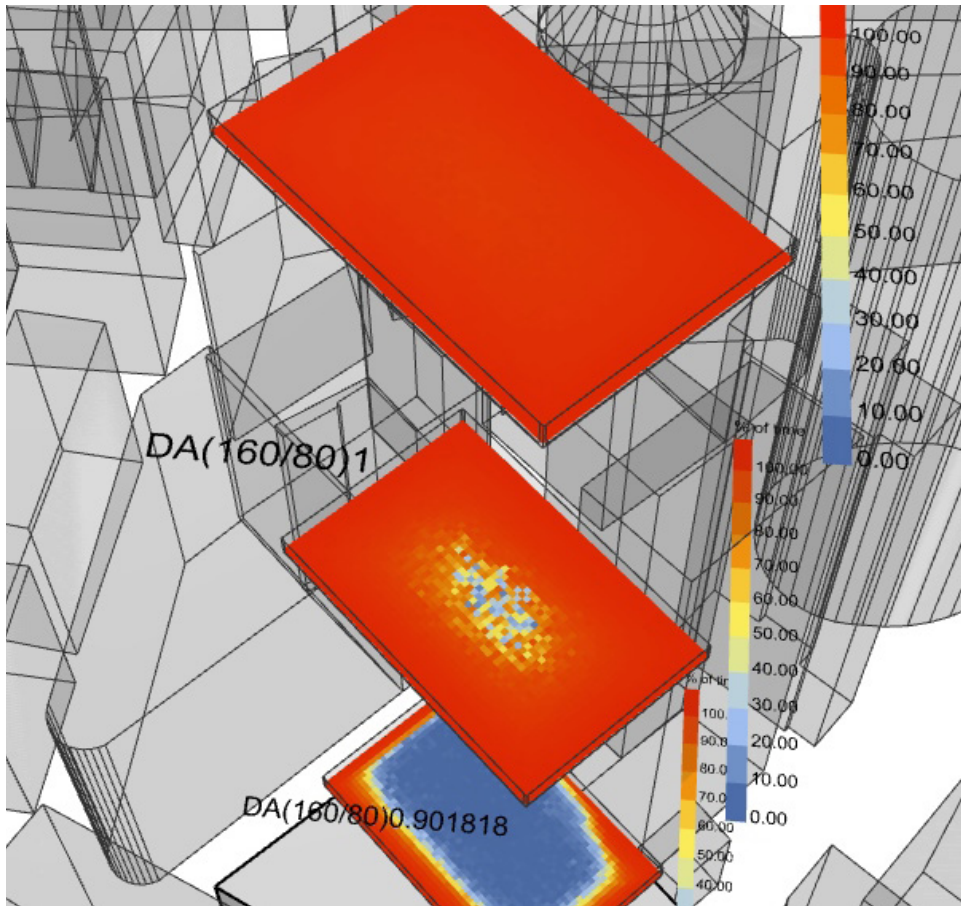


Figure 3-11 | Daylight Autonomy - indicative OSD building envelope - west site

4 Sustainability Rating Strategy

4.1 General

A sustainability rating strategy has been established for SMW packages and station development. Sustainability rating requirements are correlated across a range of current and emerging regulatory, policy, statutory planning and Sydney Metro requirements, and market recognised standards, drivers and trends.

Minimum sustainability rating targets for the Hunter Street OSD and their justification are outlined in Table 4-1. Together with the drivers presented in Section 2, these minimum sustainability rating targets meet and exceed the best practice energy performance nominated in clause 7.25A Sustainable development in Central Sydney tower cluster areas of the Sydney LEP 2012 (Amendment No 64).

An indicative energy and water approach is set out in Sections 5 and 6, respectively.

Sustainable transport considerations are presented in Section 7.

The indicative design response is summarised in Section 8.

A Preliminary Green Star Buildings Scorecard is provided in Appendix A for guidance only.

Table 4-1 | Sustainability rating strategy setting out the minimum target ratings for the Hunter Street OSD

PACKAGE	ASSETS	MINIMUM RATING TARGETS	JUSTIFICATION
Hunter Street OSD	East and West buildings – Commercial office	– 6 star Green Star Buildings v1	Guidance on sustainable development - City of Sydney Council PCA Premium Grade office quality guidelines
		– 6 star NABERS Energy for Offices (base building) (Commitment Agreement) (without GreenPower)	Green Star Buildings, Credit 22 Energy Use, Exceptional Performance, NABERS Commitment Agreement Pathway
		– 4.5 star NABERS Water for Offices	Guidance on sustainable development, City of Sydney Council
		– 5 star NABERS Water for Offices (stretch target)	Verifiable performance, see Section 6

4.2 Climate Positive

The Green Building Council of Australia (GBCA) is helping to drive the transformation of the built environment to a climate positive future. The science of climate change and an understanding of how the built environment needs to act is captured in the role and targets set in Green Star Buildings.

The Climate Positive Pathway sets a Whole Life Carbon Vision that leverages the World Green Building Council's (WorldGBC's) Advancing Net Zero program that is working toward total sector decarbonisation by 2050.

Referring to Figure 4-1, the scope of the World Green Building Council's Whole Life Carbon Vision considers the complete life cycle modules of those defined in EN 15978, i.e. Upfront Carbon (A1-A5), Use Stage Embodied Carbon (B1-B5), Operational Carbon (B6) and End of Life Carbon (C1-C4).

The Climate Positive Pathway established under the Green Star Buildings tool sets out provisions to:

- Reduce
 - Drive credible reductions in Upfront Carbon and Operational Carbon
- Eliminate
 - Avoid locking in fossil fuels
 - Install systems that use low impact refrigerants
 - Electrify all energy uses and purchase 100% renewable electricity
- Compensate
 - Offset operational greenhouse gas (GHG) emissions that cannot be immediately eliminated (e.g. refrigerants and standby generator test diesel fuel use)

- Neutralise
 - Neutralise GHG emissions that cannot be eliminated (e.g. product and material manufacturing, use and disposal, construction activities, water supply, wastewater treatment, and waste transport and treatment) through short-term nature-based solutions, and long-term carbon capture and storage technologies
- Assuming certification will occur after 1 January 2030, the following Climate Positive Pathway requirements will apply to the Hunter Street OSD under a 6 star Green Star pathway:
1. Credit 21 Upfront Carbon Emissions | Exceptional Performance | 40% reduction in upfront carbon emissions over a standard practice building
 2. Credit 22 Energy Use | Exceptional Performance | NABERS Commitment Agreement Pathway - 6 star NABERS Energy
 3. Credit 23 Energy Source | Minimum Expectation | preparation of a Zero Carbon Action Plan (ZCAP)
 4. Credit 23 Energy Source | Exceptional Performance | 100% of the building's energy comes from renewables
 5. Credit 24 Other Carbon Emissions | Credit Achievement | high GWP refrigerants are eliminated or offset
 6. Credit 24 Other Carbon Emissions | Exceptional Performance | 100% of residual embodied emissions are offset

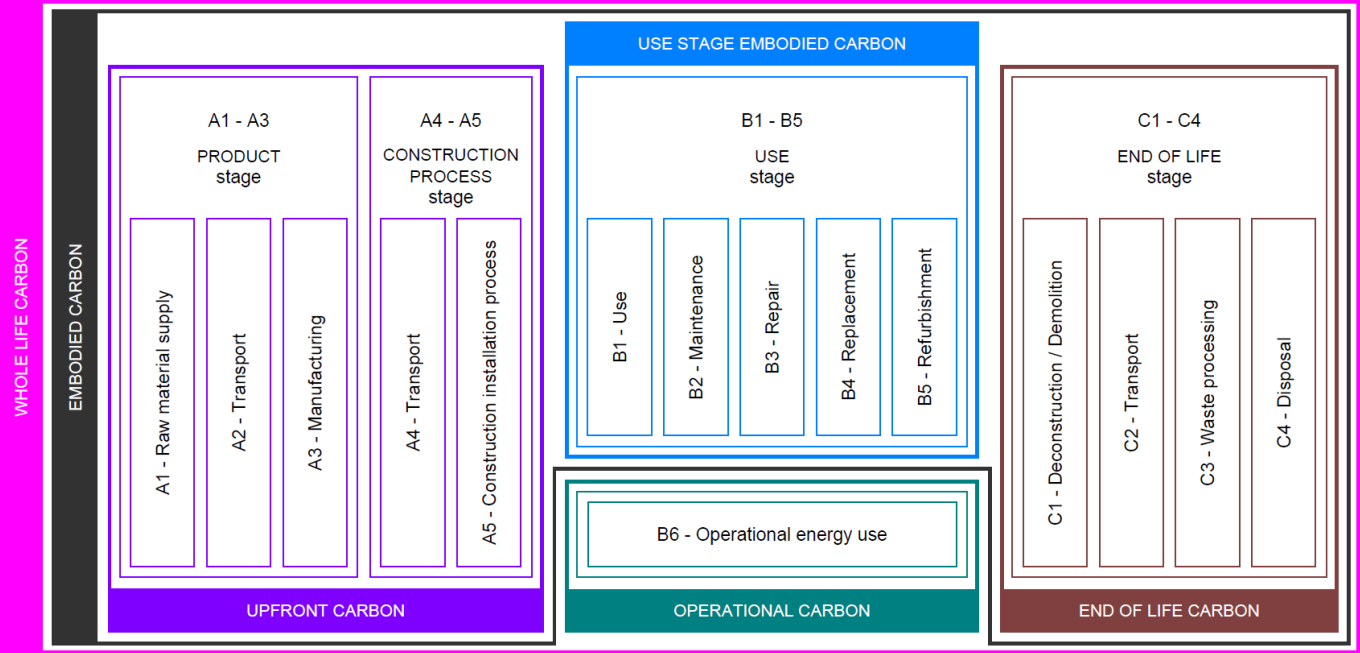


Figure 4-1 | Scope of the World GBC's Whole Life Carbon Vision

5 Energy Strategy

5.1 Energy Performance

Operational energy performance is a major contributor to the building life cycle carbon footprint.

The indicative OSD has been evaluated against the nominated sustainability rating targets detailed in Table 4-1 to verify the energy performance.

Preliminary building energy models have been developed in accordance with NABERS protocols for the indicative East and West OSD sites.

A minimum 6 star NABERS Energy for Offices target has been established for the Hunter Street OSD. The indicative OSD design was found to meet this energy performance target based the nominated passive and active design measures presented in Table 5-1. The nominated measures are only intended to provide guidance for future design development by others.

Figures 5-1 and 5-2 presents the following for indicative East and West OSD sites, respectively:

- Predicted monthly energy consumption by end use
- Predicted annual energy performance against the 6 star NABERS Energy budget, including 15% margin

Table 5-1 | Passive and active design measures provided for guidance of future design development

PASSIVE DESIGN MEASURES	ACTIVE DESIGN MEASURES
<ul style="list-style-type: none">- Upper levels (where subject to a high to medium solar exposure)<ul style="list-style-type: none">• 60% window to wall ratio (average for all levels and elevations)• Glazing system U-value 2.8 W/m².K SHGC 0.23• 600mm deep horizontal shading at 900mm and 2400mm above floor level applied to the north, east and west elevations• 600mm deep vertical shading to the west elevation at an interval aligned with the curtain wall module width- Lower levels (where subject to a low solar exposure)<ul style="list-style-type: none">• 70% window to wall ratio (average for all levels and elevations)• Glazing system U-value 2.8 W/m².K SHGC 0.25- Envelope wall system R-value 1.5 m².K/W (total R-value 3.5 m².K/W)- Spandrel system R-value 1.0 m².K/W (total R-value 3.5 m².K/W)- Envelope roof total R-value 5.0 m².K/W- Envelope floor total R-value 2.0 m².K/W	<ul style="list-style-type: none">- Internal temperature setpoint of 22.5 ± 1.5 °C for all office zones- All other internal conditions and operational profiles are in line with NABERS protocols- Active chilled beam (ACB) with constant air volume (CAV) system to the perimeter office zones- Variable air volume (VAV) system to the centre office zones- Central air handling plant (including economy cycle and demand control ventilation) separately serving the hybrid ACB and VAV heating, ventilation and air conditioning (HVAC) systems- 15% improvement in the energy efficiency ratio (EER) over Part J5.10 Refrigerant chillers (NCC 2019, Section J Energy efficiency) for water-cooled chiller plant serving comfort cooling systems- A seasonal coefficient of performance (COP) > 3.5 for air-to-water polyvalent heat pump plant serving space heating and domestic hot water heating systems, and comfort cooling low load/peak load conditions- Rooftop solar PV systems to be maximised to deliver approximately 3-4% of the total annual energy consumption (verified in coordination with the indicative OSD)

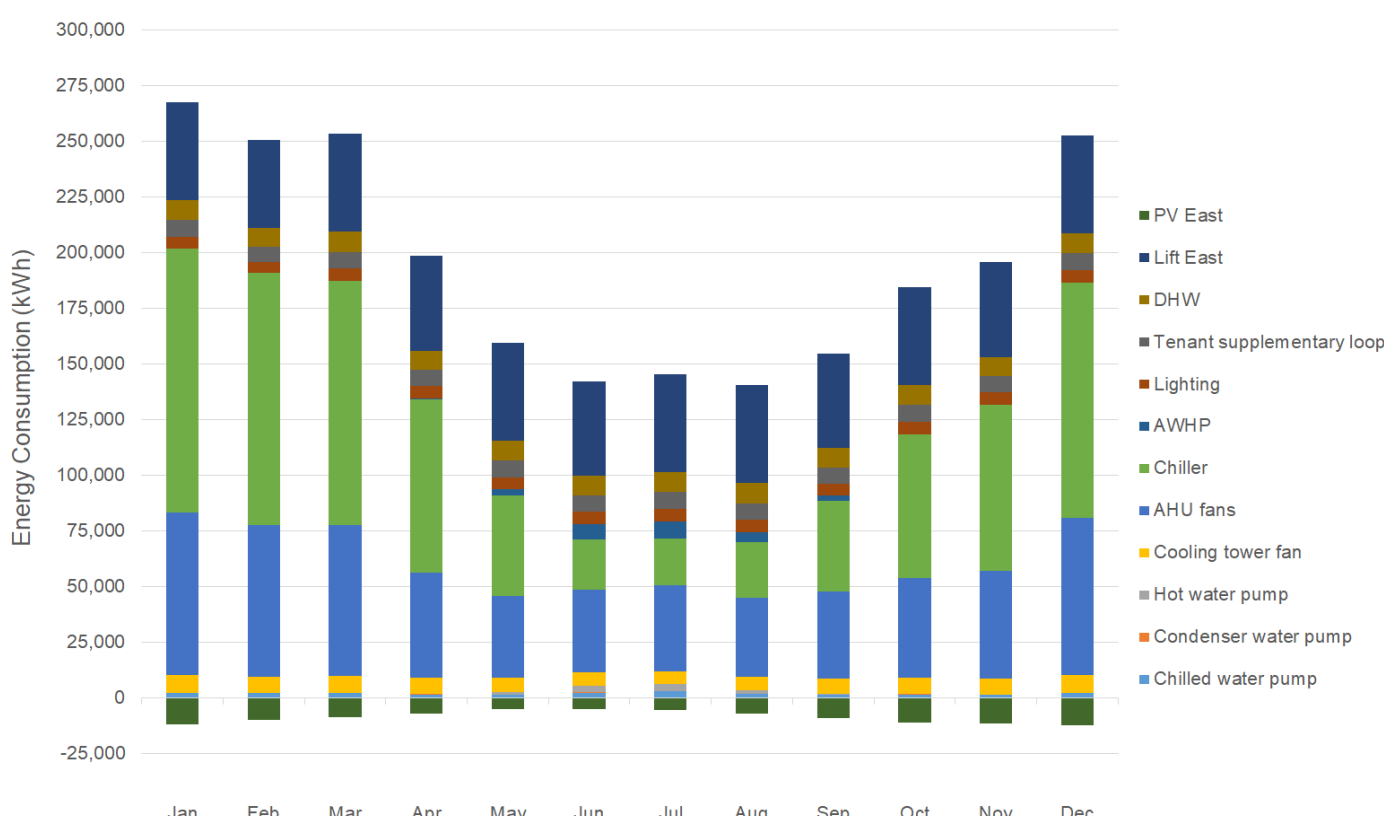
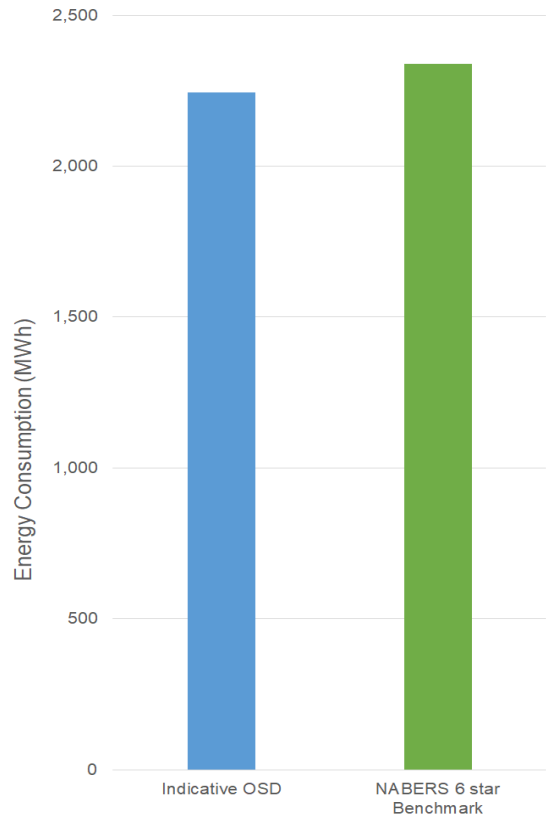


Figure 5-1 | East site energy consumption breakdown. [Right] annual consumption vs NABERS 6 star benchmark. [Left] monthly energy consumption broken down by use.

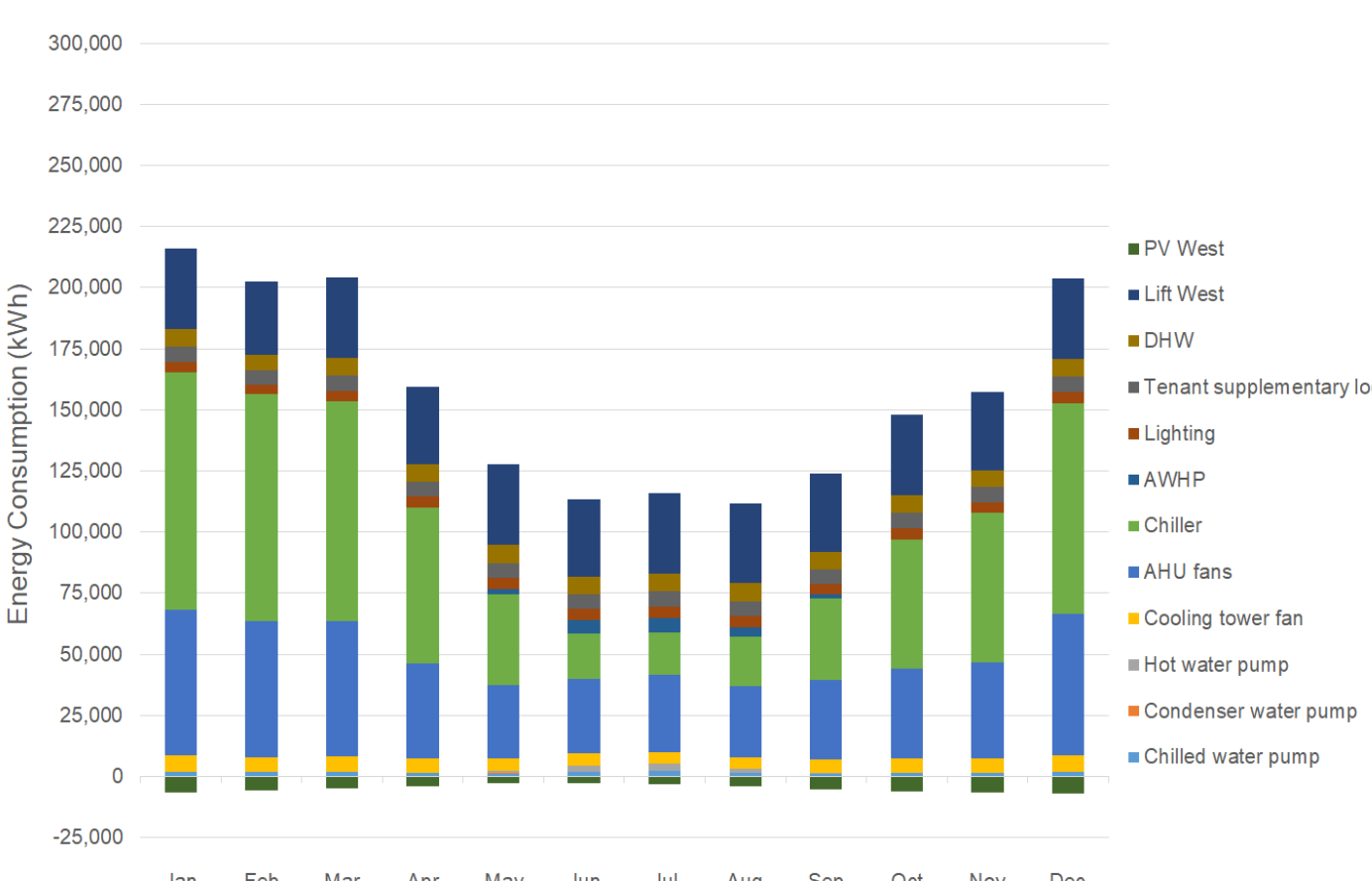
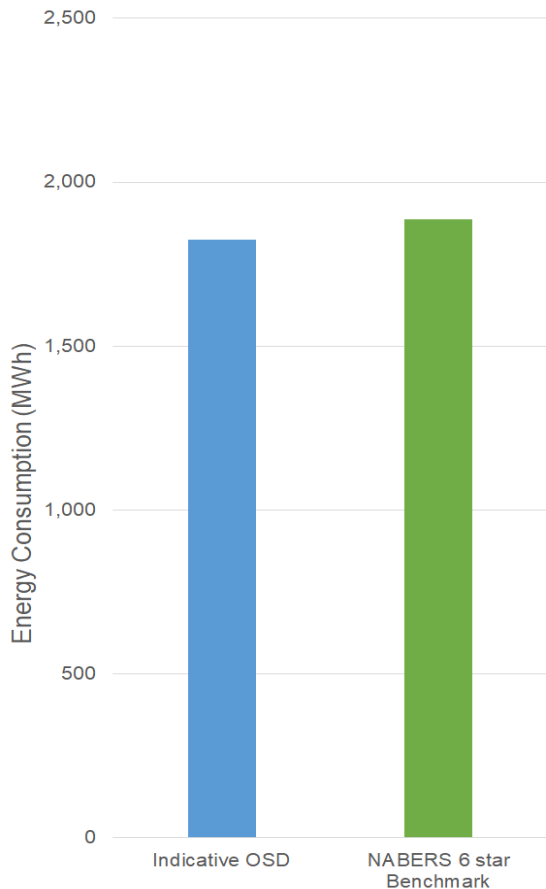


Figure 5-2 | West site energy consumption breakdown. [Right] annual consumption vs NABERS 6 star benchmark. [Left] monthly energy consumption broken down by use.

6 Water Strategy

6.1 Water Performance

To support water resilience, buildings must integrate water efficiency measures and make use of alternative water sources to reduce the demand for potable water.

The indicative OSD has been evaluated against the nominated sustainability rating targets detailed in Table 4-1 to verify the water performance.

The indicative OSD has been assessed against the NABERS Water for Offices and Green Star Buildings (Credit 25 Water Use) rating systems.

Preliminary building water balance analysis has been carried out in accordance with the related protocols of each rating system.

The indicative OSD was found to meet the NABERS annual potable water consumption targets presented in Table 6-1 based on the water efficiency measures presented in Table 6-2. The nominated measures are only intended to provide guidance for future design development by others.

Figures 6-1 and 6-2 visually presents the indicative performance against the NABERS water benchmarks and water balance for the indicative East and West OSD sites, respectively.

Table 6-1 | NABERS Water budgets for each site

SITE	TARGET / BUDGET
East	<div>– 4.5 star</div> <div>– 40,418 kL/year</div>
West	<div>– 4.5 star</div> <div>– 34,045 kL/year</div>

Table 6-2 | Water efficiency measures incorporated for guidance of future design development

WATER EFFICIENCY POTENTIAL PATHWAYS
<div>– Toilets - 5 star WELS rating</div> <div>– Urinals - 5 star WELS rating</div> <div>– Wash hand basin taps - 6 star WELS rating</div> <div>– Kitchen taps - 6 star WELS rating</div> <div>– Showers - 4 star WELS rating</div> <div>– Dishwashers - 5 star WELS rating</div> <div>– Dual plumbing systems serving all non-potable water demands, including toilet and urinal flushing, landscape irrigation and make-up water for heat rejection systems</div> <div>– 25 kL rainwater tank and treatment system for rainwater harvesting and reuse to meet a proportion of the non-potable water demands</div> <div>– Future ready connection for a recycled water network, including future ready space provision for a recycled water tank</div> <div>– Closed circuit cooler (hybrid cooling tower) plant for heat rejection serving base building and tenant supplementary loop</div> <div>– Landscape design - total average crop coefficient less than 0.6</div> <div>– Landscape irrigation - subsurface drip irrigation - 90% system efficiency</div> <div>– Fire protection system - water is not expelled during testing</div>

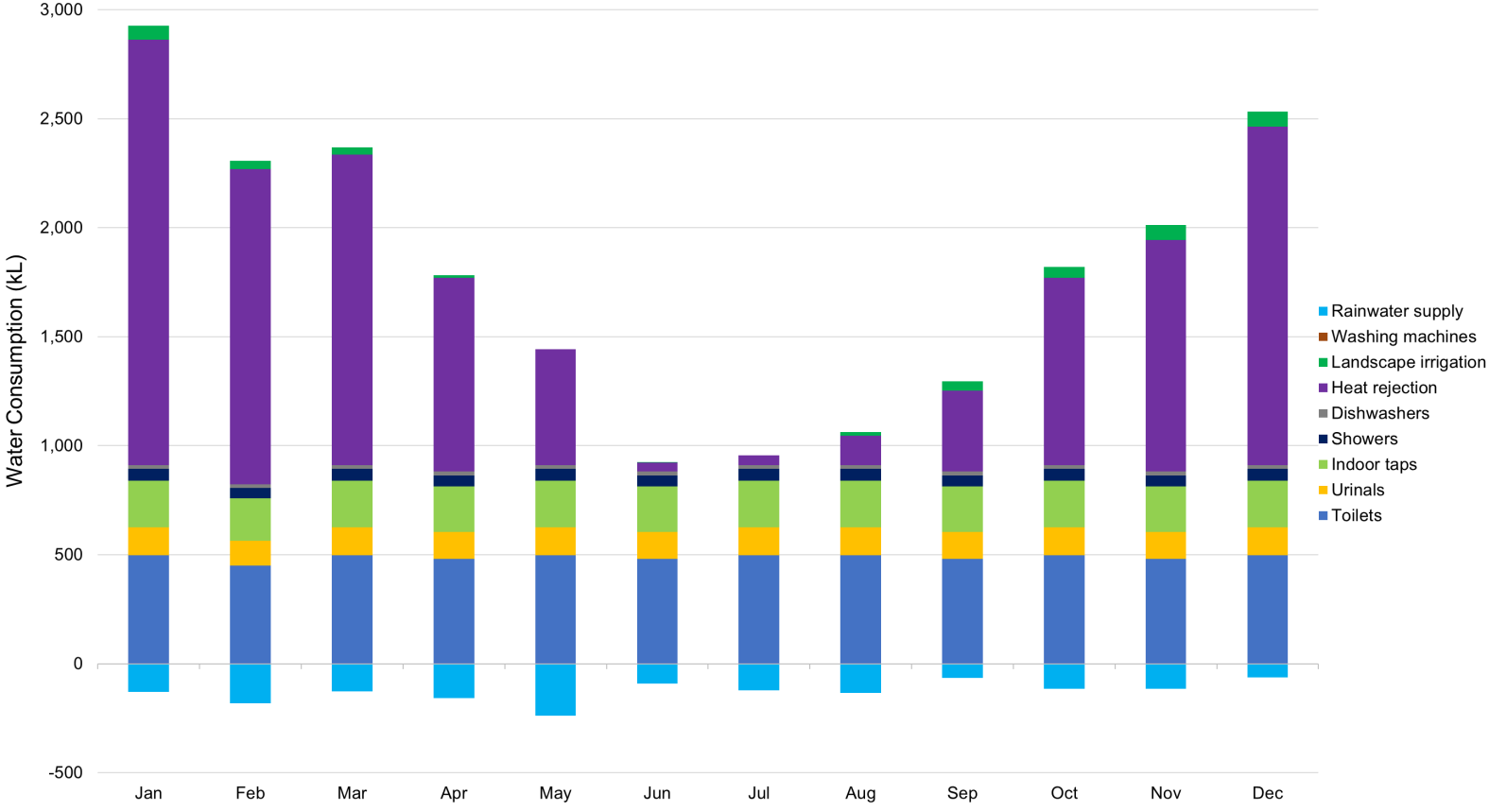
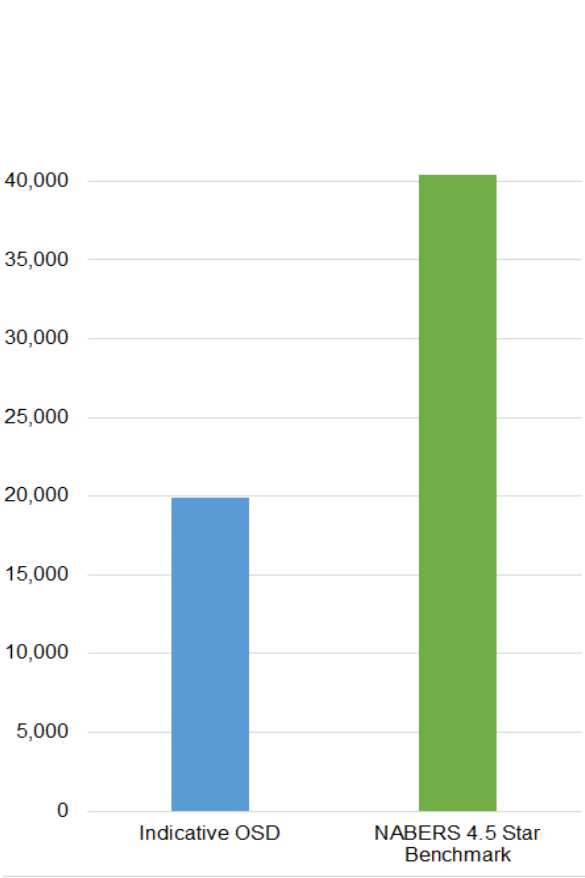


Figure 6-1 | East site water consumption breakdown; [right] annual consumption vs NABERS 4.5 star benchmark; [left] monthly water consumption broken down by end use

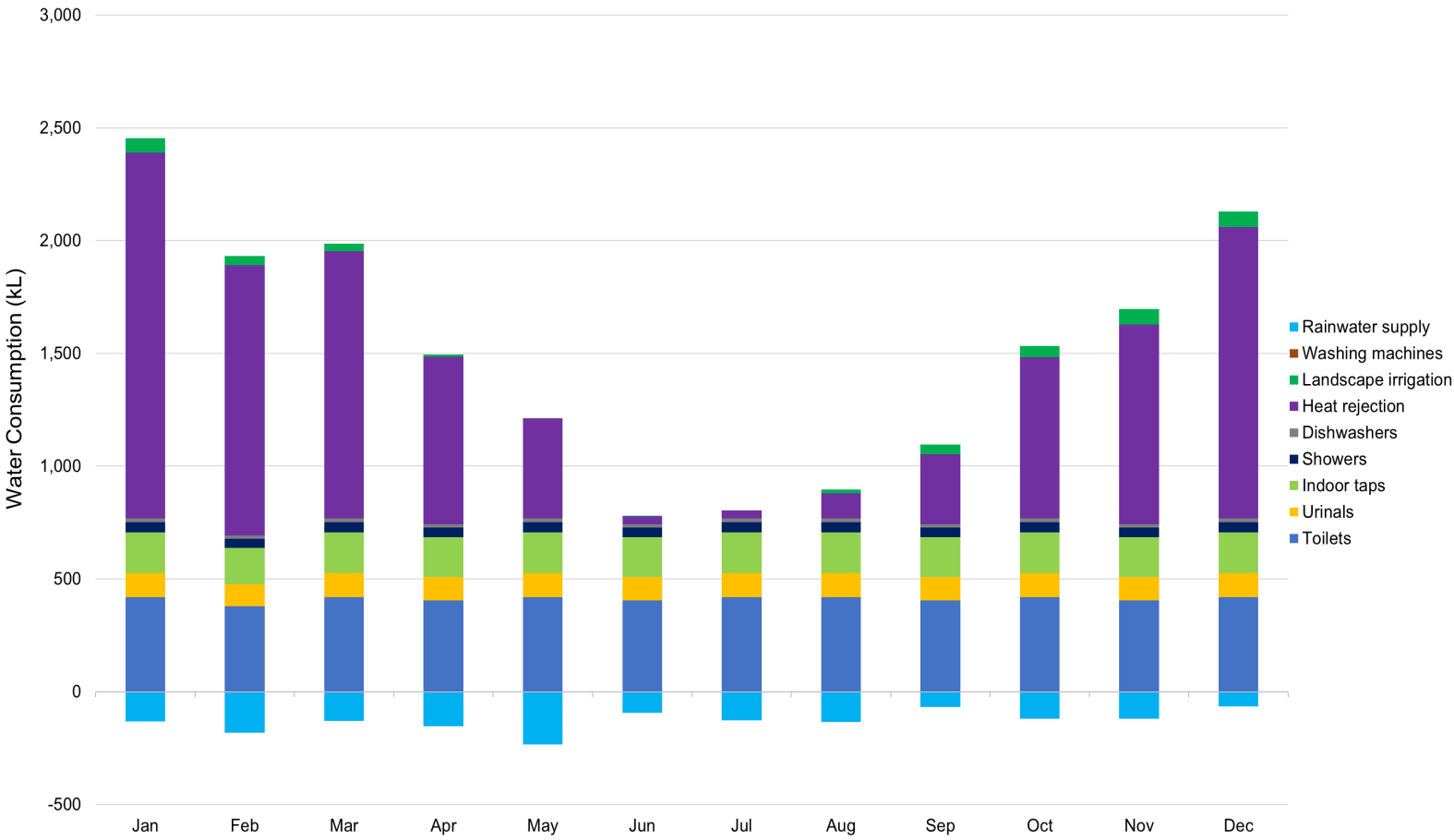
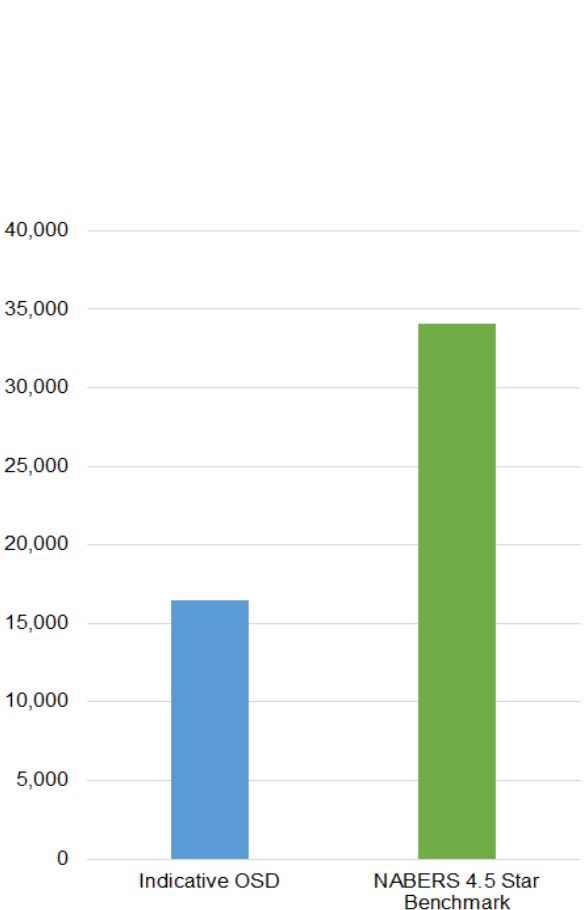


Figure 6-2 | West site water consumption breakdown; [right] annual consumption vs NABERS 4.5 star benchmark; [left] monthly water consumption broken down by end use

7 Sustainable Transport

7.1 Movement and Place

The Council has set provisions that:

- Prioritise active transport modes and improve the permeability of the pedestrian network
- Reduce private vehicle use and encourage active, shared and public transport use

Relevant Sydney DCP 2012 design controls include:

- One (1) carshare parking space per 30 car spaces must be provided for any office, business or retail premises
- One (1) occupant bicycle parking space per 150 m² and one (1) visitor bicycle parking space per 400 m² of floor space of commercial development must be provided
- One (1) occupant bicycle parking space per 250 m² and two (2) + one (1) visitor bicycle parking space per 100 m² over 100 m² of floor space of retail development must be provided
- One (1) personal locker for each bike parking space for non-residential developments
- One (1) shower and change cubicle for up to 10 bike parking spaces
- Two (2) shower and change cubicle for up to 11 to 20 or more bike parking spaces
- Two (2) additional shower and change cubicle for each additional 20 bike parking spaces of part thereof

To encourage workers and visitors to use active, low carbon and public transport options instead of private vehicles, the criteria set out in Green Star Buildings (Credit 27 Movement and Place) has been set as a benchmark for the indicative Hunter Street OSD.

These criteria include:

- Minimum Expectation
 - The building must include showers and changing facilities for building occupants
 - These facilities must be accessible, inclusive and located in a safe and protected space
- Credit Achievement
 - Access for cyclists and the provision of bicycle parking facilities must be prioritised
 - A Sustainable Transport Plan must be prepared and implemented
 - Electric vehicle (EV) charging capabilities must be integrated
 - Transport options that reduce the need for private fossil fuel powered vehicles must be prioritised
 - The building's design and location must encourage walking

7.2 End of Trip Facilities

Table 7-1 details the various buildings uses, and associated areas and population, and the end of trip facilities requirements (including showers, lockers and bike racks).

Commercial and retail occupancies are based on Table D1.13 of NCC 2019.

The relevant Sydney DCP 2012 design controls

and Green Star Buildings criteria have been applied when determining the required number of showers, lockers and bicycle parking provision. Where there is an inconsistency, the more onerous requirement has been met. Table 7-2 identifies the end of trip facilities driver for each building and its uses.

End of Trip facilities has been coordinated with the *Transport and Accessibility Impact Assessment*.

Table 7-1 | Building uses, and associated areas and population, and the number of showers, lockers and bike racks required

USE TYPE	EAST		WEST	
	Commercial	Retail	Commercial	Retail
AREA	81,769 m ²	1,454 m ²	65,914 m ²	933 m ²
POPULATION	8,177	485	6,591	311
REQUIRED SHOWERS	75	5	61	5
REQUIRED LOCKERS	1,023	61	824	39
REQUIRED BIKE RACKS	750	22	605	15
RECOMMENDED BIKE RACKS	760	30	610	20

Table 7-2 | End of trip facilities driver

USE TYPE	EAST		WEST	
	Commercial	Retail	Commercial	Retail
SHOWERS	DCP	Green Star	DCP	Green Star
LOCKERS	Green Star	Green Star	Green Star	Green Star
BIKE RACKS	DCP	DCP	DCP	DCP

7.3 Private Vehicle Use

The Green Star Movement and Place calculator has been applied to assess emissions reduction from transport by encouraging active and public transport use to reduce vehicle kilometres travelled. Table 7-3 details the inputs used in the Green Star Buildings Movement and Place calculator for both the East and West indicative OSD and a baseline based on 2016 Census results.

Table 7-3 | Movement and Place calculator inputs

	BASELINE	PROPOSED
Work weeks	48	48
Avoided trips	2%	2%
Average trip length	18.26 km	18.26 km

Work weeks refer to the number of normal working weeks per annum for employees. This is assumed to be 48 weeks (assuming a typical 4-week or 20-day annual leave provision).

Avoided trips refer to the tendency of employees to work from home or otherwise not take a commuting trip during a work week. This avoided trips percentage for the proposed buildings is based on Census data. It is expected that the proposed avoided trips percentage will increase once COVID and flexible working trends are better understood.

Average trip length is based on Statistical Area Level 2 (SA2) Census data for the development location. The baseline and proposed building average trip length is deemed equivalent.

Emissions intensity is based on the Green Star Movement and Place calculator, and assumes both Sydney Trains and Sydney Metro are net zero in operation.

Table 7-5 details the baseline, proposed and adjusted mode share for commercial building use for input to the Green Star Movement and Place calculator.

Baseline mode share data is based on 2016 Census data. Proposed mode share data are early estimates extracted from the *Transport and Accessibility Impact Assessment*. Adjusted mode share data is based on aspirational targets that aim to encourage active mode transport in support of Green Star criteria.

Assessing each building individually, the following targets were met when applying the adjusted mode share:

- Private vehicle use emissions reduction: 40%
- Active mode encouragement: 90%
- Vehicle Kilometres Travelled (VKT) reduction: 20%
- Amenity diversity: 10 amenities across five categories within 400m of the building

The required bicycle parking facilities to meet or exceed the 90% active mode encouragement are presented in Table 7-1. The calculation for bicycle parking provisions is heavily reliant on the baseline active mode share (bicycle and walking). Recommended bicycle parking is presented in the case where the proposed mode share are subject to change.

The proposed car parking provision of 35 spaces at each subject site is less than the LEP maximum rates set out in Table 7-4. Given the proximity of the subject site to a range of public transport links, the reduction in the number of spaces compared to the prior parking provisions is considered appropriate.

By providing a lower number of commercial and retail parking spaces than the LEP maximum, employees will be discouraged from using private vehicles for work commuting trips, catalysing a shift to sustainable transport modes and reducing impacts on the broader road network.

The sustainable transport initiatives and ready access to metro services drive private vehicle use emissions reductions of circa 70% and a VKT reduction of circa 75%.

7.4 Electric Vehicles

Located in the Sydney CBD, occupants have access to a diverse range of amenities, encouraging the walkability of the proposed sites. This is supported by the results from the Movement and Place calculator showing both sites meet the amenity diversity criteria outlined above.

This presents a compelling sustainable transport response for the indicative OSD.

Table 7-4 | Car parking spaces, inclusive of car share provision

LAND USE	MAXIMUM SPACES		PROPOSED SPACES	
	WEST	EAST	WEST	EAST
COMMERCIAL	74	72	70	
RETAIL	1	1	0	0
CAR SHARE	2	2	1	1

Table 7-5 | Commercial mode share for different scenarios

MODE	COMMERCIAL		
	BASELINE	PROPOSED	ADJUSTED
Train	53.18%	36.17%	33.64%
Bus	22.01%	17.60%	16.38%
Ferry	3.01%	3.01%	2.80%
Tram	0.36%	3.92%	3.65%
Metro	0.00%	28.95%	26.93%
Car Driver	12.62%	3.03%	3.03%
Car Passenger	1.89%	0.38%	0.38%
Motorbike	0.00%	0.00%	0.00%
Bicycle	1.43%	1.43%	9.17%
Walk	5.52%	5.52%	4.02%

To ensure the proposed OSD can support the transition to electric vehicles, the following initiatives are addressed within the context of electrical infrastructure, and EV ready and EV capable capacity:

- EV ready
 - EV charging points to at least 5% of all car parking spaces
 - EV charging points to all car share parking spaces (in addition to the 5% provided)
- EV capable
 - Electrical infrastructure and a load management plan prepared to allow for future installation of EV charging to 25% of all car parking spaces (including the EV ready provision)
 - A dedicated, safe, unobstructed route from the electrical supply point that allows for the future provision of all necessary electrical cabling to all car parking spaces without the need for substantial builders work in connection to the electrical cabling installation

8 Indicative Design Response

8.1 Basis of ESD Design Guidelines

The indicative Hunter Street OSD will target the following minimum sustainability rating targets:

- 6 star Green Star Buildings
- 6 star NABERS Energy for Offices rating (base building) (Commitment Agreement) (without GreenPower)
- 4.5 star NABERS Water for Offices

The minimum sustainability rating targets nominated meet and exceed the best practice energy performance nominated in clause 7.25A Sustainable development in Central Sydney tower cluster areas of the Sydney LEP 2012 (Amendment No 64).

Further to the minimum 6 star Green Star Buildings rating target, the following Climate Positive Pathway has been established for the Hunter Street OSD:

- Achieve a 40% reduction in upfront carbon emissions over a standard practice building
- Prepare a Zero Carbon Action Plan (ZCAP) to transition any residual fossil fuel systems to fossil fuel-free systems and their end of life
- Source 100% of the building's electricity from renewables
- Eliminate or offset high GWP refrigerants
- Offset 100% of residual embodied emissions

Passive and active design measures to reduce energy use intensity have been presented in Section 5 as guidelines for the indicative OSD. These also leverage facade optimisation to balance daylight access and visual comfort, thermal comfort and energy efficiency within the context of the indicative OSD.

Electrification of all energy uses of the buildings and 100% renewable electricity is considered. The capacity of on-site renewable energy systems has been evaluated and are expected to deliver approximately 3-4% of the total annual energy consumption. Passive and active design measures, and the deployment of advanced technologies aim to minimise the need for infrastructure augmentation and reduce operational costs.

The indicative OSD building envelope for the east site receives high levels of direct sunlight to the upper north east and north west elevations throughout the year. To balance solar exposure across the upper and lower elevations, the facade design should integrate climate responsive measures to optimise performance.

The indicative OSD building envelope for the west site receives good levels of direct sunlight to the north elevation throughout the year. The west elevation is extensively overshadowed in winter by neighbouring development on George Street.

Richard Johnson Square, adjacent to the Hunter Street East site, maintains good levels of direct morning sunlight throughout summer.

The urban massing acts to shade the public open spaces on summer afternoons, enhancing outdoor comfort and liveability.

Water efficiency measures and the use of alternative water sources to reduce the demand for potable water have been presented in Section 6 as guidelines to support water resilience.

Dual plumbing systems should be installed to serve all non-potable water demands, including toilet and urinal flushing, landscape irrigation and make-up water for heat rejection systems. This can be supported by the integration of 25 kL rainwater tank and treatment systems for rainwater harvesting and reuse to meet a proportion of the non-potable water demands. Future ready connections for a recycled water network should be provisioned, including future ready space provision for a recycled water tank.

Sustainable transport initiatives have been evaluated in Section 7 to:

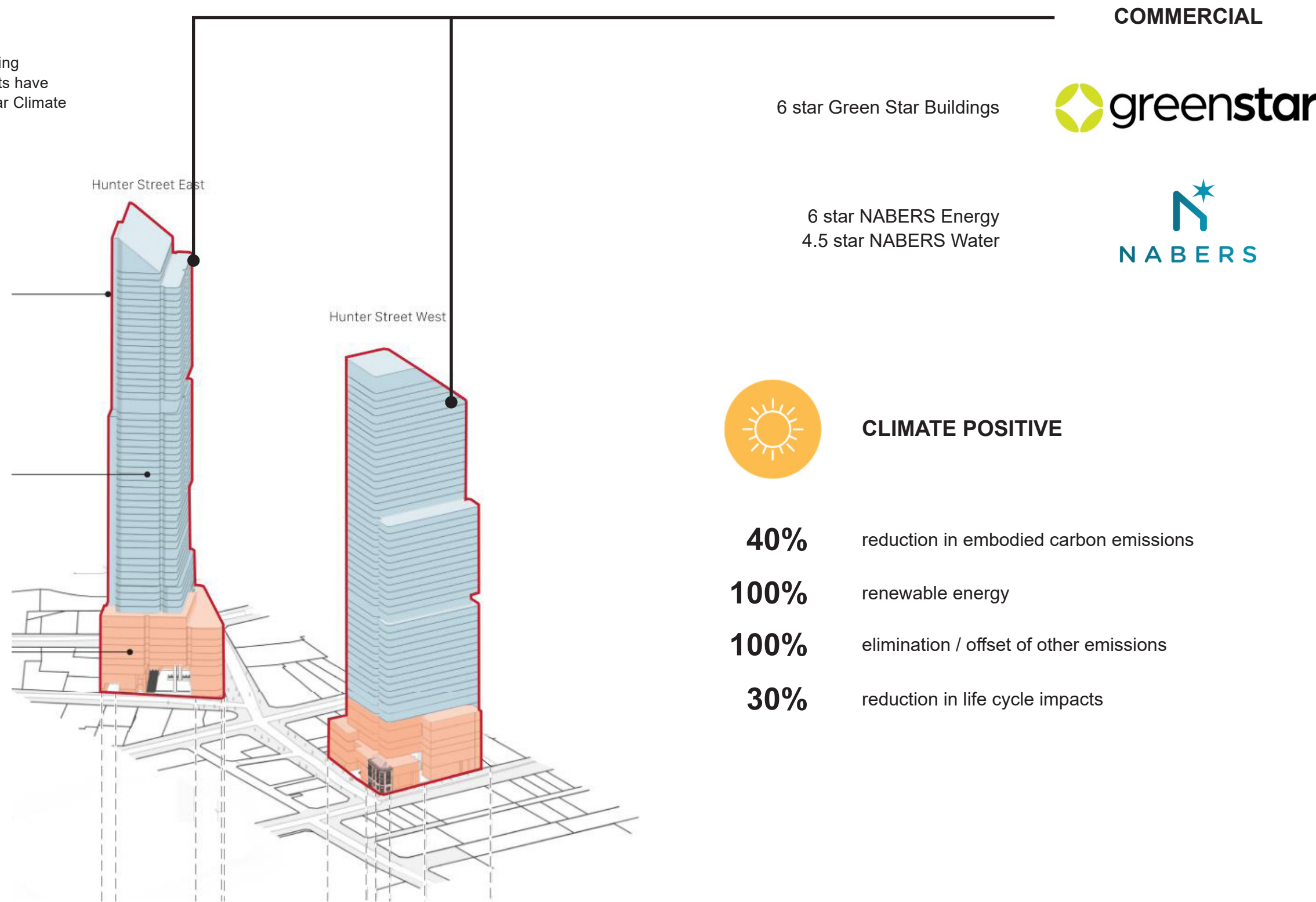
- Reduce the emissions attributed to private vehicle use by 40% and vehicle kilometres travelled by 20%
- Encourage walkability by demonstrating there are a range of diverse amenities within 400m
- Improve active mode uses by 90%

In alignment with Green Star requirements, at least 90% of construction and demolition waste should be diverted from landfill and a waste management plan developed to:

- Identify, quantify and classify the likely waste streams generated during construction and operation
- Promote responsible source separation to reduce the amount of waste that goes to landfill by implementing convenient and efficient waste management systems

8.2 ESD Strategy

In combination with the Sustainability Rating Strategy, the following performance targets have been identified to align with the Green Star Climate Positive Pathway



Appendices

Sydney Metro West

Appendix A Preliminary Green Star Buildings Scorecard

The purpose of this preliminary assessment is to demonstrate that the Green Star target rating is achievable within the indicative Hunter Street OSDs.

Date	14.12.2021
Revision	1.0
Author	Alan Davis
Tool	v1 Rev B

	Green Star rating	Minimum expectations met	Climate Positive Pathway met
West	6 star	Yes	Yes
East	6 star	Yes	Yes

Credit Title	Aim of Credit	Criteria No.	Criteria Title	Credit Requirements Summary <i>For full criteria refer to Green Star for Buildings Submission Guidelines</i>	Points Available	West 6 star
RESPONSIBLE						
Industry Development	The development facilitates industry transformation through partnership, collaboration and data sharing.	Credit Achievement; meet all three of the following criteria:				
		1.1	Green Star Accredited Professional	A Green Star AP must be contractually engaged as part of the core project team for the duration of the project.	1	1
		1.2	Financial Transparency	The project team discloses the cost of sustainable building practices of the project, including design, construction and documentation to the GBCA.		
		1.3	Marketing Sustainability Achievements	Information on the sustainability initiatives that the building targeted must be provided to enable it being featured on the GBCA's website. The project team must outline how the building will detail its sustainability achievements to its stakeholders (typical building occupants and visitors). The Green Star Certification achieved for the project must be prominently displayed in a location that is visible to the public.		
Responsible Construction	The builder's construction practices reduce impacts and promote opportunities for improved environmental and social outcomes.	Minimum Expectation; meet all four of the following criteria:				
		2.1	Environmental Management System	Builder must have an Environmental Management System (EMS) certified to a recognised standard, such as AS/NZS ISO 14001, BS 7750 or the European Community's EMAS.	Minimum Expectation	Minimum Expectation
		2.2	Environmental Management Plan	The Environmental Management Plan (EMP) must be project specific and cover the scope of construction activities. It must be implemented from the start of construction and include all works within the project scope.		
		2.3	Construction and Demolition Waste	Projects must divert at least 80% of construction and demolition waste from landfill. A Disclosure Statement is required from waste contractors and processing facilities outlining how the company and their reporting aligns with the <i>Green Star Construction and Demolition Waste Reporting Criteria</i> .		
		2.4	Sustainability Training	The Builder must provide the following training to 95% of all contractors and subcontractors present on site for at least three (3) days: • information on the sustainable building certification(s) sought, including: – the sustainability attributes of the building and their benefits; – the value of certification; and – the role site worker(s) play in delivering a sustainable building.		
		Credit Achievement; in addition to the Minimum Expectation, meet the following criteria:				
		2.5	Construction and Demolition Waste Diversion	Projects must divert at least 90% of construction and demolition waste from landfill. A Disclosure Statement is required from waste contractors and processing facilities outlining how the company and their reporting aligns with the <i>Green Star Construction and Demolition Waste Reporting Criteria</i> .	1	1

Credit Title	Aim of Credit	Criteria No.	Criteria Title	Credit Requirements Summary <i>For full criteria refer to Green Star for Buildings Submission Guidelines</i>	Points Available	West 6 star	East 6 star
Verification and Handover	The building has been optimised and handed over to deliver a high level of performance in operation.	Minimum Expectation; meet all three of the following criteria:					
		3.1	Metering and Monitoring	The building must have accessible energy and water metering for all common uses, major uses, and major sources. The meters must be connected to a monitoring system capable of capturing and processing the data produced by the meters. The meters and monitoring systems must: • Provide continual information (up to 1-hour interval readings); • Be commissioned and validated per the most current 'Validating Non-Utility Meters for NABERS Ratings' protocol, or National Measurement Institute (NMI) standards; • Be capable of identifying inaccuracies in the meter network and producing alerts. Inaccuracies are defined as those over meter tolerances based on their metering accuracy class (e.g. 'Class 1' meters shall not have inaccuracies of more than 1% due to metering accuracy class); and • Be sufficient to support future achievement of a NABERS rating.	Minimum Expectation	Minimum Expectation	Minimum Expectation
		3.2	Commissioning and Tuning	The project team must perform the following prior to construction: • Set environmental performance targets; and • Perform a services and maintainability review; During construction and practical completion: • Commission the building; and • Engage building tuning service provider; After practical completion: • Tune the building over the next 12 months.			
		3.3	Building Information	The project team must provide the following to the building owner: • Operations and maintenance information for all nominated building systems; • A building log book developed in line with CIBSE TM31: Building Log Book Toolkit before practical completion of the project; and • Building user information.			
		Credit Achievement; in addition to the Minimum Expectation, meet one or both (Building Services Value > \$20M) of the following criteria:					
		3.4	Soft Landings Approach	Implement Stages 1 - 4 of the <i>Soft Landing Framework Australia and New Zealand</i> .	1	1	1
		3.5	Independent Commissioning Agent	An ICA must be appointed to advise, monitor, and verify the commissioning and tuning of the nominated building systems throughout the design, tender, construction, commissioning and tuning phases.			
Responsible Resource Management	Operational waste and resources can be separated and recovered in a safe and efficient manner.	Minimum Expectation; meet all three of the following criteria:					
		4.1	Collection of Waste Streams	The building must provide bins or storage containers to building occupants to enable them to separate their waste. These bins must be labelled and easy to access, and evenly distributed throughout the building. They must also allow for segregating the following, as a minimum: • General waste going to landfill; • Recycling streams to be collected by the building's waste collection service, including: – Paper and cardboard; – Glass; and – Plastic; and • One other waste stream representing at least 1% of the total annual operational waste (by volume) of the building. This may include collecting any of the following waste types: organics, e-waste, batteries, etc. Any other single waste stream (except food waste) that represents more than 5% of total annual operational waste (by volume) must also be accounted for.	Minimum Expectation	Minimum Expectation	Minimum Expectation
		4.2	Dedicated Waste Storage Area	A dedicated area, or areas, for the storage and collection of the applicable waste streams must be provided. The storage area must be sized to accommodate all bins or containers, for all applicable waste streams, for at least one collection cycle. The storage area(s) must have easy and safe access by collection vehicles.			
		4.3	Sign-off by Waste Specialist and/or Contractor	A waste specialist and/or contractor must sign-off on the designs to confirm they are adequately sized and located for the safe and convenient storage and collection of the waste streams identified.			

Credit Title	Aim of Credit	Criteria No.	Criteria Title	Credit Requirements Summary <i>For full criteria refer to Green Star for Buildings Submission Guidelines</i>	Points Available	West 6 star	East 6 star
Responsible Procurement	The procurement process for all products, materials, and services follows best practice environmental and social principles.	Credit Achievement; meet both of the following criteria:					
		5.1	Risk and Opportunity Assessment	The project team must undertake a risk and opportunities assessment of its supply chain to identify environmental and social risks and opportunities. The project must provide a narrative on how it has actively addressed one risk and one opportunity.	1	1	1
		5.2	Responsible Procurement Plan	The project must develop and implement a plan to mitigate and manage identified risks and drive implementation of identified opportunities. This can be part of an organisational plan or a standalone plan.			
Responsible Structure	The building's structure is comprised of responsibly manufactured products.	Credit Achievement					
		6.1	Good Practice Products	50% of all structural components (by cost) meet a Responsible Products Value score of at least 10.	3	3	3
		Exceptional Performance					
Responsible Envelope	The building's envelope is comprised of responsibly manufactured products.	6.2	Best Practice Products or Good Practice Products	In addition to 6.1, one of the following must be met: • 10% of all products in the structure (by cost) meet a Responsible Products Value score of at least 15; or • 80% of all products in the structure (by cost) meet a Responsible Products Value score of at least 10.	2	2	2
		Credit Achievement					
		7.1	Good Practice Products	30% of all building envelope components (by cost) meet a Responsible Products Value score of at least 10.	2	2	2
Responsible Systems	The building's mechanical, electrical, hydraulic and transport systems are comprised of responsibly manufactured products.	Exceptional Performance					
		7.2	Best Practice Products or Good Practice Products	In addition to 7.1, one of the following must be met: • 10% of all products in the building envelope (by cost) meet a Responsible Products Value score of at least 15; or • 60% of all products in the building envelope (by cost) meet a Responsible Products Value score of at least 10.	2		
		Credit Achievement					
Responsible Finishes	The building's internal finishes are comprised of responsibly manufactured products.	8.1	Good Practice Products	20% of all active building systems (by cost) meet a Responsible Products Value score of at least 6.	1	1	1
		Exceptional Performance					
		8.2	Best Practice Products or Good Practice Products	In addition to 8.1, one of the following must be met: • 5% of all active building systems (by cost) meet a Responsible Products Value score of at least 11; or • 35% of all active building systems (by cost) meet a Responsible Products Value score of at least 6.	1		
Responsible Finishes	The building's internal finishes are comprised of responsibly manufactured products.	Credit Achievement					
		9.1	Good Practice Products	40% of all internal building finishes (by area) meet Responsible Products Value score of at least 7.	1	1	1
		Exceptional Performance					
Responsible Finishes	The building's internal finishes are comprised of responsibly manufactured products.	9.2	Best Practice Products or Good Practice Products	In addition to 9.1, one of the following must be met: • 10% of all internal building finishes (by area) meet a Responsible Products Value score of at least 12; or • 60% of all internal building finishes (by area) meet a Responsible Products Value score of at least 7.	1	1	1
		RESPONSIBLE Total			17	14	14

Credit Title	Aim of Credit	Criteria No.	Criteria Title	Credit Requirements Summary <i>For full criteria refer to Green Star for Buildings Submission Guidelines</i>	Points Available	West 6 star	East 6 star	
HEALTHY								
Clean Air	Pollutants entering the building are minimised, and a high level of fresh air is provided to ensure levels of indoor pollutants are maintained at acceptable levels.	Minimum Expectation; meet all three of the following criteria:						
		10.1	Ventilation System Attributes	• Separation from pollutants: the building ventilation systems must be designed to comply with ASHRAE Standard 62.1:2013 or AS 1668:2012 (whichever is greater) regarding minimum separation distances between pollution sources and outdoor air intakes; and • Cleaning ductwork: all ductwork that serves the building must be cleaned prior to occupation in accordance with a recognised standard.	Minimum Expectation	Minimum Expectation	Minimum Expectation	
		10.2	Provision of Outdoor Air	Outdoor air is provided at a rate 50% greater than the minimum required by AS1668.2-2012, or CO ₂ concentrations are maintained below 800ppm at all times during the occupancy period.				
		10.3	Exhaust or Elimination of Pollutants	It must be demonstrated that pollutants from printing and photocopying equipment, cooking processes and equipment are limited from the nominated area by either: • Removing the source of pollutants; or • Exhausting the pollutants directly to the outside.				
		Credit Achievement; in addition to the Minimum Expectation, meet both of the following criteria:						
		10.4	Ventilation System Attributes	Any mechanical ventilation system within the building must provide adequate access to both sides of all moisture and debris-catching components for maintenance within the air distribution system.	2	2	2	
		10.5	Provision of Outdoor Air	For mechanically ventilated or mix mode spaces, outdoor air is provided at a rate 100% greater than the minimum required by AS1668.2-2012, or CO ₂ concentrations are maintained below 700ppm at all times during the occupancy period.				

Credit Title	Aim of Credit	Criteria No.	Criteria Title	Credit Requirements Summary <i>For full criteria refer to Green Star for Buildings Submission Guidelines</i>	Points Available	West 6 star	East 6 star
Light Quality	The building provides good daylight and its lighting is of high quality.	Minimum Expectation; meet all three of the following criteria:					
		11.1	Lighting Comfort	Lighting within the building must meet the following criteria: • All lighting must be flicker-free; • Light sources must have a minimum Colour Rendering Index (CRI) average R1 to R8 of 85 or higher, and have a CRI R9 of 50 or higher; • Light sources must meet best practice illuminance levels for each task within each space type with a maintained illuminance that meets the levels recommended in AS/NZS 1680.1:2006 series applicable to the project type and including maintenance; • The maintained illuminance values must achieve a uniformity of no less than that specified in Table 3.2 of AS/NZS 1680.1:2006, with a maintenance factor method as defined in AS/NZS 1680.4.; and • All light sources must have a minimum of 3 MacAdam Ellipses.	Minimum Expectation	Minimum Expectation	Minimum Expectation
		11.2	Glare from Light Sources	Bare light sources must be fitted with baffles, louvers, translucent diffusers, ceiling design, or other means that obscures the direct light source from all viewing angles of occupants, including occupants looking directly upwards. Refer the Submission guidelines for more prescriptive pathways.			
		11.3	Daylight	The project team is required to show how the building's design: • Maximises the number of occupants that are in or near daylight areas during their daily activities for all building types; • Ensures regularly occupied spaces are in reasonable proximity to glazed façades, windows or skylights; • Controls or mitigates glare in the daylight spaces; • Maximises daylight to spaces that prioritise learning, healing, and living: – For schools, how all classrooms have access to a view and daylight; – For hospitals, how all patient areas have access to a view and daylight; and – For apartments, how in 95% of all apartments, the living rooms and all bedrooms have access to a view and daylight; and • Provides building occupants with unrestricted access to daylight indoor common spaces.			
		Credit Achievement; at least one criteria must be met (2 points) Exceptional Performance; both criteria must be met (2 points)					
		11.4	Artificial Lighting	• The walls within the field of view of occupants in regularly occupied spaces must have an average surface reflectance value of 0.70 and an average surface illuminance of at least 50% of the horizontal illuminance levels required for task. This requirement does not apply to green walls or to coloured/patterned/biophilic feature walls that make up less than 20% of the field of view of the occupants; and • Vertical illuminance in workspaces: ensure that 50% of the horizontal task illuminance reaches the average eye height for 90% of primary spaces using a vertical illuminance calculation grid. The illuminance values must be calculated in accordance with AS/NZS 1680 series for the relevant task. <u>Where unknown, a conservative estimate can be used.</u>	4	2	2
		11.5	Daylight	For non-residential buildings, at least 40% of the nominated area averaged across the building must receive high levels of daylight with no less than 20% on any floor or tenancy (whichever is smaller). For residential buildings, 60% of the combined living and bedroom area of each apartment unit must comply with the daylight requirements. Kitchens are not included in the calculations. The daylight levels must also be present in at least 20% of the area of each bedroom and living area.			
Acoustic Comfort	The building provides acoustic comfort for building occupants.	Minimum Expectation					
		12.1	Acoustic Comfort Strategy	An Acoustic Comfort Strategy must be prepared describing how the building design will deliver acoustic comfort to the building occupants. It must address: • Quiet enjoyment of space; • Functional use of space; • Control of intrusive or high levels of noise; • Privacy; • Noise Transfer; and • Speech intelligibility.	Minimum Expectation	Minimum Expectation	Minimum Expectation
		Credit Achievement; base build (commercial) criteria 12.2 and 12.3:					
		12.2	Maximum Internal Noise Levels	Internal ambient noise levels in the nominated areas must be no greater than the upper range value relevant to the activity type in each space as recommended in the current AS/NZS 2107:2016.	2	2	2
		12.3	Acoustic Separation	The project must address noise transmission between enclosed spaces within the nominated area demonstrated through privacy or sound insulation.			

Credit Title	Aim of Credit	Criteria No.	Criteria Title	Credit Requirements Summary For full criteria refer to Green Star for Buildings Submission Guidelines	Points Available	West 6 star	East 6 star	
Exposure to Toxins	The building's occupants are not directly exposed to toxins in the spaces they spend time in.	Minimum Expectation; meet all three of the following criteria:						
		13.1	Paints, Adhesives, Sealants and Carpets	At least 95% of internally applied paints, adhesives, sealants (by volume) and carpets (by area) must meet stipulated 'Total Volatile Organic Compounds (TVOC) Limits'.	Minimum Expectation	Minimum Expectation	Minimum Expectation	
		13.2	Engineered Wood Products	Either no new engineered wood products are used in the building or at least 95% (by area) of all engineered wood products meet specified formaldehyde emission limits.				
		13.3	Banned or Highly Toxic Materials	A comprehensive hazardous materials survey must be carried out. Asbestos, lead or PCBs have been stabilised or removed and disposed in accordance with best practice guidelines; or the survey concluded that no hazardous materials were found in any existing buildings or structures on the project site.				
		Credit Achievement						
		13.4	On-site Testing	In addition to the Minimum Expectation, on-site testing must be undertaken to verify the following limits: • TVOC = 0.27 ppm; • Formaldehyde = 0.02 ppm; and • At least three samples are to be taken per floor and at least six (6) floors must be sampled. These must be representative of where the occupants are likely to spend a majority of their time.	2	2	2	
Amenity and Comfort	The building provides internal amenities that improve occupant experience of using the building.	Credit Achievement						
		14.1	Amenity Rooms	The building includes one or several rooms designed to promote either inclusivity, mindfulness or exercise for staff or occupants. For a room(s) to qualify, it must be classified as per below: • Parent room; • Relaxation, meditation or prayer room; or • Exercise room; and The room size to be provided must be as follows: • The size of the room is calculated at a ratio of 1m ² per every 10 occupants or staff; and • The room must be no smaller than 10m ² .	2	2	2	
Connection to Nature	The building fosters connection to nature for building occupants.	Credit Achievement; Views + either Plants & Nature-inspired design or Interaction with Nature Exceptional Performance; all criteria						
		15.1	Views	At least 60% of the nominated area has a clear line of sight to a high quality internal or external view. All floor areas within 8m from a compliant view can be considered to meet this credit criterion.	2	1	1	
		15.2	Plants & Nature-inspired Design	Plants are provided in primary occupied spaces at a rate of one or more plants, in pots with a soil surface area totalling at least 500cm ² , every 10m ² of the nominated area. An ongoing maintenance plan must be established to ensure plant health is maintained. Five nature inspired design interventions must be provided in alignment with the following principles: • Elements that provide differing natural sensory experiences; • Elements that reflect natural and cultural patterns and forms; • Using natural materials; and • Large scale and holistically incorporated natural motifs and art.				
		15.3	Interaction with Nature	Occupants can interact with nature either inside the building, or externally through a green façade (or wall) or garden. At least 5% of the building's floor area/or site area (whichever is greater) must be planted area (either vertical or horizontal). The allocated area must be accessible and have the necessary infrastructure to allow the activity to occur (for example water source/taps for irrigation, storage area for tools and equipment).				
HEALTHY Total						14	11	11

Credit Title	Aim of Credit	Criteria No.	Criteria Title	Credit Requirements Summary For full criteria refer to Green Star for Buildings Submission Guidelines	Points Available	West 6 star	East 6 star
RESILIENT							
Climate Change Resilience	The building has been built to respond to the direct and indirect impacts of climate change.	Minimum Expectation					
		16.1	Climate Change Pre-screening Checklist	Project team members must consider potential impacts from climate change when completing the checklist including, but not limited to: <ul style="list-style-type: none">• Direct damage or failure of project components;• Accelerated deterioration of project components or reduced design life;• Reduced operating capacity;• Climate hazard impacts to surrounding areas (e.g. impacting access and egress);• Impacts to the health and wellbeing of building occupants and other relevant stakeholders; and• Indirect risks from impacts to other interdependent systems and services (e.g. transport networks, power, water, telecommunications).	Minimum Expectation	Minimum Expectation	Minimum Expectation
		Credit Achievement; in addition to the Minimum Expectation, meet both the following criteria:					
		16.2	Climate Change Risk and Adaptation Assessment	A suitably qualified professional must undertake a climate change risk and adaptation assessment and author a report.	1	1	1
		16.3	Managing Risks	The project team must ensure risks are addressed as follows: <ul style="list-style-type: none">• All risks rated as 'Extreme' must be addressed through specific design responses;• All risks rated as 'High' must be addressed through design or future operational responses; and• Regardless of risk rating, at least two risks identified in the assessment must be addressed by specific design responses.			
Operations Resilience	The building can respond to acute shocks and chronic stresses that can affect its operations over time.	Credit Achievement; meet all three of the following criteria:					
		17.1	Comprehensive Risk Assessment	The suitably qualified professional authoring the operations resilience assessment must <ul style="list-style-type: none">• Identify a set of clear resilience objectives and performance goals for the project and provide a diverse range of actions;• Collaborate with key internal and external project stakeholders to identify and confirm the relevant acute shocks and chronic stresses likely to impact the functionality of the project and its ability to meet performance goals;• Identify and confirm a range of interdependent infrastructure systems, networks, services and assets on which the project is likely to rely and interface with;• Identify key areas of system vulnerability, specifically how these may be affected by the identified shocks and stresses and as result may impact the project through reduced capacity and/or functionality; and• Outline emergency response procedures in the event of an identified shock event/natural disaster impacting the project and the local community.• Consult with relevant authorities with regards to evacuation procedures and emergency actions.	2	2	2
		17.2	Managing Risks	<ul style="list-style-type: none">• All risks rated as 'Extreme' must be addressed through specific design responses.• All risks rated as 'High' must be addressed through design or future operational responses.• Regardless of risk rating, at least two risks identified in the assessment must be addressed by specific design responses.			
		17.3	Addressing Power Loss	Project team must assess building's survivability in the case of a blackout, then designed to account for its design purpose and provide a measure of survivability.			
Community Resilience	The building contributes to improving the resilience of the community.	Credit Achievement					
		18.1	Community Resilience Plan	The project team must develop a community resilience plan that: <ul style="list-style-type: none">• Defines its surrounding local community, and the groups which rely on or interact directly or indirectly with the building. In addition to considering tenants and visitors, this must identify key vulnerable communities;• Identifies resilience objectives and goals associated with servicing the community;• Identifies social considerations affecting the community;• Identifies acute shocks and chronic stresses that impact the project's function and ability to service the community (including climate-related shocks and stresses if the Climate Change Resilience credit is not targeted);• Demonstrates how the development of actions (physical and non-physical responses) to manage the impact from shocks and stresses is in response to the outcomes of community engagement;• Shows how the two most significant impacts identified are dealt with specifically through the building's design; and• Identifies how material shocks and stresses identified for the building may impact on these stakeholders by considering a clear set of social indicators.	1		

Credit Title	Aim of Credit	Criteria No.	Criteria Title	Credit Requirements Summary <i>For full criteria refer to Green Star for Buildings Submission Guidelines</i>	Points Available	West 6 star	East 6 star
Heat Resilience	The building reduces its impact on heat island effect.	Credit Achievement					
		19.1	Heat Island Reduction	Design responses to mitigate urban heat island. 75% of the site area to be one or a combination of: • Vegetation; • Green roofs; • Roofing materials, including shading structures, having the following: – For roof pitched <15°– a three-year SRI of minimum 64; or – For roof pitched >15°– a three-year SRI of minimum 34. • Unshaded hard-scaping elements with a three-year SRI of minimum 34 or an initial SRI of minimum 39; • Hardscaping elements shaded by overhanging vegetation; and • Water bodies and/or water courses. The area of site that is shaded by permanent structures at noon local time at the summer solstice are also deemed compliant.	1	1	1
Grid Resilience	The building contributes to the functioning of the grid as it transitions to a higher level of renewable energy capacity.	Credit Achievement; meet one criteria or a combination of Active Generation and Storage Systems and Demand Response criteria:					
		20.1	Active Generation and Storage Systems	The building has the capacity to reduce its electricity peak demand by 10% of the building's annual peak electricity demand for at least a one-hour period. The peak demand reduction can occur through • thermal storage solutions (such as chilled water storage systems); • electricity storage solutions (batteries); or • renewable on-site generation. Building management system (BMS) must include a demand management dashboard that shows the peak demand target, current, historical demand, alongside the critical performance characteristics. The BMS must also have the capacity to accept external control signals to enable signing up to current or future demand response programs.	3	3	3
		20.2	Demand Response	The demand response strategy must show how at least 10% of the building's annual peak electricity demand is being shed without affecting occupant amenity (comfort, lighting, movement) as outlined in credits Light Quality, and Amenity and Comfort for at least 4 hours.			
		20.3	Passive Design Solutions	• The building's facade demonstrates a 10% improvement over a reference building modelled to Section J requirements of the National Construction Code 2019, or the version of the code applicable to the building's construction, whichever is later. The calculation must follow either Method 2 in the wall/glazing calculator or use a JV3 model; and • The building is mostly naturally ventilated (that is, the building has no mechanical cooling or heating for 80% of the building's occupiable area); and • The building's occupiable area is less than 3,000m ² .			
		RESILIENCE Total			8	7	7

Credit Title	Aim of Credit	Criteria No.	Criteria Title	Credit Requirements Summary <i>For full criteria refer to Green Star for Buildings Submission Guidelines</i>	Points Available	West 6 star	East 6 star
POSITIVE							
Upfront Carbon Emissions	The building's upfront carbon emission contributions from materials and products have been reduced and offset.	Minimum Expectation					
		21.1	Reducing Upfront Carbon Emissions	Emits 10% less upfront carbon emissions compared to a reference building	Minimum Expectation	Minimum Expectation	Minimum Expectation
		Credit Achievement; in conjunction with the Minimum Expectation, meet the following criteria:					
		21.2	Reducing Upfront Carbon Emissions	Emits 20% less upfront carbon emissions compared to a reference building	3	3	3
		21.3	Offsetting Demolition Works	Demolition works are offset			
		Exceptional Performance; in conjunction with the Credit Achievement, meet the following criteria:					
Energy Use	The building has low energy consumption.	21.4	Reducing Upfront Carbon Emissions	Emits 40% less upfront carbon emissions compared to a reference building	3	3	3
		Minimum Expectation; Reference Building Pathway criteria 22.1 or NABERS Commitment Agreement Pathway criteria 22.2					
		22.1	Reference Building Pathway	The building uses 10% less energy compared to a reference building, excluding on-site renewable energy generation systems connected behind the meter.	Minimum Expectation	Minimum Expectation	Minimum Expectation
		22.2	NABERS Commitment Agreement	The building has a NABERS Energy Commitment Agreement to achieve a 5.5 star NABERS Energy for Offices (base building) rating.			
		Credit Achievement; Reference Building Pathway criteria 22.3 or NABERS Commitment Agreement Pathway criteria 22.4					
		22.3	Reference Building Pathway	The building uses 20% less energy compared to a reference building.	3	3	3
		22.4	NABERS Commitment Agreement	The building has a NABERS Energy Commitment Agreement to achieve a 5.5 star (with 25% modelling margin) NABERS Energy for Offices (base building) rating.			
		Exceptional Performance; Reference Building Pathway criteria 22.5 or NABERS Commitment Agreement Pathway criteria 22.6					
Energy Source	The building's energy comes from renewables.	22.5	Reference Building Pathway	The building uses 30% less energy compared to a reference building.	3	3	3
		22.6	NABERS Commitment Agreement	The building has a NABERS Energy Commitment Agreement to achieve a 6 star NABERS Energy for Offices (base building) rating.			
		Minimum Expectation					
		23.1	Zero Carbon Action Plan	The project team must develop a Zero Carbon Action Plan for the building. The plan must be signed off by the building owner or developer and included in any operational documents for the building. The Zero Carbon Action Plan must include a target date by when the building is expected to operate as net zero carbon. The Zero Carbon Action Plan must cover all energy consumption, procurement, and generation and cannot rely on procuring renewable fuels as its only solution. It must also include infrastructure provided for tenants or future occupants such as gas installations for cooking.	Minimum Expectation	Minimum Expectation	Minimum Expectation
		Credit Achievement					
		23.2	Renewable Electricity	All electricity under the control of the building owner or operator must be accounted for and sourced from renewables.	3	3	3
		Exceptional Performance					
		23.3	Renewable Energy	All energy under the control of the building owner/operator and all non-electricity energy provided for uses that are not under the building owner's control must be sourced from renewables.	3	3	3

Credit Title	Aim of Credit	Criteria No.	Criteria Title	Credit Requirements Summary For full criteria refer to Green Star for Buildings Submission Guidelines	Points Available	West 6 star	East 6 star
Other carbon emissions	The building's other carbon emissions, such as those from refrigerants, are eliminated or offset.	Credit Achievement					
		24.1	Eliminating or Offsetting Refrigerants	All refrigerants from building systems or domestic appliances provided by the building must be captured in the credit. This includes where fridges or freezers are provided as part of a fitout package in a residential setting. There are two pathways available: • Eliminates high-GWP refrigerants from the building; or • Offsets 100% of carbon emissions from refrigerants.	2	2	2
		Exceptional Performance					
		24.2	Other Emissions	The project must calculate and offset: • Emissions for refrigerants; • Emissions from the building's electricity use (as determined in the Energy Use credit) multiplied by the grid coefficient (unless the Energy Source Credit Achievement is met, in which case these emissions are zero); • Emissions from the building's energy use as determined in the Energy Use credit (unless the Energy Source Exceptional Performance is met, in which case these emissions are zero); • Upfront carbon emissions as determined in the Upfront carbon emissions credit; • Emissions from module A5 construction equipment use, and utilities during construction on site (unless the Life Cycle Impacts calculator was used for the Upfront Carbon Emissions credit); • Life cycle emissions from modules B and C as calculated in Life Cycle Impacts; • Construction waste emissions; and • Any other carbon emissions over 1% of the total carbon emissions profile for the building.	2	2	2
Water use	The building has low water consumption.	Minimum Expectation; meeting one of the following criteria:					
		25.1	Sanitary Fixture and Appliance Efficiency	All fixtures and water-using appliances installed within the project's scope must, at a minimum, meet the prescribed WELS ratings.	Minimum Expectation	Minimum Expectation	Minimum Expectation
		25.2	Reducing Water Use	Uses 15% less potable water compared to a reference building through the GBCA's Water Use Calculator.			
		Credit Achievement; in conjunction with the Minimum Expectation, meet both of the following criteria:					
		25.3	Reducing Water Use	Uses 45% less potable water compared to a reference building through the GBCA's Water Use Calculator.	3		
		25.4	Recycled Water Infrastructure	Building must have infrastructure for recycled water in a district or location where local council or water authorities (or similar) have planned for installation of recycled water infrastructure.			
		Exceptional Performance; in conjunction with Credit Achievement, meet the following criteria:					
Life Cycle Impacts	The building has lower environmental impacts from key resources over its lifespan than a typical building.	Credit Achievement					
		26.1	Life Cycle Impacts	The project demonstrates a 30% reduction in life cycle impacts when compared to standard practice.	2	2	2
POSITIVE Total					30	24	24

Credit Title	Aim of Credit	Criteria No.	Criteria Title	Credit Requirements Summary <i>For full criteria refer to Green Star for Buildings Submission Guidelines</i>	Points Available	West 6 star	East 6 star
PLACES							
Movement and Place	The building's design and location encourages occupants and visitors to use active, low carbon, and mass transport options instead of private vehicles.	Minimum Expectation; meet both of the following criteria:					
		27.1	Changing Facilities	The project must provide adequate facilities for regular occupants (not for visitors), including: • Showers; and • Lockers.	Minimum Expectation	Minimum Expectation	Minimum Expectation
		27.2	Accessible, Inclusive, and Located in a Safe and Protected Place	Upon accessing, pedestrians and cyclists must be protected from the elements and other vehicles. Access must be safe, with consideration given to avoiding steep gradients, surface grip levels, and visibility around tight corners.			
		Credit Achievement; in conjunction with the Minimum Expectation, meet all four of the following criteria:					
		27.3	Bicycle Parking Facilities	The building's access must prioritise walking and cycling options. This means the building's access must be well lit, weather protected and separated from vehicles.	3	3	3
		27.4	Sustainable Transport	• The project team must prepare and implement a Sustainable Transport Plan. The requirements must be reflected in the design of the building's facilities and ongoing operational processes; and • Provide EV charging point to at least 5% of all car parking spaces, all car sharing parking spaces, infrastructure and load management plan for future 25% of all car parking spaces, and dedicated routes for future provision of electrical cabling.			
		27.5	Reducing Private Vehicle Use	Complete the Movement and Place Calculator and demonstrate at least: • Emission reduction: 40% • Active mode encouragement: 90% • VKT reduction: 20%			
		27.6	Encouraging Walkability	Building's design and location must encourage walking to and from a number of amenities. This means designing roads within the site boundary to prioritise pedestrians, and either providing within, or being located close to, a number of amenities.			
Enjoyable Places	The building provides places that are enjoyable and inclusive.	Credit Achievement; meet both of the following criteria:					
		28.1	Publically Accessible Places	The project provides new, publicly accessible spaces that are enjoyable and support community activity and interaction - 0.25 m ² /occupant or 2.5% of GFA, whichever is greater.	2		
		28.2	Activation Strategy	An activation strategy must be provided to ensure placemaking continues after practical completion. The strategy must demonstrate how the future occupants and the wider community can contribute to the place activation.			
Contribution to Place	The building's design makes a positive contribution to the quality of the public environment.	Credit Achievement, meet one of the following criteria:					
		29.1	Urban Context Report	Provide an urban context report and demonstrate how building's design responds to it.	2	2	2
		29.2	Independent Design Review	Design reviews are held at key points in the development of the design. At a minimum, these must occur as follows: • Design Review during concept/schematic design stage, to ensure that proponents can take advantage of the advice offered at a time where the design is flexible enough to accommodate change without impacting on time and cost constraints; • A subsequent review when the design has been further progressed. This review session will typically occur during design development; and • At building permit stage (after development approval) a further check must take place by the Design Review Panel Chair or delegate, to ensure that the final design reflects approved development application and any relevant conditions related to design quality.			

Credit Title	Aim of Credit	Criteria No.	Criteria Title	Credit Requirements Summary <i>For full criteria refer to Green Star for Buildings Submission Guidelines</i>	Points Available	West 6 star	East 6 star
Culture, Heritage and Identity	The building reflects local culture, heritage and identity.	Credit Achievement, meet one of the following criteria:					
		30.1	Community Led Design Response	The project team must show that they have undertaken local analysis to identify culture, heritage and identity unique to the project site and area. The project team must undertake community engagement as part of this local analysis, the project must reflect local identity, culture and heritage in the design of the building in a publicly demonstrable way. This can be achieved through: <ul style="list-style-type: none">• Community art or placemaking projects;• Selection of suppliers/designers of artwork or cultural elements;• Building elements that tell stories of the past and heritage; and• Spaces and uses that reflect the local identities	1		
		30.2	Independent Design Review	Design reviews are held at key points in the development of the design. At a minimum, these must occur as follows: <ul style="list-style-type: none">• Design Review during concept/schematic design stage, to ensure that proponents can take advantage of the advice offered at a time where the design is flexible enough to accommodate change without impacting on time and cost constraints;• A subsequent review when the design has been further progressed. This review session will typically occur during design development; and• At building permit stage (after development approval) a further check must take place by the Design Review Panel Chair or delegate, to ensure that the final design reflects approved development application and any relevant conditions related to design quality.		1	1
		PLACES Total			8	6	6

Credit Title	Aim of Credit	Criteria No.	Criteria Title	Credit Requirements Summary <i>For full criteria refer to Green Star for Buildings Submission Guidelines</i>	Points Available	West 6 star	East 6 star
PEOPLE							
Inclusive Construction Practices	The builder's construction practices promotes diversity and reduces physical and mental health impacts.	Minimum Expectation					
		31.1	On-site Facilities, Policies and Training	The head contractor must ensure the following is provided, or available, on-site: <ul style="list-style-type: none">• Separate gender inclusive bathroom facilities and changing amenities with a high degree of privacy; and• Diverse gender-specific fit-for-purpose personal protective equipment (PPE) for diverse body sizes and types. The head contractor must: <ul style="list-style-type: none">• Implement policies to address issues of discrimination, racism, and bullying on-site;• Introduce on-site redress procedures for any relevant breaches, and corrective measures to be put in place should any incident be identified;• Empower a diverse lead team to manage these policies on-site, and• Provide training to all contractors and sub-contractors on these policies (as per below). The head contractor must provide the following training to 95% of all contractors and subcontractors present on site for at least three days: <ul style="list-style-type: none">• Information on drug and alcohol awareness and mental health; and• Information on policies implemented on discrimination, racism, and bullying on site.	Minimum Expectation	Minimum Expectation	Minimum Expectation
		Credit Achievement; in conjunction with the Minimum Expectation, meet all three of the following criteria:					
		31.2	Needs Analysis	The responsible party should carry a needs analysis of site workers and contractors to determine appropriate actions. The policies and programs should be relevant to all construction workers on site for the full duration of construction.	1	1	1
		31.3	Physical and Mental Health Programs	The head contractor must show that they have introduced programs and solutions to address at least five of the following: <ul style="list-style-type: none">• Suicide prevention;• Healthy eating and active living;• Reduce harmful alcohol and tobacco consumption and avoid drug use;• Increased social cohesion, community and cultural participation;• Understanding depression;• Preventing violence and injury;• Decreased psychological stress;• Finding fulfilment at work or mindful meditation; and• Other issues identified in the Needs Analysis. A mix of programs is acceptable. The programs must cover at least 80% of the workforce that have attended the site for more than three days from commencement on site to practical completion. The programs or solutions can be implemented directly by the head contractor or through partnerships with mental and physical health organisations.			
		31.4	Evaluating the Program's Effectiveness	The project must provide an evaluation report to the client and sub-contractors with the following information: <ul style="list-style-type: none">• Information on the programs or initiatives that were delivered, including information on dates, attendance, and available languages; and• A review on whether the programs delivered the intended outcomes including recommendations for improving future delivery of these programs.			
Indigenous Inclusion	The building celebrates Aboriginal and Torres Strait Islander people, culture and heritage.	Credit Achievement; meet one of the following criteria:					
		32.1	Reconciliation Action Plan	Project team must demonstrate that: <ul style="list-style-type: none">• A key member of the Project Team is part of the organisational RAP Working Group;• At least 90% of the RAP targets have been met on the project; and• All implemented actions related to the RAP are publicly reported on the Project's website.	2		
		32.2	Inclusion of Indigenous Design	The project team must demonstrate that the Australian Indigenous Design Charter guiding principles are incorporated in the design of the building including: <ul style="list-style-type: none">• How local Aboriginal and Torres Strait Islander communities have been engaged throughout the design development;• How the project has been designed to acknowledge and recognise the Indigenous culture of the site;• How information on the reconciliation and cultural values of the project will be made available to the public, visitors and building tenants in the operational phase of the project's life.		2	2

Credit Title	Aim of Credit	Criteria No.	Criteria Title	Credit Requirements Summary For full criteria refer to Green Star for Buildings Submission Guidelines	Points Available	West 6 star	East 6 star
Procurement and Workforce Inclusion	The building's construction facilitates workforce participation and economic development of disadvantaged and under-represented groups.	Credit Achievement; meet both of the following criteria:					
		33.1	Social Procurement Strategy	The project team must develop and implement a social procurement strategy or plan (this can be part of an overall project procurement plan/strategy) that directs at least 2% of the building's total contract value to generate employment opportunities for disadvantaged and under-represented groups.	2		
		33.2	Employment Opportunities	Generate employment opportunities for disadvantaged and under-represented groups either: • Directly, through workforce targets; or • Indirectly, through social procurement. A combination of these strategies can be used to achieve the credit, as long as the total dollar spend on the above activities is equal to or greater than the required 2% value of the building's total contract value.			
		Exceptional Performance; meet both of the following criteria:					
		33.1	Social Procurement Strategy	The project team must develop and implement a social procurement strategy or plan (this can be part of an overall project procurement plan/strategy) that directs at least 4% of the building's total contract value to generate employment opportunities for disadvantaged and under-represented groups.	1		
		33.2	Employment Opportunities	Generate employment opportunities for disadvantaged and under-represented groups either: • Directly, through workforce targets; or • Indirectly, through social procurement. A combination of these strategies can be used to achieve the credit, as long as the total dollar spend on the above activities is equal to or greater than the required 4% value of the building's total contract value.			
Design for Inclusion	The building is welcoming to a diverse population and is welcoming to their needs.	Credit Achievement					
		34.1	Inclusive Design	The building's design and construction must be able to be navigated and enjoyed by stakeholders of diverse ages, genders, and abilities. This applies to common spaces, bathroom facilities and amenities provided within the building. This must include: • Equal access to the building: Provide equitable, appealing, safe, and secure access in a manner that does not segregate or stigmatise users through all principal entrance points and main thoroughfares inside and outside the building; • Diverse wayfinding: Introduce visual, physical, olfactory, and auditory solutions to help individuals navigate the site in a safe and enjoyable manner; and • Inclusive spaces: Introduce internal and external spaces for a diverse range of users, including parents, family restrooms, emergency rooms, quiet rooms and social interaction rooms. These rooms must be accessible to all users.	2	2	2
		Exceptional Performance; in conjunction with the Minimum Expectation, meet the following criteria:					
		34.2	Needs Analysis	A Needs Analysis is conducted, meeting the following requirements: • The project team must consult with distinct community types to develop a needs analysis that will influence the project during the design phase; • Consultation must be undertaken early in the design process and include a balanced cross-section of representation of the target group • Consultation must be considerate and relevant to the project • The consultation process must generate a report that is then used to influence the design of the project As a result of the needs analysis, the building must show how it aligns with best practice guidelines, such as the Design for Dignity Guidelines: Principles for Beyond Compliance Accessibility in Urban Regeneration	1		
PEOPLE Total					9	5	5

Credit Title	Aim of Credit	Criteria No.	Criteria Title	Credit Requirements Summary For full criteria refer to Green Star for Buildings Submission Guidelines	Points Available	West 6 star	East 6 star		
NATURE									
Impacts to Nature	Ecological value is conserved and protected	Minimum Expectation; meet all three of the following criteria:							
		35.1	Ecologically Sensitive Sites	At the date of purchase or option contract, land clearing does not occur on the site as a result of the building, infrastructure, or construction works on the following: • Old-growth forest; • Prime agricultural land; • Any wetland listed as being of 'High National Importance'; • Aspects considered 'Matters of National Environmental Significance' listed under the Environmental Protection and Biodiversity Conservation Act (1999).	Minimum Expectation	Minimum Expectation	Minimum Expectation		
		35.2	Managing Light Pollution Impacts	• Light pollution to neighbouring bodies: all outdoor lighting on the project complies with AS 4282:1997 Control of the obtrusive effects of outdoor lighting. • Light pollution to night sky: one of the following specified reductions in light pollution must be achieved by the project: - Control of upward light output ratio (ULOR); or - Control of direct illuminance.					
		35.3	Wetland Management Plan	The site-specific Wetland Management Plan must be prepared by a qualified Ecologist or other qualified professional and include requirements for ongoing quarterly monitoring, annual reporting and management of the wetland ecosystem for a minimum of five years. The plan must be exhibited to the public on the applicant's website, or the local council's offices or library, for a minimum of 24 months.					
		Credit Achievement; in conjunction with the Minimum Expectation, meet both of the following criteria:							
		35.4	Protecting Ecological Values	• Context report: understand the site's historical and current ecological context by documenting the site's current ecological values by type and biomass. • Protecting ecology: show how ecological values will be protected.	2				
		35.5	Retaining High Biodiversity Values	If deemed necessary by an Ecologist, at least 50% of existing site with high biodiversity value is retained.					
Biodiversity Enhancement	The building's landscape enhances the biodiversity of the site and off site	Credit Achievement: meet all three of the following criteria:							
		36.1	Landscape Area	At a minimum, external landscape in the building, whether horizontal or vertical must be provided at a ratio of either 15% of the site area or at a ratio of 1:500 of the GFA, whichever is larger. Vertical or horizontal landscapes are acceptable.	2	2	2		
		36.2	Diversity of Species	• Landscape must be shown to be diverse and include multiple species/genus/etc. • Greater than 60% of plants must be indigenous and the site must include at least one significant (nesting) tree or equivalent habitat provision per 500m ² of landscaped area. • No invasive species are allowed, as per the Australian Weeds Strategy 2017 to 2027.					
		36.3	Biodiversity Management Plan	A suitably qualified professional must prepare the plan must outline key actions that need to be undertaken in order to maintain the ecological integrity of biodiversity on the site, whether this is existing or that created as part of the development.					
		Exceptional Performance; in conjunction of the Minimum Expectation, meet both of the following criteria:							
		36.4	Landscape Area	As a minimum, external landscape in the building, whether horizontal or vertical must be provided at a ratio of either 30% of the site area or at a ratio of 1:300 of GFA, whichever is larger. Vertical or horizontal landscapes are acceptable.	2				
		36.5	Diversity of Species	• Landscape must be shown to be diverse and include multiple species/genus/etc. • An ecologist must review, assess and verify how the choice of landscaping and biodiversity is diverse and resilient to climate change impacts, thereby increasing the longevity of the landscape. • Greater than 80% of plants must be indigenous and the site must include at least one significant (nesting) tree or equivalent habitat provision per 250m ² of landscaped area. • No invasive species are allowed, as per the Australian Weeds Strategy 2017 to 2027. • The site must preserve, restore and/or support vulnerable ecosystem through planting critically endangered and/or endangered plant species which are native to the bioregion.					
Nature Connectivity	Wildlife movement is facilitated within and adjacent to the site.	Credit Achievement							
		37.1	Species Connectivity	The site may include any of the following strategies: • Landscaping: Where connectivity is being achieved through landscaping, this must be contiguous with existing, restored and new habitats. As a minimum requirement for habitat connectedness, the conservation area must make up at least 25% of the total external area within the building's site boundary. To be eligible, this must be at least 182m ² ; or • Infrastructure: Design features such as a canopy bridge, wildlife tunnels, green roofs, amphibian tunnels and green infrastructure are used to connect nature on site to adjacent natural areas, which are either existing, restored or new.	2				

Credit Title	Aim of Credit	Criteria No.	Criteria Title	Credit Requirements Summary For full criteria refer to Green Star for Buildings Submission Guidelines	Points Available	West 6 star	East 6 star
Nature Stewardship	Biodiversity is restored beyond the building site.	Credit Achievement; meet all four of the following criteria:					
		38.1	Area of Restoration or Protection	The area of restoration must be equivalent to the total GFA of the development, or site area, whichever is greater.	2		
		38.2	Location of Restoration or Protection Activities	Land for restoration must be in Australia and restored to equivalent ecological value of the site before any development occurred. The location of the land designated for the offsite restoration must not be in the development boundary.			
		38.3	Activities to Protect or Restore	Achieving the credit can be done by either: • The project owner protecting or restoring an area offsite themselves; or • The project owner supports an organisation that restores an area on their behalf.			
		38.4	Legislated Requirements	Where the project is required to purchase biodiversity offsets, invest in land restoration, restore land, or similar, as part of an EPBC action, development approval, or other legislated requirements, these actions cannot be used to demonstrate compliance with this credit.			
Waterway Protection	Local waterways are protected, and the impacts of flooding and drought are reduced	Credit Achievement; meet both of the following criteria:					
		39.1	Stormwater Volume	Demonstrate a reduction in average annual stormwater discharge (ML/yr) of 40% across the whole site.	2	2	2
		39.2	Pollution Reduction Targets	All stormwater discharged from site meets: Total Suspended Solids 85%; Gross Pollutants 90%; Total Nitrogen 45%; Total Phosphorus 65%.			
		Exceptional Performance; in conjunction with the Minimum Expectation, meet both of the following criteria:					
		39.1	Stormwater Volume	Demonstrate a reduction in average annual stormwater discharge (ML/yr) of 80% across the whole site.	2	2	2
39.2	Pollution Reduction Targets	All stormwater discharged from site meets: Total Suspended Solids 90%; Gross Pollutants 95%; Total Nitrogen 60%; Total Phosphorus 70%.					
NATURE Total					14	6	6
LEADERSHIP							
Market Transformation	Celebrates initiatives or outcomes that are deemed new and break barriers, and in turn inspire others to follow.	Credit Achievement, up to 5 points available					
		40.1	Innovative Initiatives	To claim points, the project team must show that an initiative is innovative by demonstrating that the technology or process is not commonly used within Australia's building industry globally, depending on the context of the innovation claimed. Projects must demonstrate these initiatives align with the following GBCA scoring metrics: • Control of outcome: the initiative delivers a guaranteed outcome • Length of impact: the initiative delivers long-lasting impacts • Scale of impact: the scale of impact is significant. For example, the outcome may satisfy multiple UN Sustainable Development Goals • Transformation potential: the initiative has the potential to transform an industry or sector • Value generation: the initiative can deliver benefits to both stakeholders (e.g. building owner or occupants) as well as the general public.	5	1	1
Leadership Challenges	Promotes achievements that are considered leading practice in Australia.	Credit Achievement					
		41.1	Leadership Challenges	Projects teams can target as many Leadership Challenges as they wish. Leadership Challenges will be uploaded to the GBCA website as they are developed. All criteria as listed on the Leadership Challenge must be met to claim reward.	Unlimited	3	3
LEADERSHIP Total					5	4	4

	Points Available	West 6 star	East 6 star
RESPONSIBLE	17	14	14
HEALTHY	14	11	11
RESILIENT	8	7	7
POSITIVE	30	24	24
PLACES	8	6	6
PEOPLE	9	5	5
NATURE	14	6	6
SUB-TOTAL POINTS	100	73	73
LEADERSHIP	5	4	4
TOTAL SCORE	105	77	77

4 Star - 15-34 score | 5 Star - 35-70 score | 6 Star - 70+ score

