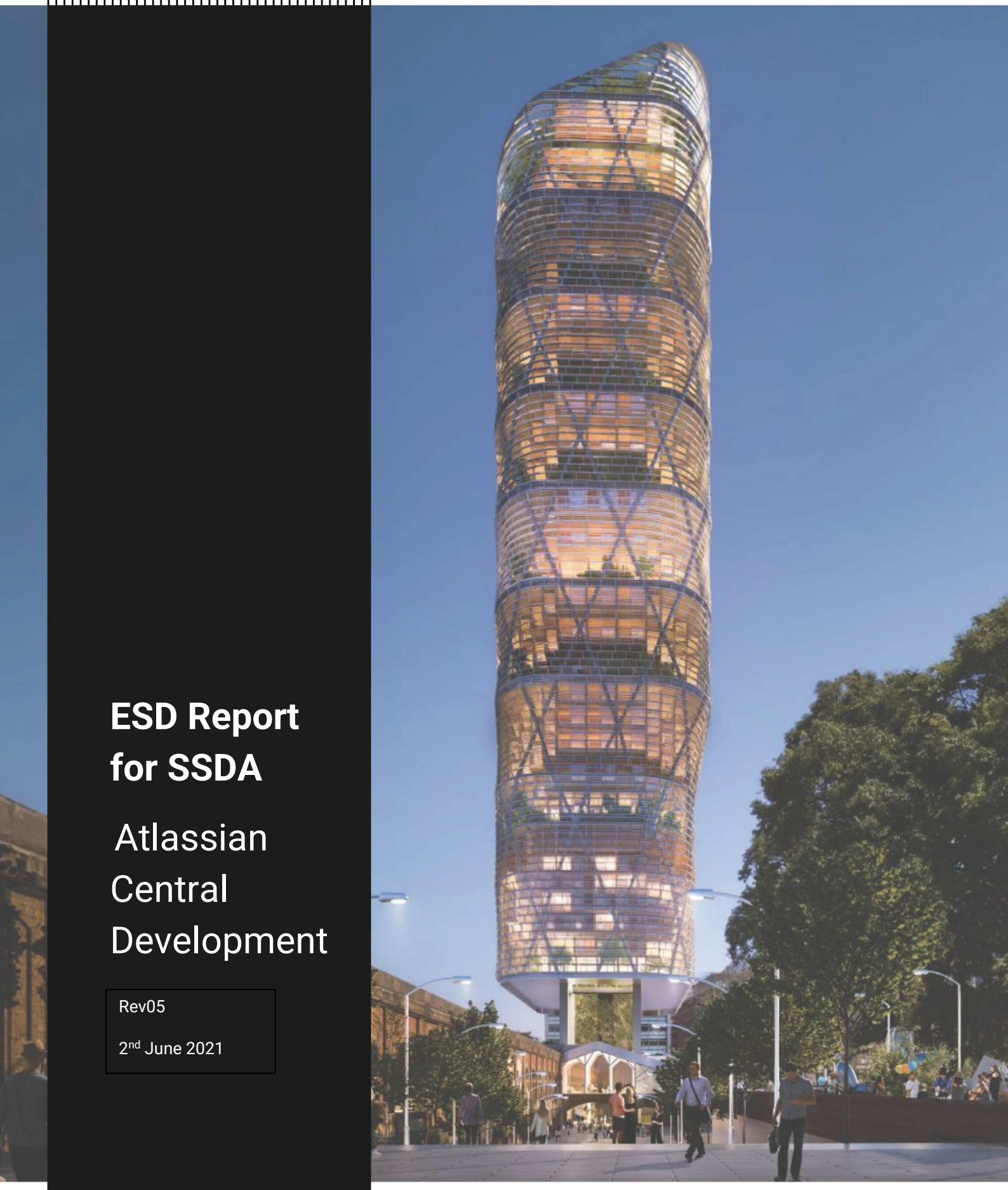
LCI Stantec

ESD Report for SSDA

Atlassian Central Development

Rev05

2nd June 2021



Revision Information

Project	Atlassian Central development	
Title	ESD Report for SSDA	
Client	Avenor	
Prepared By	**LCI Consultants** L4, 73 Walker Street North Sydney 2060	**Stantec** Level 6, Building B, 207 Pacific Highway St Leonards, New South Wales, 2065
Author	LCI / Stantec	

Revision Schedule

Revision	Date	Issue Name	Author	Authorised
00	19.08.20	For Review	JvD, MW	LEP
01	04.09.20	For Review	JvD, MW	LEP
02	23.09.20	FINAL	JvD, MW	LEP
03	29.09.20	SSDA Submission	JvD, MW	LEP
04	05.05.21	SSDA Submission	JvD, MW	LEP
05	02.06.21	SSDA Submission	JvD, MW	LEP

Contents

1 Introduction

LCI and Stantec have been commissioned by Atlassian (the Applicant) to prepare this report in accordance with the technical requirements of the Secretary's Environmental Assessment Requirements (SEARs), and in support of the SSD-10405 for a commercial and hotel development above the Former Inwards Parcel Shed at 8 – 10 Lee Street, Haymarket.

Specifically, this report addresses the following SEARs:

SEARs	Report Reference
1. Ecologically Sustainable Development (ESD) The EIS shall: ·	
• identify how ESD principles (as defined in Clause 7(4) of Schedule 2 of the Regulation) will be incorporated in the design, construction and ongoing operation phases of the development, and include innovative and best practice proposals for environmental building performance ·	Section 2.1
• include a framework for how the proposal will be designed to consider and reflect international best practice sustainable building principles to improve environmental performance and reduce ecological impact. This should be based on a materiality assessment and include waste reduction design measures, future proofing, use of sustainable and low-carbon materials, energy and water efficient design and technology (including water sensitive urban design) and use of renewable energy ·	Section 2.2
• investigate the use of third party ESD certification to achieve targets ·	Section 2.3
• demonstrate how the climate change projections for the Sydney Metropolitan Area have been used to inform the building design and asset life of the project	Section 2.4

1.1 Description of the Site

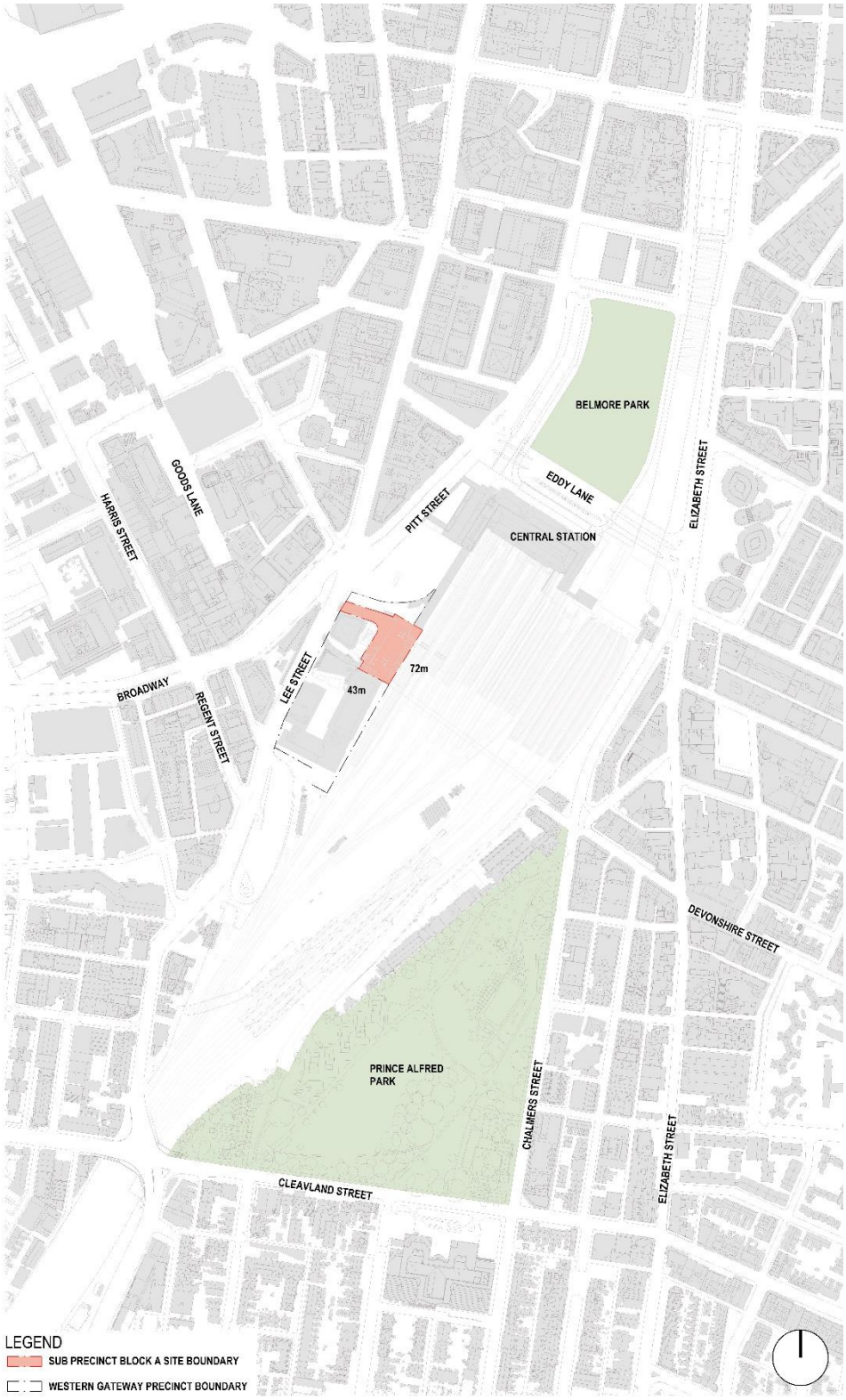
The Site is known as 8-10 Lee Street, Haymarket. It is an irregular shaped allotment. The allotment has a small street frontage to Lee Street, however this frontage is limited to the width of the access handle.

The Site comprises multiple parcels of land which exist at various stratums. All the lots are in the freehold ownership of Transport for NSW, with different leasing arrangements:

- **Lot 116 in DP 1078271**: YHA is currently the long-term leaseholder of the Site which covers the areas shown in blue below.
- **Lot 117 in DP 1078271**: This is currently in the ownership of TfNSW and the applicant is seeking the transfer of the leasehold on this land to provide for an optimise basement and servicing outcome for the Site.
- **Lot 118 in DP 1078271**: This is currently in the ownership of TfNSW and the applicant is seeking the transfer of the leasehold for part of the air-rights above part of this allotment to allow for an optimised building envelope for the project. The proposal also uses a part of Lot 118 in DP 1078271 within Ambulance Avenue for Day 1 bike access, secondary pedestrian access and fire service vehicle access.
- **Lot 13 in DP 1062447**: This is currently in the ownership of TfNSW but TOGA (who hold the lease for the Adina Hotel) have a long-term lease of this space in the lower ground area.

The Site has an area of approximately 3,764sqm which includes 277sqm of air rights that apply from RL40.

Figure 1 – Site Location and Dimensions



1.2 Site and Surrounding Context

The Site is directly adjacent to the Western Wing Extension of Central Station, and forms part of the 'Western Gateway Sub-precinct' of the Central Railway Station lands. It is situated between the existing CountryLink and Intercity railway platforms to the east and the Adina Hotel (former Parcel Post Office) to the west.

Existing vehicle access to the Site is via Lee Street, however the Lee Street frontage of the Site is only the width of the access handle.

Current improvements on the Site include the Parcels Shed, which operated in association with the former Parcels Post Office (now the Adina Hotel). The Site is currently used as the Railway Square YHA. The Site also includes the western entryway to the Devonshire Street Pedestrian, which runs east-west through Central Station under the existing railway lines.

The Site is situated in one of the most well-connected locations in Sydney. It is directly adjacent to Central Station Railway which provides rail connections across metropolitan Sydney, as well as regional and interstate connections and a direct rail link to Sydney Airport. The Site is also within close proximity to several educational institutes and is a city fringe location which provides access to key support services.

Central Railway Station is currently undergoing rapid transformation to allow for integration of rail, metro and light rail transport infrastructure. This will elevate the role of Central Station not only for transport but also enhance opportunities for urban renewal and revitalisation of the surrounding precinct. This is one of the key drivers for the identification of the Central SSP and the Western Gateway Sub-precinct to accommodate a new innovation and technology precinct.

The proximity of the Western Gateway Sub-precinct to the city, while still being located outside the core Sydney CBD, provides opportunity for it to evolve to attract technology and innovation companies. It has access to all required services while being sufficiently separate to the CBD to establish a distinct technology industry ecosystem. Its CBD fringe location will provide affordable commercial rents which will support Startups and entrepreneurs which are a key component of an innovation precinct.

1.3 Project Description

The proposed SSDA will facilitate the development of a new mixed-use development comprising *'tourist and visitor accommodation'* (in the form of a 'backpackers') and commercial office space within the tower form. Retail, lobby and food and drink premises at the Lower Ground level and Upper Ground level.

Atlassian Central at 8-10 Lee Street will be the new gateway development at Central Station which will anchor the new Technology Precinct proposed by the NSW Government. The new building will be purpose-built to accommodate the Atlassian Headquarters, a new TfNSW Pedestrian Link Zone, and the new Railway Square YHA backpacker's accommodation, in addition to commercial floorspace to support Tech Start-ups.

The new development is to be built over the existing heritage former Inwards Parcels Shed (the Parcels Shed) located on the western boundary of Central Station with the Adina hotel to the west. The works includes a 38-storey mixed-use tower with basement loading dock facilities and end of trip (**EOT**) facilities accessed off Lee Street, 2 storey lobby utilising the Parcels Shed building, lower ground and upper ground retail, YHA hostel and commercial tower with staff amenities to the mid-level and roof top areas and a pedestrian Link Zone works for TfNSW.

The building design has been conceived to support the delivery of a site plan designed to connect with future developments to both the south and east and integrate with a cohesive public realm for the broader Sydney community in accordance with NSW government strategic planning.

The tower design is a demonstration project for Atlassian, representing their commitment to environmental sustainability and contemporary workplace settings through tower form and construction systems along with a set of emblematic outdoor workplaces stacked in the tower form.

The existing Parcels Shed will be adaptively re-used in accordance with best practice heritage process and form the upper level of a 2-storey entry volume that connects visually with the 2 level Link Zone. Over the roof of the Parcels Shed, a new privately owned but publicly accessible landscaped area will be created as the first part of a new upper level public realm that may extend to connect to a future Central Station concourse or future Over Station Development.

The proposed mixed use tower directly adjoins a live rail environment to the east and public domain to the north, west and south. These works will consider these rail environments and have been designed to ensure that all TfNSW external development standards are achieved. This ensures there is no impact to the operation or safety of these TfNSW assets.

Interfaces from the overall site and especially the State works Link Zone have been designed in consultation with the adjoining stakeholders. These stakeholders include TfNSW to the north and south, Toga and the Adina Hotel operator to the west and the Dexus Fraser's site to the south. Connections via the Link Zone, through the basements, and off the proposed new Link Zone dive ramp will be designed to enable existing and future developments to function in both the day 1 scenario and end state when all developers have completed their works.

The overall project aspiration is to create a world class tech precinct with effective pedestrian links through the Atlassian site to the Central Station western forecourt to Central Walk west and adjoining stakeholder's sites.

1.4 Glossary

1.5 Glossary of Key Terms

Term	Definition
Atlassian Site	8 – 10 Lee Street, Haymarket
The Project	Commercial and hotel development above the Former Inwards Parcel Shed at 8-10 Lee Street, Haymarket
Block B or "Dexus/ Frasers Site"	14-30 Lee Street Haymarket. Adjoining land immediately to the south currently comprising three 8 storey commercial buildings.
Block C or Adina Hotel	2 Lee Street, Haymarket The Former Parcels Post Office The Adina Apartment Hotel Sydney Central
Central Sydney	Land identified as Central Sydney under the Sydney LEP 2012 and includes Sydney's Central Business District
Sub-precinct	Western Gateway Sub-precinct
Atlassian Central	The Atlassian tower building (building only)
Atlassian Central development	The whole Atlassian development within the Atlassian Site including the tower and public domain works.
Devonshire Street Tunnel	The pedestrian and cycle tunnel running between Chalmers Street and Lee Street
Link Zone	The publicly accessible land within the Site.
Central Walk West	The future western pedestrian entry to the new 19 metre wide underground concourse customers to suburban rail and Sydney Metro platforms.
Habitat Level 1	Flexibly ventilated workspace areas

1.6 Abbreviations

Abbreviation	Meaning
A	Ampere
ACHAR	Aboriginal Cultural Heritage Assessment Report
AEO	Approved Engineering Organisation
AHIMS	Aboriginal Heritage Information Management System
AS	Australian Standard
ASA	Asset Standards Authority
APAR	Airports Protection of Airspace Regulations
ASP 1	Accredited Level 1 Service Provider (High Voltage Construction)
ASP 3	Accredited Level 3 Service Provider (High Voltage Design)

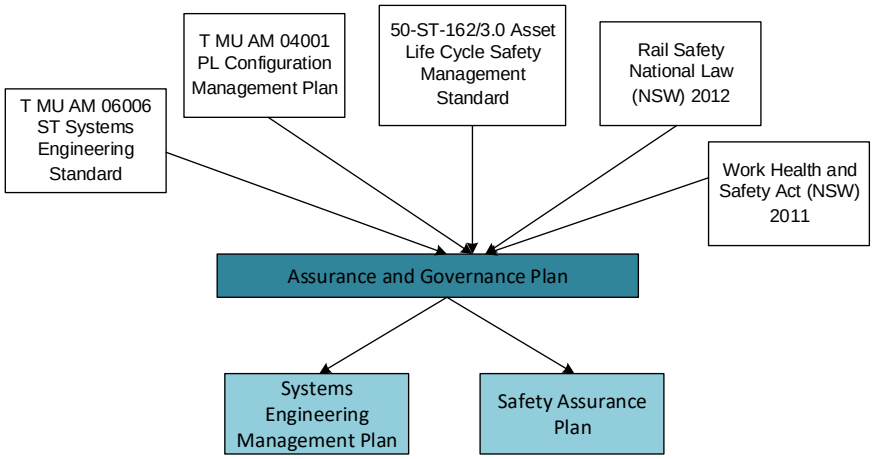
ASS	Acid Sulfate Soils
ATP	Australia Technology Park
BC Act	Biodiversity Conservation Act 2016
BCA	Building Code of Australia
BDAR	Biodiversity Assessment Report
Camperdown-Ultimo Strategy	Camperdown-Ultimo Collaboration Area and Place Strategy
CDRP	Central Design Review Panel
Central SSP	Central Station State Significant Precinct
C2E	Strategy Central to Eveleigh Urban Transformation Strategy
CMP	Conservation Management Plan
Council	City of Sydney Council
CPTED	Crime Prevention Through Environmental Design
CPTMP	Construction Parking and Traffic Management Plan
CSPS	Draft Central Sydney Planning Strategy
DAS	Distributed Antenna Service
DBYD	Dial Before You Dig
DES	Design Excellence Strategy
Design Brief	Architectural Design Competition Brief
Design Competition	Architectural Design Competition
Design Guideline	Western Gateway Design Guideline
Devonshire Tunnel	Devonshire Street Pedestrian Tunnel
District Plan	Eastern City District Plan
DIP	Ausgrid Design Information Package
DN	Diameter Nominal
DPC	NSW Department of Premier and Cabinet
DPIE/Department	NSW Department of Planning, Industry and Environment
DP	Deposited Plan
DSI	Detailed Site Investigation
EIS	Environmental Impact Statement
EPA	NSW Environment Protection Authority
EPBC	Act Environment Protection and Biodiversity Conservation Act 1999
ESD	Ecologically Sustainable Development
GANSW	NSW Government Architect's Office
GFA	Gross Floor Area (as defined under the Sydney Local Environmental Plan 2012)
HIS	Heritage Impact Statement
HV	High Voltage
Infrastructure Strategy	State Infrastructure Strategy 2018-2038
kPa	kilo Pascal
kVA	kilo Volt Amp
LGA	City of Sydney Local Government Area
L/s	Litre per second
LSPS	Draft Sydney Local Strategic Planning Statement
LV	Low Voltage
m	metre
MCF	Mobile Carriers Forum
mm	millimetre

NBN	National Broadband Network
NIA	Noise Impact Assessment
OEH	NSW Office of Environment and Heritage
OLS	Obstacle Limitation Surface
OWMP	Operational Waste Management Plan
Parcels Shed	Former Inward Parcels Shed
PSI	Preliminary Site Investigation
Region Plan	A Metropolis of Three Cities – Greater Sydney Region Plan
RAP	Remediation Action Plan
RAPs	Registered Aboriginal Parties
RMS	Roads and Maritime Services
RTTC	Radar Terrain Clearance Chart
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
SEPP 55	State Environmental Planning Policy No.55 – Remediation of Land
SEPP Infrastructure	State Environmental Planning Policy (Infrastructure) 2007
SEPP SRD	State Environmental Planning Policy (State and Regional Development) 2011
sqm	Square Metres
SREP SH	Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005
SSD	State Significant Development
SSDA	State Significant Development Application
Sub-precinct	Western Gateway Sub-precinct
Sydney 2030	Sustainable Sydney 2030 Strategy
Sydney LEP 2012	Sydney Local Environmental Plan 2012
Taskforce	Tech Taskforce
TIA	Transport and Accessibility Impact Assessment
TNSW	Transport for New South Wales
The Minister	The Minister for Planning, Industry and Environment
The Regulation	Environmental Planning and Assessment Regulation 2000
Transport Strategy	Future Transport Strategy 2056
Urbis	Urbis Pty Ltd
VA/m2	Volt Amps per square meter
VIA	Visual Impact Assessment
YHA	Youth Hostel Association
WELL	WELL Building Standard
WSAA	Water Service Code of Australia
WSC	Water Services Coordinator

2 ASA Compliance and AEO Process

The Atlassian Building Project, as part of the greater Central Precinct Renewal project, is required to comply with ASA Standards and due to the interface with the rail corridor is required to follow an AEO process throughout the project lifecycle.

The Assurance structure adopted by the project in order to deliver a compliant project is as shown below:



The Assurance and Governance of the project, in accordance with the AEO Requirements set out in the TfNSW standards - Configuration Management Plan (T-MU-AM-04001-PL V6.0), Systems Engineering Standard (T-MU-AM-06006-ST V2.0) and Asset Lifecycle Safety Management Standard (50-ST-162/3.0) is documented within the Project Assurance and Governance Plan (ABC-AGP-PLN-0001 V6.0).

This plan sets out the governance arrangement and assurance principles that will be applied throughout the project lifecycle, further details pertaining to the conduct and assurance of systems engineering principles and safety assurance are set out in the project Systems Engineering Management Plan ABC-SEMP-PLN-0001 V6.0 (SEMP) and Safety Assurance Plan ABC-SAP-PLN-0001 V6.0 (SAP) respectively.

The compliance of the project with ASA standards is carried out at an individual design discipline level. Relevant ASA Standards will be applied to the activities conducted by LCI Consultants during the design of the project.

3 Assessment Requirements and Project Responses

3.1 Clause 7(4) of Schedule 2

The ESD principles that are to be incorporated into the proposed development must be aligned with Clause 7(4) – Schedule 2 – Environmental Planning & Assessment Regulation (2000).

The Precautionary Principle

Namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In the application of the precautionary principle, public and private decisions should be guided by:

(i) Careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment; and
(ii) An assessment of the risk-weighted consequences of various options.

PROJECT RESPONSE

The proposed project will be constructed on previously developed land and will not disturb or degrade any local greenfield site. During the design and construction phases, the main contractor will implement an independently certified Environmental Management System (EMS), which demonstrates formalised systematic and methodical approach to planning, implementing and auditing. Throughout the building's operation, adherence to procedures that account for environmental risk and mitigation measures will be met.

Inter-Generational Equity

Namely, that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations.

PROJECT RESPONSE

To uphold inter-generational equity, the proposed development minimises the consumption of energy and water resources whilst reducing embodied carbon and waste. The ESD principles incorporated into the proposed development facilitates the conservation of energy and water resources through energy and water efficiency measures.

Energy consumption will be designed to achieve a minimum 10% improvement above National Construction Code requirements (NCC BCA 2019) and is targeting even higher levels of efficiency. The building is targeting a net-zero carbon emissions pathway through reductions in operational energy consumption and offsetting strategies. This will be achieved using passive design strategies including natural ventilation and mixed mode ventilation, air stratification and internal shading to minimise energy for space conditioning. Onsite renewable energy from solar PV panels and the purchasing of offsite renewable energy will deliver operational net-zero carbon.

The reduction in water use will be established through high WELS rated water fixtures and fittings and a rooftop rainwater capture and reuse for irrigation of planting in the Crown and Park zones. Toilets and cooling towers will be connected to a dual reticulation/ third-pipe system that can be connected to any future precinct-wide recycled water networks.

Waste generated during the construction and operational phases will be diverted from landfill to be recycled. An Environmental Management System (EMS) will be established and adhered to throughout construction. Operational waste streams will be separated to maximise recycled waste once the building is complete and occupied.

The structure of the building will consist of a steel frame and concrete core coupled with cross-laminated timber (CLT). These materials reduce embodied carbon in two ways; by avoiding the use of energy intensive cement and by sequestering carbon in the timber structure.

Reducing energy, water, embodied carbon and waste ensures that the health, diversity and productivity of the environment is maintained for the benefit of future generations.

Conservation of Biological Diversity and Ecological Integrity

Namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration.

PROJECT RESPONSE

The Project will be built on a previously-developed site, ensuring no loss of biodiversity or ecological integrity. In fact, the landscaping proposed for the Crown levels will include native plant selections that will generate a habitat that could support insect and bird species that have been previously displaced.

The implementation of a Construction Environmental Management Plan (CEMP) during delivery will ensure that any stormwater captured will be treated before being discharged from the site, rendering a positive impact on balance to the water aspects that sustain threatened species and ecological communities.

Further, the project's ESD principles to reduce energy, water and waste consumption have an indirect impact to conserve biodiversity and ecological integrity to the broader environment. By minimising demand on energy and water resources, the need for land-clearing and the pollution generated from utility infrastructure will be minimised.

Improved Valuation, Pricing and Incentive Mechanisms

Namely, that environmental factors should be included in the valuation of assets and services, such as:

(i) polluter pays, that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement;
(ii) the users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste; and
(iii) environmental goals, having been established, should be pursued in the most cost-effective way by establishing incentive structures, including market mechanisms that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.

PROJECT RESPONSE

The valuation of the project's assets and services consider environmental factors through the implementation of various ESD initiatives. An Environmental Management System will be in place throughout the construction to ensure that excessive pollution and waste are minimised, and to establish recycling and landfill waste streams during construction and operational phases. This creates a system where pollution is managed and controlled and creates an incentive to reduce pollution and waste.

In operation, the pursuit of environmental ratings such as Green Star and NABERS promote resource efficiency that reduces running costs and increases the value of the development to investors, owners and tenants.

3.2 Frameworks for Best Practice Sustainable Design Principles

3.2.1 Sustainable Design Principles at Atlassian Railway Square

Sustainability is embedded in the ethos of Atlassian which has been evident in the leadership displayed by the founders of the organisation. Consequently, sustainability has been a key foundation of the project since the inception in 2017 and is seen as providing the opportunity to pave the way for the Western Gateway Sub-Precinct. Indeed, Atlassian is committed to achieving carbon neutrality by 2025 through the RE100 program which will ensure that the new development has net-zero emissions.

In recognition of the importance of these values, Atlassian engaged specialists from Australia (LCI) and Europe (Transsolar) during the pre-competition stages of the project to work with the competition architects EC3 and embed these values as part of the reference design's DNA. Located in Germany, Transsolar is an internationally acclaimed climate consulting practice specialising in very low energy and carbon neutral buildings.

As part of the competitive design process for the site, the sustainability brief was used as a critical guide for competitors, and LCI/Transsolar were part of the technical team appraising the competition entries. These sustainability aspirations were also a key component of the weighting for the assessment and appraisal of the competition entries.

The response of Atlassian and the design team has been to design a unique building which is true to the holistic sustainability aspirations of the design rather than designing to achieve the specific outcomes of a formal green building rating. Indeed, the process has been to develop the design with the highest sustainability intent and then see how it rates. The result is a building that is not chasing points but aspiring to deliver sustainable concepts which match the development's vision.

Table 2 includes some examples of ESD framework elements or principles that SEARS suggests may be considered.

Table 2 – Suggested Framework Principles from SEARS requirements.

SEARS Principle referenced	Atlassian Railway Square Design Response
Waste reduction design measures	During Construction, more than 90% of demolition and construction waste will be recycled. During Operation, initiatives including food rescue, segregation and dehumidification of food waste, container deposit recycling and comingled recycling will occur.
Future proofing,	The building incorporates mixed mode and naturally ventilated spaces that could be conditioned by future tenants, if required. A third-pipe recycled water reticulation network is provided for connection to future recycled water networks.
Use of sustainable and low-carbon materials	Timber structure has been introduced in habitats that allow for high rise construction, using 'megafloor' structural transfer slabs. Where possible, concrete will be high in supplementary cementitious materials to reduce Portland cement. Steel structures and aluminium façade elements will be refined and will be sourced from suppliers with low carbon practices and technologies.
Energy and Water efficient design and technology (including water sensitive urban design)	Proposed Mechanical, Electrical and Hydraulic building services will be efficient and minimise the use of energy and water. The roof (Crown) will incorporate significant landscaping for heat island minimisation and biodiversity improvement, whilst ameliorating stormwater impacts.
Use of renewable energy	In addition to the potential inclusion of renewable energy on-site (i.e. solar PV panels), Atlassian is committed to operating the building using 100% Renewable Energy sourced off-site.

Figure 3 demonstrates some of the inherent sustainability attributes of the proposed design. These attributes contribute to the sustainability story that the building portrays, however they may not necessarily translate into a high rating score for any or all of the various Sustainability Rating tools. Notwithstanding this, the following section provides an indication of how the current design currently rates for a variety of tools.

Figure 3 – Sustainability Initiatives

3.3 Third Party ESD Certification

3.3.1 Green Star Buildings v1.1

The project has committed to achieving a 6 Star Green Star Buildings rating which exceeds 'Australian Best Practice' and is considered to exhibit 'World Leadership' design. The Green Star rating system provides a framework to assess how a building reduces its impact on the environment while meeting the economic and social needs for its occupants and surrounding communities.

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

- ResponsibleHealthyResilient
PlacesPeopleNatureLeadership

Points are awarded for a building project's ability to secure as many credits from each category. Each credit targets the environmental impact of a specific design feature. The total number of points awarded determines if the project earns a rating as shown in Figure 4. The Green Star Buildings pathway for Atlassian Railway Square is summarised in Appendix A.

Figure 4: Available Green Star Certification ratings

3.3.2 LEED Rating

LEED is an American rating system, in many ways similar to Green Star, for which the project is targeting a Platinum rating for v4.1 Building Design & Construction (BD&C). Atlassian is targeting 88 points, allowing for a 10% buffer to reach the targeted platinum rating.

3.3.3 WELL Rating

The US developed Health and Wellbeing rating, WELL, is relatively new to Australia but is gaining traction with commercial building owners and tenants. Atlassian Central is aspiring to achieve a WELL Core rating for the Atlassian tenancy levels and a full WELL rating for the base building. A full WELL rating includes concepts that reward tenant HR policies and operational provisions that do not influence the base building design. Some WELL concepts relate to external influences that are hard to design for, such as municipal water quality criteria (i.e. no fluoride) and outdoor pollution from the absence of catalytic converters on passing buses and trucks.

WELL builds on the committed Green Star Building rating scheme and also rewards design features that support the wellbeing of occupants. Atlassian Railway Square's 6 Star Green Star pathway includes alignment with the WELL and LEED pathways where possible.

Figure 5: WELL Rating Scale

3.3.4 NABERS Energy

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

The City of Sydney sets bold targets for energy efficiency in its 2012 DCP (updated in August 2018) which include a peer-reviewed NABERS Energy Commitment Agreement of at least 5.5 Stars prior to CC approval. This target is one of the highest of all planning jurisdictions in Australia and to exceed this requirement and achieve a 6 Star NABERS Energy rating is rare because the scale beyond 5 Stars becomes non-linear and equipment efficiency improvements become less effective in increasing the rating.
Only a small number of projects in the Sydney CBD have achieved a 6 Star rating without the use of Green Power (only 12 across the whole country). One is a small A-Grade building with little external fabric and the other two are low rise waterfront buildings with access to harbour cooling. These buildings are not directly comparable to the Atlassian Central Development and therefore idealised assumptions about occupant behaviour and operation must be made. This is even more challenging in a building that incorporates innovative mixed mode and natural ventilation features that rely on all tenants committing to fully utilising adaptive comfort behaviours.

The commercial office portion of the proposed development will target a 5.5 Star NABERS Office Base Building Energy rating (without GreenPower). A 6 Star rating may be achievable if accredited Green Power is procured but this would restrict Atlassian's procurement options and may not be desirable.

The YHA cannot be rated using the NABERS tool as it is not of a sufficient quality star rating to be comparable to a typical full service hotel.

3.3.5 NABERS Water

The proposed target of 4.5 Star for NABERS Water is also aspirational and not yet widely achieved. Only a small number of commercial buildings in Sydney have achieved a 4.5 Star rating or better (just one 5 Star rating) and of that number;

- Approximately a quarter have no co-incident NABERS Energy rating, suggesting high water efficiency but no energy efficiency.

- Nearly a third have harbour heat rejection systems, rather than conventional cooling towers, significantly reducing water usage.
- At least one building has a recycled water treatment plant that minimises potable water use.
- More than half are low-rise buildings with less than 20,000sqm of NLA with large roofs for rainwater capture and, in some instances, air cooled plant that does not consume water for heat rejection.

Site constraints and the tall form of the building preclude many of these opportunities, making a 4 Star NABERS Water rating a more realistic target for larger commercial towers. The areas of naturally ventilated and mixed mode air conditioning should minimise heat rejection water demand and the vegetated and landscaped areas of the building will be drained to a rainwater tank for irrigation. Additionally, the building will include dual reticulation of potable and non-potable water to allow the development to access any recycled water network in the future which will deliver an immediate and measurable improvement in NABERS Water rating.
The YHA cannot be rated using the NABERS tool as it is not of a sufficient quality star rating to be comparable to a typical full service hotel.

Figure 6: NABERS Star Scale

3.4 Design for Climate Change Resilience

The new Atlassian Central will be designed to future-proof itself from the potential impacts of climate change.

NARCLiM Climate Change Projections

The NSW Office of Heritage and Environment, now part of the NSW Department of Planning, Industry and Environment, has developed the NSW and ACT Government Regional Climate Modelling (NARCLiM) climate change projections to provide a dataset for detailed near future (2020-2039) and far future (2060-2079) projections. Generally, it determines that there will be:

1. more hot days and fewer cold nights;
2. an increase the number of heatwave events;
3. more hot days above 35°C; particularly in Spring and Summer;
4. an increase in rainfall in Summer and Autumn and a decrease in Winter and Spring; and
5. a change in rainfall patterns that will affect drought and flooding events.

CSIRO Climate Future Projections

In addition, the Intergovernmental Panel on Climate Change (IPCC) published four greenhouse gas (GHG) concentration trajectories known as Representative Concentration Pathways (RCPs) which are used by CSIRO for climate projection modelling at a regional scale within Australia. The four RCPs and its definitions include:

- **RCP 2.6** – Emissions peak 2010-2010, decline substantially – 1.0°C of Global Warming Mean and likely temperature range of 0.3°C – 1.7°C
- **RCP 4.5** – Emissions peak around 2040, then decline – 1.8°C of Global Warming Mean and likely temperature range of 1.1°C – 2.6°C
- **RCP 6.0** – Emissions peak around 2060, then decline – 2.2°C of Global Warming Mean and likely temperature range of 1.4°C – 3.1°C
- **RCP 8.5** – Emissions continue to rise throughout the 21st century – 3.7°C of Global Warming Mean and likely temperature range of 2.6°C – 4.8°C

The series of climate futures matrices representing the combination of time periods and greenhouse gas scenarios and classified by the combined changes of the climate variables identified above are provided in *Table 7: Climate futures matrices for RCP 4.5 and RCP 8.5 at East Coast*

.

PROJECT RESPONSE (*See Table 8: Climate change projections and response initiatives for Atlassian Railway Square*

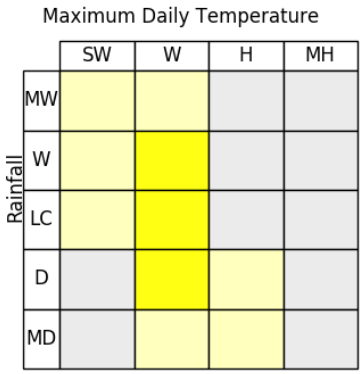
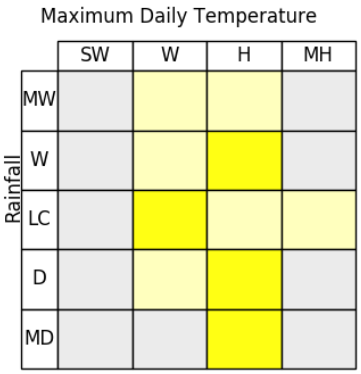
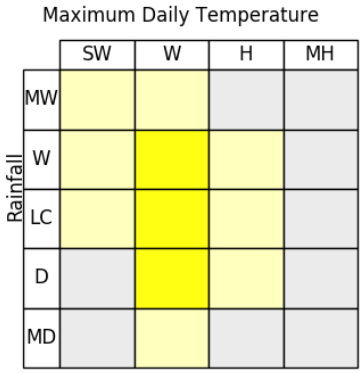
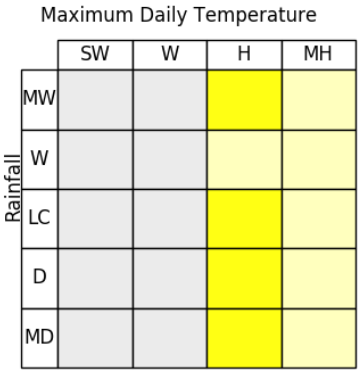
)

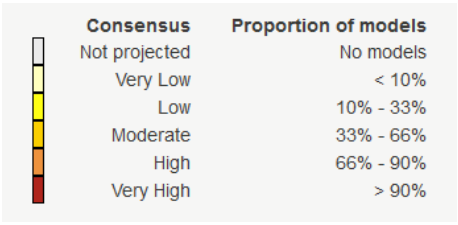
To provide practical and realistic design advice, the use of climate projection data from the medium range scenarios, RCP 4.5, is considered for the 2030 climate projections. The RCP 8.5 scenario is considered an extreme worst-case scenario and has been considered for the 2070 climate projections.

The projections will have an impact on operational costs and occupancy comfort and safety. Hotter days with more heatwave events will particularly affect comfort in the naturally ventilated spaces and the operation of building services equipment. This will also require higher capacity and operational costs for mechanical services to maintain occupancy comfort. Increased drought events will require provisions to supplement shortages in potable water. Stronger and reinforced façade components may be required to withstand increased intensity of storm events

The design initiatives in Figure 7 aim to mitigate the effect of future climate change. These measures should allow the project to meet the difficulties predicted by the CSIRO's climate change projections while maintaining occupancy comfort and operational efficiency.

Table 7: Climate futures matrices for RCP 4.5 and RCP 8.5 at East Coast

<table>
<tr><th colspan="2" rowspan="2">East Coast Climate Futures</th><th colspan="2">Year</th></tr>
<tr><th>Summer 2030</th><th>Summer 2070</th></tr>
<tr><td rowspan="3">Emissions Scenarios</td><td>RCP 4.5</td><td> 
</td><td> 
</td></tr>
<tr><td>RCP 8.5</td><td> 
</td><td> 
</td></tr>
<tr><td colspan="2">Keys</td><td>Maximum Daily Temperature
SW Slightly Warmer < 0.50
W Warmer 0.50 to 1.50
H Hotter 1.50 to 3.00
MH Much Hotter > 3.00

Rainfall
MW Much Wetter > 15.00
W Wetter 5.00 to 15.00
LC Little Change -5.00 to 5.00
D Drier -15.00 to -5.00
MD Much Drier < -15.00</td><td> 
</td></tr>
</table>

Source: CSIRO and Bureau of Meteorology, Climate Change in Australia website (http://www.climatechangeinaustralia.gov.au)

Table 8: Climate change projections and response initiatives for Atlassian Railway Square

Climate Change Projections	Project Responses
• Hotter days and more frequent heatwave events	**Mechanical System Provision** • External Ambient conditions should include an extra 1°C (dry bulb) temperature to calculate the required cooling load of the building as a measure of accounting for 2030 RCP4.5 projections. The cooling load is satisfied by the chillers, cooling towers, chilled water pumps, condenser water pumps, pipework and air side systems, and, as such, all the aforementioned equipment associated with cooling accounts for the requirement of RCP 4.5. • Further, the increase in temperatures as per 2070 RCP8.5 projections will be met as the main HVAC equipment that will satisfy the cooling demand will be replaced in approximately 25-30 years. Spatial provision is enabled through the equipment selection process which inherently provides for larger equipment typically in the range of 4-8% than that of the design requirement. However, it is also noted that equipment produced in 25-30 years will be of a much higher efficiency then that currently produced and, as such, will require a smaller footprint to satisfy the same load as that of its current day equivalent. • Selecting external ambient conditions now to account for the provisions of RCP8.5 projections would be counter intuitive, as the main equipment items which satisfy the cooling demand will be oversized and will not operate with the desired efficiency. **Architectural Design** • Increase in hotter ambient temperature is addressed via use of a high-performance façade to improve overall thermal resistance, minimising radiation penetrating the building, which affects energy consumption and thermal comfort. Working zones are biased towards the South-East of the floorplate with the setback from the façade on the North and West providing self-shading. In addition, shading platforms/ledges in the articulated façade provide external shading and further reducing direct solar radiation.
• Extended drought periods	The current hydraulic services design implements water efficient fittings and a roof capture and reuse strategy to reduce potable water consumption that will assist in combating extended drought periods. • The design incorporates a compact rooftop rainwater harvesting and reuse system that captures rainwater from the roof areas to reuse for irrigation. • Toilets, urinals, and cooling towers will be connected to a future precinct-wide rainwater harvesting network. In addition, strategies that assist water efficient design include, subject to detailed design of the project: • Potable water using fixtures to be low-flow and WELS rated. • Potable water sub-metering to be connected to the BMCS to reduce wastage through identifying leaks, or poor operational performances
• More extreme rainfall events	• Significant works to raise basement ramp entry levels to reduce flooding of basement • Significant stormwater upgrade and diversion works to integrate with broader precinct infrastructure.

4 Conclusion

The framework for the competition has produced an exceptional architectural design response which reflects the sustainability aspirations and draft design guidelines framework.

The successful scheme represents a significant step up in design quality which puts sustainability at the fore front of the design. There is ongoing refinement and technical work as part of the design development to ensure that the ESD principles are further enhanced beyond the SSDA submission.

The high performance level of the building will be realised through the application of a high performance double operable façade, innovative low energy air conditioning system, significant areas of natural ventilation to the tower, integrated on-site renewable power generation, a low carbon timber structure, and a commitment to off-site renewable power.

4.1 Appendix A – Green Star Buildings Scorecard

The following Green Star credit assessment for the combined development has been based on a combination of the SHoP/BVN competition design and a typical Business As Usual approach to PCA Premium Grade commercial office building in Sydney.

The credit analysis is based on current design initiatives and does not rely on implementing strategies to solely seek Green Star Credit points. It is worth noting that the main credit point benefit is due to the commitment of off-setting all greenhouse gas emissions through off-site renewables.

The following Green Star pathway demonstrates that the building as currently designed, is capable of achieving a 6 Star Green Star rating. Specific credits may change through design development and the following list should not be relied upon, however the Project is committed to achieving the targeted rating.

Credit Code	*Credit Title*	*Points Targeted*
Responsible		
1	Industry Development	1
2.0	Responsible Construction (Minimum)	-
2.1	Responsible Construction	1
3.0	Verification and Handover (Minimum)	-
3.1	Verification and Handover	1
4.0	Operational Waste (Minimum)	-
5.1	Responsible Procurement	1
6.1	Responsible Structure	3
7.1	Responsible Envelope	2
8.1	Responsbile Systems	1
8.2	Responsible Systems (Exceptional)	1
9.1	Responsible Finishes	1
Healthy		
10.0	Clean Air (Minimum)	-
10.1	Clean Air	2
11.0	Light Quality (Minimum)	-
11.1	Light Quality	2
11.2	Light Quality - Exceptional	2
12.0	Acoustic Comfort (Minimum)	-
12.1	Acoustic Comfort	2
13.0	Exposure to Toxins (Minimum)	-
13.1	Exposure to Toxins	2
14.1	Amenity and Comfort	2
15.1	Connection to Nature	1
15.2	Connection to Nature (Exceptional)	1
Resilient		
16.0	Climate Change Resilience (Minimum)	-
16.1	Climate Change Resilience	1
17.0	Operations Resilience	2
19.0	Heat Resilience	1
20.0	Grid Resilience	3
Positive		
21.0	Upfront Carbon Emissions (Minimum)	-
21.1	Upfront Carbon Emissions	3

Credit Code	*Credit Title*	*Points Targeted*
22.0	Energy Use - Minimum	-
22.1	Energy Use	3
23.0	Energy Source (Minimum)	-
23.1	Energy Source	3
23.2	Energy Source (Exceptional)	3
24.0	Other Carbon Emissions	2
25.0	Water use (Minimum)	-
25.1	Water Use	3
26.0	Life Cycle Impacts	2
Places		
27	Movement and Place (Minimum)	-
27.1	Movement and Place	3
28.1	Enjoyable Places	2
29.1	Contribution to Place	2
30.1	Culture, Heritage and Identity	1
People		
31.0	Inclusive Construction Practices (Minimum)	-
31.1	Inclusive Construction Practices	1
32.1	Indigenous Inclusion	2
33.1	Procurement and Workforce Inclusion	2
34.1	Design for Inclusion	2
34.2	Design for Inclusion (Exceptional)	1
Nature		
35	Impacts to Nature (Minimum)	-
36.1	Biodiversity Enhancement	2
37.1	Nature Connectivity	2
39.1	Waterway Protection	2
Leadership		
40.1	Market Transformation	3
41.1	Leadership Challenge	2
	Total Green Star Points	**79**
	Green Star Rating	**6 star**

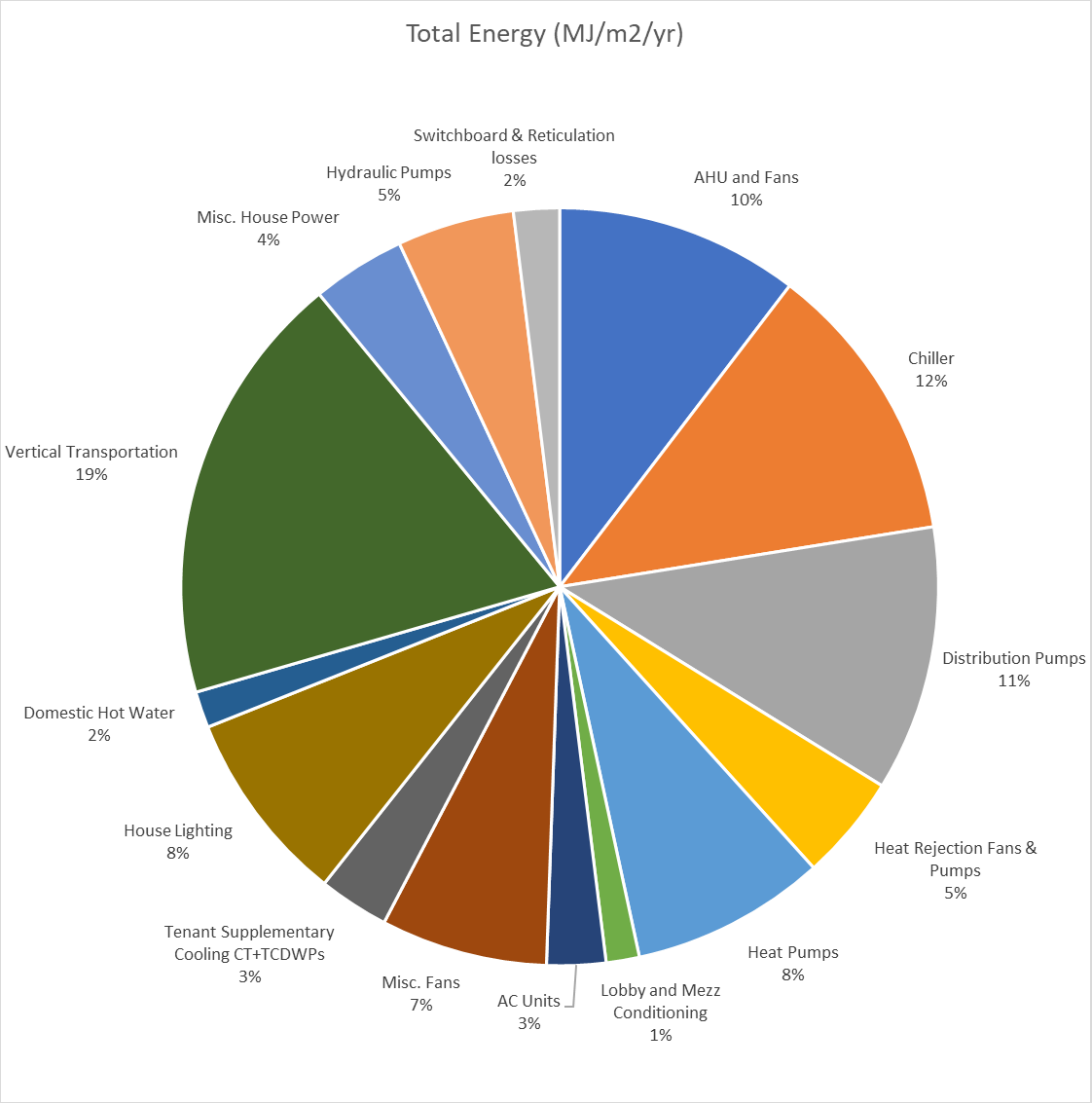
4.2 Appendix B – Atlassian Central SSD-10405 Response To Submissions

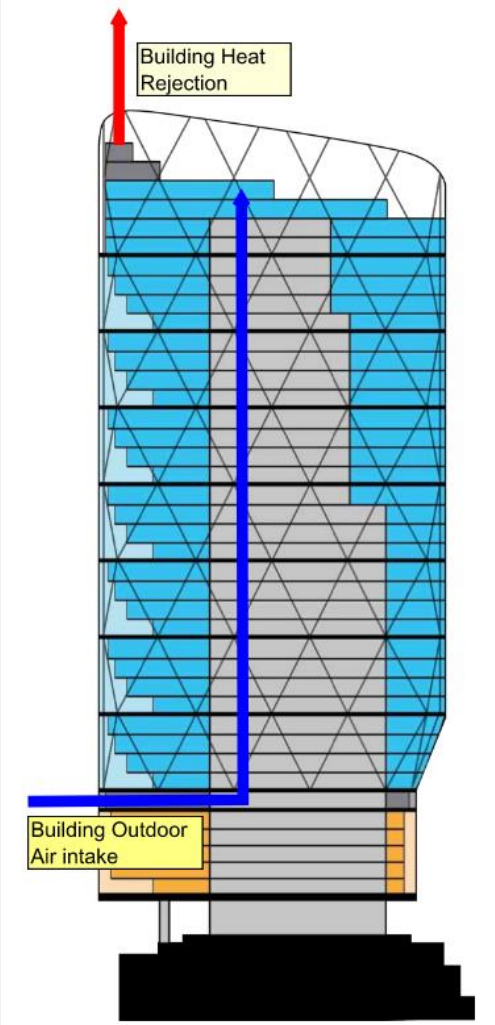
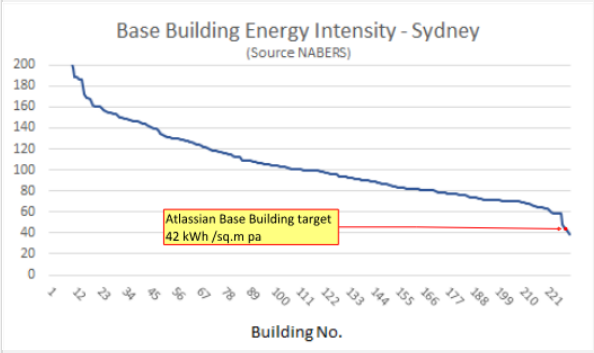
City of Sydney Comment	**Location of Response within Report**
The Heritage Setting View Analysis Report (Urbis, September 2020) does not include the two other significant multi-storey developments proposed for the Western Gateway sub-precinct. These should be included to ensure the cumulative impacts to the SHR site are clearly understood.	Section 7/ Page 23
The City supports the commitment to environmental performance embedded within the proposal, and notes that this is fundamental to the development. We also acknowledge that innovation at this level can create challenges in terms of how the building's design/performance rates using traditional rating tools. As such, the City recommends the following commitments within the application form part of the conditions of consent: A NABERS Office Energy base building Commitment Agreement targeting 5.5 Star must be signed prior to the release of any Construction Certificate. Furthermore, it is not unreasonable or inconsistent to require through conditions a commitment to achieve NABERS 6 Star Rating through the purchase of offsite renewable energy, even if it requires Atlassian to enter into a 5- or 10-year Power Purchase Agreement. The building is to achieve Net-Zero operational emissions through a combination of energy efficiency, on-site renewables (through Building Integrated PV cells) and offsite renewable power. Rainwater harvesting is to occur and be reused on-site for landscaping and grey water appropriate appliances.	The building will be committing to a minimum 5.5 Star NABERS Energy Commitment Agreement with an aspirational target of 6 Stars. Net Zero emissions will be achieved through a combination of on-site renewables, and Power Purchase Agreements. Rainwater harvesting will provide a reduction in potable water use, however the reduced roof area due to the trafficable nature will provide limited benefit. Notwithstanding this, the building will be designed with a recycled water network to be plumbed into the proposed City of Sydney network when available. The construction stage will be targeting 90% recycled demolition and construction waste in accordance with the Green Star target.

City of Sydney Comment	Location of Response within Report
The development is to be designed to include dual reticulation for connection to any future precinct scale recycled water scheme. 90% of demolition and construction waste is to be recycled, while provision is made for separate food and garden organics waste.	

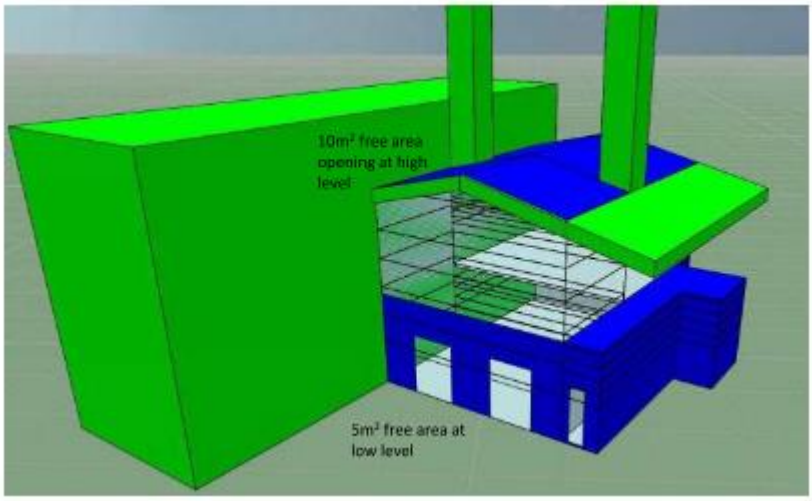
	NABERS SD02 Position - Typ Habitat Resize AHU coils; Updated HC controller; Infiltration B 0.35ACH continuously; 7.5% opening to L19 and L22 Park zone					
Scenario	**Run-32**					
	Electricity (MWh/year)	Gas (MJ/year)	Diesel (L/year)	kWh/m²/yr	MJ/m²/yr	% of Emissions
Base Building Loads						
AHU and Fans	432.2			9.3	33.5	18.4%
Chiller	283.2			6.1	21.9	12.1%
Distribution Pumps	229.0			4.9	17.7	9.7%
Heat Rejection Fans & Pumps	110.3			2.4	8.5	4.7%
Heat Pumps	200.1			4.3	15.5	8.5%
Lobby and Mezz Conditioning	32.7	-	-	0.7	2.5	1.4%
AC Units	58.0	-	-	1.2	4.5	2.5%
Misc. Fans	164.0	-	-	3.5	12.7	7.0%
Tenant Supplementary Cooling CT+TCDWPs	69.3	-	-	1.5	5.4	2.9%
House Lighting	191.1	-	-	4.1	14.8	8.1%
Domestic Hot Water	35.7	-	-	0.8	2.8	1.5%
Vertical Transportation	427.5	-	-	9.2	33.1	18.2%
Misc. House Power	92.1	-	-	2.0	7.1	3.9%
Generator - Jacket Water Heater	-	-	-	-	-	0.0%
Generator - Testing	-	-	-	-	-	0.0%
Hydraulic Pumps	115.2	-	-	2.5	8.9	4.9%
Switchboard & Reticulation losses	48.8	-	-	1.1	3.8	2.1%
Sub-Total (Excl. On-Site Generation)	**2,489.3**	**-**	**-**	**53.6**	**181.9**	106.0%
On-Site Generation	**140.0**	**-**	**-**	**3.0**	**10.8**	**0.**
Total Grid Demand	**2,349.3**	**-**	**-**	**50.5**	**171.1**	100.0%
	A+ Mezz	**A+B+Mezz**	**A+B+C+Mezz**			
Electricity split (%)	100%	100%	100%			
Hour/Week	60	60	60			
Postcode	2000	2000	2000			
NLA	**46,483**	**52,246**	**56,377**			
NABERS Stars	**5.89**	**6.01**	**6.08**			

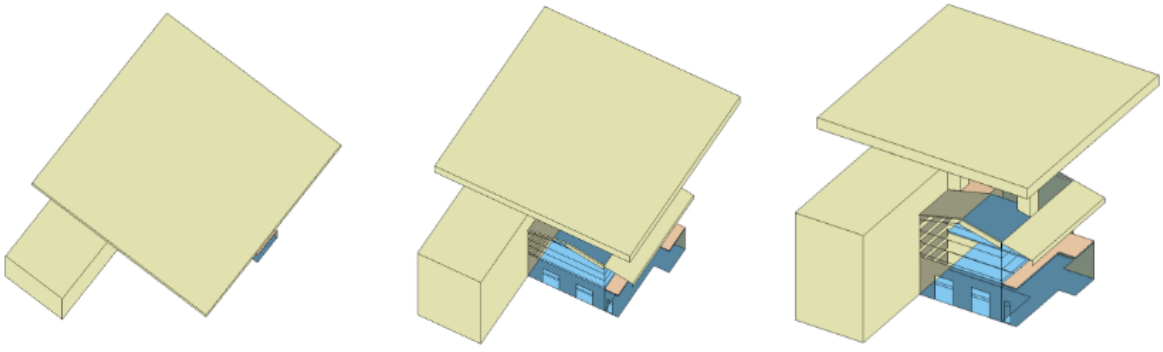
Preliminary NABERS Modelling at Schematic Design Stage

City of Sydney Comment	Location of Response within Report
	
The ESD Report addresses climate change, but only from the point of view of internal thermal comfort. It does not address the Urban Heat Island Effect and impacts on the wider context. The report should be updated to address reflected heat from the façade, any heat impacts on the public domain and proposed mitigation measures. Reducing the UHI effect is a specific aim within the draft Western Gateway Design Guide (refer part 2.1(m); 3.4.1(e) part c: reduce the urban heat island effect). It is not acceptable to rely on tree planting by others	The total energy demand of the building is only 50% compared to conventional buildings representing the best 30% of the market. This by itself is significantly reducing the anthropogenic heat emissions at the site, in particular at the ground and pedestrian level. No fossil fuels are used and burned at the site. Air Cooled Heat pumps are used for pace heating and domestic hot water. All heat is rejected at high levels about 160m above ground.

City of Sydney Comment	Location of Response within Report
outside the development site as potential UHI mitigation. 	Roof landscaping of Crown Roof provides heat island mitigation.   Crown Landscaping to mitigate Heat Island 
The north elevation of the Parcel Shed is proposed as full height glazing with no external shading. Further, the aspirations for the project architecture show clear glazing to enhance transparency and allow views into the building. This is not well resolved or feasible due to summer sun ingress, and high performance or tinted/reflective glazing will be required to address heat. The City strongly objects to the use of high performance or tinted glazing in lieu of passive external shading devices in situations directly impacting the public such as this.	Final thermal modelling of this space is yet to be finalised for this naturally ventilated space. Preliminary thermal modelling has shown the impact of the SHGC on the north facade glazing has a low impact on the internal temperature within the space. This is mainly due to the high level of outdoor air exchange to the naturally ventilated lobby space, the north-eastern aspect of the glazing, and the shading from the building to the east and tower above.

City of Sydney Comment	Location of Response within Report

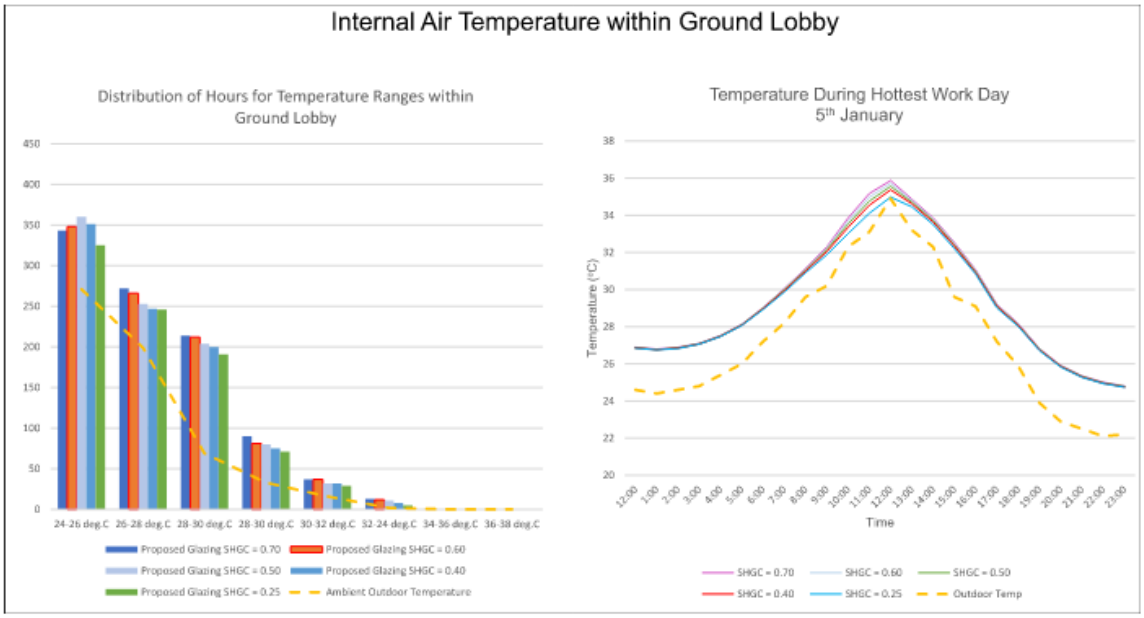


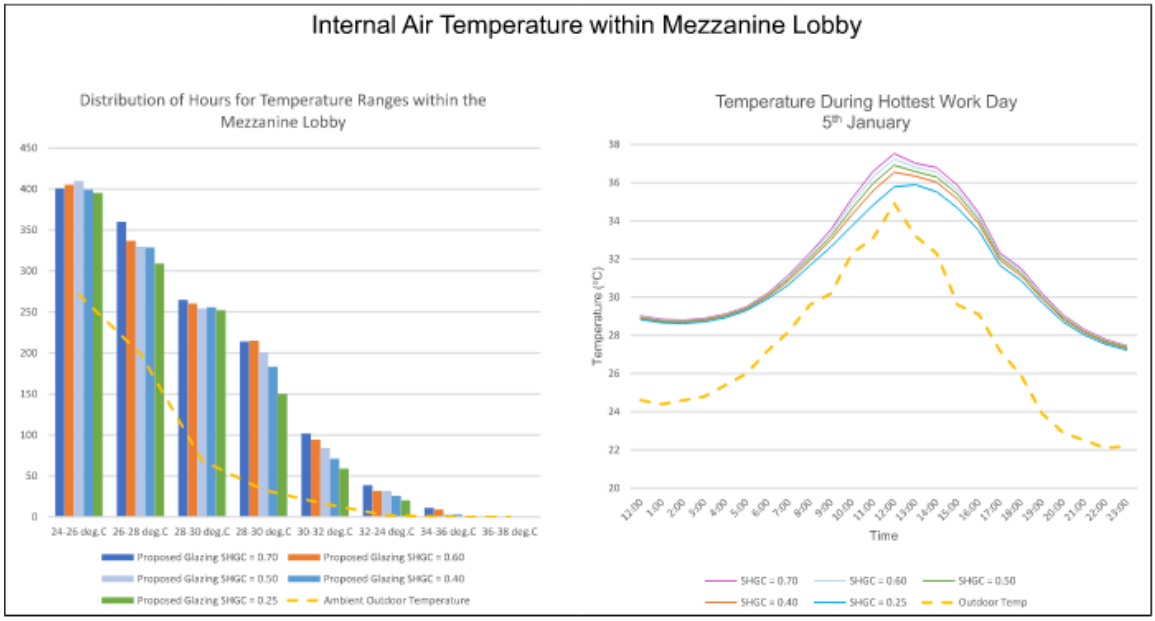


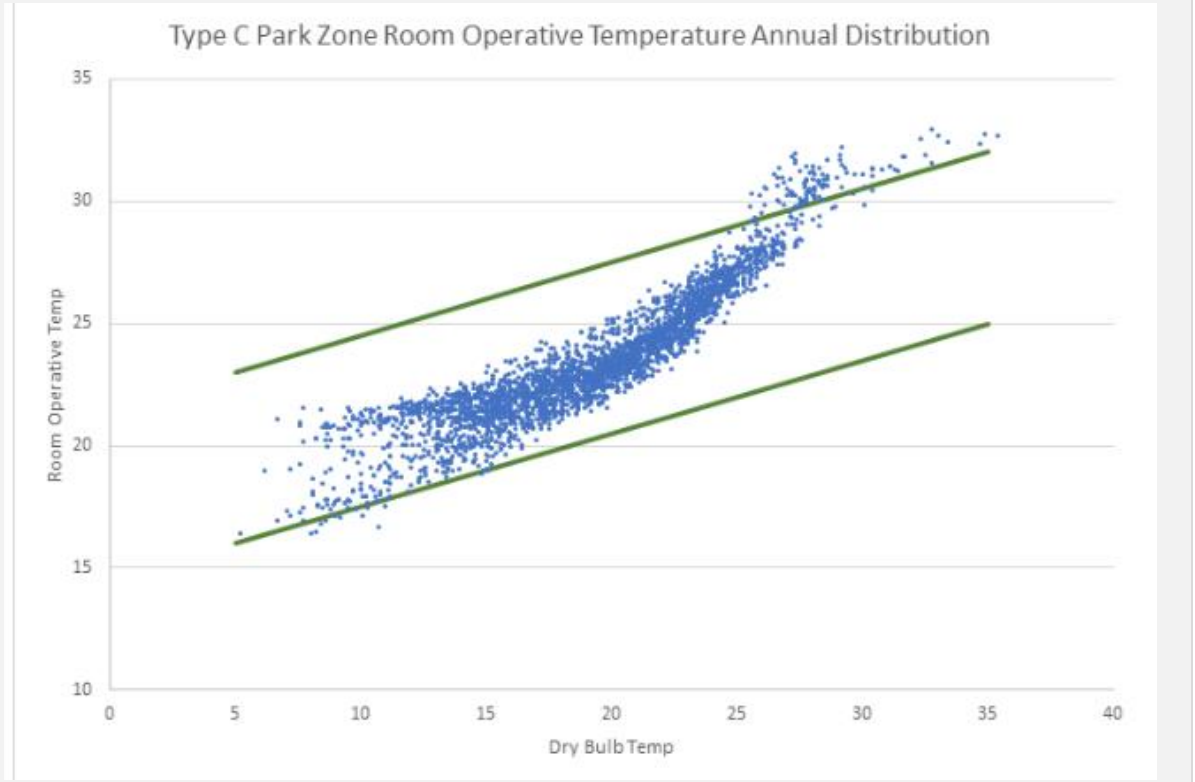
Summer Solstice
12pm on December 22nd

March Equinox
12pm on March 20th

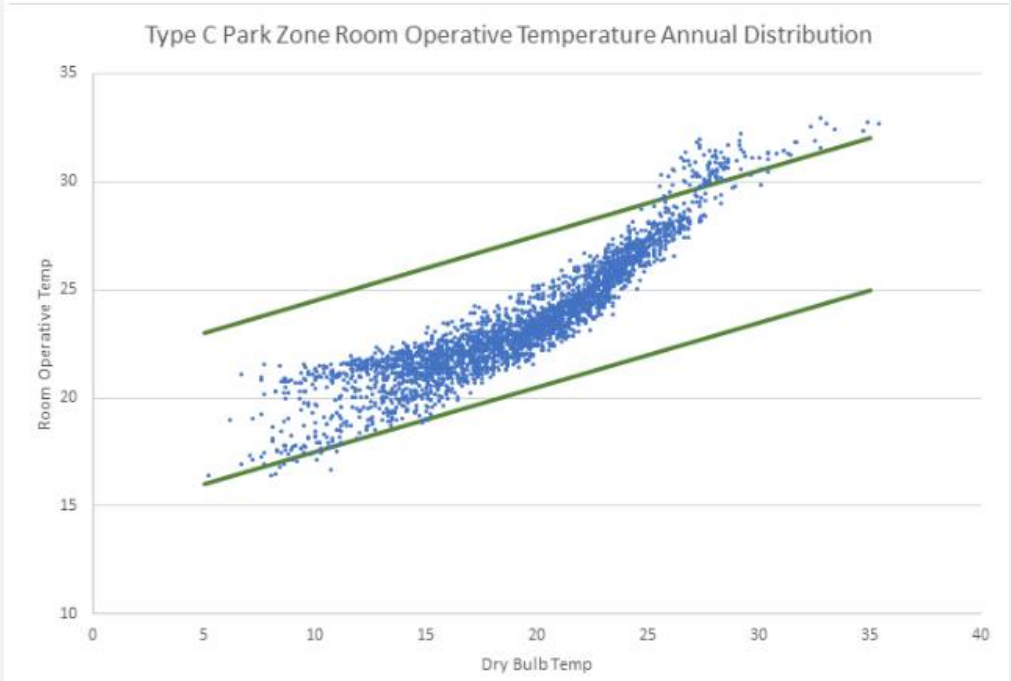
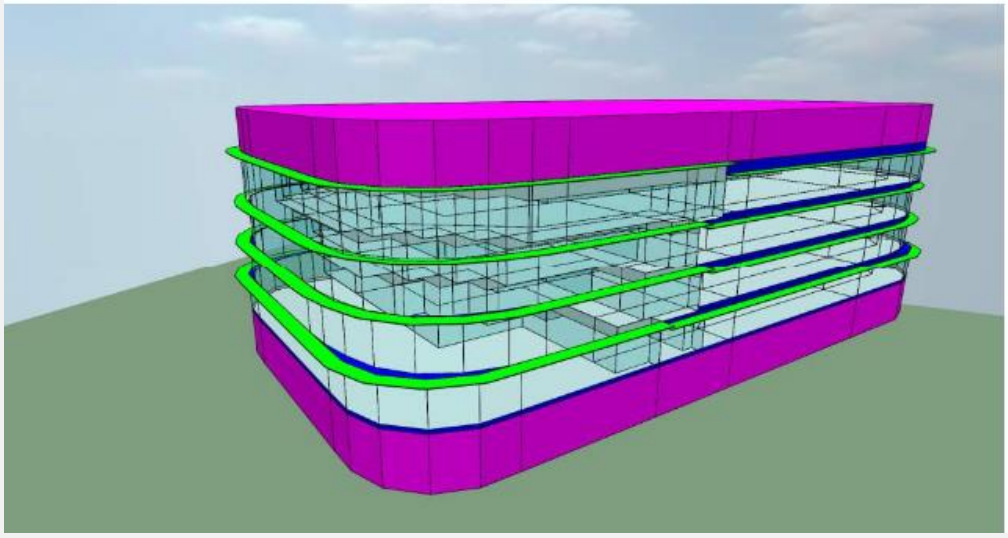
Winter Solstice
12pm on June 21st



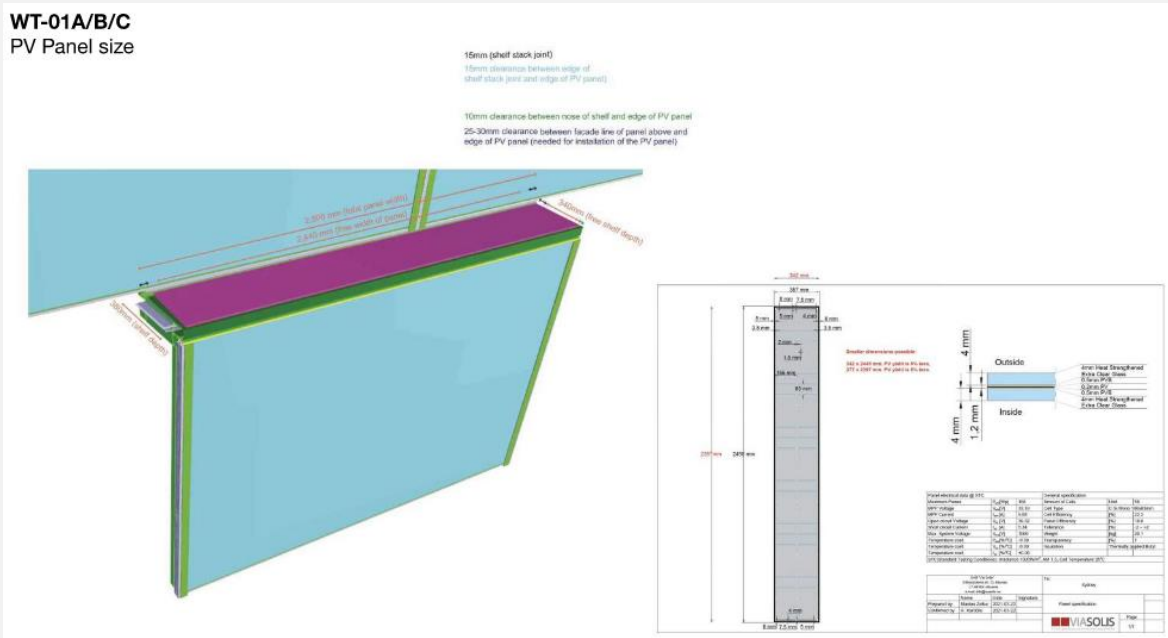
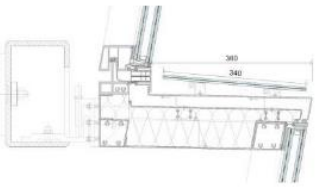
City of Sydney Comment	Location of Response within Report
	
The application proposes areas of the tower floor plate to be naturally ventilated (the BiPV are operable panels) on the northern and western elevations and partially to full mechanical ventilation on the east and southern edges of the building (fixed panels). Developed in Europe, this system has great potential in the northern hemisphere climate conditions. There is evidence of success trialling the glass system in greenhouses for crop production in Europe and Israel reduces energy requirements by maintaining optimal root temperatures for crops and plants, rather than heating or cooling the air. https://www.pv-magazine-australia.com/2019/10/15/new-chapter-for-solaragriculture-bipv-for-off-grid-greenhouses/	The PV panels are not operable, the panels are attached to the shelves. The shading performance of shelves has been modelled in detail for the façade geometry and all orientations. The areas are well natural ventilated. All-natural ventilated areas are supplied from the parks. Detailed thermal comfort modelling has been undertaken for the parks as well as for the adjacent natural ventilated areas, based on the performance of the façade, openings, internal loads and orientations. The design is aiming on comfortable mid-door conditions for people. It is not aiming on greenhouse conditions. The chart in the attached report shows the results of preliminary modelling indicating the anticipated operative temperature frequency between the 80% comfort satisfaction adaptive comfort bands in the naturally ventilated park zone. The modelling shows clearly that for the naturally ventilated space the adaptive comfort conditions are maintained for the majority of the year.

City of Sydney Comment	Location of Response within Report
 	
However, there is no confirmation the BIPV system been constructed and tested in commercial buildings elsewhere in Australia, preferably in areas with the same climate zone. The design fails to confirm:	The Type C space is provided with approximately 15% openable area to maintain thermal comfort conditions within the space for most of the year. Refer to the results of the detailed thermal modelling demonstrating the

City of Sydney Comment	Location of Response within Report
If the glazing system contribute to heat gain on a western façade and what are the impacts on the healthy growth of trees and plants. Does the glazing / operable ventilation system result in wind impacts to landscape zones within the tower? What is the strategy if trees fail on these upper levels post construction?	Type C Park space Operative Temperature over the year. The operable windows can be adjusted to minimise the impact of wind when needed. The window openings to the Park are automatically operated to control natural ventilation according to ambient temperature, wind and rain conditions. The PV system is intended to be a Building Applied PV, BAPV system. The PV shall not impact the health conditions of people or of trees and plants in the park. Heat of absorption of solar radiation is assumed to be well natural ventilated
The glazing system and creation of landscaped habitats within the tower is an ambitious proposal that must also be feasible and designed based on empirical evidence that the design can work in Sydney.	The thermal performance modelling is showing that the temperature conditions can be hold close to ambient conditions. The Parks, as designed and intended to be operated to create excellent mid-door conditions and to not overheat. Light and solar gains should be sufficient for trees and plants grown indoors.

City of Sydney Comment	Location of Response within Report
 	
DPIE have no assurance that the landscape will succeed and evidence that a stable ambient temperature and environment can be achieved for optimal plant growth with natural ventilation.	The conditions in the park are intended to suit thermal mid-door comfort for human occupancy. Natural ventilation is controlled to increase minimal temperature in winter, remove solar gains in summer and to moderate wind and gust. The climate control is understood to satisfy conditions for plant growth. The trees in the

City of Sydney Comment	Location of Response within Report
	Habitat shall be sized to contribute to the shading of the area were planted. Once the Cp values are available and design of the façade and openings is progressed the thermal natural vent performance and control of wind can be modelled in greater detail. Refer to the
The following recommendations are made with respect to the BiPV system: Submit photographic evidence and confirm locations where this BiPV glazing system has been built with planting at the edge in Sydney or a warm temperate climatic zone. Build off site in Sydney a full-sized prototype for the BiPV façade with planting in the habitat and tested off site located in a west facing aspect. Submit empirical evidence gathered from testing the prototype to confirm feasibility of the glazing solar system, natural ventilation and how impacts on proposed planting within Habitat levels will be mitigated. The City understands a similar condition was applied by DPIE to the Lend Lease development Damaru House Barangaroo (1 Sussex Street) that includes an integrated green roof with solar panels over a CLT commercial building. DPIE required empirical evidence and ongoing research data collected to demonstrate the energy captured, energy costs and temperature reduction, and success of an integrated green roof with PV cells.	This question or request might be based on a misunderstanding of the PV system and purpose. There is no BIPV glazing. BAPV are glass-glass modules for reasons of fire protection The BAPV is not intended to reduce temperature in Park or to be integrated with the plants. Refer to details of the façade and location of PV panels on shelves in the attached report.

City of Sydney Comment	Location of Response within Report
WT-01A/B/C PV Panel size  **WT-01A/B/C** PV testing **PV Glass** Indicative detail for SD 1.0 where PV is a rainscreen cladding Based on initial fire brigade response, rainscreen detail approach will be preferred  **Fire test results** PV glass performs better than laminated build-up without embedded PV in smoke developed index, no other category has provided results (no ignition in any specimens) **Laminated glass build-up** Table 4 Test calculations and results Table 5 Regulatory indices Number of specimens ignited: 0 **Laminated PV glass build-up** Table 4 Test calculations and results Table 5 Regulatory indices Number of specimens ignited: 0	
The acoustic report identifies hostel rooms on the north and west elevations as exceeding comfort levels and requiring an alternative natural ventilation strategy. Providing natural ventilation to the hostel rooms is imperative to ensure the development achieves the sustainability outcomes stated within the EIS. It is recommended that the DPIE require any natural ventilation strategy to comply with the City's draft Alternative natural ventilation of	Acoustic report does not identify a requirement for an alternative natural ventilation strategy. It identifies a requirement for an alternative means of ventilation to be provided in accordance with the requirements of the NCC (i.e. alternative ventilation system complying with AS 1668.2 and AS/NZS 3666.1). This has been achieved through a mechanical ventilation system.

City of Sydney Comment	Location of Response within Report
apartments in noisy environments performance pathway guideline.	
A comprehensive Emergency Response Plan (ERP) is to be developed for the site. The ERP is to specifically address foreseeable on-site and off-site fire events and other emergency incidents or potential hazmat incidents. The ERP details the appropriate risk control measures that would need to be implemented to safely mitigate potential risks to the health and safety of firefighters and other first responders. Such measures will include the level of personal protective clothing required to be worn, the minimum level of respiratory protection required, decontamination procedures to be instigated and minimum evacuation zone distances. Other risk control measures that may need to be implemented in a fire emergency (due to any unique hazards specific to the site) should also be included in the ERP. Two copies of the ERP are to be stored in a prominent 'Emergency Information Cabinet' located in a position directly adjacent to the site's main entry point/s.	
Electricity generation from diesel generators The EIS states that the proposal will include installation of several stand-by emergency diesel generators. Section 5.2.2 of the AQA states that "The standby generators would be for emergency use only and would not be operated under normal circumstances." However, section 8.10.1 ofthe EIS indicates that these generators will be operated during testing and maintenance. The EIS does not provide fuel consumption figures for the generators, or details about how often and how long the generators will be operated during testing and maintenance. Clause 17 of Schedule 1 of the	The generators are not proposed to be in operation for more than 200 hours per year. Through the regular testing for the back-up generators, the estimated total hours of generator operation will be less than 100 hours.

City of Sydney Comment	Location of Response within Report
POEO Act states that the generation of electricity by means of electricity plant that: • is based on, or uses, an internal combustion engine; and • that is situated in the metropolitan area; and • has capacity to burn more than 3 megajoules of fuel per second; and • operates for more than 200 hours a year is required to be licensed by the EPA. Under clause 17, 'plant' includes all generators on the premises collectively, and 200 hours a year includes testing and maintenance. Therefore, if all of the generators combined at the premises have a capacity to burn more than 3 megajoules of fuel per second, and if the sum of the hours operated for testing and maintenance all of the generators at the premises exceeds 200 hours a year, the proposal will require an Environment Protection Licence under the POEO Act. The EPA recommends that the proponent provide details about: • the individual and combined electrical generation capacity of the generators. • the individual fuel rate and combined fuel consumption capacity of the generators. • the proposed generator testing and maintenance regime. • the combined annual hours of operation of the generators, including testing and maintenance. • the total amount of fuel proposed to be stored on site for the generators; and • whether an Environment Protection Licence is required for the proposal under clause 17 of Schedule 1 of the POEO Act. If the proposal requires an Environment Protection Licence under the POEO Act, the	

City of Sydney Comment	Location of Response within Report
proponent will need to apply to the EPA separately for the licence.	
Air quality Assessment (AQA) The EPA notes that that AQA has adopted a qualitative approach to assess potential air quality impacts. The EPA has reviewed the AQA and considers that it does not provide adequate information to enable the EPA to accurately assess the air quality impacts associated with operation of the proposal. The EPA recommends that the AQA be revised to provide further information on the following: a) Emissions • Table 14 in Appendix A of the AQA provides the emission concentrations of the diesel generators for NOx, CO, HC and PM. The EPA recommends that Table 14 be updated to also include emission concentrations for SO2, PAHs and VOCs. • The EPA recommends that the proponent justify the proposed backup power source, and detail the alternative options considered. • Section 6.2 of the AQA provides a list of recommended mitigation measures to minimise potential air quality impacts during operation. The EPA recommends that the proponent provide further details to demonstrate that all reasonable and feasible emission controls have been considered to prevent or minimise air pollution from operation of the generators. b) Model scenarios • The EPA recommends that the AQA include a more robust assessment of the generator testing regime for all possible hours of operation and present the impacts at identified receptors in accordance with the EPA's Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (2016). • The EPA recommends that the AQA revise the normal and worst-case operational model	

City of Sydney Comment	Location of Response within Report
scenarios to assess the potential impacts of operating the emergency generators during testing and maintenance, and for extended periods during emergencies. The AQA should provide justification for the frequency and length of emergency operation modelled. • The EPA recommends that the AQA include an evaluation of the number of hours in a year, if any, that exceedances of the ground level concentrations at nearby receptors are predicted to occur for the worst-case scenario including generator operation. c) Impact assessment criteria exceedances • The EPA recommends that the AQA include contour plots for all pollutants for all modelled scenarios. Predicted impacts at the identified receptors should be presented in the AQA that includes highest increments and highest background air quality with the corresponding hourly background or increment.	
Noise and vibration impact from rail operations The EPA's response to the request for input to the Secretary's Environmental Assessment Requirements (SEARS) for the proposal (EPA ref. DOC19/1037631-2, dated 5 December 2019) recommended that "Any future planning approvals permitting development of the site should include acceptable vibration and ground-borne noise limits for spaces within the development drawn from the EPA's Rail Infrastructure Noise Guideline (EPA, 2013) and Assessing Vibration: a technical guideline (DECC, 2006)." The EPA notes that the potential for noise and vibration impacts from rail infrastructure has been considered in the EIS and NVIA. The EPA recommends that, if approved, the proposal should be consistent with the EPA's Rail Infrastructure Noise Guideline (EPA, 2013) and Assessing Vibration: a technical guideline (DECC, 2006)."	There are no uses identified within the EPA's RING that are present within the proposed development. Hence, this should not be applicable. Confirming the limits outlined in EPA's Assessing Vibration document will be applied to this development, per the criteria outlined in the NVIA.

City of Sydney Comment	Location of Response within Report
Sydney Water's servicing requirements for this proposed development are provided under the Notice of Requirements for the Feasibility study that the proponent has already lodged with us – CN 182654. Or any future Notice of Requirements.	The feasibility Section 73 noted that modelling of the watermain will need to be undertaken to confirm capacity. Discussions have been had with Sydney Water to identify proposed sewer connection to the DN400 sewer main adjacent to the site. A Section 73 application will be lodged with Sydney Water once DA approval is provided. The Section 73 application will provide the building water and sewer loads.
As specified under this Feasibility study, the developer must engage a hydraulic engineer and conduct a detailed planning study to determine required augmentations and proposed connection points for potable water and wastewater. This needs to be provided to Sydney Water for review. Service location and potholing of existing sewer mains are to be undertaken accurately to identify the location of existing assets.	Final sewer and water loads will be provided with the Section 73 application. .
Detailed servicing requirements will be provided at the Section 73 application stage.	
As per our available records, a major 1,500mm Sydney Water stormwater pipe is located within the development boundary. A section of the 1,500mm pipe is within the pedestrian subway tunnel and another section of this 1,500mm pipe is free of any buildings over this pipe and open to sky. Building over Sydney Water's 1,500mm stormwater pipe As per current Sydney Water's guidelines for building over and adjacent to stormwater channel, no new buildings or permanent structures are to be proposed over Sydney Water's stormwater pipe/channel or within 1m from the outside face of the stormwater pipe/channel. These clearance requirements would apply for unlimited depth and height. Considering the specific circumstances at this location, Sydney Water will not object to any	

City of Sydney Comment	Location of Response within Report
building over the 1,500mm pipe, provided the extent of the building over this pipe is limited to the existing pedestrian subway tunnel. No building over this 1,500mm pipe is permitted where the current air space above this 1,500mm pipe is open to sky.	
Building under the existing Sydney Water's 1,500mm pipe Sydney Water's concurrence to the proposed building under Sydney Water's 1,500mm pipe is subject to engineering evaluation where the proponent is required to provide evidence that the current proposal would not increase the risk to Sydney Water. Under the current circumstance, the followings are attributed to Sydney Water's existing 1,500mm pipe: • Sydney Water's 1,500mm pipe is not reliant on any buildings or structures for its structural stability. • In the event, If the existing stormwater pipe is leaked or failed, it will not flood any building or property below the existing pipe level. The proponent is required to provide their construction and other necessary details to ascertain, that the proposed building under the Sydney Water's stormwater pipe maintains the above status quo.	
Structural intent The submitted Building Services Utility Report (LCI & Stantec, September 2020) indicates that the 'Day 2' basement connection to Block B requires tunnelling under the existing sewer mains in the Devonshire Street Tunnel. Given the criticality of this connection to the function and overall performance of the Consortium's Integrated Distribution Centre to support the optimal public domain outcome further details are warranted. In particular, the Consortium recommends the Block A proponent be required	

City of Sydney Comment	Location of Response within Report
to consult with the Consortium and outline its intended approach. The design and detail of this connection is subject to final agreement between the Block A proponent and the Consortium.	
Acoustic The Western Gateway Design Guide and Public Realm Strategy is seeking an activated ground plane both day and night. Detailed consideration should be given to the noise assumptions from the uses of the adjoining owners including Block B and Block C. In order to provide the optimum ground plane experience, acoustic measures should be implemented within Block A to ensure that the ground plane retailers of Blocks A, B and C can operate harmoniously with the occupants of the proposed Block A hotel and office. Incorporation of a precinct wide approach to the acoustic principles for the sub-precinct should be considered for all new built form in the Western Gateway Design Guide to allow the redevelopment of the Western Gateway into a vibrant and activated mixed use precinct. This precinct approach would involve noise sensitive development (like hotel use) around the activated plaza to incorporate a level of acoustic mitigation to respond to the future environment, to enable greater flexibility and opportunities or ground plane activation.	Given the activities within the activated plaza are unknown at this stage, this should be discussed at a later date. In addition to this, activities of retail precincts within the plaza will need to comply with standard environmental noise emissions regulations (liquor act, NSW POEO, etc.) and hence will need to consider the use of the hotel spaces with windows open, regardless of facade noise mitigation.