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TOGA Central Station Adina Redevelopment

Environmentally Sustainable Design (ESD) Statement

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1.0 Introduction

1.1 Project Overview

TOGA has proposed redeveloping their existing Adina Hotel property, located in central Sydney along Lee Street and adjacent to Henry Deane Plaza , known as Block C of the Western Gateway Sub-precinct.

The project has been conceived of as the restoration and adaptive reuse of the heritage quality Parcel Post building, which currently houses the Adina Hotel, and the addition of a tower over the Parcel Post building. The Parcel Post building will contain hotel reception, restaurants, conference and meeting facilities, and other public functions; the roof of the Parcel Post building may be developed as public space, possibly as a restaurant. Hotel rooms will be relocated into the lower levels of the tower overhead, connected by a new lift and service core. The upper levels of the tower will be developed as premium office space, designed at the quality and with the amenities required to attract technology companies as tenants.

1.2 Project Sustainability Brief

Sustainable development principles are at the heart of the design proposals for the subject site.

In line with expectations from both the Australian market for premium workplace buildings and the facility requirements of leading global technology companies, and meeting with the requirements of Transport for NSW's Draft Design Guide for the Western Gateway Sub-precinct (version 3, dated 20 June 2020), this project will achieve the following key goals and objectives:

Healthy Buildings

- Achieve high indoor environmental quality for occupant health and well-being
- Provide great daylight and control of sunlight and glare for all tenancies
- Enable indoor-outdoor spaces and tenancy connections to the outside by inclusion of amenity natural ventilation
- Excellent alternative transport availability and end-of-trip facilities
- Achieve at minimum a WELL Silver Core and Shell certification

Zero Carbon Buildings

- Minimise embodied carbon through careful design, material selection, and product specifications
- Integrate passive design principles, preferably sufficient well-insulated external wall, to minimise architectural and mechanical system complexity
- Operate with minimal energy input to provide low-carbon, low energy cost tenancies
- Minimise combustion in building systems to enable zero-carbon operations through renewable power purchase
- Minimise additional peak resource loads upon local utilities and provide smart grid benefits to the network
- Achieve NABERS 5.5 Star Energy for the commercial tenancy, NABERS 4.5 Star Energy for the Hotel

Social Sustainability

- Support a vibrant, active and healthy community through street level activation and an active vertical circulation axis
- Provide restorative spaces inside and out featuring plants, natural materials, and other biophilic elements
- Foster community resilience through engagement with local stakeholders and participation in local community programs

As a quality assurance measure to ensure that these goals and objectives are delivered, along with a broader sustainability program, TOGA commits to certifying the development at a Six Star level using the Green Star Design & As Built (v1.2) rating tool.

2.0 Sustainable Management

2.1 Sustainable Management Key Goals

Objective:	Target:
Sustainability Benchmarking	• The key project design features align with a 6 Star rating under the Green Star Design and As Built tool.
Best Practice Commissioning and Tuning	• Full compliance with Green Star Commissioning and Tuning requirements
Metering and Monitoring	• Best practice metering and monitoring provision in line with Green Star and NABERS requirements
Climate Adaptation and Resilience	• Incorporate measures for resilience to extreme events and climate change
Best Practice Waste Management	• A whole of life integrated waste management system that facilitates circular economy approach to material reduction and recycling.

2.2 Design Proposals

2.2.1 It is proposed that the Green Star Design and As Built green building rating tool (version 1.2) will be used as a quality assurance methodology for the delivery of a design that represents excellence in sustainability. A Green Star review has been carried out at this design stage to ensure that the design has potential for delivery of this ambition.

2.2.2 The building will be designed and constructed with the end user tenancies in mind; to facilitate their ability to carefully manage energy and water consumption, minimising their running costs and environmental impact. During the design development stages, consultation will be held with future user group representatives. As part of this the design team will engage with users on the proposed building systems and their sustainable management and operation principles.

2.2.3 All key environmental building systems including indoor environmental quality, energy and water will follow Green Star best practice to ensure that the building is handed over to the end-users in line with design intent.

2.2.4 The commissioning process will be targeted to include air-pressure testing of the building fabric to target a minimum air-tightness target in line with Green Star standards to deliver improved energy efficiency and internal thermal comfort. High-quality building sealing will also contribute to improved acoustics and project wellness aspirations for achieving reduced infiltration of dust particles and air pollutants to the internal environment.

2.2.5 The project will employ smart metering systems for all tenancies so that they can be empowered with immediate information on energy and water consumption subject to cost review of options available. Options for cost effective integration of smart energy management technologies for tenants will be explored in more detail in the design stages.

2.2.6 During the construction period the contractor will follow best practice and develop a site specific environmental management plan. Sufficient support will be given to the site team such that they are educated in sustainable construction methods and understand the performance quality aspects required for this project.

2.2.7 During building operation, minimise waste-to-landfill through the provision of recyclable waste, organics, e-waste and non-recyclable waste storage at each level of the building as appropriate. Space allocation for waste collection will be sufficient for on-site management of individual waste streams and movement of appropriate waste collection vehicles.

2.2.8 An initial Climate Change and Resilience Risk Review will be undertaken in the Concept Design stage and this will be developed further through all design stages. The development team has already identified two key concerns: hotel residents safely sheltering in place through extreme events, and the effects of utility failure on basic operations of the hotel and continuity of business operations in the commercial office area.

3.0 Health and Wellness

3.1 Health and Wellness Goals

Objective:	Target:
Align with international best practice for health and well-being	• Achieve WELL Building Core and Shell Silver rating, and enable potential future higher level certification in partnership with program operator of hotel and key commercial tenants
Provide best practice Indoor Environmental Quality (IEQ)	• Achieve all reasonable credits within the Green Star IEQ section
Indoor Air Quality	• Indoor air quality to be provided at a best practice rate of 50% greater than required by AS1668 or CO_2 concentrations maintained below 800ppm
Natural ventilation	• Provide natural ventilation amenity capability in select areas of the office tower
Visual Comfort	• Primary spaces that will receive high levels of daylight for at least 40% of the occupied office floor area and 50% of hotel bedrooms • 90% of building areas will have views out
Thermal Comfort	• Provide a range of thermal environments in both the hotel and the office areas to facilitate adaptive comfort • Mechanically ventilated spaces will be designed to achieve thermal comfort in line with ASHRAE best practice
Acoustic Comfort	• Provide a range of acoustic environments in both the hotel and the office areas to facilitate adaptive comfort • Portions of the office areas will allow acoustic connections to outdoors through operable windows or other natural ventilation devices
Indoor Pollutants	• Occupant health will be safeguarded through specification of low VOC and low formaldehyde interior materials
Biophilia	• Incorporate elements of biophilic design to complement the historic building context and new building program needs

3.2 Design Proposals:

3.2.1 The health, comfort and well-being of building occupants is of prime importance for this project. The project intends to capture international best practice for health and wellness through inclusion of design allowances within the base-build to facilitate WELL certification in cooperation with the key tenancies. This includes strategies for enhanced ventilation levels, enhanced pollution infiltration management, combustion elimination, enhanced air filtration and purification.

3.2.2 A key provision of the building is the offering of naturally ventilated, indoor-outdoor spaces, that provide access to winter-garden like experiences within the building. This provision will have comfort, biophilic, and social well-being benefits for occupants.

3.2.3 The project will include interesting and aesthetically pleasing vertical circulation routes to create opportunities for active circulation. Daily experience exercise like this contributes to occupant health and wellness, as well as providing places for chance encounters and community building moments.

3.2.4 The building tower facades will go through an extensive design optimisation process to maximise their passive design benefits of good daylight provision, improved thermal comfort, greatly reduced space conditioning energy use, and reduced peak power loads. It is anticipated that the tower facades will incorporate areas of solid wall as a way to improve passive design performance and also create an elegant and appropriate architectural expression for this site.

3.2.5 In line with Green Star targets spaces in the tower will aim to achieve a minimum of 2% daylight factor for a minimum of 40% of the primary occupied floor area. At least 60% of the primary occupied floor zone will achieve a high quality external view out.

3.2.6 Generally, outside air provision will be increased over the minimum requirement of AS 1668.4:2012, to ensure optimum indoor air quality in line with the WELL Building requirements. Internal CO_2 monitoring will be provided for commercial offices and hotel rooms to ensure indoor CO_2 levels are maintained below a best practice threshold and allow for outside air reduction without compromising air quality during times of temperature extreme.

3.2.7 Artificial lighting design will complement natural daylight provision and will be designed to provide a high quality of general illuminance and be glare free in line with AS/NZS 1680.

3.2.8 Internal fit-out materials specification will be reviewed in accordance with Green Star best practice to avoid internal off-gassing of pollutants, including volatile organic compounds (VOCs) and formaldehyde, that are detrimental to health and well-being.

3.2.9 In accordance with Green Star and NCC requirements, thermal comfort assessment will be carried during the design process and verified during commissioning to ensure that the building accords with best practice thermal comfort performance standards in regularly occupied zones.

4.0 Energy Efficiency and Operational Emissions Reductions

4.1 Energy Efficiency Key Goals:

Objective:	Target:
Building Fabric Performance	• Improve upon NCC 2019 building envelope performance requirements
NABERS Rating	• Minimum NABERS Energy 5.5 Star rating for the office component with a Commitment Agreement • Minimum NABERS Energy 4.5 Star rating for the hotel component with a Commitment Agreement
Zero Carbon enabled	• Minimise combustion and air pollution emission sources from regularly used building HVAC systems

4.2 Design Proposals:

4.2.1 Reducing greenhouse gas emissions and on-going energy use are a key driver for this project. The approach is to firstly reduce energy demand through passive design measures wherever possible. The development will be designed using a "fabric first" approach that integrates passive design into the architecture – especially the building envelopes – to ensure that heating, cooling, and lighting energy needs are minimised. The building envelope design should prioritise:

- Insulated wall for passive indoor comfort conditioning
- Integral self-shading façade elements that protect glazed areas
- Minimal moving façade elements

4.2.2 Energy efficient building systems will be considered throughout the development, including:

- Mixed-mode HVAC system operation in areas with amenity natural ventilation
- Evaporative and indirect evaporative cooling of outside air
- Heat reclaim chillers to provide hot water preheating for the hotel and office domestic hot water systems
- LED lighting with daylight and vacancy controls

4.2.3 Building services that minimise peak power loads on the electricity network will be considered, including:

- Thermal storage that allows generation of chilled water at night
- Battery storage of power generated by renewable power resources on the building or grid
- Integrated thermal mass through building structure or phase change materials in finishes to minimise peak loads

4.2.4 Minimise all regularly used combustion sources from centralized building systems through use of heat pumps

4.2.5 Encourage tenants to eliminate combustion through adoption of induction cooktops in commercial kitchens

4.2.6 Explore options for shared utility supply across the precinct, including:

- Central district thermal energy plant (chilled water and hot water)
- Central emergency power supply
- Central thermal and electrical storage facility
- Embedded network to enable energy sharing or trading between different buildings and end users

5.0 Sustainable Transport

5.1 Sustainable Transport Key Goals:

Objective:	Target:
Support active modes of transportation	• Bicycle storage racks for occupants and visitors, together with end-of-trip facilities, to be provided in line with Green Star requirements as a minimum
Provide electric vehicle infrastructure	• A minimum of 5% of vehicle charging bays provided with electric vehicle charging infrastructure, with capacity provision for future increase

5.2 Design Proposals:

5.2.1 Site location offers unsurpassed public transport opportunities and is located in a highly walkable neighbourhood with good pedestrian and cycleway links to the CBD, Ultimo, Surry Hills, and Redfern.

5.2.2 The development will meet at a minimum the Green Star requirements for bicycle storage capacity, based on needs for office occupancy and staff of hotel (not including guests).

5.2.3 The project will be designed to provide easy, safe linkage from the bicycle parking and end-of trip facilities to surrounding bicycle routes.

5.2.4 The end-of-trip facilities will meet at a minimum the Green Star requirements, with a potential upsizing to allow for runners and other users.

5.2.5 Designated car share spaces will be provided, as will infrastructure for electric vehicle charging at parking bays. The electric vehicle infrastructure will be designed for expansion to meet growing demand.

5.2.6 Explore options for shared precinct-wide bicycle storage and end of trip facilities:

- Central bicycle storage and service centre
- Central end of trip facilities (locker rooms, showers)

6.0 Water Efficiency

6.1 Water Efficiency Key Goals:

Objective:	Target:
Reduce potable water consumption	• Implement a holistic water management strategy across all building programs to reduce potable water consumption in line with Green Star water efficiency targets
NABERS Rating	• Minimum NABERS Water 4.0 Star rating for the office component • Minimum NABERS Water 4.0 Star rating for the hotel component

6.2 Design Proposals:

6.2.1 Building and public realm will be pre-plumbed with separate recycled water supply to end use points that do not require potable water.

6.2.2 Rainwater and possibly stormwater will be collected from the site and used within the building where possible and practical.

6.2.3 Generally, across the whole development, water conservation considerations include fixtures and fittings selected for high WELS ratings as appropriate to minimise water consumption

6.2.4 WCs will be specified as dual flush type, with efficient average flush capacity throughout the development

6.2.5 Sub-metering of water use and a leak-detection system will be provided to ensure that uses throughout the building can be interrogated. This will enable abnormal water uses to be detected and for reporting against project water consumption targets.

6.2.6 Consideration will be given to installation of a grey water harvesting system to enable capture and filtration of grey water sources on site (showers, hand basins) for re-supply to non-potable end uses.

6.2.7 Explore options for shared precinct water recycling plant, including:

- Wastewater capture and treatment to tertiary standards
- Precinct-wide recycled water supply
- Sewer mining capability to stabilize flows, and to support municipal water system as needed

7.0 Materials and Circular Economy

7.1 Materials Key Goals:

Objective:	Target:
Reduced embodied carbon of building development	• Explore opportunities to use low carbon cements and pozzolans, incorporate recycled content and reduce structural mass, specify low embodied carbon for major trade packages
Responsibly and sustainably sourced building materials	• Major materials and products will be responsibly sourced for low environmental impact with third-party accreditation
Targeted reduction in construction materials waste sent to landfill	• Waste sent to landfill <10kg/m^2 in line with Green Star best practice • Target 90% demolition and construction waste recycling
Enable comprehensive operational waste recycling, including composting of organic wastes	• On-site space provision for recycled material separation, management, and collection • Divert as much waste as possible from landfill, including organic waste diversion to composting programs run by partners

7.2 Design Proposals:

7.2.1 Subject to further exploration in the next design stage, it is intended that the project will pursue a low embodied carbon development strategy. The team will pursue concretes that incorporate alternative low-carbon cements and cementitious materials reclaimed from waste streams; these may include geopolymers, ground granulated blast furnace slag or fly ash. The team will also pursue recycled aggregates to minimise demand of virgin materials and reduce CO_2 emissions. Similarly, preference will be given to other major products and materials with embodied carbon rates lower than industry standards.

7.2.2 All materials selection and sourcing within the development will be undertaken with the principles of sustainable development in mind. The two key principles will be for the selection of products and materials with lower life-cycle impact and to target a reduction in waste to landfill compared to typical practice.

7.2.3 Opportunities for refinement of structural design to minimise concrete and steel usage will be explored in the next design stage.

7.2.4 Generally, where possible, materials will be selected to meet Green Star product transparency and sustainability requirements with third-party supply chain certification.

7.2.5 On-site construction waste minimisation will be targeted at 90% diversion from landfill in line with Green Star best practice.

7.2.6 Where appropriate, off-site pre-fabricated components will be considered.

7.2.7 As possible, the project will harmonize requirements for low embodied carbon materials and products, including concretes, with other precinct developments and infrastructure works, for the purposes of driving market response and change toward lower embodied carbon products, especially concrete.

7.2.8 Operational waste will be managed under a comprehensive management plan that pursues circular economy outcomes including waste upcycling and recycling in partnership with on- and off-site waste management partners.

8.0 Land Use & Ecology

8.1 Land Use & Ecology Key Goals:

Objective:	Target:
Improved Ecological Value	• Enhance ecological value of the site through increased greening over public realm and rooftop levels. Use appropriate native, drought tolerant species.
Mitigate Heat Island Effect	• Contribute to reduced urban heat island and urban cooling effects through increased planted outdoor surfaces, soft landscaping and high SRI surfaces and finishes.

8.2 Design Proposals:

8.2.1 Noting that the development site has limited public realm around an existing heritage building, and that the public realm needs to accommodate extremely high volumes of pedestrian movement, the development will work to introduce planted landscapes into Henry Deane Plaza and onto the roof areas of the buildings where they can support the creation of great public places and enhance the urban environment.

8.2.2 All species will be selected to be drought tolerant, to minimise irrigation requirements. The team will aim to include a significant percentage of native species from SE Australia and ecologically appropriate planting to contribute towards creating a net increase of urban biodiversity.

8.2.3 Irrigation systems will be designed to incorporate monitoring devices to detect sub-soil moisture, weather and other environmental data to efficiently control irrigation regimes

8.2.4 Ground level public realm and roofscapes without vegetation will be designed to achieve a high solar reflective index (SRI) to minimise urban heat island effect.

9.0 Pollution Emissions

9.1 Pollution Emissions Key Goals:

Objective:	Target:
Watershed protection	• Reduce peak outflows and meet all regional stormwater quality objectives
Microbial Control	• Best practice measures to reduce legionella risk in water cooling and domestic hot water systems throughout the development
Reduced refrigerant impacts	• Zero ozone depletion potential (ODP) and low global warning potential (GWP) refrigerants specified in line with Green Star best practice

9.2 Design Proposals:

10.2.1 The development will improve upon peak stormwater outflow and water quality compared to the current site condition.

10.2.2 Water Sensitive Urban Design (WSUD) features will be integrated into the public realm and roofscapes of the project, or built into the site utilities as required, to improve the quality of stormwater leaving the site.

10.2.3 Overflow from the rainwater tank, run-off from all balconies, trafficable roof areas, and podium roof will be detained on-site and treated to meet the water quality objectives prior to discharge off site.

10.2.4 Generally, all heat rejection and domestic hot water systems will be designed to accord with best practice for the minimisation of microbial growth and associated risks to human health. Residential cooling systems are proposed to be dry air coolers to minimise water consumption and reduce risk of microbial contamination in the vicinity of façade openings.

10.2.5 Chiller plant and all refrigeration systems in the base buildings will be selected on the basis of minimising environmental impacts through the selection of low ozone depletion potential (low ODP) and low global warming potential (low GWP) refrigerants and through implementing leak detection and management measures.

10.0 Connected Communities

10.1 Innovation Key Goals:

Objective:	Target:
Activated engagement with Central Station Western Gateway Precinct	• Street level and possibly other level permeability and active retail, culture and entertainment
Round the clock activity	• Appropriate programming of amenities and activities that support extended daily life in the Precinct
Design for all ages and abilities	• Provide Universal Access throughout development except when in direct conflict with critical heritage protection requirements
Shared community spaces	• Provide public access to heritage building program areas, and provide internal neighbourhood spaces within office tower
Stakeholder engagement	• Engage with all stakeholders, nurturing relationships with diverse communities represented
Smart community	• Implement a Smart Community strategy for improved social cohesion, environmental and economic benefits

10.2 Design Proposals:

10.2.1 The redevelopment aims to create a larger, more active, and better connected public realm around the current Adina Hotel. While the public realm must accommodate a high volume of pedestrian traffic moving to and from Central Station and the adjacent development sites, the public realm will also be a great place of its own. Henry Deane Plaza will be upgraded and better connected to both Railway Square and to the newly emerging Central Station entrance plaza just north of the current hotel.

10.2.2 A mix of hotel, office, retail, and food and beverage outlets will extend the hours of activation of the Central Station Western Gateway Precinct, also extending economic activity into the surrounding neighbourhood.

10.2.3 The project will be designed for all ages and abilities, meeting best practice Universal Access principles. Beyond this, the programs and the amenities offered in the public realm will be aimed at a range of ages, not just the commuters and office workers in the adjacent buildings.

10.2.4 The project is committed to integrating a Smart platform to enable intelligent use of sensors and data across the development for enhanced social connectivity opportunities, enhanced environmental management and economic performance benefit.

11.0 Innovation

11.1 Innovation Key Goals:

Objective:	Target:
Innovation in sustainable design	• Target Green Star innovation credits
Living Lab enabling	• Include systems that enable the development to host in situ research and continuous learning

11.2 Design Proposals:

11.2.1 As part of the Green Star Design and As Built 6 Star accreditation pathway, innovative sustainable design and construction innovation measures will be pursued. These potential innovation areas are focused on bringing improvements upon standard Green Star benchmarks, innovation based on leading global sustainability benchmarks such as the WELL Building Standard, meeting a number of the pre-defined Innovation Challenges or potentially defining some bespoke innovation measures for this project.

11.2.2 Since health and wellness is a core project value, the project will target enhancements to indoor and outdoor spaces that bring health, comfort and wellness benefits to occupants. The project will innovate through targeting a number of key value-add measures from the WELL Building Standard v2.0. These will include strategies for enhanced ventilation levels, enhanced pollution infiltration management, fossil fuel combustion minimisation, enhanced air filtration and purification.

11.2.3 Investigate areas for activation through Living Labs programs that enable the buildings to host in situ research into new products and services that include a built environment component. The team will explore partnerships with relevant Cooperative Research Centres working in sustainability, technology, and built environment so that this development can support relevant research efforts where they align with the development vision and with the interests of the tenants.

12.0 References

This report has been compiled based on discussion with the client and design team and through the review of the following information:

1. Green Star Design & As-Built v1.2
2. WELL Building Standard v2.0
3. Transport for NSW *Central Precinct Strategic Framework* (July 2020)
4. Transport for NSW *Draft SEPP Report: Western Gateway Rezoning Proposal* (October 2019), with note that this document has been superseded by the Block A&B rezoning gazetted legislation.
5. Transport for NSW *Draft Design Guideline: Western Gateway Sub-precinct* (version 3, June 2020)
6. Transport for NSW *Western Gateway Sub-precinct Public Domain Strategy* (May 2020)