Sustainability Management Plan

436 Lonsdale Street

Issue 03 | 11 June 2024

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436 Lonsdale Street					
Sustainability Management Plan					
Biruu					
Revision	Date				
01	24 March 2023	Description	Draft for review and comment by project team		
			Prepared by	Checked by	Approved by
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02	10 May 2024	Description	Draft report for submission to the City of Melbourne		
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		Name	Rajath Sindia, Richard Stokes	Richard Stokes	Richard Salter
03	11 June 2024	Description	Report for submission to the City of Melbourne		
			Prepared by	Checked by	Approved by
		Name	Rajath Sindia	Richard Stokes	Richard Salter
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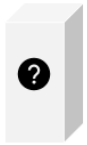

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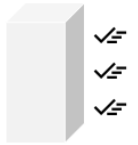

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Introduction

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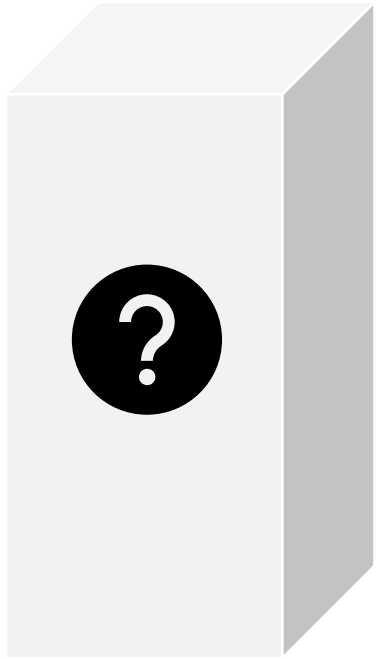

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Strategy Overview

Legal, market lead and organisational influences.

This report provides an overview of the Sustainability Management Plan for the redevelopment of 436 Lonsdale Street by Biruu.

Arup have developed a comprehensive sustainability strategy for this project with Biruu, with consideration of other key stakeholders and Wardle as the lead architect. The sustainability strategy considers a holistic approach, using the Green Star tool as a facilitator, however it is the project's intention to look beyond rating tools, driven by the client's ambitions and key focus areas in sustainability. Environmental Social and Governance (ESG) strategy, Wardle Architects and Arup's Climate Emergency Declaration and the emerging market expectations for sustainable buildings as defined by the Property Council of Australia's new Office requirements.

An overview of the applicable requirements for the development for the City of Melbourne have been outlined and are directly addressed within this report on the basis of the proposed design.

The design of the development is considered to meet and exceed these requirements and is committed to meeting the targets outlined within this report within the final design.

Project drivers and influences

Primarily includes legal, tenant and organisational level

Legal Requirements

National Construction Code

CITY OF MELBOURNE

Tenant Expectations

VICTORIA State Government

PROPERTY COUNCIL of Australia

greenstar

ESG Targets

biruu.

Sustainability Strategy Responds to All Key Drivers

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Site Context

Melbourne CBD Legal Precinct

The proposed development is located at 436 Lonsdale Street in the Melbourne CBD. The proposed building part of the legal precinct and will be redeveloped to attract a range of potential commercial office tenants with a public sector focus.

- Part of the city's courts precinct and in close proximity to the County Court of Victoria, Melbourne Children's Court, the Supreme Court of Victoria, the Court of Appeal and many more associated facilities.
- Tree lined footpaths available on Lonsdale and William St.
- The site has a Walk Score of 99 and a Transit Score of 100, indicating great accessibility to many amenities and safe, walkable streets.
- Flagstaff station is a ~400m walk with close proximity to Flagstaff Gardens, giving occupants access to public green space and public transport.
- A 10 minute walk to Queen Victoria Market, a cultural hub undergoing a $250M renewal.
- The Melbourne Central shopping precinct is only a 6 minute walk providing access to significant amenity.

436 Lonsdale St context

Close to some of Melbourne's most popular amenities

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Project Overview

Court rooms and commercial space with heritage overlay

The proposed site has a heritage building previously used as the Taxation Office, built in 1924. The building is a notable indicator of the early establishment of the Commonwealth Government in Melbourne. Hence, the site will be subject to a heritage overlay meaning much of the existing heritage facade must be retained. As such, the proposed development will add a tower that is set back from the heritage façade, so as not to impose on the integrity of the original building, but add sufficient area to accommodate over 16,900 m^2 of office space.

The project will provide space to include 22 levels of office space, with potential arrangements for work and meeting spaces on all tower and podium levels, and a terrace on level 7 and 23 for tenants.

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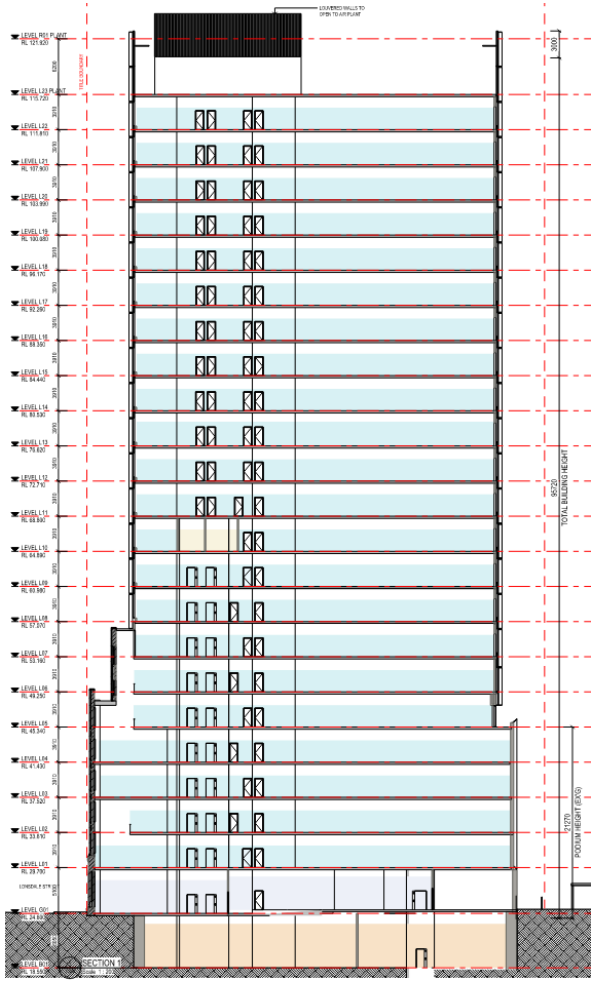

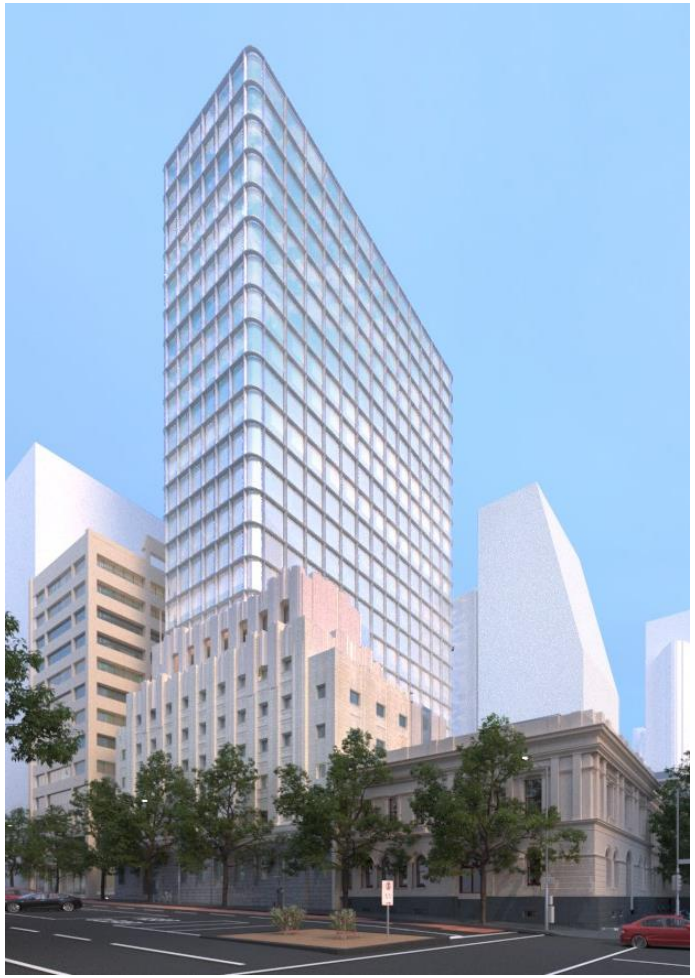

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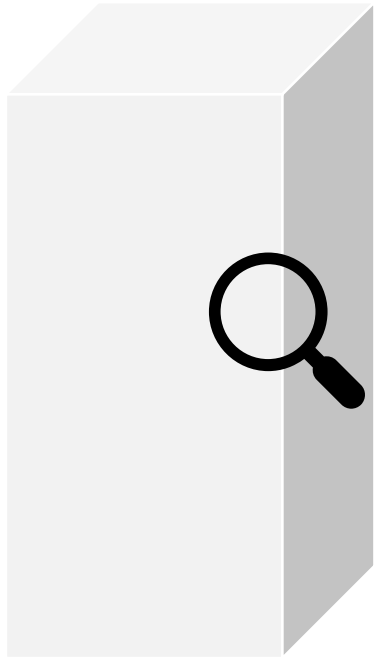

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C376 Planning Amendment

More ambition across diverse areas of sustainability.

The C376 Planning Scheme Amendment: Sustainable Building Design (C376) is currently a draft and public amendment that is currently in public exhibition phase.

The sustainability ambitions of the amendment are a significant extension on the previous planning scheme, and more in alignment with the requirements to meet climate emergency targets such as the 2019 Paris Agreement.

The requirements within the amendment can be categorised into several focus areas – energy efficiency, renewables, waste and resource recovery, urban heat island, urban ecology, integrated water management – as well as overall requirements.

These can further be identified as either mandatory or discretionary, where achieving discretionary targets would likely be considered most favourably.

It is understood that at this stage the policy is not a legal requirement but has been considered to ensure a future proofed and emerging policy aligned government asset is developed and delivered. It is considered more onerous than the current requirements in all aspects.

The table to the right summarises each of the requirements in the new amendment. Further details on each category are provided on the following pages.

Category	Mandatory	Discretionary
Overall Table 1	• Green Star Design and As-built 5 star certified within 12 months of occupation.*	• Green Star Design and As-built 6 star certified within 12 months of occupation.
Energy Efficiency Table 2	• 7.5 star NatHERS average. • 6.5 star NatHERS minimum. • 5.5 star NABERS Energy rating within 24 months of occupation.	• 6 star NABERS Energy rating within 24 months of occupation
Renewables Table 3	-	• Incorporate on-site renewable energy. • Not incorporate connections to gas services or other non-renewable energy.
Waste + Resource Recovery Table 4	• Waste and resource recovery facilities evidenced with suitable plan.*	• Minimise landfill from construction waste and maximise resource recovery.
Urban Heat Island Table 5	• 75% of more of total site area reduce the impact including landscaping, solar panels, light roofs or shaded areas.	• Consider façade reflectivity, passive heating and cooling strategies and cool external surface strategies such as permeable paving.
Urban Ecology Table 6	• 0.55 or more using the City of Melbourne's Green Factor tool.	• Support various green cover maintenance and support strategies.
Integrated Water Management Table 7	• Best Practice CSIRO Guideline Targets for Stormwater Management.* • Connect to precinct recycled water if available. • Minimum supply of rainwater to 10% of demand or to support urban greening.	• Implement alternative water for all non-potable uses on-site where technically achievable.
Table 8	• Residential: 'relevant credit' under 5 star Green Star Design and As-built. • Non-Residential: At least a 4 star NABERS Water rating in operation.	

* Current planning requirements

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Overall Sustainability

Mandatory

The C376 Planning amendment maintained the minimum requirement to achieve a 5 star Green Star rating but adds the requirement that it is certified by the GBCA and must be achieved within 12 months of occupation.

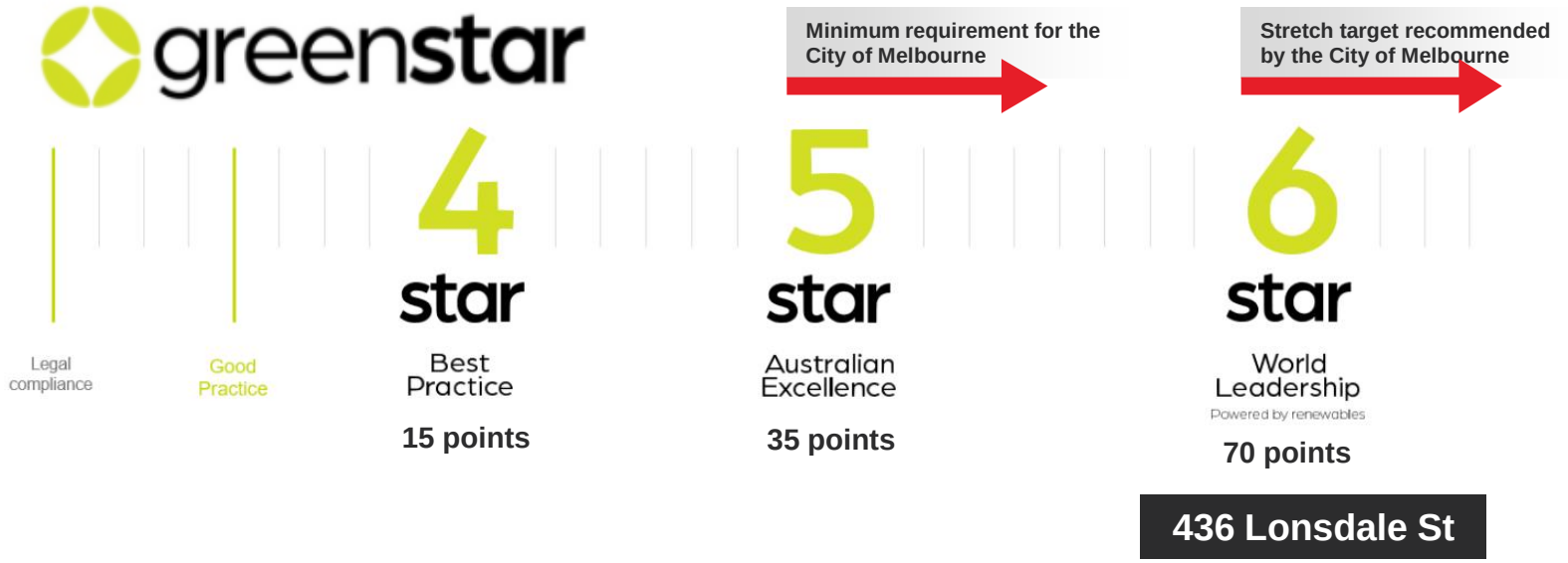
Further the City of Melbourne indicates that their preferred outcome is a 6 star Green Star rating.

Green Star is Australia's national and voluntary rating system for the assessment of the sustainable design, construction and operation of buildings, fit-outs and communities.

The Green Star rating tool helps to address the range of environmentally sustainable design practices, and supports a single holistic approach to sustainable building design.

All new buildings must now register under Green Star Buildings v1, the most ambitious version of the tool yet. The tool is made up of a number of minimum expectations, core credits and leadership credits.

- ✓ The 436 Lonsdale Street development is targeting a 6 star Green Star Buildings v1 rating with 79 points targeted, exceeding the planning requirements.



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Overall Sustainability

Mandatory

Further the C376 policy refers to NABERS Energy 5.5 star targets as Minimum and 6 star NABERS Energy for Preferred performance levels.

✓ The redevelopment is targeting a 5.5 star base building NABERS Energy rating consistent with PCA grade expectations.

Discretionary

× 6 star NABERS Energy is not considered achievable at this stage without Green Power or on-site generation such as cogeneration or trigeneration systems. We note that prior to Covid-19, there were only a very small number of buildings that were able to meet this target in Melbourne without these features. Other areas being explored on other projects are on-site renewable energy with photo-voltaic (PV) panels across the roof and façade systems, but this is not considered appropriate for this building's massing and CBD location with potential for future overshadowing. This will be explored as the design is developed in detail.

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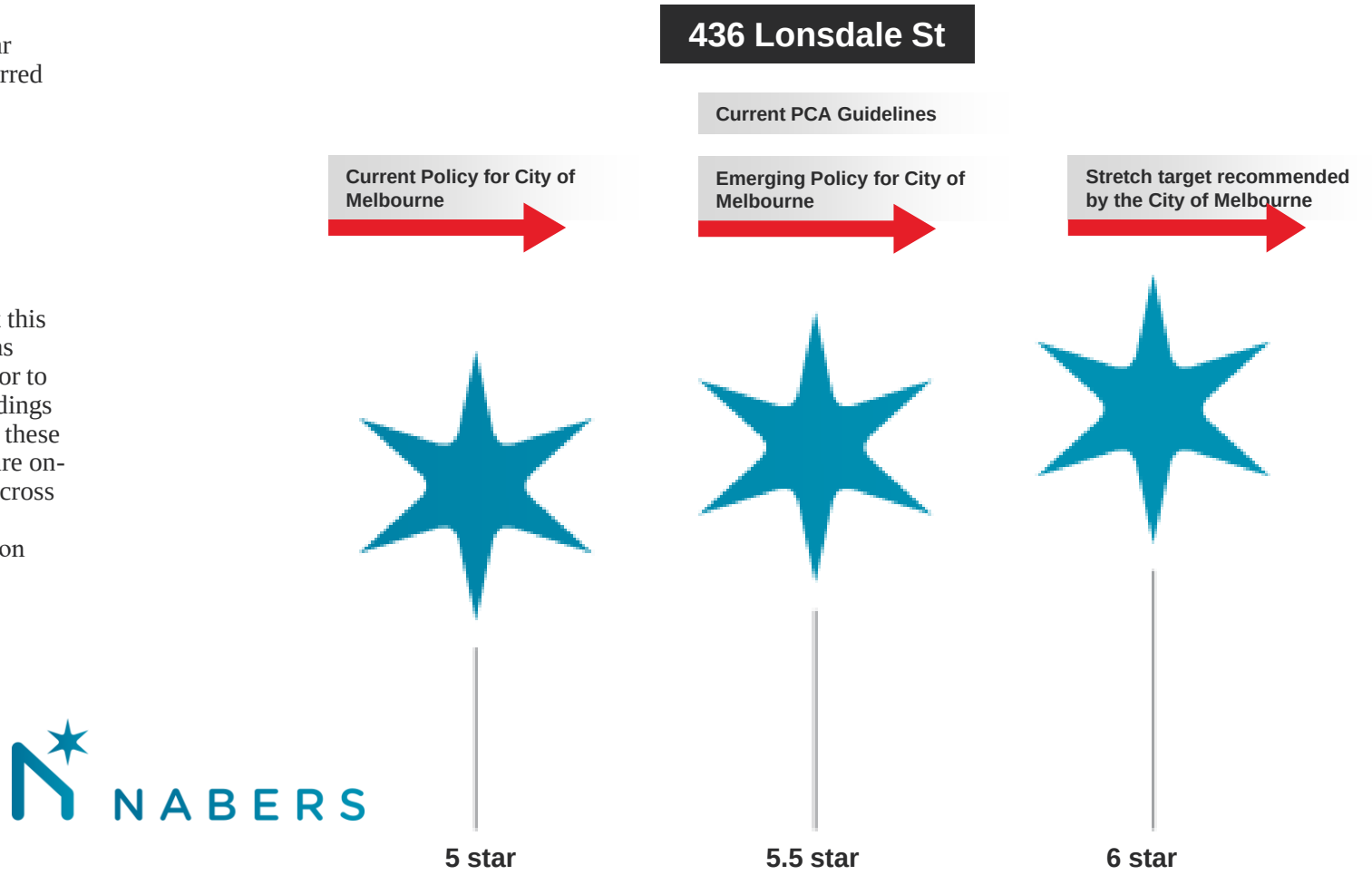

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Renewables

Discretionary

Onsite renewables are strongly encouraged where possible. Onsite renewables increase a buildings resilience against black outs or brown outs. They have the additional benefit of reducing stresses on land use for offsite generation farms that can have negative consequences for ecology and biodiversity on the site they are developed.

The requirement also recommends the exclusion of a gas connection or other non-renewable sources. The transition away from fossil fuels is critical if we are to meet climate targets.

These recommendations align well with credit 23 Energy Source found in the Green Star Buildings v1 tool for which 5 star projects must use 100% renewable energy and electricity.

✓ The 436 Lonsdale Street project is committed to achieving these requirements with all electric design and 100% renewable energy purchase off-site. On-site renewable energy will be explored in design development where possible but has not been prioritised over heat pumps, energy efficient cooling towers and rooftop amenity with green infrastructure.

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Waste + Resource Recovery

Mandatory

The project must develop an operational and waste management plan which addresses how waste is separated, stored and accessed, in order to maximise the diversion of waste from landfill.

This requirement aligns with credit 4 Responsible Resource Management which is a minimum requirement for Green Star rated buildings registered with Buildings v1.

✓ The 436 Lonsdale Street project is committed to achieving these requirements. Please refer to the separate operational waste management plan by Aecom.

Discretionary

It is also strongly recommended that the project diverts construction and demolition waste from landfill through responsible building practices.

As a minimum expectation in the Green Star Buildings v1 tool, all projects must divert at least 80% of construction waste from landfill. If the project achieves 90% diversion then they will be awarded 1 point. 90% is considered to be industry best practice.

✓ The 436 Lonsdale Street project is committed to achieving these requirements.

Urban Heat Island

Mandatory

The project must reduce the urban heat island effect impact by using finishes and materials that reflect heat across 75% of the site area. This aligns with the Green Star credit 19 Heat Resilience.

Cities with dense concentrations of buildings and pavement absorb and retain heat. This can result in higher demand on air conditioning, air pollution, and heat related discomfort.

✓ The 436 Lonsdale Street project is committed to achieving these requirements. Please refer to Appendix F which shows the strategy marked up.

Discretionary

Passive heating and cooling strategies are strongly encouraged for the project. By using passive approaches, we reduce the need for mechanical plant that reject heat and further compound the heat island effect.

Further, it is strongly recommended to consider reflective façade finishes and cool surface technologies such as permeable paving.

- The 436 Lonsdale Street project has featured passive design principles where appropriate including a significant external shading strategy and a high performance building envelope that is designed beyond the NCC Section J provisions. Please refer to Appendix A for the design allowances.

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Urban Ecology

Mandatory

The project must demonstrate a Green Factor score of at least 0.55. The Green Factor tool considers vegetation included on the site and building and rewards more points for native and connected planting, or large trees.

This is complementary to the Green Star credit 36 Biodiversity Enhancement although given the nuances of the Green Factor calculation, achievement of one does not necessarily mean the achievement of the other.

✓ The 436 Lonsdale Street project is committed to meeting Green Factor with a score of 0.55 estimated. Please refer to Appendix D for a summary.

Discretionary

In addition to increasing ecology, it is also strongly recommended that strategies for maintenance and support of these systems are in place.

✓ The 436 Lonsdale Street project is committed to this requirement and will put in place a suitable maintenance system for the proposed green infrastructure as the design develops in detail.

Integrated Water Management

Mandatory

The project must demonstrate that the CSIRO Best Practice Guideline Targets for Stormwater Management are in place. This relates to the treatment of pollutants and reduction of peak loads. This aligns fully with the Green Star credit 39 Waterway Protection.

Additionally, the project must use minimum 10% rainwater to meet demand. Alternatively the project may demonstrate the support of urban greening.

✓ The 436 Lonsdale Street project is committed to these requirements. Refer to the separate stormwater report for details and note that the 10% rainwater demand target is not achievable for a site of this type and size so the rainwater will be directed to support urban greening.

Discretionary

Alternative water sources for all non-potable uses are strongly recommended where technically achievable for the project. This may mean utilisation of grey water or blackwater treatment systems which could supply toilets, urinals, irrigation or cooling towers, for instance.

This is complementary to the Green Star credit 25 Water Use.

✓ The 436 Lonsdale Street project has allowed for a rainwater system to meet this requirement with water treatment considered not commercially viable at this scale. Refer marked up plans in Appendix B.

Water Performance

Mandatory

The project must achieve the minimum requirement for the Green Star credit 25 Water Use, where the potable water demand of the building must be 15% less than that of a reference building.

This would be achieved through the use of efficient fixtures and fittings, recycled water strategies, low water demand landscaping or waterless heat rejection, for example.

✓ The 436 Lonsdale Street project has allowed for water efficient fixtures and fittings as well as a rainwater harvesting system to exceed this requirement with a 22% reduction anticipated. Refer water strategy in Appendix B.

✓ A 4 star NABERS Water rating in operation is also committed to as part of the development's response.

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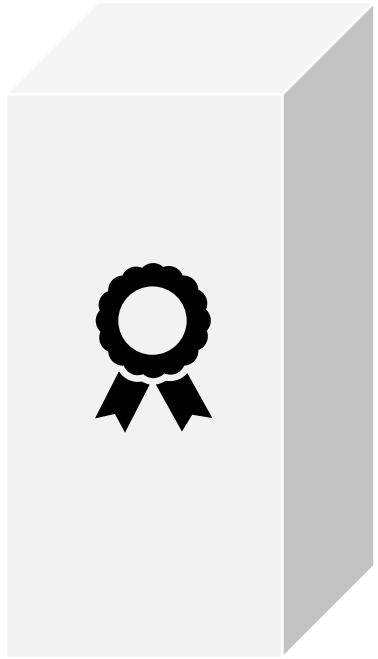

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Strategy Overview

Driven by 6 star Green Star target

The 436 Lonsdale St redevelopment is committed to achieving a 6 star Green Star rating for the building, indicating a level of 'World Leadership', the highest rating currently available.

This requires a minimum of 70 credits in the Green Star Buildings v1 Submission.

This overlaps with the C376 policy requirements and supports the overall preferred target of 6 star by expanding upon how this is planned to be achieved.

It should be noted that the specific credits that are targeted may change throughout the course of the project as final design is detailed and construction documentation is provided, however the project is committed to the overall goal of a 6 star Green Star rating.

The Green Star pathway to achieve a 6 star rating is outlined in further detail within the following pages.

Responsible

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

Places

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

Healthy

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

People

Encourages solutions that address the social health of the community.

Resilient

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

Nature

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

Positive

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

Leadership

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

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Responsible

12/17 Green Star points

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

The Responsible category in Green Star encourages implementation of practices that support best practice outcomes throughout the different phases of planning, design, procurement, construction, commissioning and operation of a development.

1 **Industry Development** **1/1**

Arup as a Green Star Accredited Professional (GSAP) has been contractually engaged to provide advice, support and information related to Green Star principles, structure, timing and processes, at all stages of the project, leading to certification. The project will also track the cost and market the sustainability outcomes.

2 **Responsible Construction** **1/1**

The project team has committed to set, measure and report on its environmental performance through the implementation of a project specific EMP. The performance shall be reported on quarterly, with methods appropriate for each stakeholder group. The contractor will provide sustainability training to site workers. At least 90% of the waste generated during construction and demolition will be diverted from landfill.

3 **Verification + Handover** **1/1**

The project is committed to achieve various energy, water and indoor environment targets in line with Green Star certification. The project will conduct an airtightness test, be commissioned and tuned as well as deliver comprehensive operations and maintenance documentation at the time of handover. An independent commissioning agent will be engaged to monitor these processes and documentation.

4 **Responsible Resource Management** **Minimum req.**

The building has been appropriately designed to facilitate the separation and collection of waste and resource streams, including appropriately sized storage areas and safe and efficient access for occupants and collection contractors. This is demonstrated in the plan prepared by Aecom.

5 **Responsible Procurement** **1/1**

The project will follow ISO 20400 Sustainable Procurement – Guidance by undertaking a risk and opportunities assessment in design development. A responsible procurement plan will be developed to help implement the opportunities and mitigate the risks identified in the assessment. This will be undertaken during detailed design to inform the material specifications. This exercise has been allowed for.

6 **Responsible Structure** **5/5**

The project will specify structural materials which have certifications demonstrating they meet standards relating to responsible procurement and sourcing. Such as FSC Certification for any timber, WSA membership for steel manufacturers and chain of custody accreditation for concrete aggregates. This strategy will be defined as the design develops in detail to inform material specifications.

7 **Responsible Envelope** **0/4**

This credit is not targeted at this stage but will continue to be investigated with the project team as the design develops in case the criteria becomes more achievable as products come to market offering the appropriate specifications.

8 **Responsible Systems** **2/2**

The project will specify building services materials, including mechanical, transportation, hydraulic, electrical, lighting and security systems materials where available at the time of procurement that meet responsible procurement and sourcing requirements. This is anticipated to be met with Declare labels for PVC free cables, pipework and conduits as well as EPDs etc. This strategy will be defined as the design develops in detail to inform material specifications.

9 **Responsible Finishes** **2/2**

The project will specify internal building finishes that meet responsible sourcing and procurement requirements. Such as FSC certification for timber finishes and GECA, Declare or GreenTag labels for carpets, ceilings, partitions etc with EPDs. This strategy will be defined as the design develops in detail to inform material specifications.

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Healthy

11/14 Green Star points

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

We spend the majority of our time indoors so the quality of the indoor environment is crucial for our health and wellbeing and the Heathy category aims to ensure . Occupant wellbeing may also by supported by having access to nature and natural amenity such as daylight.

10 **Clean Air** **2/2.**

A higher level of fresh air (100% more) is provided to ensure levels of indoor pollutants are maintained at acceptable levels. This can also be considered with 700ppm criteria instead of 100% more outside air than the Australian Standard. Minimum separation distances between supply intake and exhaust are met and internal sources of pollutants are exhausted directly outside. This is allowed for in the design documented to date by Aecom.

11 **Light Quality** **2/4**

The building will be designed to provide adequate daylight to meet the Minimum Expectation in addition to best practice artificial lighting, while mitigating the affect of glare to occupants and ensuring occupants have access to quality views outside or inside the building. This includes horizontal luminance in accordance with AS/NZS 1680 across at least 90% of the GFA that is regularly occupied. The intent is to work with a tenant to deliver an integrated design solution to meet this credit requirement, otherwise the point will be removed from the pathway. We consider we have sufficient buffer for this strategy.

12 **Acoustic Comfort** **2/2**

The buildings will be designed to meet high levels of acoustic comfort, by meeting the maximum internal noise levels and acoustic separation criteria that is applicable to this building type. This will be detailed as the design develops and will be accompanied by an acoustic comfort strategy by a suitably qualified professional and demonstrated by testing following completion.

13 **Exposure to Toxins** **2/2**

95% of paints, adhesives, sealants and carpets will be specified to meet strict VOC content and 95% of engineered wood products must meet thresholds for formaldehyde. This strategy will be defined as the design develops in detail to inform material specifications.

14 **Amenity and Comfort** **2/2**

The project will include dedicated spaces that act as a parent rooms, relaxation room or an exercise room. 1m^2 per occupant must be provided and must include appropriate amenities so as the rooms intended purpose can be met. The design will integrate space for dedicated amenity areas for staff on the ground floor to meet this requirement subject to tenant preferences.

15 **Connection to Nature** **1/2**

The building will include indoor plants and incorporate nature-inspired design through the integration of the tenant fit-out and detailed design of the lobby space. At least ~1m^2 of indoor plants to every 300m^2 of regular occupied spaces (80% of tenancy GFA) will be provided. The design presently features a green wall in the lobby space on the ground floor which will be built upon with potted plants in design development. Please refer to marked up plans in appendix D and the landscape architects precedent imagery for reference of intent.

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Resilient

7/8 Green Star points

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

The Resilient category addresses the need for developments to have defences and mechanisms in place to respond to and mitigate changes in climate, supporting infrastructure and in emergency scenarios.

16 **Climate Change Resilience** **1/1**

The project will develop a project-specific climate change risk and adaptation plan for the building. All the high and extreme risks must be addressed with design or operational interventions. A pre-screening check has been undertaken and is included in Appendix G. The detailed strategy will be defined as the design develops in detail which is appropriate given the limited findings from the pre-screening exercise.

17 **Operations Resilience** **2/2**

The project team will undertake a comprehensive review of the acute shocks and chronic stresses likely to influence future building occupants in detailed design. The building's design and future operational plan must then address any high or extreme system-level interdependency risks and the building's design must maintain a level of survivability and design purpose in a blackout. A diesel generator has been allowed for to date to support resilience in operations, supporting critical systems in the event of a blackout. Please refer to marked up plans in appendix G. The detailed strategy will be defined as the design develops in detail and the energy model can be used to inform this further.

18 **Community Resilience** **0/1**

The project is not targeting this credit as it is considered less appropriate for this typology. This may be revisited once the tenant is known and the design is further progressed. It is noted this must be completed in the design stages.

19 **Heat Resilience** **1/1**

Strategies are being implemented to reduce the project's contribution to the urban heat island effect by including light shade finishes, vegetation and shading. The design presently features approximately 263m^2 of vegetation, and light-coloured roof surface finishes are intended to meet this requirement with heritage areas anticipated to be accepted as not applicable by the Green Building Council of Australia, consistent with past projects. Note this is subject to a Technical Query once registered. Please refer to marked up plans in appendix F.

20 **Grid Resilience** **3/3**

The demand response approach to grid resilience is proposed for implementation on this project with a suitably specified building management system (BMS) that will enable the building to shed electrical demand in times of peak without affecting occupant amenity for at least 4 hours. This is anticipated to be through marginally changing the temperature set-points within the building's common areas, slowing lifts, dimming base building lighting and making use of the energy recovery ventilation system. This will be introduced to tenant leases.

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Positive

17/29 Green Star points

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

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

21 **Upfront Carbon Emissions** **6/6**

The building's upfront carbon emissions are at least 40% less than those of a reference building. This will be tested on the basis of the reference design defined by Green Star. A benchmarking analysis has been undertaken and is included in Appendix C with various proposed strategies including structural design optimisation, low carbon concrete and carbon neutral certified products including concrete, carpets and ceiling panels.

22 **Energy Use** **3/6**

The building's energy use will be at least 20% less than a reference building. This will be demonstrated by undertaking a dynamic energy simulation of the building as the design develops through exceeding the National Construction Code's fabric, HVAC and lighting requirements. It will include lighting requirements for tenants and align to a NABERS 5.5 star Energy rating. Refer Appendix A for details.

23 **Energy Source** **6/6**

100% of the building's energy will come from renewable sources, either on-site, or off-site through strategies such as Power Purchase Agreements (PPAs) or Green Power. This means no on-site gas combustion will be featured on the project, even for heating or cooking with all electric systems.

24 **Other Carbon Emissions** **4/4**

The project will seek to minimise impacts from refrigerants where possible and ultimately commits to offsetting emissions from refrigerants that remain. Further the project commits to offsetting the entire upfront carbon emissions that remain following the initial reduction, recognising that this is a requirement for 6 star for projects registering from the 1st of January 2023.

25 **Water Use** **0/6**

The building will use at least 15% less potable water compared to a reference building. The design presently features water efficient fixtures and fittings and rainwater collection to meet this requirement. Please refer to marked up plans in appendix B. At this stage, the project does not include infrastructure for recycled water connection as there are no known plans for this system in this area.

26 **Life Cycle Impacts** **0/1**

This credit is not targeted at this stage but will continue to be investigated with the project team as the design develops in case the criteria becomes more achievable.

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Places

7/9 Green Star points

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

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

27 **Movement and Place** **3/3**

The building's design and location prioritises walking, cycling, and transport options that reduce the need for private fossil fuel powered vehicles. The architectural strategy to meet these requirements has been implemented early in the design including 195 bike parks, 10 showers, 65 lockers and 0 carparking spaces. Please refer to marked up plans and further notes in appendix G. Reference should also be made to the Aecom Transport Plan which is consistent with this approach.

28 **Enjoyable Places** **0/2**

This credit is not targeted as it is not suitable for this typology of building and site.

29 **Contribution to Place** **2/2**

The project will contribute to the liveability of the wider urban context and enhance the public realm. This will be verified through the completion of an Urban Context Report to be written by Wardle.

30 **Culture, Heritage, Identity** **2/2**

Element's of the building's design will celebrate and acknowledge the local people and identity, history and commemorate relevant minorities. The design includes the retention of the existing heritage façade to support this claim and the final design outcome will be reached in collaboration and with meaningful engagement with community groups through the design process as it develops.

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People

8/9 Green Star points

Encourages solutions that address the social health of the community.

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

31 **Inclusive Construction** **1/1**

The contractor once appointed will provide gender inclusive facilities and PPE and will have policies on site to increase awareness and reduce instances of discrimination and bullying. The head contractor will additionally provide high quality staff support including mental and physical health support. This will be a specified requirement.

32 **Indigenous Inclusion** **2/2**

The building's design and construction will celebrate Aboriginal and Torres Strait Islander people, culture and heritage by either playing an active role in the organisation's Reconciliation Action Plan or incorporating design features using Indigenous design and planning principles. At this stage this is a commitment and will be developed as the design is detailed in consultation with First Nations people.

33 **Procurement and Workforce** **2/3**

Through the implementation of a social procurement strategy, at least 2% of the building's total contract value will be directed to generate employment opportunities for disadvantaged and under-represented groups. This will be a specified requirement.

34 **Design for Inclusion** **3/3**

The building will be designed to be inclusive to a diverse range of people, acknowledging the different needs of people to ensure they enjoy an equal experience. The design outcome will be reached in collaboration and with meaningful engagement with appropriate groups through the design process as it develops and in partnership with a tenant. This includes equal access to the building, diverse wayfinding and provision of inclusive spaces informed by a needs analysis.

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Nature

6/14 Green Star points

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

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

35 **Impacts to Nature** **2/2**

The building's site is not of significant ecological value, light pollution will be minimised and the design and construction conserves existing natural soil, hydrological flows and vegetation elements. As a building on a previously developed site, the project will demonstrate a positive impact to biodiversity by providing additional site ecology. Please refer to marked up plans in appendix D.

36 **Biodiversity Enhancement** **2/4**

1m^2 of landscaped area per 300m^2 GFA will be provided with a large nesting tree or equivalent habitat location. Landscaping must also meet species targets and include critically endangered and/or endangered plant species native to the bioregion. Please refer to marked up plans in appendix D

37 **Nature Connectivity** **0/2**

This credit is not targeted at this stage but will continue to be investigated with the project team as the design develops in case the criteria becomes achievable with subsequent development of the landscaping. At this stage the landscaping design is fragmented and does not meet the criteria.

38 **Nature Stewardship** **2/2**

This credit is targeted with an off-site nature reserve and/or restoration project of equal area to the GFA of the development. This amounts to 21,903m^2 and would be committed to if necessary, as the Green Star pathway evolves through the project timeline. This credit is considered part of the development's buffer for points in this regard which is appropriate as it has not implications on the built form and can be secured at any point prior to practical completion to achieve the credits.

39 **Waterway Protection** **0/4**

The building meets the specified pollutant targets however does not meet the annual average flow reduction (ML/yr) of 40% compared to pre-development levels so cannot achieve the Credit Achievement at this stage. This will be further reviewed as the design is developed. Please refer to the separate civil report that includes stormwater modelling that provides further information combined with the City of Melbourne stormwater requirements.

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Leadership + Sector Specific Points

11/10 Green Star points

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

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

40 **Market Transformation** **0 points**

Further opportunities for Leadership will be explored as the design is developed with the project team. Where opportunities for market transformation are identified these will be presented to the GBCA for consideration as Leadership strategies.

41 **Leadership Challenge: Climate Positive Pathway** **1 point**

The Climate Positive Pathway Leadership challenge has been met through the alignment of the design with the Green Star Climate Positive Pathway credits, gaining an additional point.

41 **Leadership Challenge: Circular Economy** **3 points**

The Climate Positive Pathway Leadership challenge has been met through the alignment of the design with the Green Star Climate Positive Pathway credits, gaining an additional point.

\- **Sector Specific Points: Collaborative Leasing** **2 points**

The development will implement suitable leases that involve the tenant(s) to enable 2 points to be achieved for collaborative leasing. This will include high quality leasing, building owner contributions and tenant leases meeting this criteria for at least 80% of the floor area, consistent with the Better Buildings Partnerships Green Leasing Guide.

\- **Sector Specific Points: Tenant Energy Source** **5 points**

The development will implement suitable leases that involve the tenant(s) to enable 5 points to be achieved for tenant energy source. This will include requirements for at least 80% of the tenants by area to procure 100% renewable energy. This will include engagement with tenants and putting in place a reporting mechanism to capture this data annually.

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Summary

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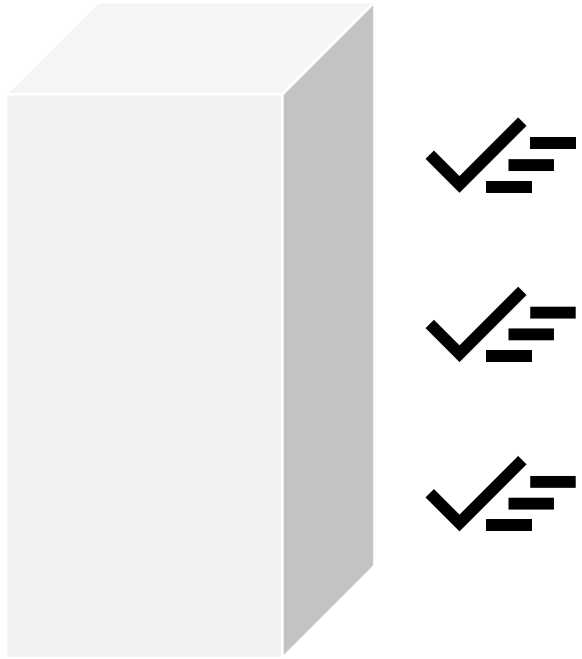

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Pathway

6 star Green Star target

The 436 Lonsdale Street development is targeting ~79 points sufficient to achieve a 6 star Green Star rating using the current version of the national Green Star rating tool. This includes an allowance for points to be lost during the detailed design and construction process.

For the full Green Star scorecard, please refer to the appendix.

Please refer to the following plans which support the targets within the sustainability strategy and should be referred to:

- ✓ Stormwater Report (by Arup)
- ✓ Operational waste management plan (by Aecom)
- ✓ Travel Plan (by Aecom)

A risk assessment demonstrating the total number of points targeted is sufficient for 6 star at this stage is included on the next page in addition to how the points are achieved for each category.

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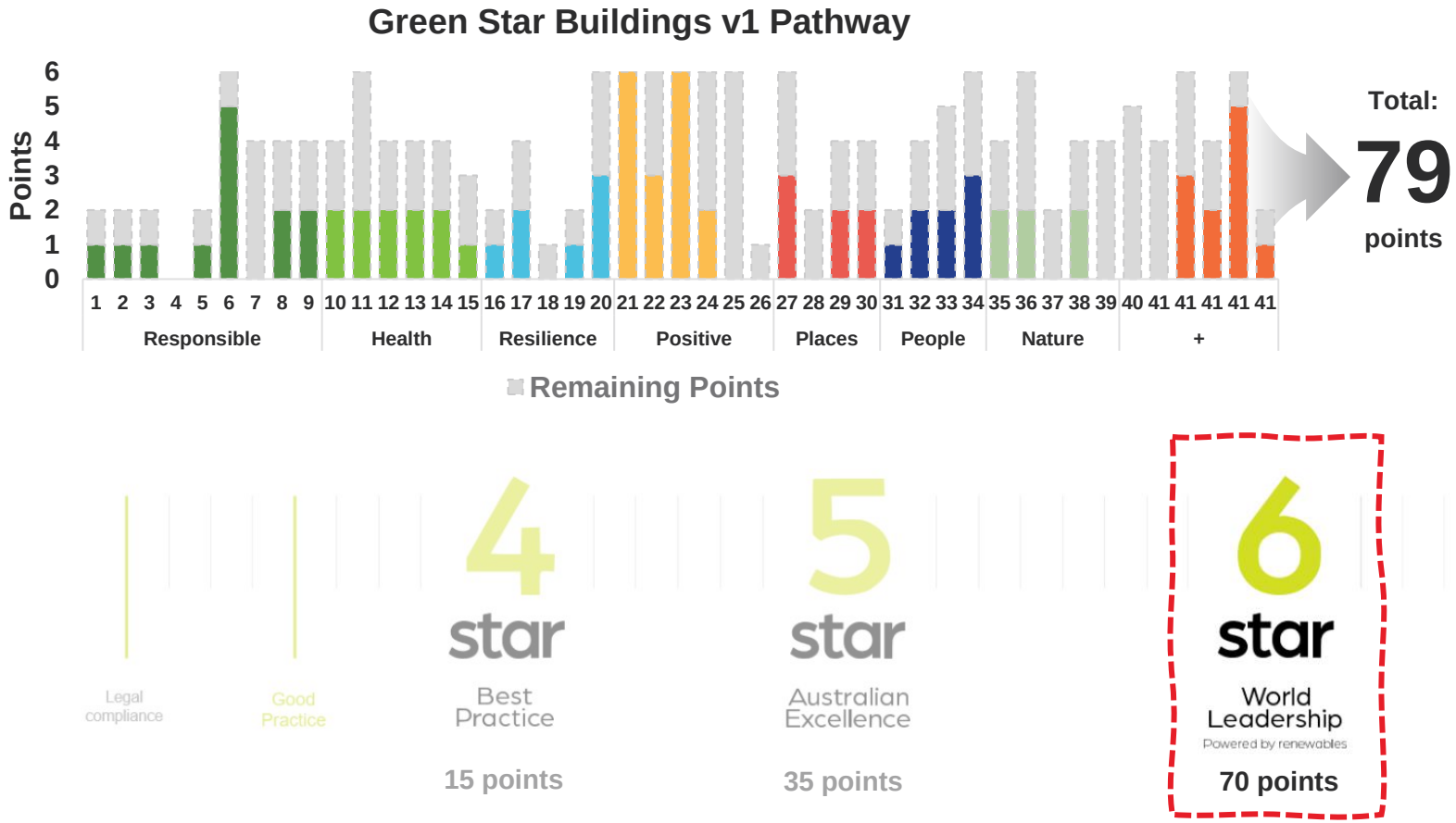

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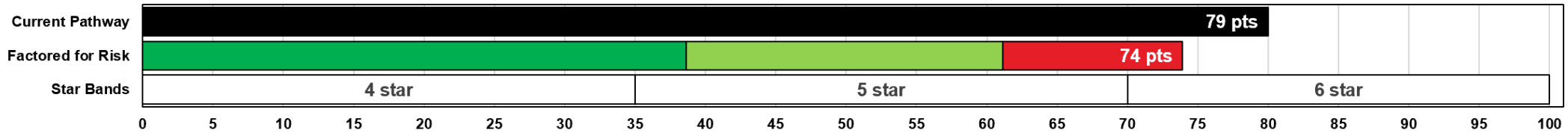
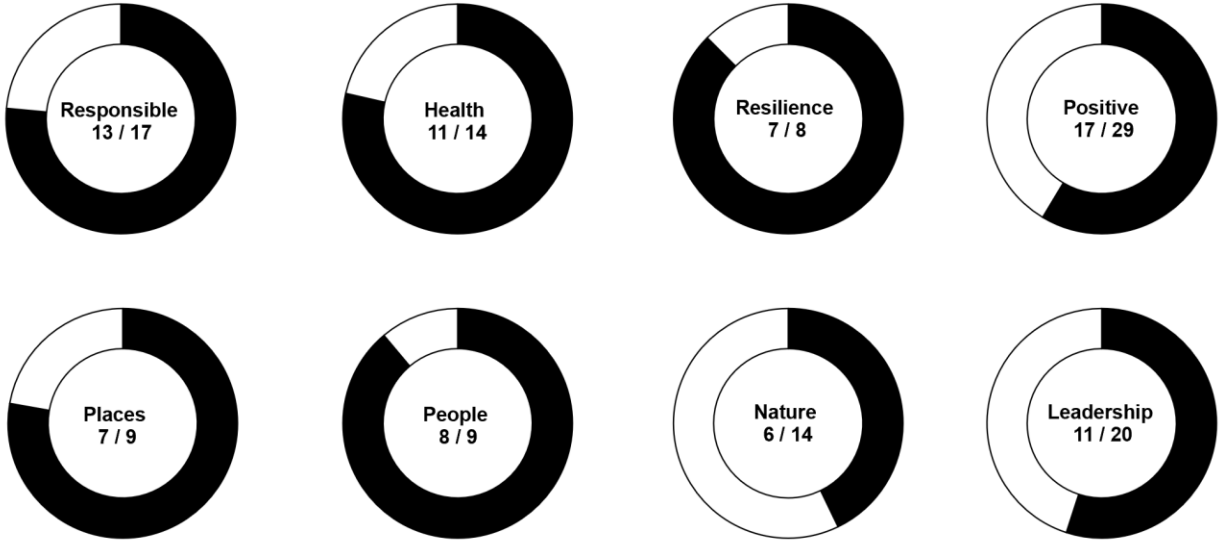
Risk Assessment and Category Outcomes

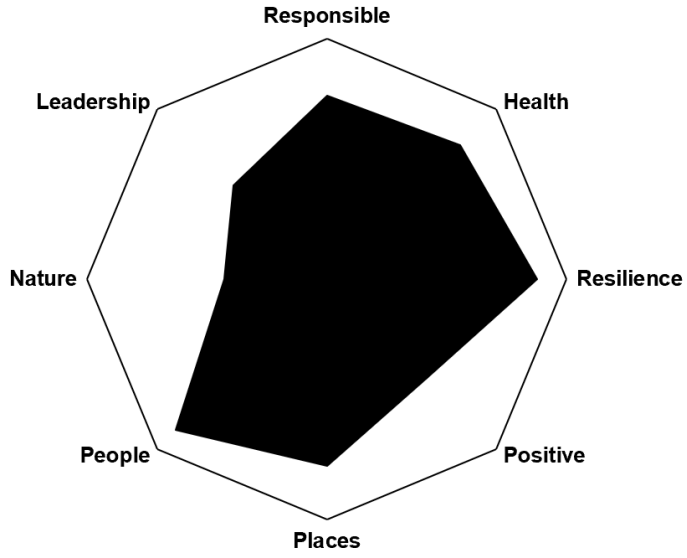
Score + Risk Overview



By Category



Current Pathway | Points Proportion by Category



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Scorecard

Green Star Buildings

The scorecard inset reveals the full pathway and the remaining credits within Green Star that will continue to be considered as the project develops in detail.

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Green Star Scorecard

Including risks per credit, responsibilities and timing

ME = Minimum Expectations NZ = Net Zero Pathway L = Low M = Medium H = High P = Primary A = Assistance X = Critical C = Consideration

	#	Credit	Min. Req	Current Pathway: Pathway	Pts	Risk	Costs	Remaining Credits: Pathway	Pts	Risk	Costs	Project Team: Client	Architect	Façade	Mech	Elec	Hydr.	Structure	Landscape	Civil	ESD	Waste	Acoustics	QS	RBS	ICA	Builder	Timing: Strategy	Brief	Concept	Design	Tender	Build	Handover	Use	Queries	Actions / Notes
Responsible	01	Industry Development		Credit	1	L	BAU	Credit	1	L	$0k	P	A	-	-	-	-	-	-	A	-	-	A	-	-	A	C	C	C	X	C	C	C	X		Appoint a GSAP by SD, disclose the costs + market the outcome.
	02	Responsible Construction		Credit	1	M	BAU	Credit	1	M	$0k	A	-	-	-	-	-	-	-	A	-	-	-	-	-	P	-	-	-	-	X	C	C	-		EMP, EMS, 90% landfill waste diversion, site staff training and audits
	03	Verification + Handover	ME	Credit	1	L	High	Credit	1	L	$0k	P	-	-	P	A	A	-	-	-	P	-	-	-	P	P	-	C	C	X	X	C	C	C		Metering, monitoring, targets, tested, commissioned, tuned with aftercare.
	04	Operational Waste	ME	Minimum	0	L	BAU	Minimum	-	L	$0k	A	P	-	-	-	-	-	-	-	A	P	-	-	-	A	-	-	-	X	-	-	C	C		Allow for suitably seperated waste storage with access
	05	Responsible Procurement		Credit	1	M	High	Credit	1	M	$200k	P	A	A	A	A	A	A	A	A	A	-	A	-	-	-	A	C	C	C	X	X	C	-	-		Design and delivery follows best practice enviro + social principles.
	06	Responsible Structure		Exceptional	5	H	High	Exceptional	5	H	TBD	A	-	-	-	-	P	-	-	A	-	-	A	-	-	P	-	-	-	C	X	C	-			The structure must be specified with recognised accredited products.
	07	Responsible Envelope		-	0	M	$0k	Exceptional	4	H	TBD	A	A	P	-	-	-	-	-	A	-	-	A	-	-	P	-	-	-	C	X	C	-	-		The envelope must be specified with recognised accredited products.
	08	Responsible Systems		Exceptional	2	H	Medium	Exceptional	2	H	TBD	A	-	-	P	P	P	-	-	A	-	-	A	-	-	P	-	-	-	C	X	C	-	-		The systems must be specified with recognised accredited products.
	09	Responsible Finishes		Exceptional	2	H	Medium	Exceptional	2	H	TBD	A	P	-	-	-	-	-	-	A	-	-	A	A	-	P	-	-	-	C	X	C	-	-		The finishes must be specified with recognised accredited products.
Health	10	Clean Air	ME	Credit	2	M	Medium	Credit	2	M	TBD	A	A	-	P	A	A	-	-	A	-	-	A	-	-	P	-	-	-	X	C	C	-	-		Minimising pollutants, maximising fresh air and enabling maintenance.
	11	Light Quality	ME	Credit	2	L	BAU	Exceptional	4	M	TBD	A	P	A	-	P	-	-	-	-	A	-	-	-	-	A	-	-	X	X	C	-	-	-		Credit achivement for daylight or light quality.
	12	Acoustic Comfort	ME	Credit	2	M	Medium	Credit	2	M	$0k	A	A	A	P	-	-	A	-	-	A	-	P	-	-	A	-	-	-	X	C	C	C	-		Acoustic strategy and best practice management.
	13	Exposure to Toxins	ME	Credit	2	L	Medium	Credit	2	M	$0k	A	P	-	-	-	-	A	-	-	P	-	-	-	-	P	-	-	-	X	X	C	-	-		Low/zero VOCs and Formaledhydes with on-site testing.
	14	Amenity and Comfort		Credit	2	L	BAU	Credit	2	L	TBD	A	P	-	-	A	-	-	-	-	A	-	A	-	-	-	-	C	C	X	C	-	C	C		Amenity rooms on-site for parents, relaxation and exercise.
	15	Connection to Nature		Credit	1	L	Medium	Exceptional	2	L	TBD	A	P	-	-	-	-	P	-	A	-	-	-	-	-	-	-	C	X	X	C	-	C	C		Views, plants, nature-inspired design and integrated nature.
Resilience	16	Climate Change Resilience	ME	Credit	1	L	BAU	Credit	1	L	$0k	P	A	A	A	A	A	A	A	A	P	-	-	-	-	A	C	C	X	X	C	-	-	-		Climate change risk mitigation strategy adopted.
	17	Operations Resilience		Credit	2	M	Medium	Credit	2	M	$0k	P	A	A	A	A	A	A	A	A	P	-	-	-	-	A	C	C	C	X	C	-	C	C		Future building operations considered and blackout plan adopted.
	18	Community Resilience		-	0	L	$0k	Credit	1	L	TBD	P	P	-	-	-	-	-	A	-	A	A	-	-	-	-	A	C	C	C	X	-	-	-	-		Community response strategy developed based on needs.
	19	Heat Resilience		Credit	1	L	BAU	Credit	1	L	$0k	-	P	-	-	-	-	-	A	-	A	-	-	-	-	-	A	-	-	-	X	C	C	-	-		At least 75% of the area mitigates the urban heat island.
	20	Grid Resilience		Credit	3	M	Medium	Credit	3	M	$0k	-	A	A	-	P	-	-	-	-	P	-	-	-	-	A	A	C	C	C	X	C	-	C	C		Active generation and storage systems adopted on-site.
Positive	21	Upfront Carbon Emissions	NZ	Exceptional	6	M	High	Exceptional	6	M	TBD	P	A	A	A	A	A	P	A	P	P	-	A	A	-	-	P	-	C	C	X	X	C	-	-		Upfront greenhouse gas emissions are reduced compared to BAU.
	22	Energy Use	NZ	Credit	3	M	BAU	Exceptional	6	M	TBD	A	A	A	A	A	A	-	-	-	P	-	-	-	A	A	A	-	-	C	X	C	C	C	-		Energy consumption is reduced compared to BAU.
	23	Energy Source	NZ	Exceptional	6	L	BAU	Exceptional	6	L	$0k	P	A	-	P	A	-	-	-	-	P	-	-	-	-	-	A	-	C	C	X	-	-	X	C		Zero Carbon Action Plan plus 100% renewable energy procurement.
	24	Other Carbon Emissions	NZ	Exceptional	2	L	High	Exceptional	4	L	$0k	P	-	-	A	-	-	A	-	-	A	-	-	-	-	-	A	-	-	C	X	C	-	X	C		Refrigerants and the upfront carbon emissions are offset.
	25	Water Use	ME	Minimum	0	M	High	Exceptional	6	L	High	A	A	-	A	-	A	-	A	A	P	-	-	-	A	A	-	-	C	X	C	C	C	C		The building uses less water than BAU.
	26	Life cycle Impacts		-	0	H	$0k	Credit	1	H	TBD	A	A	A	A	A	A	A	A	A	P	-	-	-	-	A	-	C	C	X	C	C	-	-		The building reduces life cycle impacts compared to BAU.
Places	27	Movement and Place	ME	Credit	3	L	BAU	Credit	3	L	$0k	P	P	-	-	P	-	-	-	-	A	-	-	-	A	-	A	X	C	X	X	C	-	-	-		The building includes showers, EOT, EV etc. informed by a plan.
	28	Enjoyable Places		-	0	L	$0k	Credit	2	L	TBD	-	A	-	-	P	-	-	-	-	A	-	-	-	-	A	A	-	C	C	X	-	-	-	C		The building delivers enjoyable places for people.
	29	Contribution to Place		Credit	2	L	BAU	Credit	2	L	$0k	P	P	-	-	-	-	-	-	-	A	-	-	-	-	-	-	-	C	C	X	-	-	-	C		The building contributes to the wider urban context.
	30	Culture, Heritage, Identity		Credit	2	L	BAU	Credit	2	L	$0k	P	P	-	-	-	-	-	-	-	A	-	-	-	-	-	-	-	C	C	X	-	-	C	C		The building's design reflects and celebrates locals and the history.
People	31	Inclusive Construction	ME	Credit	1	L	BAU	Credit	1	L	$0k	A	-	-	-	-	-	-	-	-	A	-	-	-	-	P	C	C	-	-	X	C	-	-		The building's construction practices are inclusive.
	32	Indigenous Inclusion		Credit	2	L	BAU	Credit	2	L	$0k	P	P	A	-	-	-	-	A	-	A	-	-	-	-	A	C	C	C	X	C	C	C	C		The project team plays an active role in the organisational Reconciliation Action Plan.
	33	Procurement and Workforce		Credit	2	L	Medium	Exceptional	3	L	TBD	P	-	-	-	-	-	-	-	-	A	-	-	-	-	P	-	-	-	-	X	C	-	-		The project implements a social procurement plan
	34	Design for Inclusion		Exceptional	3	L	Medium	Exceptional	3	L	TBD	P	P	A	A	A	A	A	A	A	A	A	A	-	-	-	A	-	C	X	C	C	C	C	C		The building is designed and constructed to be inclusive to a diverse range of people.
Nature	35	Impacts to Nature		Credit	2	M	BAU	Credit	2	L	TBD	P	A	-	-	P	-	-	P	A	A	-	-	-	-	-	P	X	X	C	X	C	X	C	C		Not a site of high ecological value and light pollution minimised.
	36	Biodiversity Enhancement		Credit	2	L	High	Exceptional	4	L	High	A	A	A	-	-	A	A	P	A	A	-	-	-	-	-	A	-	-	X	X	X	C	X	C		The building's site includes a sizeable and diverse landscape area
	37	Nature Connectivity		-	0	L	$0k	Credit	2	L	TBD	A	A	-	-	-	-	-	P	-	A	-	-	-	-	-	A	C	C	C	X	C	C	-	-		Species connectivity is encouraged through the site.
	38	Nature Stewardship		Credit	2	L	Medium	Credit	2	L	$0k	P	A	-	-	-	-	-	P	-	A	-	-	-	-	-	-	C	C	X	C	C	-	-	-		Areas of restoration or protection are provided
	39	Waterway Protection		-	0	L	$0k	Exceptional	4	L	TBD	A	-	-	-	-	-	-	-	P	A	-	-	-	-	-	A	-	-	C	X	C	C	-	-		Stormwater discharge is reduced and pollution targets are met.
+	40	Market Transformation		-	0	H	$0k	Credit	5	H	TBD	A	A	A	A	A	A	A	A	A	P	A	A	A	A	A	A	C	C	C	X	C	C	C	C		The project implements a building solution or process that is considered leading.
	41	Leadership | Responsible Products		-	0	L	$0k	Exceptional	4	L	TBD	A	P	P	P	P	P	P	-	-	A	-	-	-	-	-	P	C	C	C	C	X	C	C	C		Credit + both exceptional performance criteria met for all responsible materials credits
	41	Leadership | Circular Economy		Exceptional	3	M	Medium	Exceptional	3	M	$0k	A	A	A	A	A	A	A	A	A	P	A	A	A	-	-	A	C	C	C	X	X	C	C	C		Arup to conduct circularity assessment, facilitate workshop with project team
	-	Sector | Collaborative Leasing		Exceptional	2	H	$0k	Exceptional	2	H	$0k	P	-	-	A	A	-	-	-	-	P	-	-	A	A	-	-	C	C	C	C	C	C	X	X		80% commercial tenants leases address BBP Green Leasing Guide + feedback platform
	-	Sector | Tenant Energy Source		Exceptional	5	H	$0k	Exceptional	5	H	$0k	P	-	-	A	A	-	-	-	-	P	-	-	A	A	-	A	C	C	C	C	C	C	X	X		At least 80% of tenant space (by NLA) uses 100% renewable electricity
	41	Climate Positive Pathway		Credit	1	L	BAU	Credit	1	L	TBD	A	A	A	A	A	A	A	A	A	P	A	A	A	A	A	A	C	C	C	X	C	C	C	C		15 points within the Climate Positive Pathway is achieved.

Total points: 79
Weighted for risk: 73.9
Estimated rating: 6 star

Total points: 100
Weighted for risk: 100.0
Potential rating: 6 star

This is the total number of points including the leadership points. A limit of 100 is applied even if more than 100 are achieved.
The risk weighting factors being applied are 0.99 for low, 0.9 for medium and 0.8 for high.
The boundaries for each star rating are 0 for 4 star, 35 for 5 star and 70 for 6 star.

Appendices

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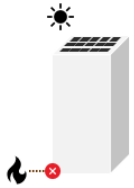
Energy
Appendix A



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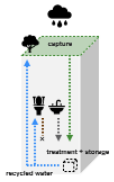
Potable Water
Appendix B



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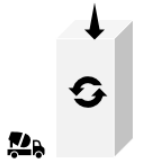
Upfront Carbon
Appendix C



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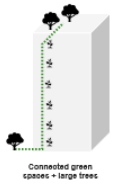
Green Infrastructure
Appendix D



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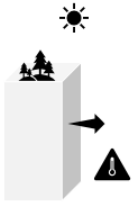
Urban Heat Island
Appendix F



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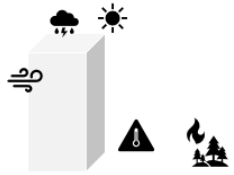
Amenity + Place
Appendix G

ARUP

Climate Resilience
Appendix H



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Energy

Appendix A

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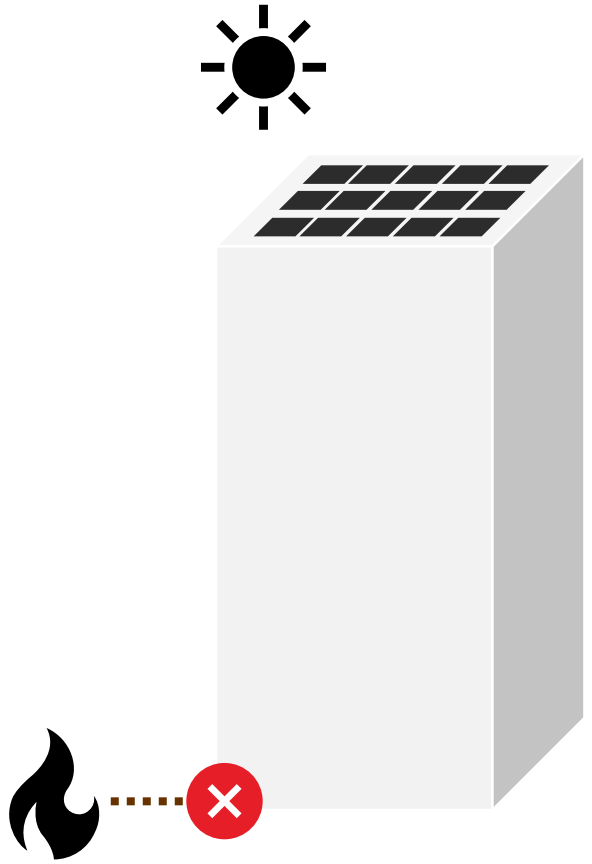

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Exceeding Section J Compliance

Fabric First Approach

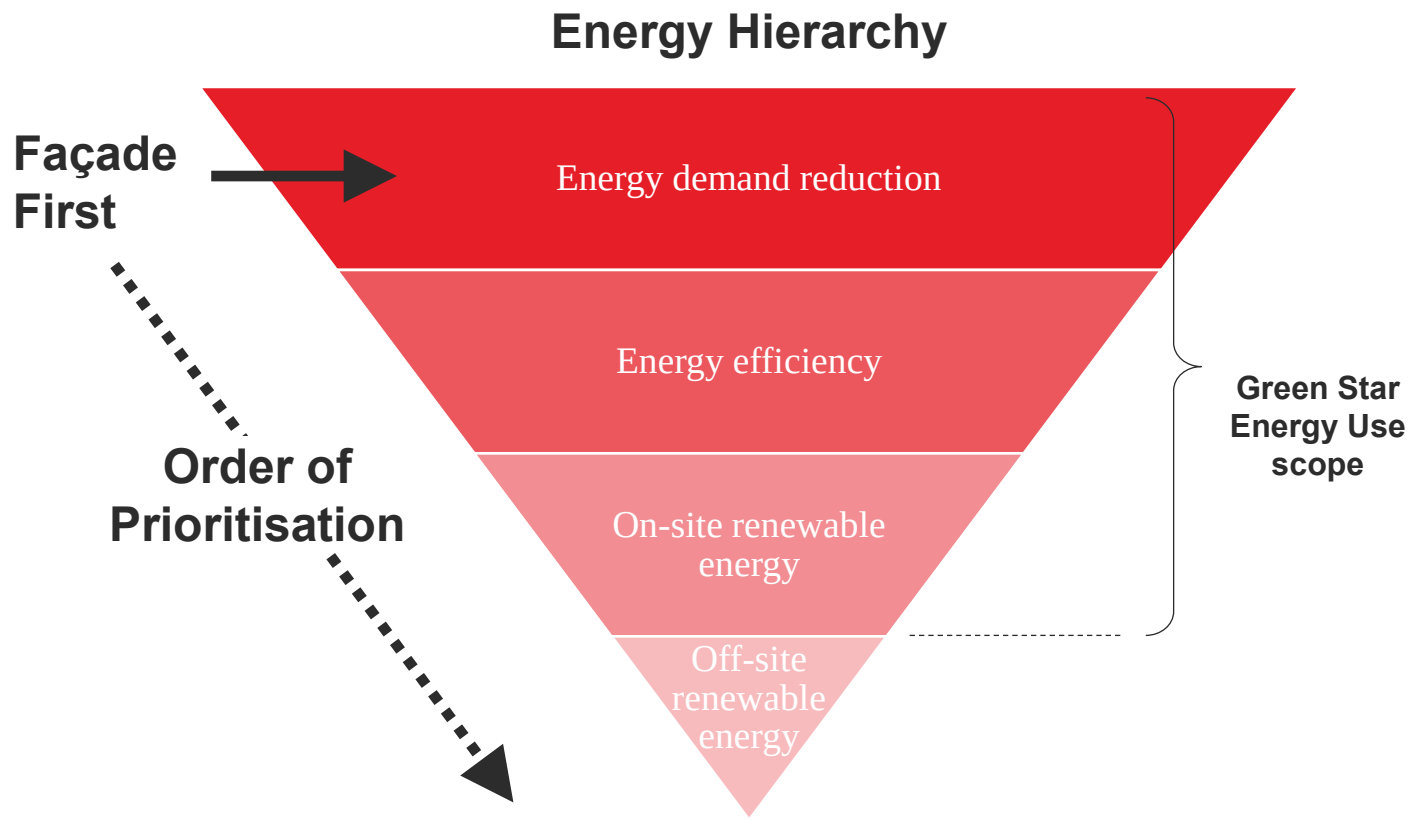
The façade is the first opportunity for the building to achieve the targeted 20% reduction in energy use overall.

Preliminary design targets to meet brief:

- 33% to 67% window wall ratio overall while also designing for maximising daylight access with considerate window placement, recognising it varies with different orientations and adjacencies that are present.
- U2.5 W/m^2.K windows inc. frame
- SHGC 0.24 (VLT ~50%) with moderate shading (conservative multiplier of 0.9 applied for horizontal and vertical shading effect from design).
- R2 and R4 m^2.K/W walls and roofs (inc. thermal bridges)
- 3 m^3/m^2/hour at 50 Pa air tightness, evidenced by a test.

It is noted that the existing façade will need upgrading.

It is noted that the project will ultimately demonstrate compliance with the JV2 Green Star Pathway.



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Façade Design

Marked up drawings

The town planning documentation developed by Wardle and the project team shows that this strategy is intended to be implemented with a double glazed and insulated façade with moderate shade protection.

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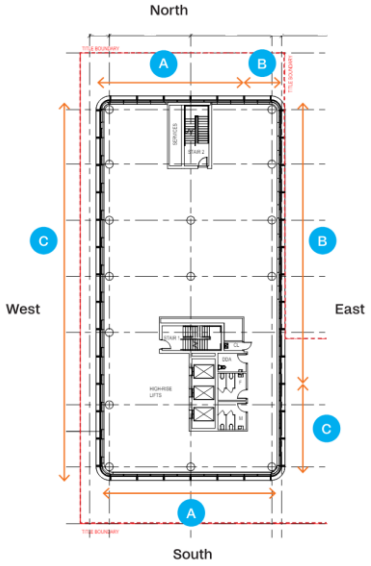
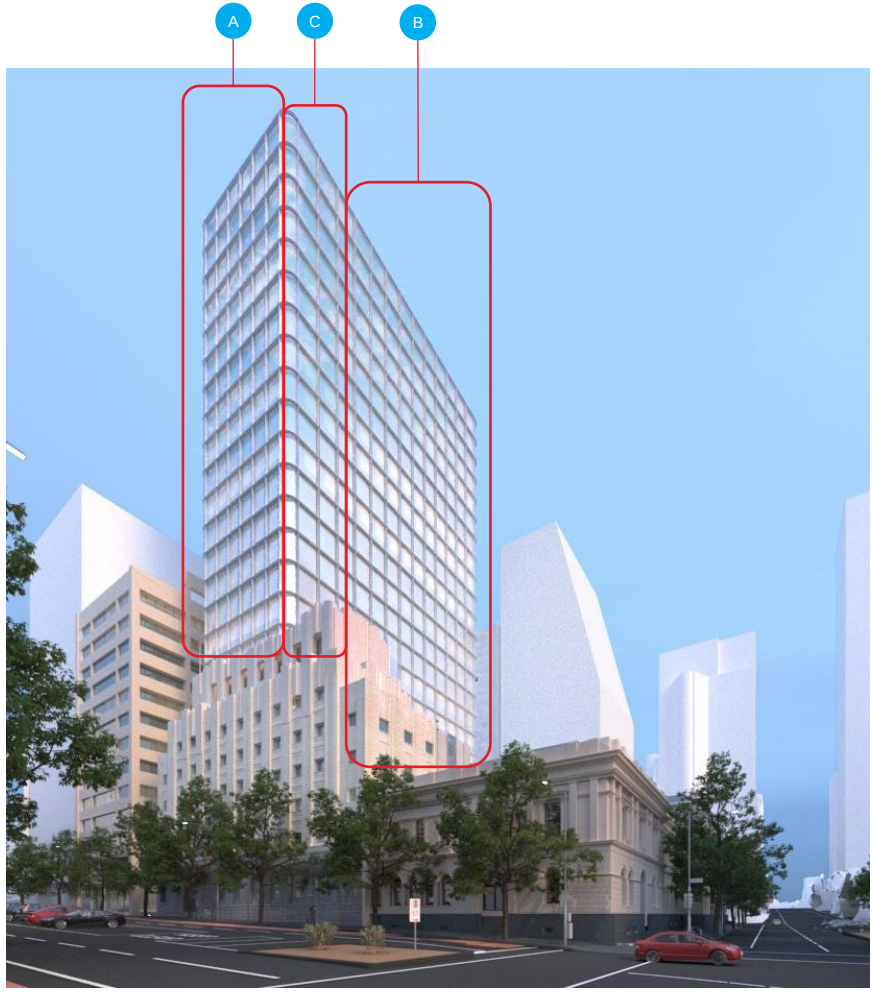
Curtain Wall - Vision & Spandrel

Design proposal:

- North facade = 67% vision glazing / Type A
- North facade (3m to LTO boundary) = 33% vision glazing / Type B
- East facade (against LTO boundary) = 33% vision glazing / Type B
- East facade (beyond LTO boundary) = 39% vision glazing / Type C
- South facade = 67% vision glazing / Type A
- West facade = 39% vision glazing / Type C
- Maintain consistent window sill & head height to all facade orientation
- 200mm (H) x 400 (D) profiled external double sunshade 'grid'





Façade strategy

Extract from Wardle documentation

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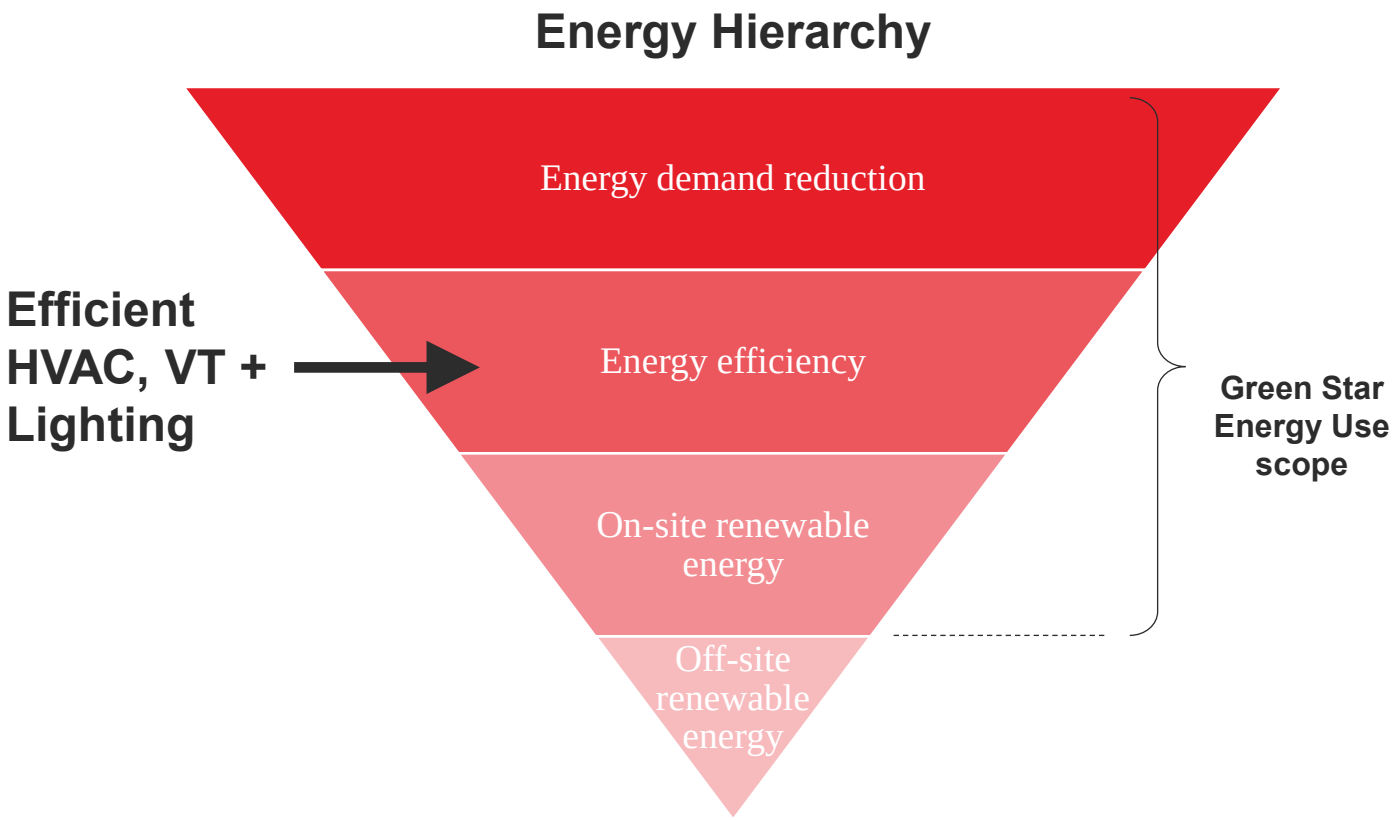
High Performance All Electric Design

Energy Efficient

The HVAC, vertical transport and lighting systems must be efficient, exceeding the NCC.

Initial design targets to meet brief:

- Water cooled chillers with ultra low emission refrigerants. Low load chiller will be explored in design development.
- Lighting with 30% reduction in aggregate using controls, sensors and LED fittings.
- Electric heat pumps with seasonal coefficient of performance of at least 3. thermal storage will be explored in design development.
- Heat recovery incorporated into ventilation system has been allowed for with variable speed EC plug fans.
- Lightweight lifts inc. regenerative brakes.



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All Electric Systems

Marked up plans

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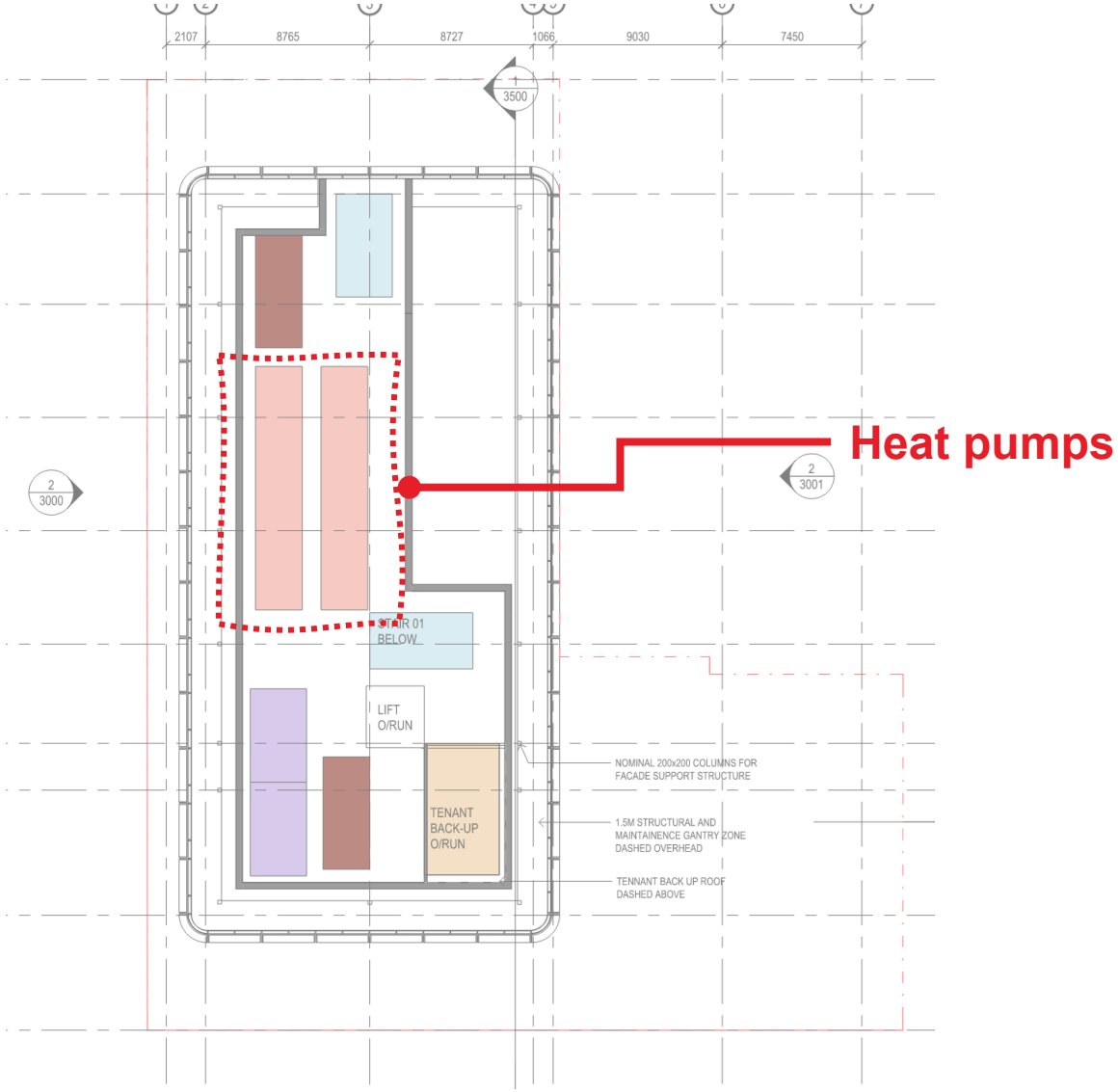

Roof Level

Marked up showing proposed heat pumps

Potable Water

Appendix B

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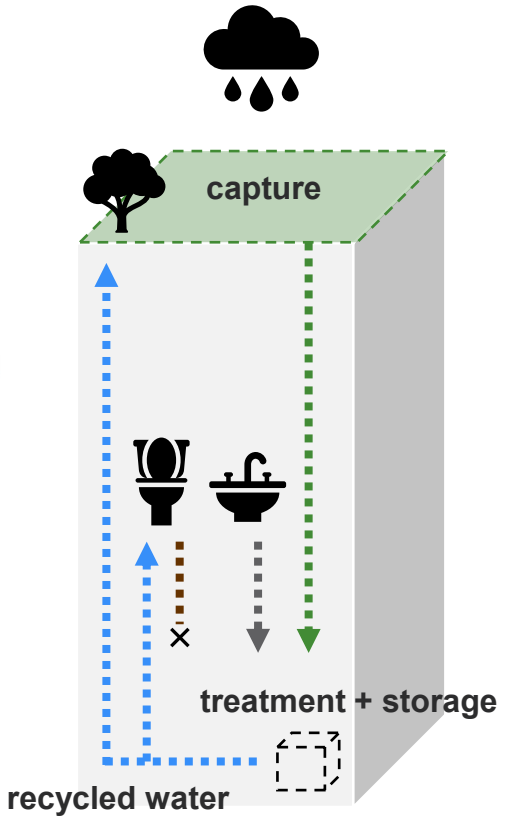

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Criteria

Green Star

The aim of credit 25 Water Use is to ensure that the building has low water use. There are three criteria for this credit:

Minimum Expectation (mandatory)

- **15%** reduction in potable water compared to a reference building

Credit Achievement (3 points)

- **45%** reduction in potable water compared to a reference building
- Recycled water infrastructure connection if available or planned to be available.

Exceptional Performance (+3 points)

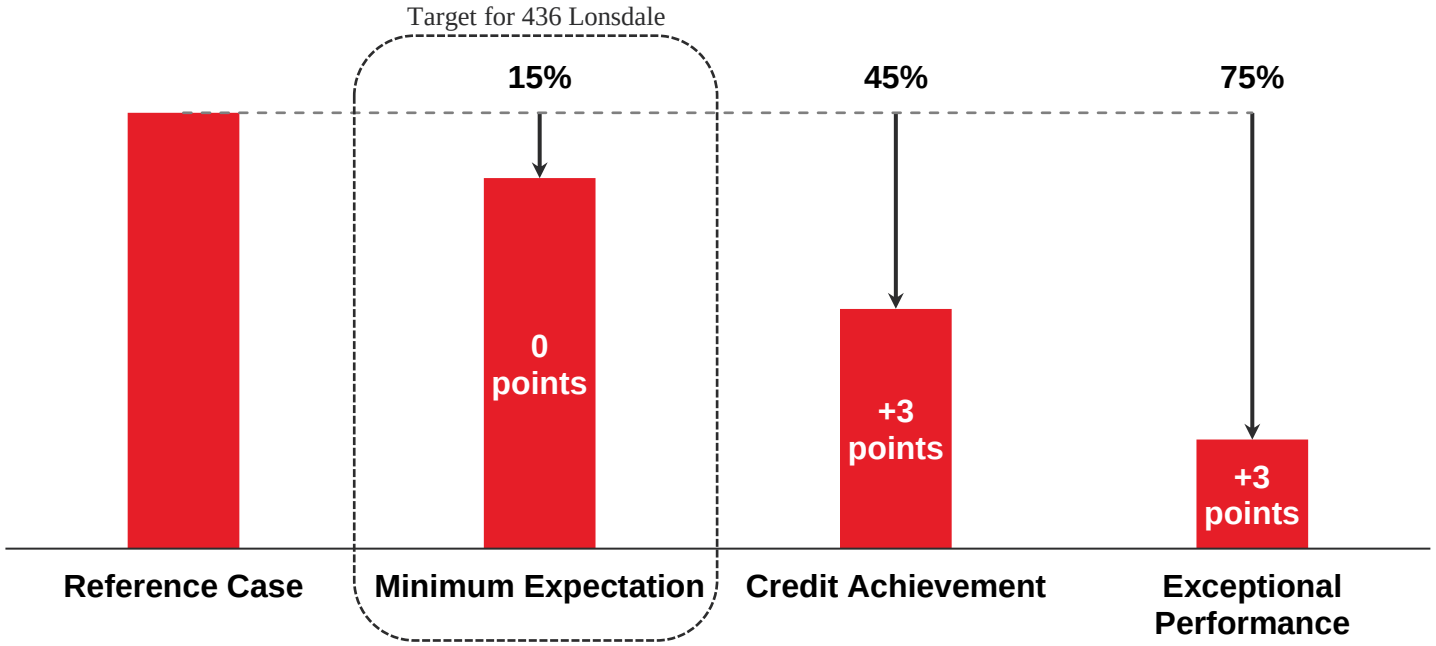
- **75%** reduction in potable water compared to a reference building.

For this building's 6 star Green star pathway established to date, just the Minimum Expectation is targeted.

New Green Star Credit Criteria – up to 6 points available

Minimum Expectation targeted.

Green Star Potable Water Reduction Targets



Recycled Water Infrastructure

The building must have infrastructure for recycled water in a district or location where local council or water authorities have planned for installation of recycled water infrastructure

Assumptions

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Calculations

A series of sensitivity tests have been run to understand which assumptions are more sensitive to change to help inform design risk assessments.

This assessment has been undertaken with the latest Green Star Potable Water calculator available at the time of writing.

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Occupancy

Staff (95% of total)	1,507
Visitors (< 1 hour)	79
Total occupancy of approximately 1,587 people	

Washdown

Hose flowrate	12 L/min
Number of hoses	2
Average daily use	30 mins

Landscape Irrigation (aligned with Green Factor)

Landscaped area	~263 m^2
% of zone undercover	0%
Crop coefficient	0.4 (low water req.)
Irrigation	Subsurface drip irrigation (90% efficiency)

Fixtures + fittings (WELS ratings)

Taps	6 star (<4.5 L/min)
Urinals	6 star (<0.8 L/flush)
Toilets	4 star (3.5 L/flush avg)
Showers	3 star (<6 L/min)

Rainwater collection

Rainwater collection area (m^2)	1,312 m^2
Rainwater tank size	25 kL
Roof	Flat without gravel
End uses connected to	Toilets, urinals, irrigation

Fire systems

% of water captured per test	80%
Testing frequency	annually
Volume discharged per test	1,000 L

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Results

Key statistics

The water consumption for the whole development has been estimated on the basis of the assumptions and operation anticipated for the building, based on estimated occupancy.

The toilets represent the largest water demand, at ~1,400 kL/year followed by showers, taps and then urinals.

The rainwater system capacity is shown to be emptied regularly with the tank struggling to maintain a water level greater than ~12 kL throughout the year, demonstrating there is no benefit in an increased rainwater tank size. The additional capacity is anticipated to allow for variation in rainfall events that will occur, noting this is average rainfall data as required for Green Star.

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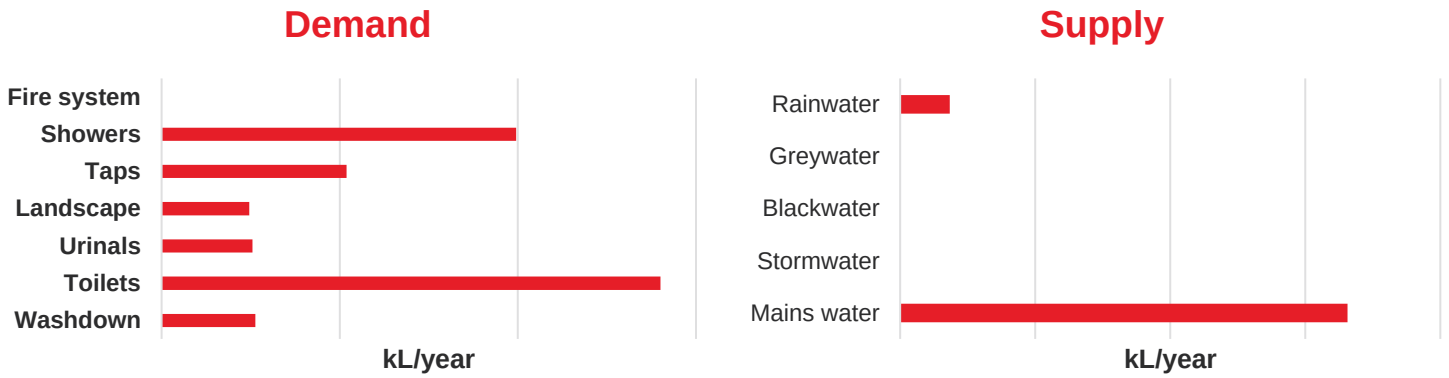

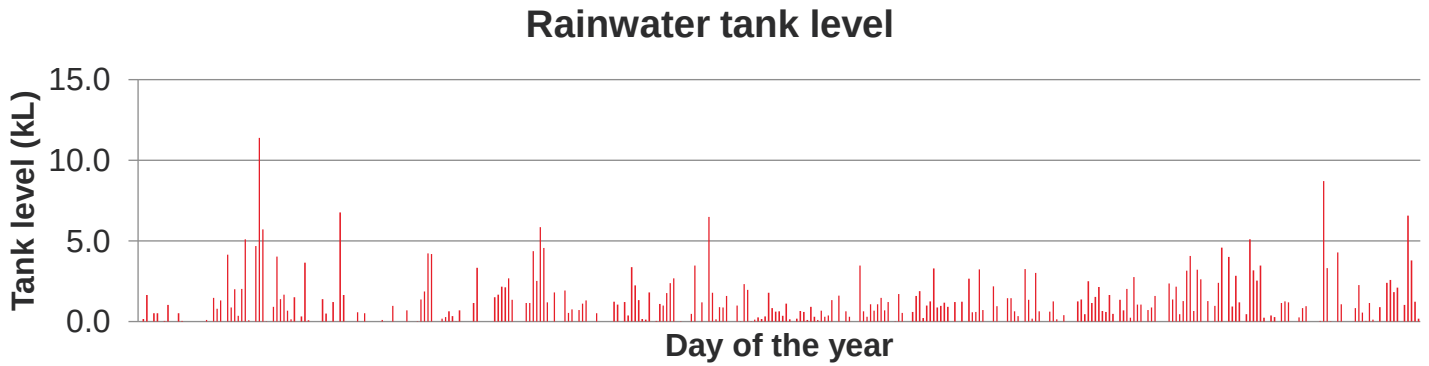

Total water demand:
~3,500 kL/year

Total potable water demand:
~3,315 kL/year

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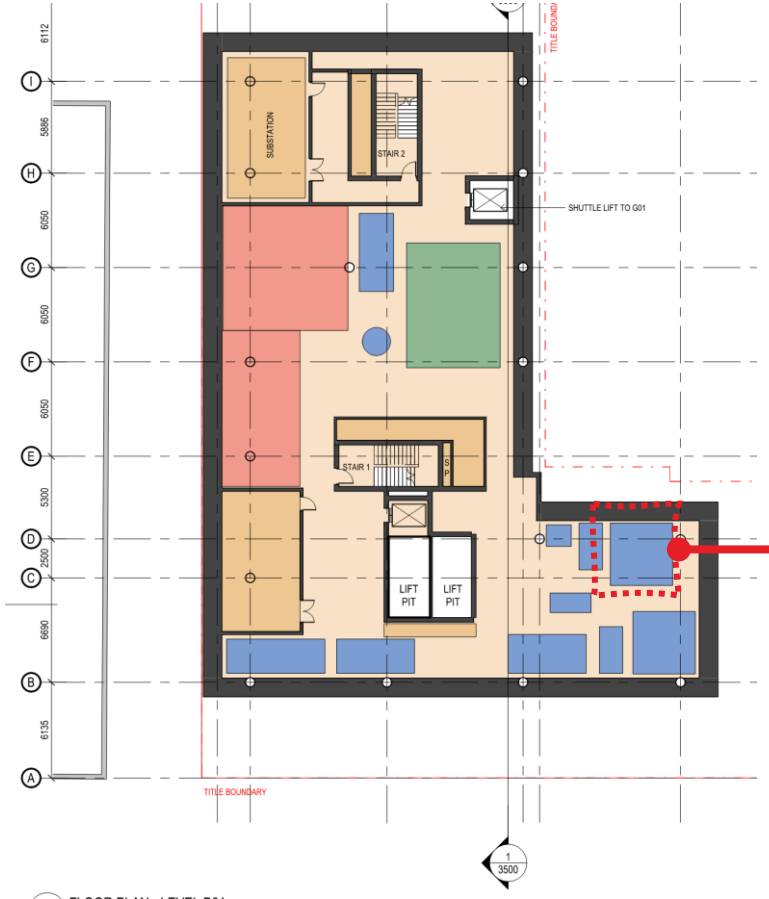
Potable water reduction

Marked up plans

The town planning documentation developed by Wardle and the project team shows that this strategy is intended to be implemented with space provision made in the basement for water storage. The rainwater will be collected from the rooftops and sent to irrigation demands for the green infrastructure as well as to toilets and urinals.

The plans allow for 50 kL which will be split between the rainwater tank storage volume requirement of approximately 25 kL and the stormwater storage volume requirement of at least 18 kL.

This will be further developed in design development.



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Basement Level

Marked up showing rainwater storage

Upfront Carbon

Appendix C

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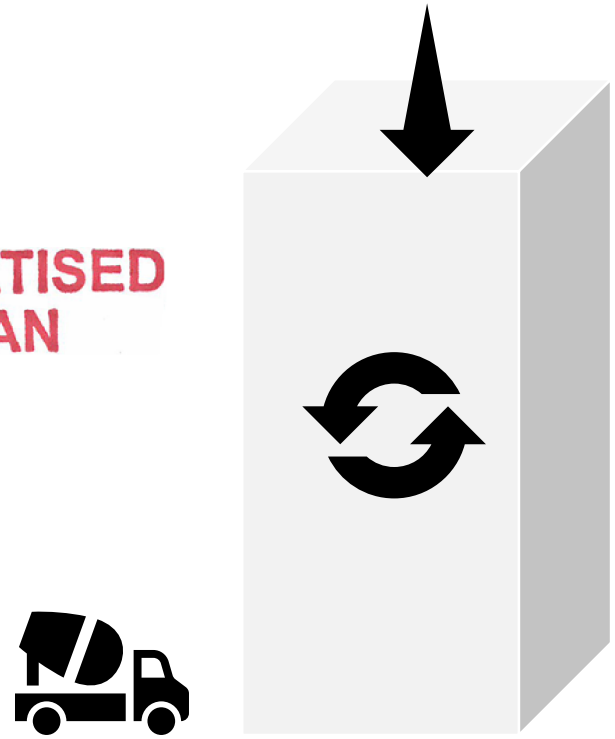

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Upfront Carbon Reduction

Reduced Upfront Impact

A preliminary reference design has been established that has been optimised to show a 40% reduction in upfront carbon.

The resulting materials must be specified and procured with emerging best practice 3rd party certifications.

The strategy anticipated to achieve at least a 40% reduction so far includes:

- Structural optimisation with grid and reinforcing rates etc.
- Reusing of existing materials on-site including aggregates and potentially internal features
- Low carbon concrete mixes
- Carbon neutral certified products including concrete, carpets and ceiling panels.
- Low carbon and minimal refrigerant use.

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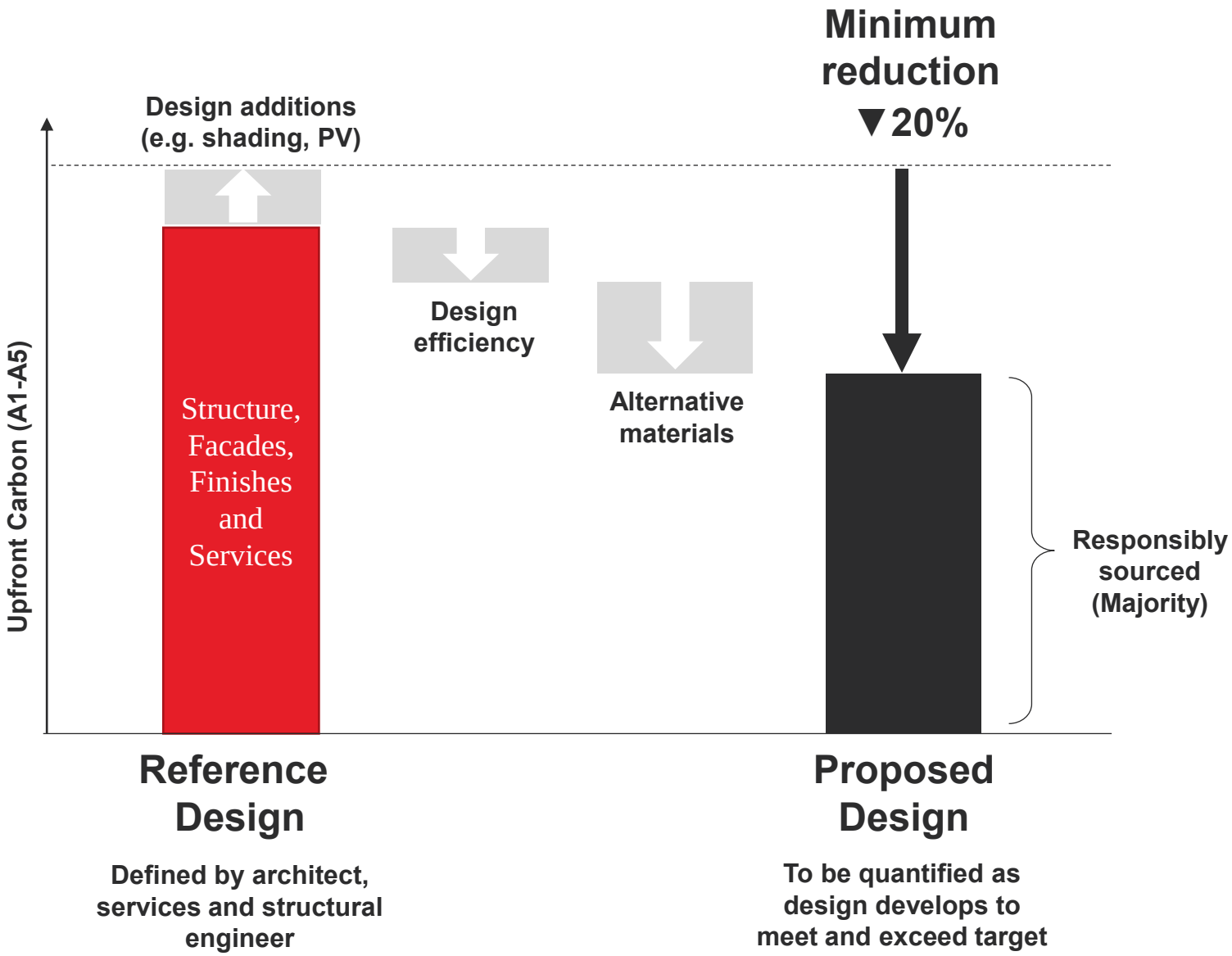

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Upfront Carbon Offset

100% Carbon Neutral

For projects registering from 2023 targeting 6 star, all emissions associated with the development must be calculated and offset.

This has been preliminarily estimated to be in the order of ~13,000 tonnes of CO_{2e} and the project is committed to offsetting this extent to meet the Green Star criteria for 6 star.

This estimate is subject to change on the basis of the detailed design and the final as-built quantities.

The process will be aligned to the Green Star criteria and include a peer review to ensure accuracy in reporting.

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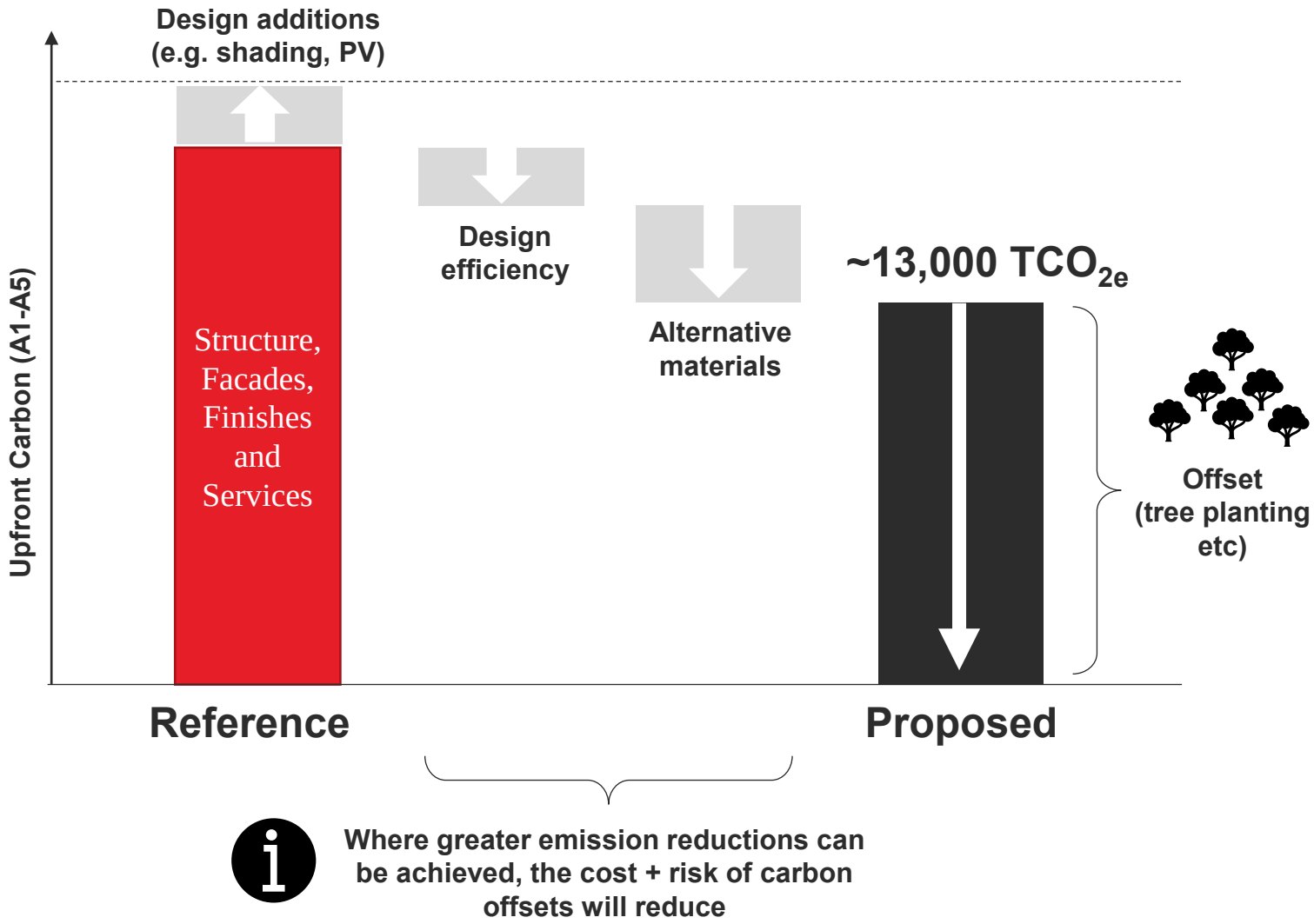

Green Infrastructure

Appendix D

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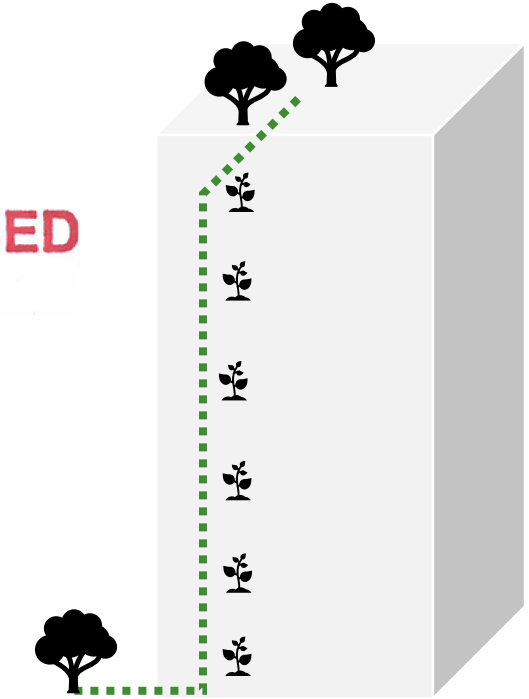

Connected green
spaces + large trees

Green Infrastructure

Marked up plans

The landscape planning documentation developed by AECOM and the project team shows that a green infrastructure strategy is intended to be implemented with space provision made within the external terraces across levels 5, 7, 8 and on the roof.

The space amounts to:

- Approximately 89m^2 of soil area across Level 5 will feature a mix of small plant types.
- Approximately 42m^2 of soil area with small tree planting across the Level 7 open terrace space
- Approximately 47m^2 of soil area in raised steel planters on the western Level 8 terrace.
- 85m^2 of landscaped space, designed with paved and seating areas.

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Landscaped terrace areas

Marked up showing ~263m^2 total landscaped area

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Green Factor

Minimum 0.55 Green Factor target

The new planning amendment requires the project to achieve 0.55 or more in new Green Factor tool. The Green Factor tool assesses the provision of various types of vegetation such as in ground, green wall, green façade, planters and green roofs. It awards points based on the area, species and connectivity of landscaping.

On the basis of the areas incorporated in the design and the Aecom landscape design provided, a score of 0.55 can be met as shown inset.

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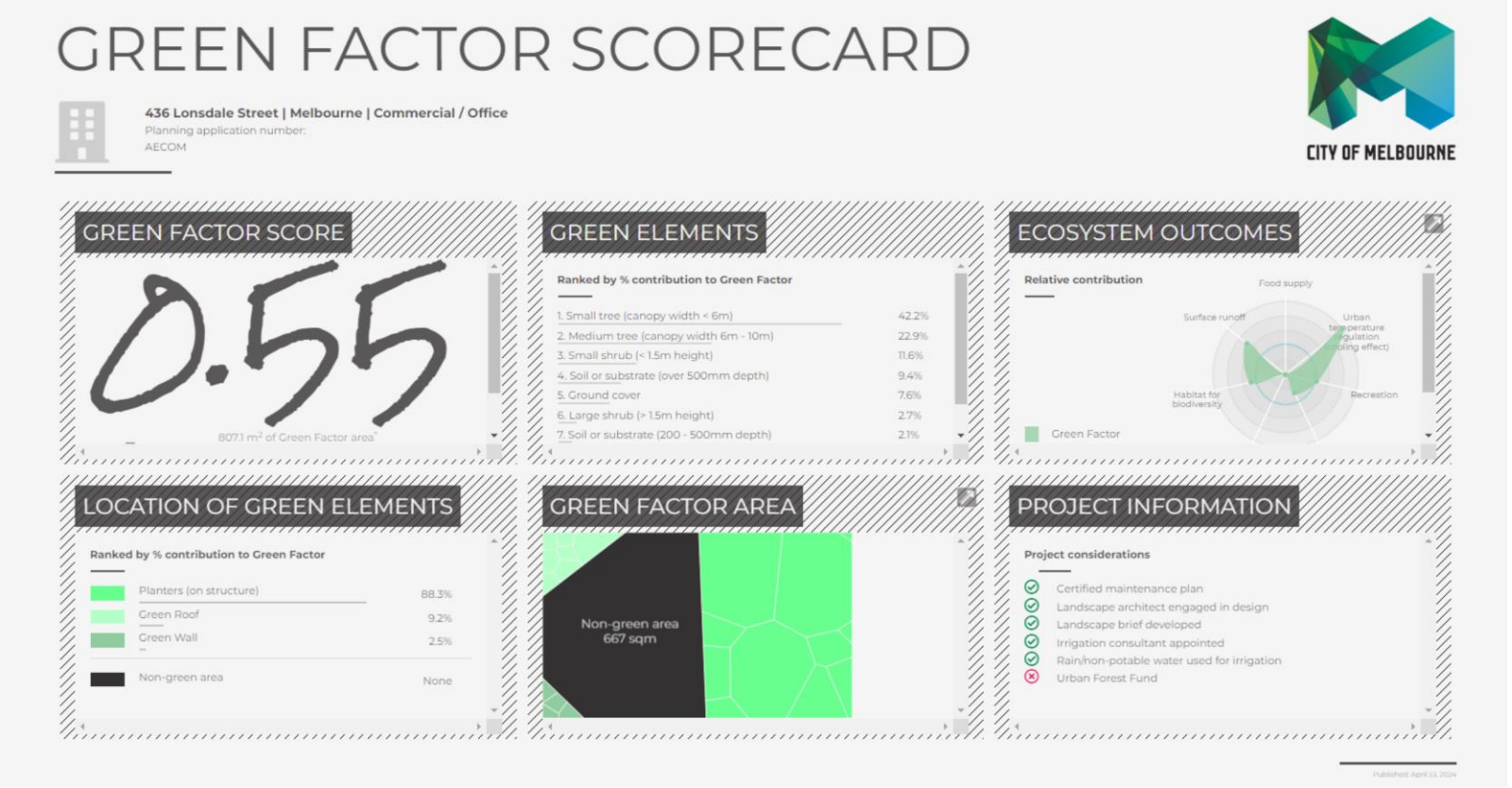

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Green Star

Alignment with Green Factor

The Green Factor requirements has the co-benefit of supporting Green Star credits Biodiversity Enhancement and Nature Connectivity.

The elements of the design that Green Star considers are as follows:

- 263m^2 of landscaped area (sufficient for Credit Achievement of Biodiversity Enhancement)
- 6 small trees would be presented as equivalent to 1 large tree for nesting with support of Ecologist.
- 60-100% indigenous planting consistent with Green Factor tests.

Assumptions:

- 21,876 m^2 gross floor area
- Species diversity requirements inset to be detailed in subsequent design development.
- Review by ecologist to occur of existing site and as the design is detailed.

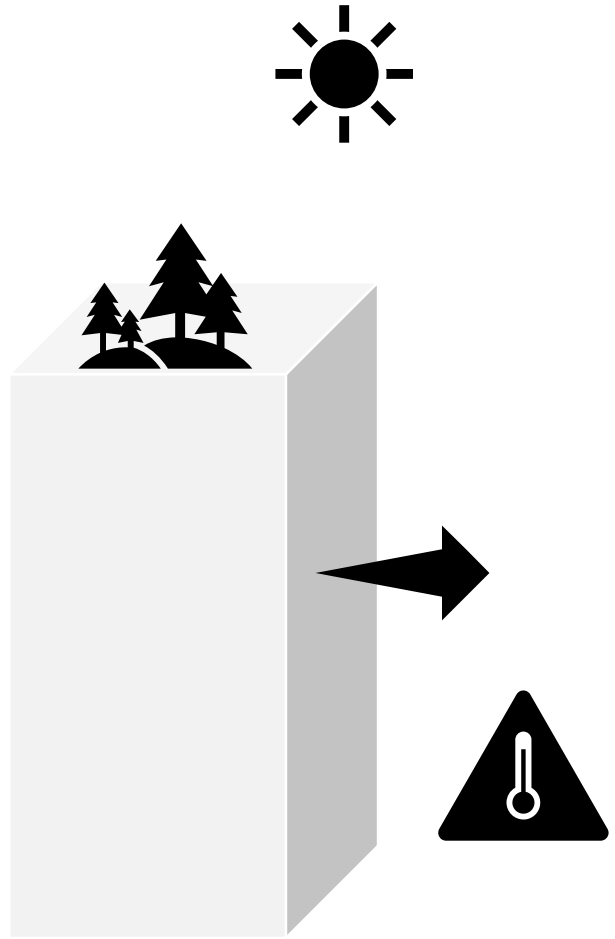
At this stage the credit achievement for biodiversity enhancement is considered to be achievable provided planting mixes are suitably specified and developed in detailed design and the GBCA accept a series of small trees as equivalent to a single large tree through the Technical Query process.

Green Star Alignment

Credit	Credit achievement	Exceptional performance
Biodiversity Enhancement (+2 points Credit Achievement) (+2 points Exceptional Performance)	• Includes (15% of site or 1:500 GFA) landscaped area = 223m^2 • 1 nesting tree (~15m) per 500m^2 of landscape or equivalent = 1 • 60% indigenous planting	• Includes (30% of site or 1:300 GFA) of landscaped area = 446m^2 • 1 nesting tree per 250m^2 of landscape = 1 • 80% indigenous planting • Include endangered species • Reviewed by ecologist
	Meet species diversity requirements: • 10% of plants from one species • 20% of plants from one genus • 30% of plants from one family • Include no invasive species	
Nature Connectivity (+2 points Credit Achievement)	• At least 25% of the site external area is connected contiguously with nature or infrastructure AND greater than 182 m^2 with connections to adjacent sites where applicable. OR • Contiguous nature connectivity when achieved with infrastructure can include features such as a canopy bridge, wildlife tunnels, green roofs and amphibian tunnels.	-

Urban Heat Island

Appendix F



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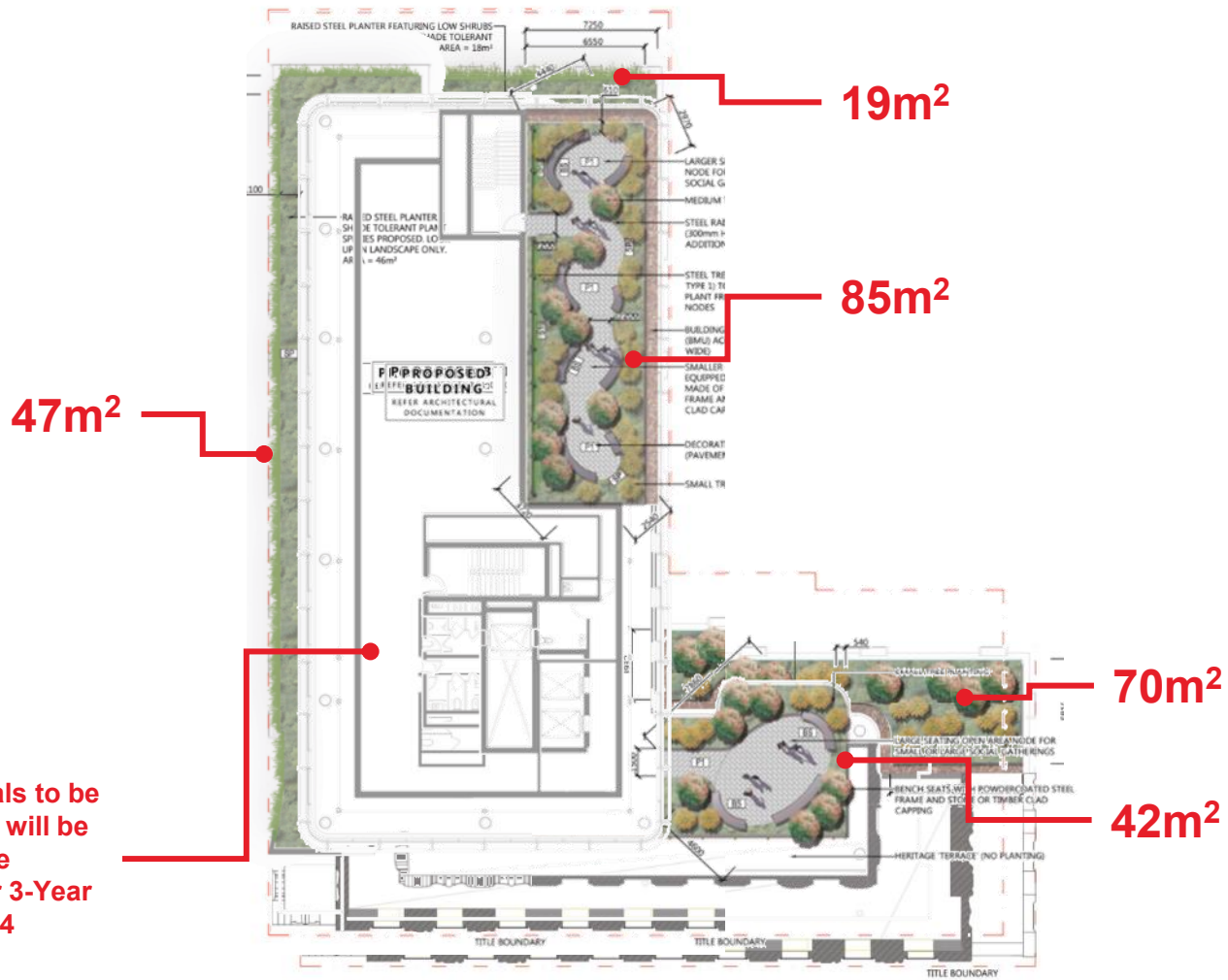
Urban Heat Island

75% site coverage with vegetation and light finishes

Cities, being made up vastly of masses of steel and concrete, absorb heat throughout the day. This can lead to what is known as the heat island effect, which can significantly increase the temperature of an urban environment, effecting the performance of buildings, the comfort of users of the city and effect any vegetation or urban wildlife.

To mitigate the effects of heat island, the project will use light coloured and reflective finishes for hardscaped surfaces across the roof as well as vegetation to the lower roof areas and shading to meet and exceed the 75% requirement.

The colours of the roof will be nominated to meet the solar reflectance criteria in Green Star as the design is developed.



Roof surface materials to be confirmed. Materials will be chosen to exceed the minimum Green Star 3-Year SRI requirement of 34

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Amenity + Place

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Site Transport

The provision of carparking, bike parking and electric vehicle chargers must enable a 90% increase in active mode transport and 20% reduction in vehicle kilometres travelled for postcode 3000 using Green Star FAQ F-00330.

On the basis of the proposed extent of bike parks, showers, carparks etc the following sustainable transport outcomes are forecast:

✓ 97% increase in active mode transport enabled

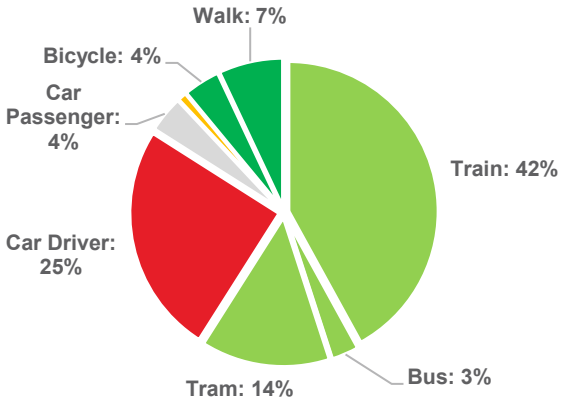
✓ 100% reduction in vehicle kilometres travelled

Assumptions:

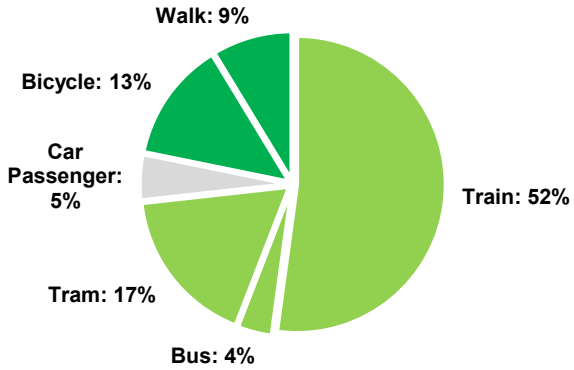
- 1,509 regular occupants (office workers)
- Walking increases from 7% to 9% through the location of the building in a highly walkable area of Melbourne that will be encouraged in the design and operation of the facility.
- No carparking provided on-site.
- The project is well served by public transport with trains, buses and trams within 500m.

This aligns with the supporting transport study provided separately by Aecom.

Current Transport Profile for Melbourne CBD



Proposed Transport Profile for 436 Lonsdale



Design allowance

182 bike parks

10 showers

60 lockers

0 carparks

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Sustainable Transport

Marked Up Plans

The town planning documentation developed by Wardle and the project team shows that this strategy is intended to be implemented with space provision made in the basement for both bike parking and end of trip (EOT) facilities.

Provision for bikes of different types and sizes has been made with provision for tools and access via a lift.

As evidenced on the plans, there is no carparking provided on-site as part of the development.

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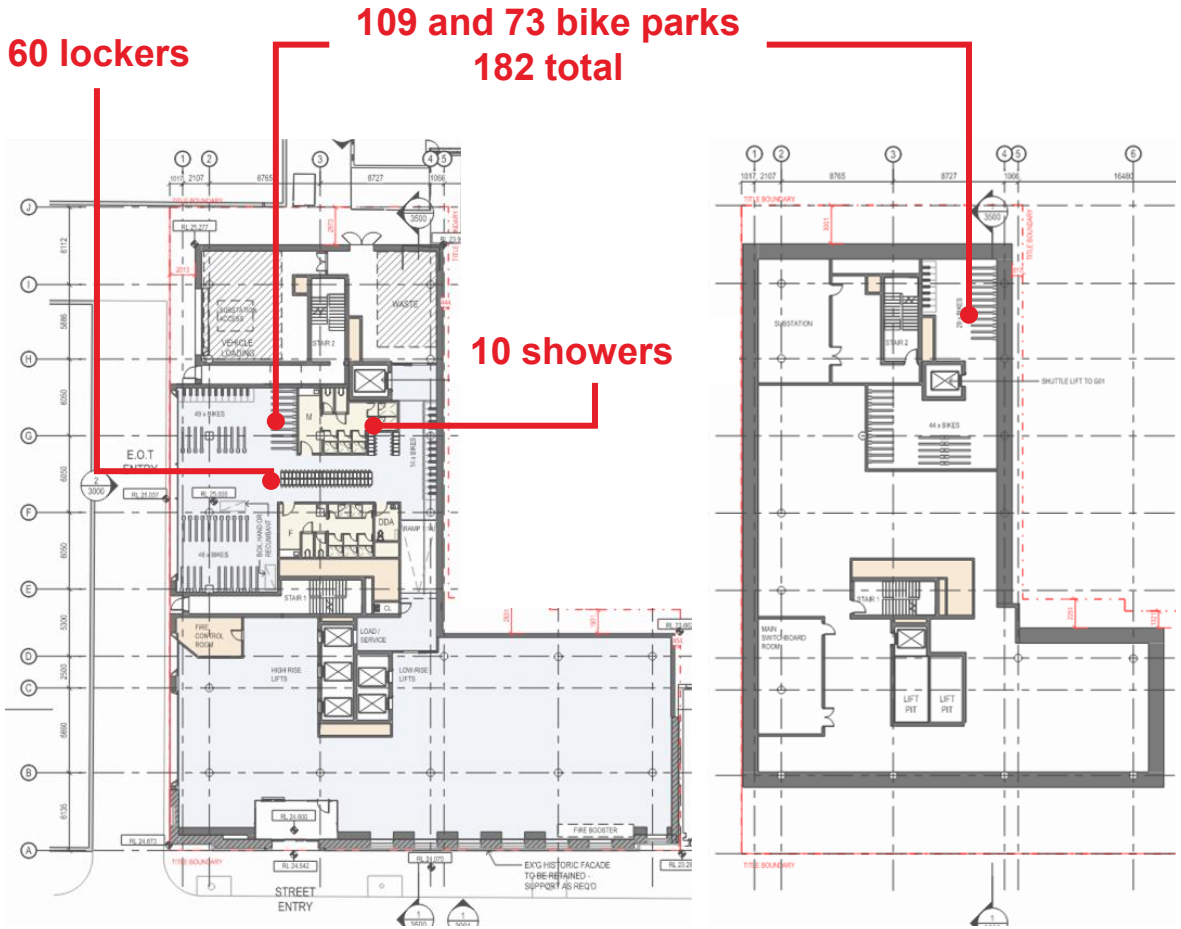

G01 - End of Trip facilities

B01 - Bike storage

Basement Level

Marked up showing bike parking and EOT facilities

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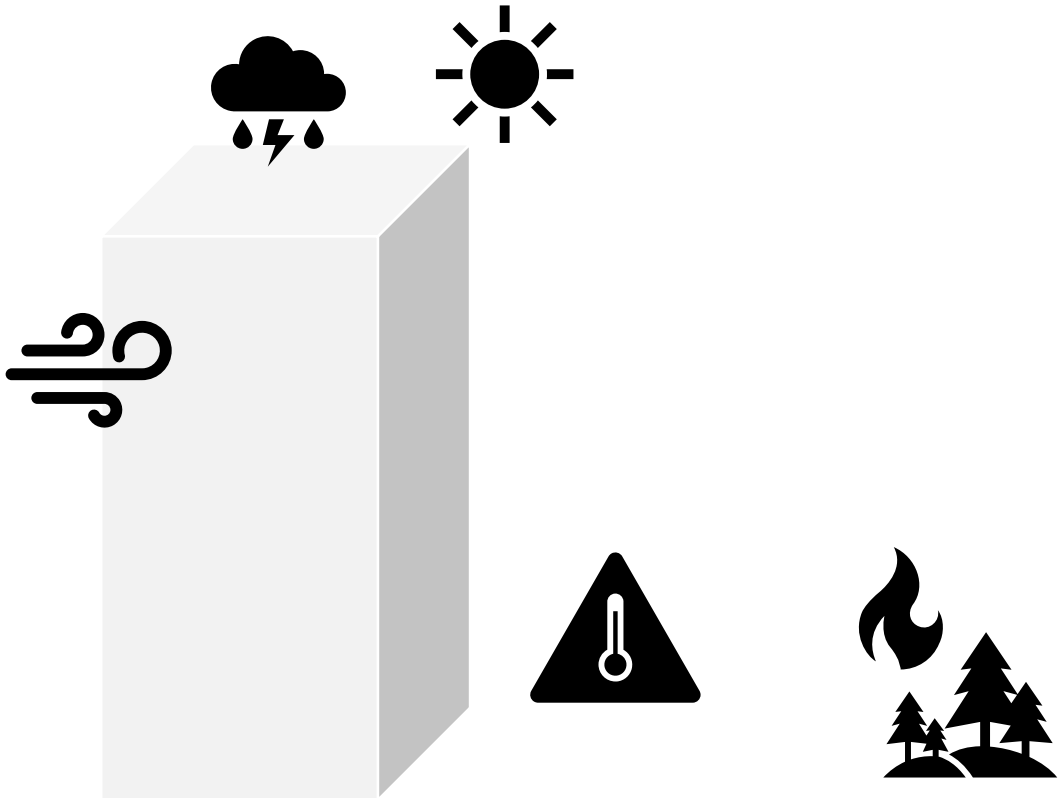
Climate Resilience

Appendix H



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Data and Methodology

This assessment assumes a minimum design life of 50 years and projecting under RCP 8.5 (business as usual scenario) as a conservative approach for time period of year 2070.

Representative Concentration Pathway (RCP) 8.5 is a scenario used in climate modeling and projections. It assumes a high level of greenhouse gas emissions throughout the 21st century, leading to a radiative forcing of 8.5 watts per square meter by the year 2100. This scenario represents a future where there is no significant effort to mitigate emissions, resulting in a world with high carbon dioxide concentrations and a substantial increase in global temperatures. It is often considered a baseline or "business as usual" scenario for climate change projections.

Historical Baseline: 1986-2005

Future timeperiod: 2070- midpoint for the period spanning 2060 to 2080.

Victorian Climate Projections 2019 (VCP19) are used as the data source. Projected change (compared with 1986-2005) data are available on the 5 km CCAM grid for each of the six simulations. These data provide the 20-year averaged monthly, seasonal and annual changes for four time periods centred on 2030, 2050, 2070 & 2090 for two greenhouse gas emissions pathways (RCP4.5 & RCP8.5).

We have used the projections data for greater Melbourne region.

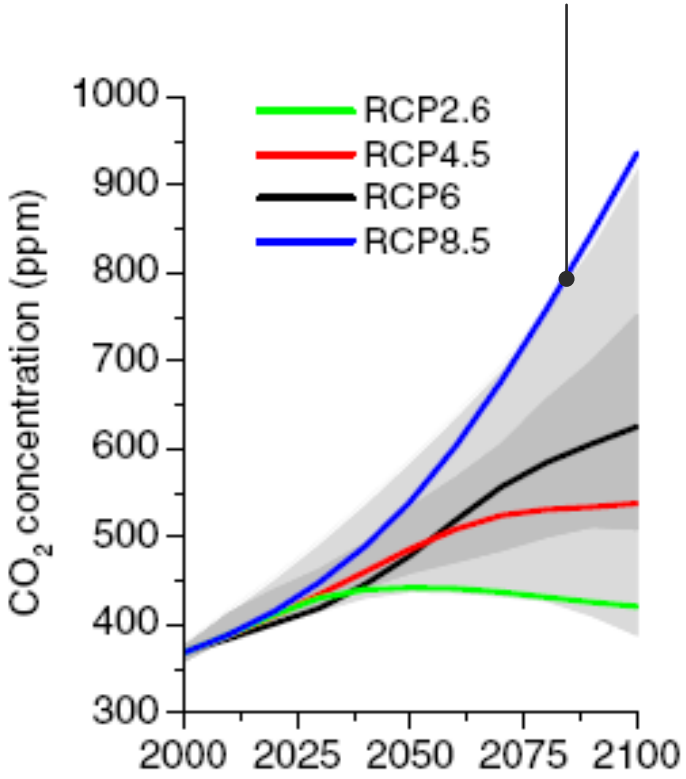
Review baseline and projected data for selected scenario for the given time period

Review historical climate hazards in the region

Identify possible climate hazards for future period

Complete the climate change pre-screening checklist

RCP 8.5 used to derive climate projections for this project.



Trends in concentrations of carbon dioxide (right). Grey area indicates the 98th and 90th percentiles (light/dark grey) of the values from the literature). The dotted lines indicate four of the SRES marker scenarios. SOURCE: van vuuren et. Al. (2011))

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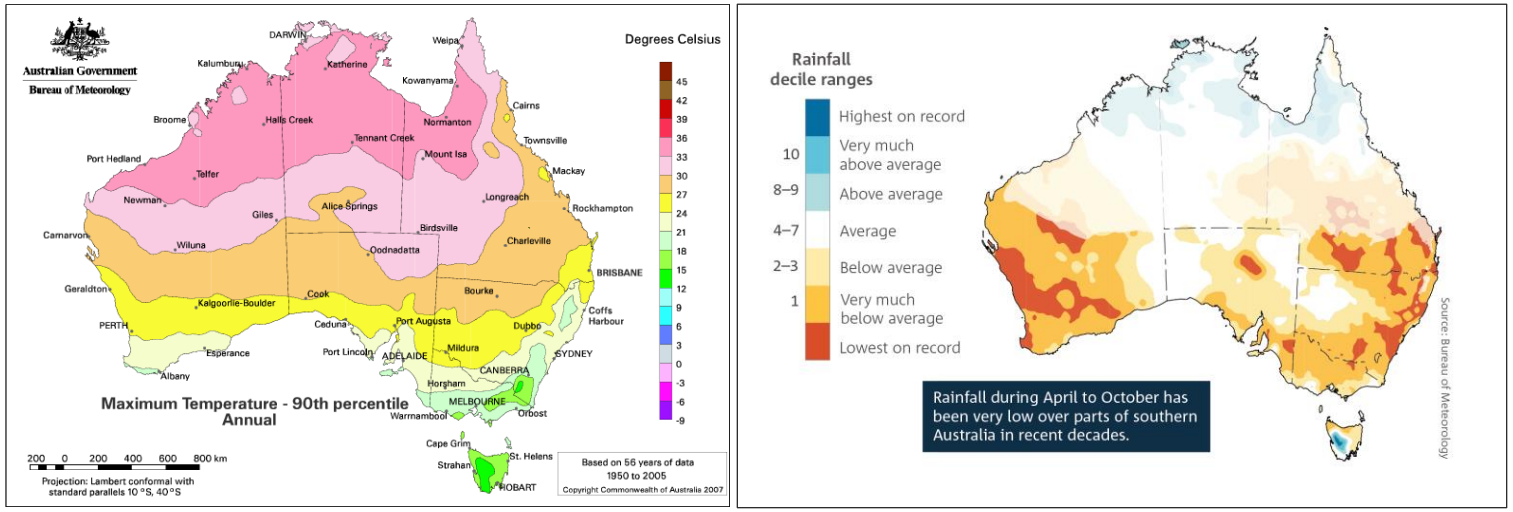
Climate of Australia and Southern slopes

Temperature

- 2019 was Australia's hottest year on record.
- Australia has warmed, on average, by 1.47 ± 0.24 °C since national records began in 1910, with most warming occurring since 1950.
- Mean temperature increased 0.8 to 1 degrees Celsius across Southern Slopes between 1910 and 2013. [1]

Precipitation

- 2019 was Australia's driest year on record.
- The drying trend in southern Australia is most evident in the south-west and south-east of the country.
- Changes in 20-year mean rainfall are about -10 to +5 % annually and about -20 to +15 % seasonally. [1]
- High confidence that there will be an increase in the intensity of rainfall events. [1]



Temperature and Rainfall maps for Australia

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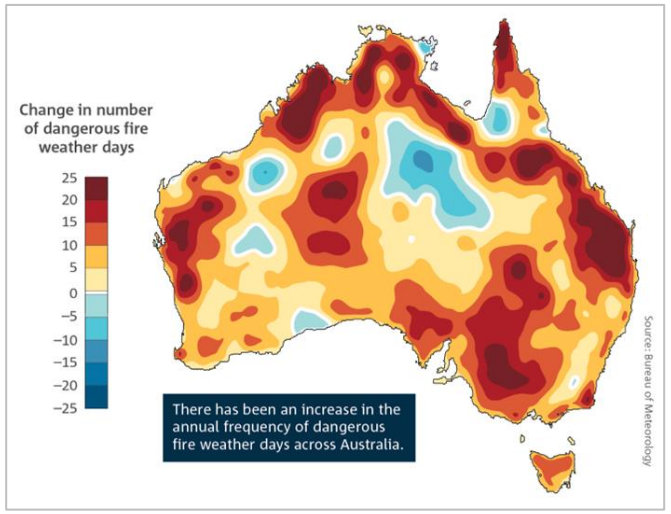
Climate of Australia and Southern slopes

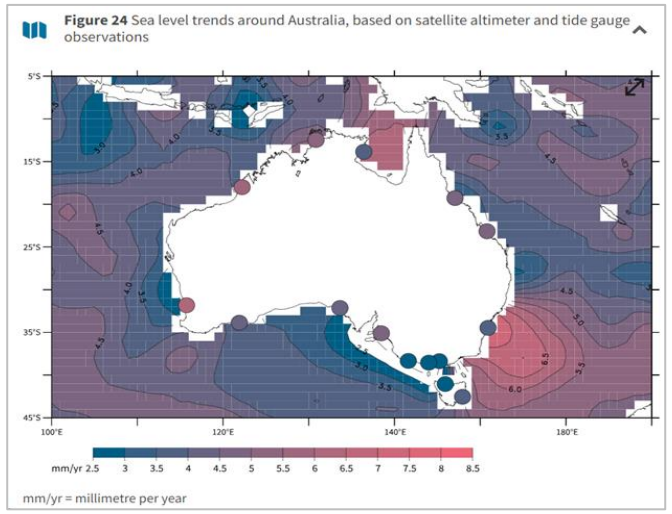
Bushfire

- Fires in the 2019-2020 bushfire season have burnt over 18.6 million hectares.
- Almost 60% of Australia had highest Forest Fire Danger Index (FFDI) on record.
- the number of days with a ‘severe’ fire danger rating increases by 100 % under RCP8.5 by 2090 for southern slopes.

Sea level rise

- Over 1966–2009, the average of the relative tide gauge trends around Australia is a rise of 1.4 ± 0.2 mm/yr.
- Continued increase in sea level for the Southern Slopes is projected with very high confidence.
- Victoria and Western Australia have the most commercial buildings exposed to a sea level rise of 1.1 metres (high end scenario for 2100) (DCCEEW: Climate Change Risks to Coastal Buildings and Infrastructure).





Fire Days and Sea level rise maps for Australia

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Cremorne's Future Climate

Flooding

At an elevation of approximately 6 meters [2], the site is not within the scope of a 1% Annual Exceedance Probability (AEP) Riverine or 1% AEP flash flood event [3]. The expected increase in the wettest day occurrence, equivalent to a 1-in-20 year event, is projected to be 6.88%.

Areas within the City of Melbourne are vulnerable to both riverine and flash flooding. Historically, Elizabeth Street has experienced impacts from flash flooding.

Coastal, tropical cyclone and bushfire

The site is situated inland, eliminating coastal risks. It is not within the tropical cyclone risk zone, and it also falls outside the bushfire risk area [5].

Heatwave and Humidity

Warmer and Drier:

Max daily temperature are expected to rise on average by 2.94°C by 2070.

The relative humidity is expected to decrease by 2.18% on average for the region by 2070 under RCP 8.5.

Storms and extreme winds

Changes are not as clear for RCP4.5 or for Victoria, and extreme winds could increase or decrease.[1]

A reduction of about 30 % of East Coast Low formation in the late 21st century compared to the late 20th century is expected for Victoria [1]

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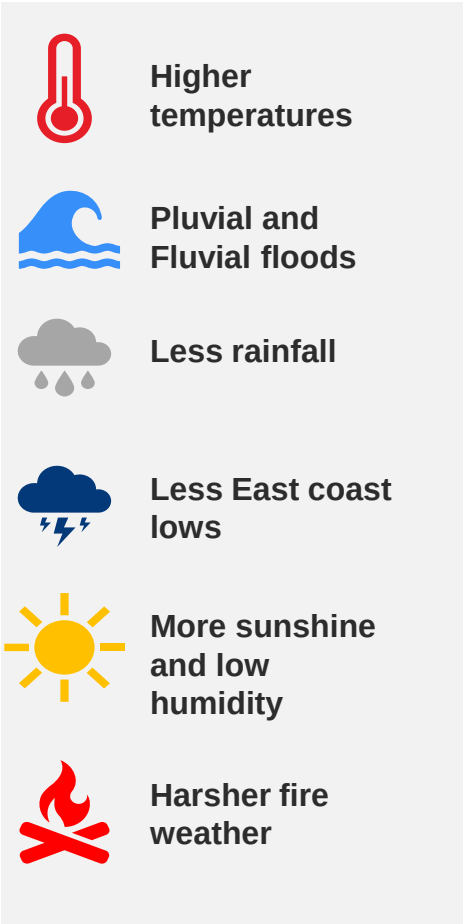

436 Lonsdale climate risk summary

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Potential climate impacts

Climate-related impacts

Climate variable	Impact	2030	2070
Temperature	Direct	• Rising temperatures impact on thermal performance of buildings and reduce thermal comfort for occupants. Increased temperature leads to increased HVAC system power demand to support enhanced thermal loads, resulting in more frequent peak load. • Temperature extremes impacting on soil expansion and contraction cycles, causing structural damage to structures and hardscaping. • Human health effects including fatigue and heat stress.	
Rainfall/ flooding	Direct	• Increased rainfall intensity leading to localised flooding and capacity issues in existing drainage infrastructure, causing damage to the buildings structure and ground-based services, and causing disruption to building occupants. • Impacts to accessibility of the site and power supply caused by flooding	
Wind/ Storm	Direct	• Extreme weather conditions leading to increased structural load on building and damaging existing buildings and future structures.	
Solar radiation	Direct	• Minimal increase in solar radiation may lead to materials degrading at an increased rate.	
Drought	Indirect	• Decreased rainfall impacting future operational costs and amenity of the site. • Reduced rainfall days will reduce removal of atmospheric pollutants leading to poorer health outcomes	
Bushfire	Indirect	• Wildfires may lead to smoke in the CBD and poor air quality within the immediate building vicinity. May lead to power restrictions/power failure. It is also possible that the frequency of droughts may increase, which would lead to an increase in particle air pollution from bushfire and wind-blown dust.	
Humidity	Negligible	• The projected decrease for relative humidity is small and is therefore unlikely to have an impact on the development.	
Sea level rise	Negligible	• Sea level rise will not present a direct impact for this development.	

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Climate Change Pre-screening Checklist

436 Lonsdale Street

Pre-screening item	Applies to project	Has data regarding future climate exposure been reviewed?	Has a risk to the project been identified?	Has a risk treatment been identified?
The project area has previously been impacted by extreme climate events (e.g. storms/tropical cyclones, extreme rainfall and flooding, damaging winds, damaging hail, bushfires, heatwaves, drought, or coastal inundation).	Yes	Yes	No	Not applicable
The project is located in a cyclone zone.	No	Yes	No	Not applicable
The is project located in or adjacent to a bushfire prone area.	No	Yes	No	Not applicable
The project is located in or adjacent to a flood prone area.	Yes	Yes	No	Not applicable
The project is located at or adjacent to the coastline or tidally influenced waterway.	No	Not applicable	Not applicable	Not applicable
The project will accommodate occupants vulnerable to the impacts of climate extremes (e.g. children, elderly, low mobility, seeking medical treatment).	Not applicable	Not applicable	Not applicable	Not applicable

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References

[1] M. Grose, “Southern Slopes Cluster Report: Climate Change in Australia Projections for Australia's Natural Resource Management regions,” CSIRO & Bureau of Meteorology, Australia, 2015

[2] https://elevation.fsdf.org.au/ - Elvis Elevation and Depth is a cloud-based system allowing users to easily discover and obtain Australian elevation and bathymetry data available within their area of interest. It is developed as a partnership between participating agencies under the Intergovernmental Committee on Surveying and Mapping (ICSM) and brings together open data from Commonwealth, state and territory governments, making it accessible from a convenient central source. Data can be quickly accessed through Elvis to support efficient planning, research and decision-making by government, industry, research communities and any others requiring the data.

[3] City of Yarra Storm and Flood Emergency Plan , Sep 2020 - https://www.yarracity.vic.gov.au/-/media/files/ycc/the-area/community-safety-and-wellbeing/city-of-yarra-flood-emergency-plan_2022.pdf?la=en

[4] Climate Futures Threshold Calculator - https://www.climatechangeinaustralia.gov.au/en/projections-tools/threshold-calculator/#

[5] Designated Bushfire Prone Area (BPA) Simplified for Victoria , Department of Energy, Environment and Climate Action, Sep 2023 - https://discover.data.vic.gov.au/dataset/designated-bushfire-prone-area-bpa-simplified

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Supporting Reports

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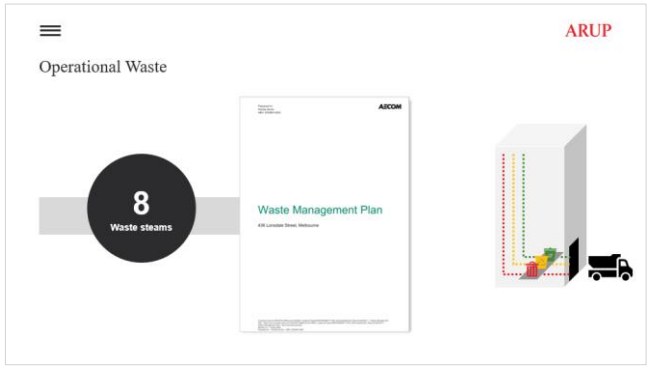

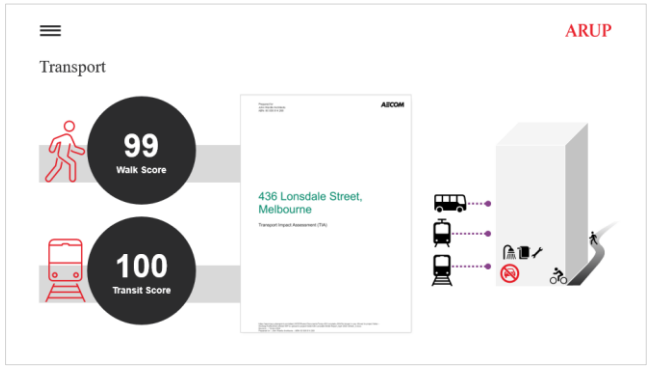

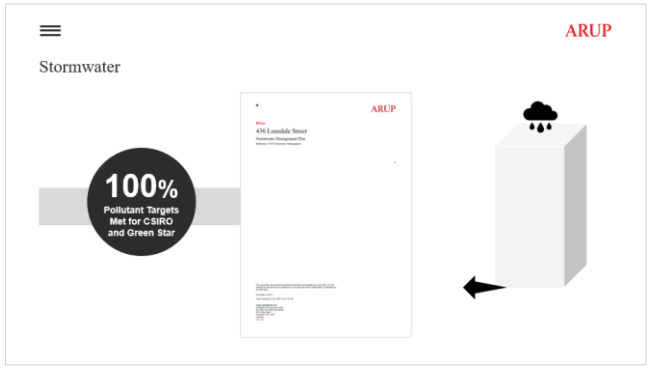

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Operational Waste

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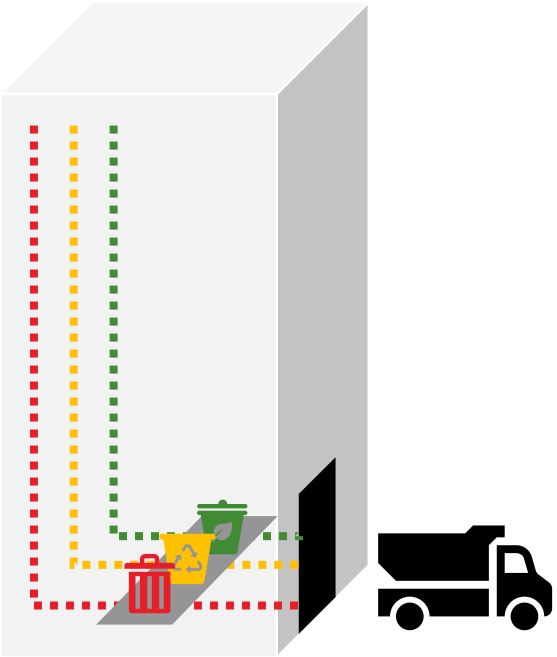
Waste steams



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Transport

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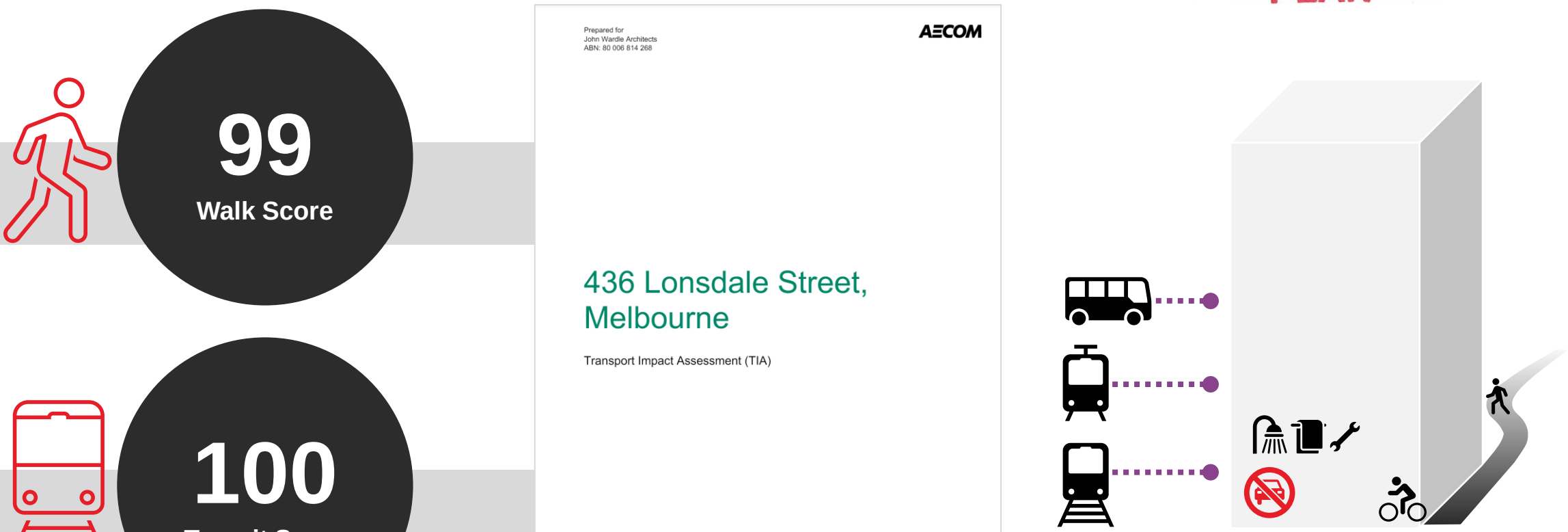
99
Walk Score

100
Transit Score



Stormwater

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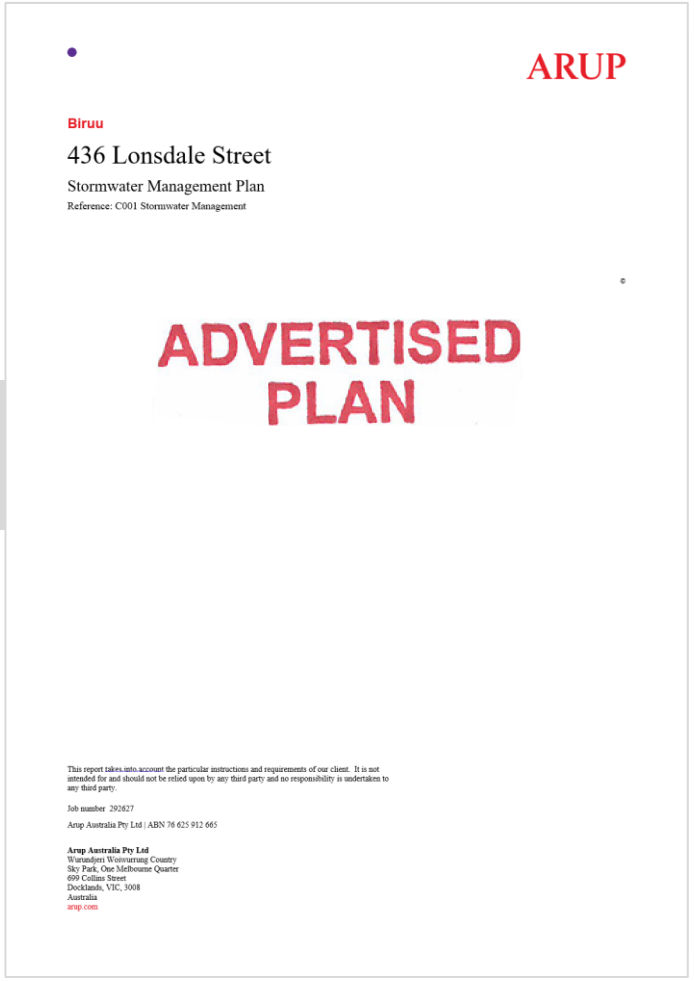
Pollutant Targets Met for CSIRO and Green Star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Stormwater Management Plan

Reference: C001 Stormwater Management

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