Green Star – Preliminary Analysis Report

MIXED USE DEVELOPMENT

44-52 Anderson Street
Chatswood NSW 2067

Prepared for
Bridgestone Projects

Prepared by
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OCT 2024

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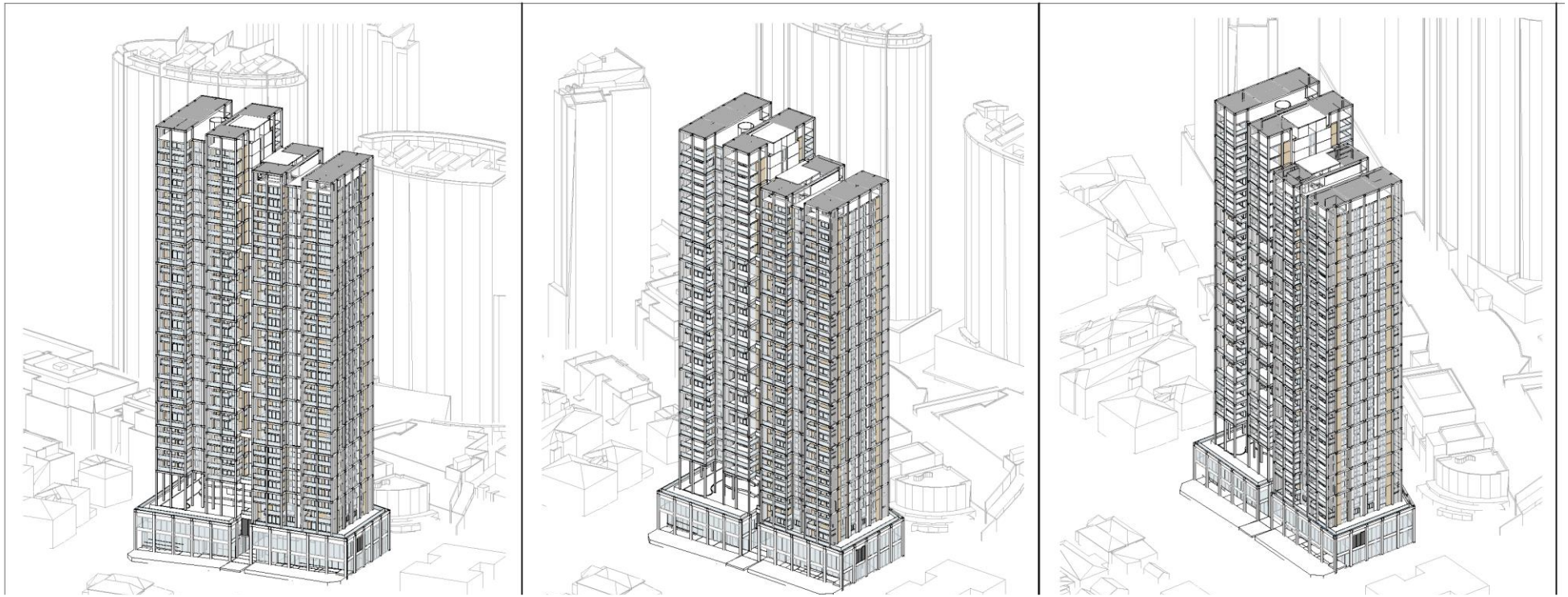
INTRODUCTION AND SUMMARY

This report summarises the very preliminary Green Star initiatives for the proposed, mixed-use development at 44-52 Anderson Street, Chatswood 2067. The following analysis was undertaken by GreenPerch on behalf of Bridgestone Projects. The Green Star Buildings Tool has been used for this draft testing analysis.

The site is located at 44-52 Anderson Street, Chatswood and is classified under the NCC climate zone 5. GreenPerch worked closely with the design team, to ensure that a high degree of energy-efficiency was achieved. In particular, a strong emphasis was placed on the passive efficiency of the building, including passive heating, passive cooling, natural lighting and natural ventilation.



Site 3D Renders - 44-52 Anderson Street, Chatswood, NSW 2067

The proposed development (**SSD-75408008**) seeks approval to construct 33-storey mixed use shop top housing, including in-fill affordable housing.

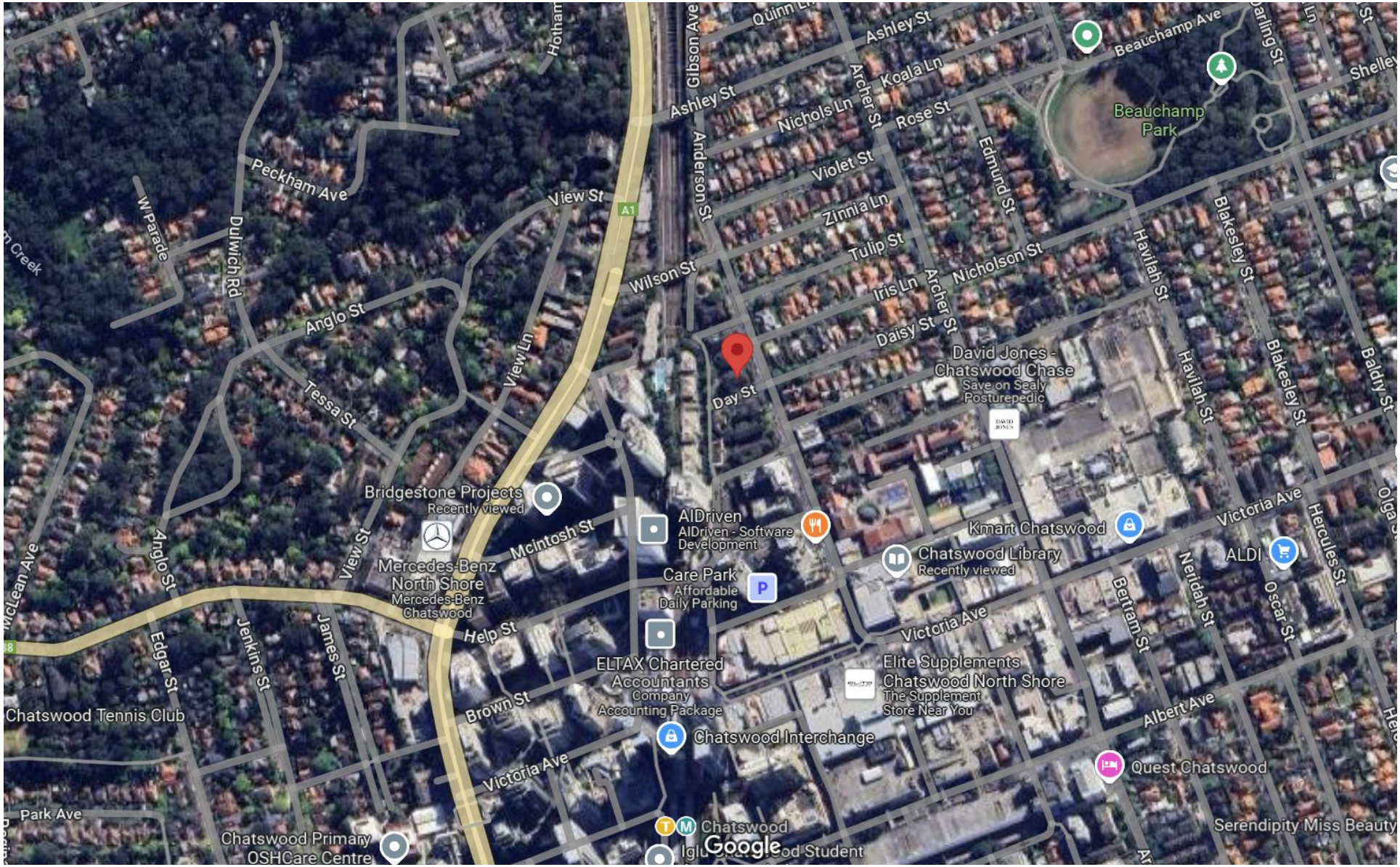
Specifically, this SSDA seeks approval for:

- Site preparation works including demolition of existing structures on the site, tree and vegetation clearing, and bulk earthworks;
- Construction of a 33-storey mixed use shop top housing development comprising:
  - A two-storey non-residential podium, with commercial/retail floor space, and
  - Two residential towers, with 123 apartments,
- Construction of an eight-level shared basement car parking for 296 carparking spaces including:

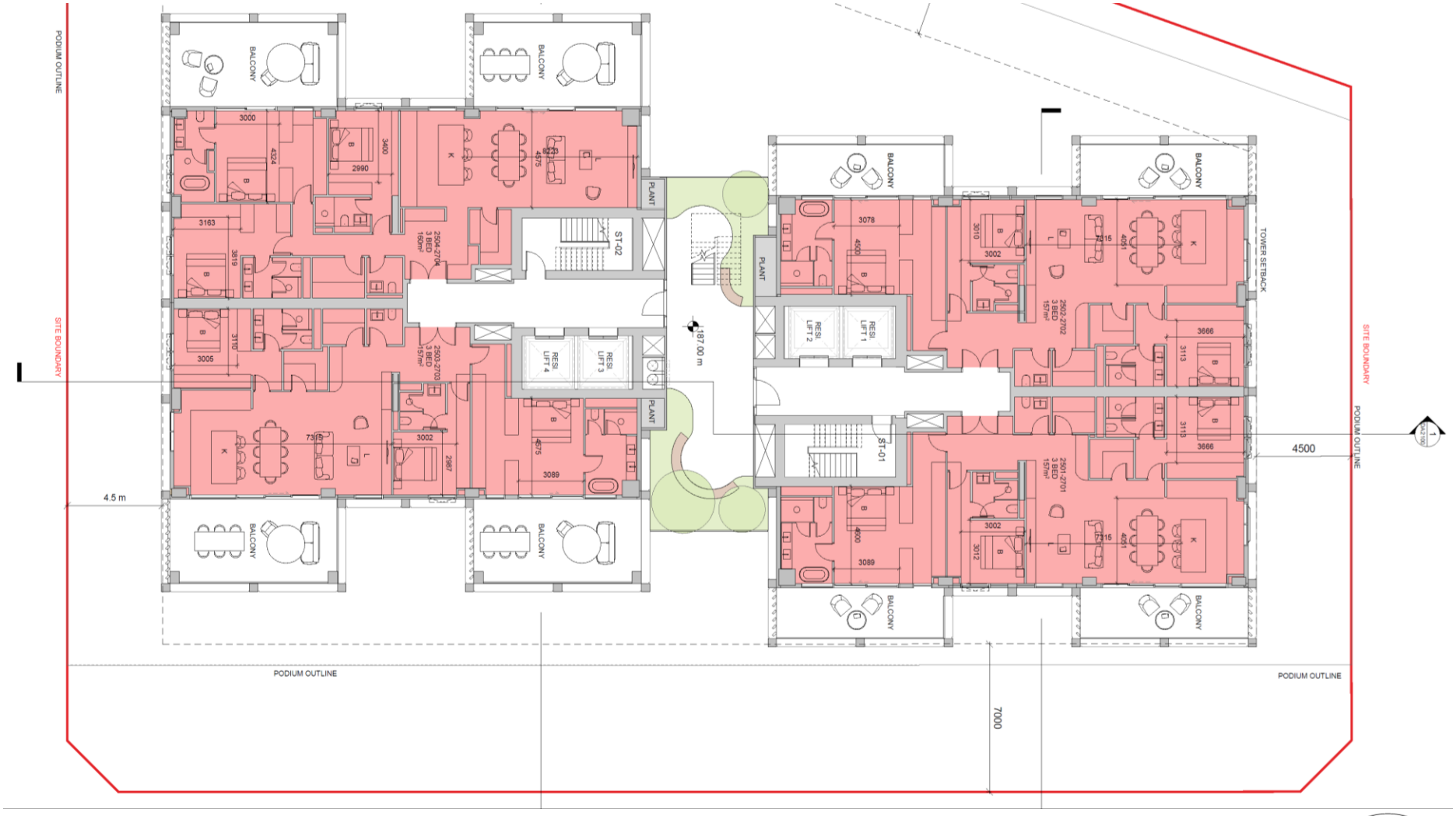
o 256 residential spaces (including 25 accessible spaces);
o 22 commercial and retail spaces (including 1 accessible space);
o 18 visitor spaces;

- Vehicular access from Day Street,
- Communal open space on Level 2 including shared outdoor spaces, swimming pool and associated amenities, sauna and BBQ area and a green spine running between the two towers;
- Associated landscaping and public domain works, and
- Services and infrastructure improvements, as required.

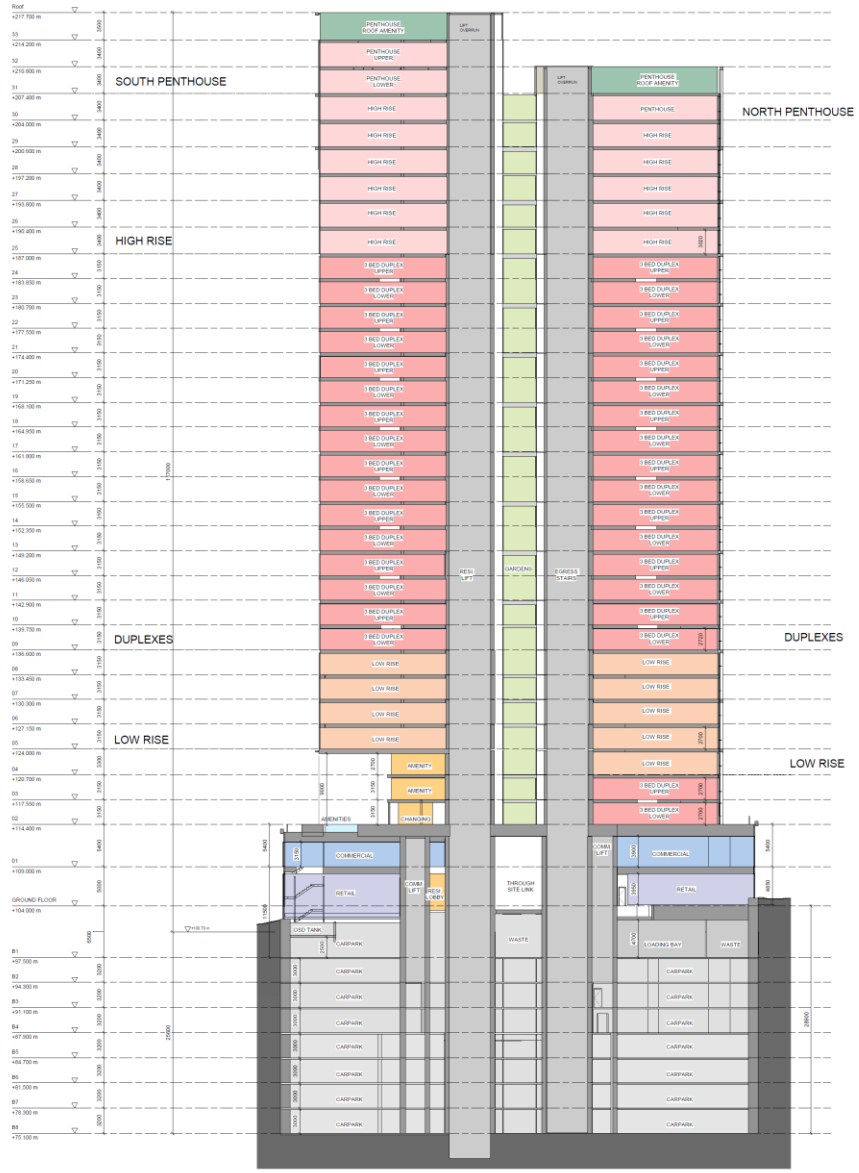
Site Context Photo - 44-52 Anderson Street, Chatswood, NSW 2067



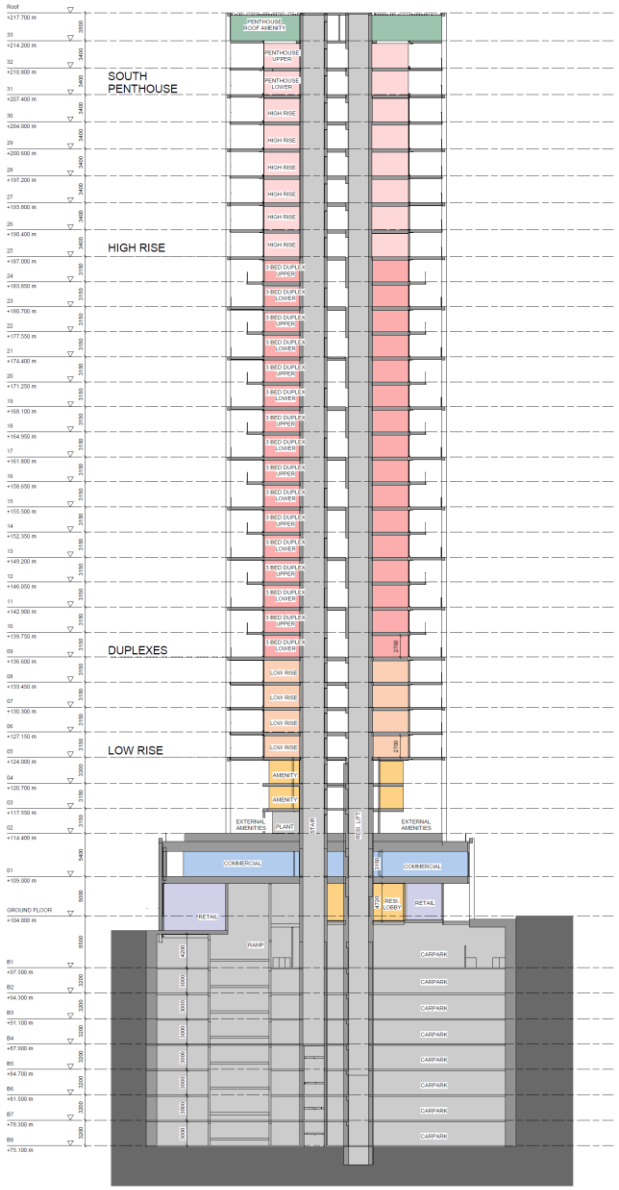
Site Location Plan - 44-52 Anderson Street, Chatswood, NSW 2067

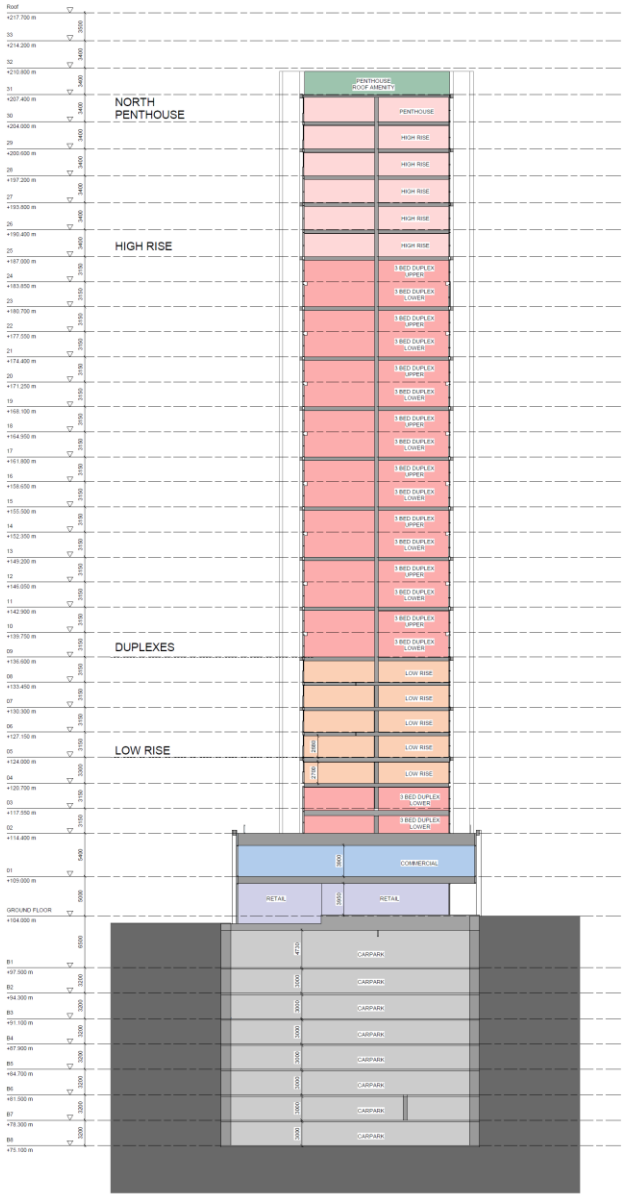


Typical plan layout (upper levels) - 44-52 Anderson Street, Chatswood, NSW 2067

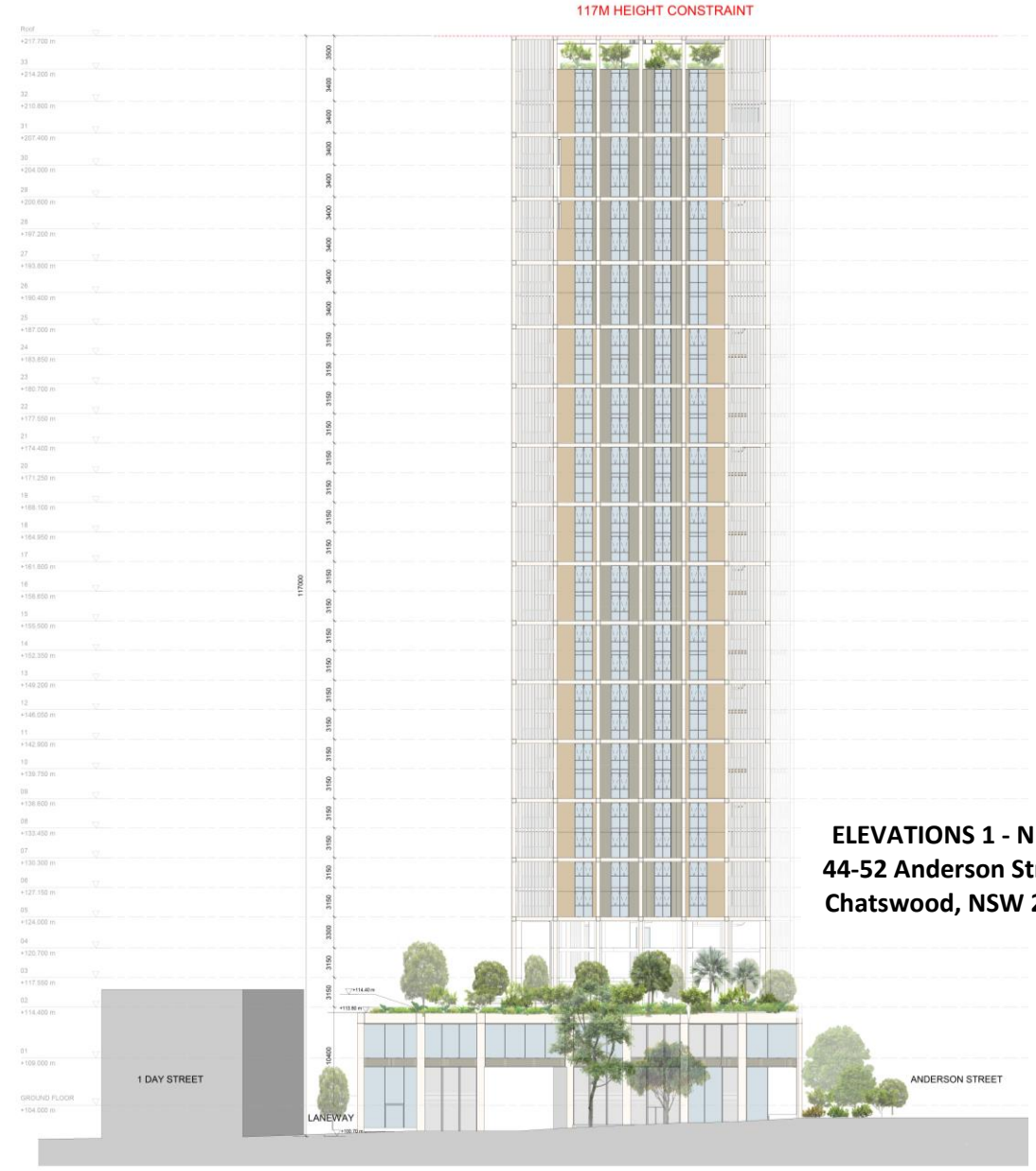


SECTIONS 1 - 44-52 Anderson Street, Chatswood, NSW 2067





SECTIONS 2 - 44-52 Anderson Street, Chatswood, NSW 2067



ELEVATIONS 1 - N & S
44-52 Anderson Street, Chatswood, NSW 2067

ELEVATIONS 2 EAST – 44-52 Anderson Street, Chatswood, NSW 2067

ELEVATIONS 3 WEST - 44-52 Anderson Street, Chatswood,

GREEN STAR TARGET SCORE

The project team will consider an opportunity to target a 5 Star Green Star Buildings rating in line with the key design initiatives outlined in this report.

Based on a review of the project design documentation, an initial Green Star Buildings assessment has been undertaken. The following potential credits and preliminary scores have been identified:

- Minimum 38 points would be targeted (suggest 43 approx) for the project to achieve a 5 Star Green Star rating

Table – Indicative Green Star Strategy & Points

GS Category	Available Points	Targeted Points
1. Responsible	17	6
2. Healthy	14	6
3. Resilient	8	6
4. Positive	30	13
5. Places	8	7
6. People	9	1
7. Nature	14	4
8. Leadership	0	0
Total	**100**	**43**

SUSTAINABILITY TARGETS

The proposed development will be designed to target the following:

- NCC 2022 Section J
- NatHERS (post-Oct 2023)
- BASIX v4 (pre-Oct 2023)
- 5 Star Green Star Buildings Tool (internal assessment)

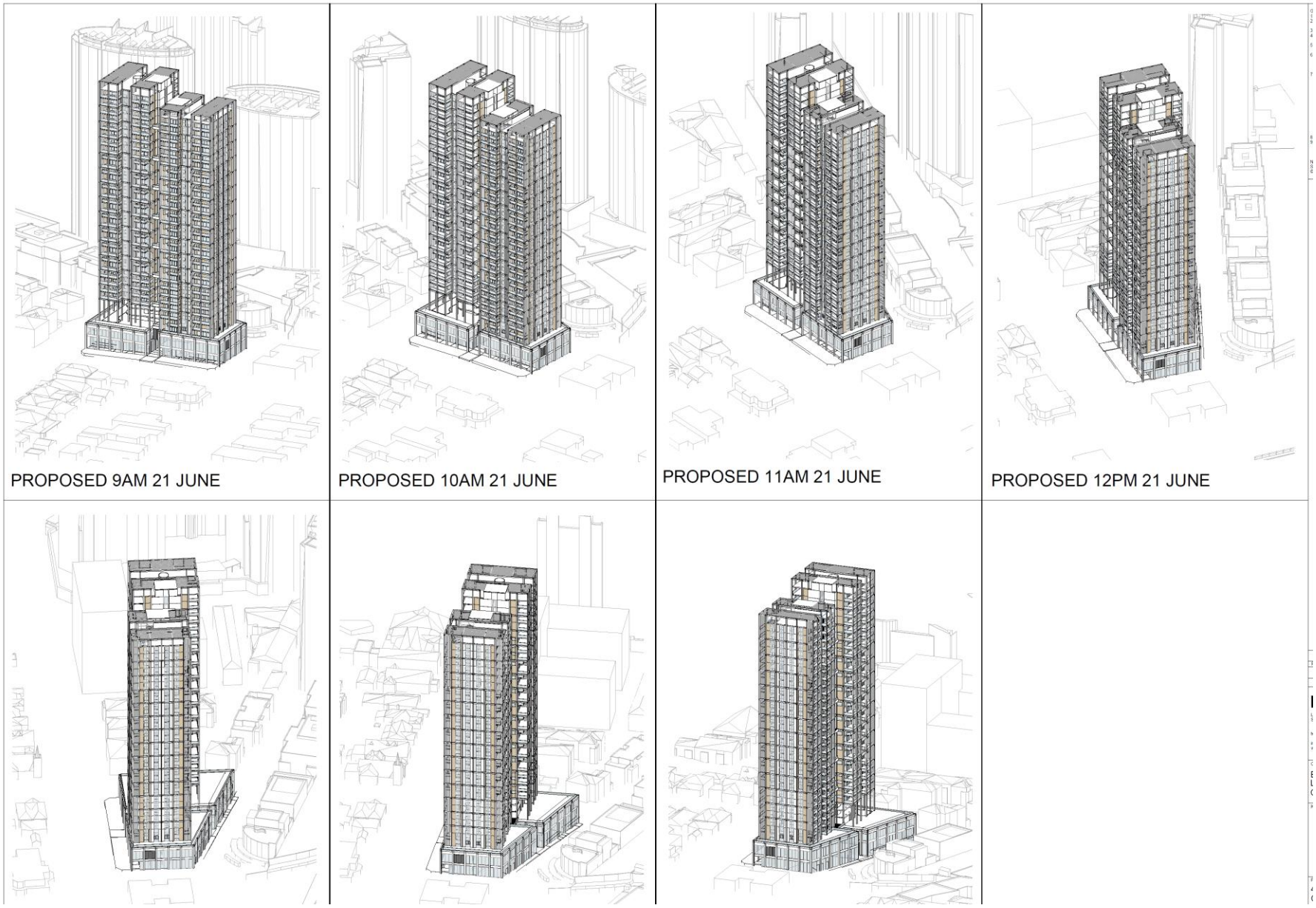
It should be noted that the first two items can form part of the Green Star rating (in particular the NatHERS models and average ratings).

GREEN STAR MINIMUM REQUIREMENTS

There are 10 Minimum Expectations that must be achieved by all Green Star projects (with some minor exceptions). This must be achieved, as a minimum performance guideline, to achieve a Green Star rating. The ''Minimum Expectations'' are designed to ensure that all Green Star rated buildings meet a basic level of sustainability performance (and will therefore be energy efficient, water efficient, supportive of good healthy spaces, built responsibly, and be designed on sites that are not critical natural areas). In summary, buildings must be designed and built to:

- Protect environmentally significant areas.
- Emit less carbon in construction and operations.
- Be water efficient.
- Have improved air, light, acoustics, and product finishes.
- Promote physical activity.
- Be built with climate change in mind.
- Manage environmental impacts during construction.
- Embrace the diversity of our population.
- Enable practices that reduce operational waste.
- Be verified to work.

There is at least one expectation per category in the rating tool. These ''Minimum Expectations'' are not worth points in the rating tool but they all must be met, in order to achieve a Green Star certification.



3D Renders - 44-52 Anderson Street, Chatswood 2067

GREEN STAR STRATEGY

The following possible strategies may be targeted, as a preliminary project approach, within each of the main Green Star sustainability categories. Naturally, it is proposed that some detailed Green Star workshops will be held with the design team to identify possible changes to this strategy and to identify alternative and possibly more sustainable avenues and/or cost-effective options, if any are available.

1. Energy and Carbon

The project should aim to target a 20% reduction in upfront carbon emissions and a weighted average of >7 stars NatHERS rating. The apartments also need a minimum NatHERS 6 stars rating, as guided by BASIX. Ideally, a7.5 to 8 star average would help energy scores. The following initiatives are to be explored further as design progresses:

- Provide a fully electric building (no fossil fuels) that uses heat pumps for domestic hot water.
- Develop a high-performing envelope (with excellent glazing) to reduce HVAC whilst also providing passive performance and health benefits to users. Good glazing is specified now, but upgrades will be explored.
- Provide electric LED lighting throughout, that has been designed for maximum energy efficiency and optimal occupant comfort. Designs should always include well-lit spaces that are ‘’fit-for-purpose’’.
- Develop a Zero Carbon Action Plan (by the electrical engineer) to cover all aspects of energy efficiency, including energy consumption, procurement and generation.
- Ideally, most of the electricity under the control of the building owner is to be sourced from renewables (on-site generation or off-site generation through purchasing contracts).
- High GWP refrigerants to be eliminated (ideally) or 100% of refrigerant emissions to be offset.

2. Water

The project should aim to target a 40% reduction in potable water when compared to a reference building through the following water initiatives:

- Reduce potable water use, through highly efficient fittings and fixtures. To prevent inefficiencies, potable water demands will be reduced by very high WELS-rating for taps, shower and toilets.
- Provide ongoing rainwater (and/or stormwater) capture, storage and re-use for landscape irrigation and other uses (pool top-up, car wash or toilet flushing to common spaces).
- Provide xeriscape or low-water plants and/or locally indigenous plants to reduce water consumption whilst also providing high levels of indoor and outdoor greenery (and local habitats for indigenous fauna).
- Develop and refine the Water Sensitive Urban Design (WSUD) initiatives to help manage stormwater run-off and to minimise pollution going to natural waterways.

3. Health and Wellbeing

The project should aim to provide a healthy and comfortable space for residents and tenants through the following health and wellbeing initiatives:

- Minimise occupant exposure to harmful indoor pollutants such as Volatile Organic Compounds (VOCs) and formaldehyde through the responsible selection of materials and finishes.
- Provide high levels of outside air to improve air quality and hygiene (but also ensure thermal performance)
- Ventilation separation distances comply with AS 1668.2:2012 or ASHRAE Standard 62.1:2013 (whichever is greater) to ensure outdoor air intakes are not contaminated with pollution sources.
- Provide a visually comfortable space through façade design to facilitate good daylight access and best practice artificial lighting (needs specific lighting design calculation)
- Provide glare mitigation measures through optimising the design for fixed or operable shading devices (including blinds) appropriate to the space.
- Ensure that the design delivers acoustic comfort (with recheck of acoustic design and post-occupancy test)
- Dedicate a percentage of the site to landscaping in combination with careful selection of plant species (high portion of locally indigenous) to encourage biodiversity
- Provide amenities and social spaces that meet the needs of the community and foster social interactions.

4. Places and People

The project should aim to create great places for residents through the following initiatives:

- Develop and implement a Sustainable Transport Plan for the site.
- Prioritise the building access for walking and cycling (to reduce motor vehicle use)
- Provide showers and changing facilities for staff in commercial tenancies to promote active transport.
- Prioritise transport options that reduce the need for private fossil fuel powered vehicles such as car share and EV charging spaces.
- Provide a building design that encourages walking and is inclusive and accessible to a diverse range of people with different needs.
- Deliver beautiful, vibrant communal spaces that encourage people to participate in community activities.
- Ensure communal spaces are inclusive, safe, flexible, and enjoyable.
- Ensure that that construction facilities and equipment provided are gender inclusive and install on-site policies that increase awareness of discrimination, bullying, physical health, and mental health.

5. Building Verification and Handover

The project should aim to ensure that the building performance is optimised and handed over efficiently, for effective operations through the following:

- Ensure accessible energy and water metering for common uses, major uses and major sources.
- Set performance targets for nominated building systems to be measured and reported during operation.
- Develop a monitoring strategy that provides facilities management with the information needed to maximise operation of the building.
- Ensure the building has been commissioned under a recognised standard before practical completion.
- Use a tuning process with quarterly adjustments and tests for at least 12 months after occupation.
- Provide operations and maintenance information for all nominated building systems, building logbook and building user information.
- An independent level of verification is provided to all commissioning and tuning activities through the engagement of an Independent Commissioning Agent.

6. Resilience

The project should ensure that the building has considered the risks to the performance of the building in the short and long-term through the following:

- Use climate resilient design approaches including water, energy and flexible passive performance.
- Develop a project-specific climate change risk and adaptation assessment for the building where all extreme and high risks identified must be addressed.
- Minimise Heat Island Effects through the careful use of vegetation and light-coloured materials.

7. Biodiversity and Nature

The project should aim to ensure that the building reduces all impacts to nature through the following initiatives:

- Develop a detailed and site-specific Biodiversity Management Plan.
- Provide outdoor lighting designs that minimise light pollution to neighbouring bodies and to the night sky.
- Provide landscaping with diverse species and priority towards climate resilient and indigenous plants.
- Protect local waterways and reduce the impacts of flooding and droughts by reducing average annual stormwater discharge rates and meeting stormwater pollution reduction targets.

GREEN STAR SUMMARY AND SCORE SUGGESTIONS

The following pages list suggest some very preliminary initiatives and scores, for each credit.

1. Responsible – 17 pts

	Credit	Mini-mum Expect	Credit Achieve Score	High Perform Score	Total points possible	Target perform level	Advised Easier Credits	Possible, Mid-Cost Credits	Toughest Priciest Credits	Green Star Requirements	
1	**Industry Develop-ment**		1		1	Credit achieve	1	0	0	Requires all three items for 1 point: • The building owner or developer uses a Green Star Accredited Prof • The building owner or developer discloses the cost of sustainable building practices to the GBCA. • The building owner or developer markets the env. achievements.	Needs funding to allow for a detailed financial analysis and release to the GBCA (for the eco-aspects). Also need allowance for marketing fees to promote all Green Star and eco-performance.
2	**Responsible Construction**	•	1		1	Credit achieve	1	0	0	To get 1 point we need the following: • 90% of construction and demolition waste is diverted from landfill, and waste contractors and facilities comply with the Green Star Criteria. This is in In addition to the Minimum Expectations •The builder or head contractor has an environmental management system in place to manage its environmental impacts on site. •The builder or head contractor has an environmental management plan to cover the scope of construction activities. •The builder diverts at least 80% of construction and demolition waste •The head contractor provides training on the sustainability targets	Needs funding to allow for the C&D waste management and design. Detailed records and proof must be provided for all aspects to prove the compliance (whether 80 or 90%). Some cost may also apply to the EMP, the EMS and also the dedicated on-site training for all the staff, in regards to waste recycling and record keeping.
3	**Verification and Handover**	•	1		1	Credit achieve	1	0	0	Requires 2 minimum items - Metering & monitoring + Commissioning & Tuning. For 1 point we need an Independent Commissioning Agent (also needed soft landings approach if total building services valued over $20m). An independent level of verification is provided to the design, planning, commissioning and tuning activities through the involvement of an independent commissioning agent.	Some cost from extra testing, since we must be tested for airtightness (and also be commissioned, and will be tuned). To get the 1 point we need an ICA, and these agents can also add significant cost.
4	**Operational Waste**	•			0	Minimum Expect	0	0	0	Building to allow for: Collection of Waste Streams, Dedicated and accessible waste storage, Signoff by Waste specialist	Mandatory. There may be extra costs for waste consultant analysis and also minor redesigns to ensure spaces all meet the targets.
5	**Responsible Procurement**		1		1		0	1	0	To get 1 point we need the following: • The building's design and construction procurement processes follow ISO 20400 Sustainable Procurement – Guidance by undertaking a risk and opportunities assessment. • A responsible procurement plan is developed to mitigate risks and implement opportunities identified in the assessment.	This can add significant time and cost for architect and design team. The process is thorough and the team must develop a plan to responsibly procure 10 or more key items mitigating risks and implementing opportunities identified in the Assessment following ISO 20400 Sustainable Procurement – Guidance
6	**Responsible Structure**		3	2	5		0	3	2	Not easy to change this late and will need LCA analysis and some design changes (ideally eTOOL or other LCA-based analysis). For 3 points we need: • 50% of all structural components (by cost) meet a Responsible Products Value of at least 10.	Possible if used earlier in design. A number of third-party certification schemes and independent verification methods can be used. However, needs much testing. Load-bearing Facades are rewarded.
7	**Responsible Envelope**		2	2	4	Credit achieve	2	0	2	For 2 points we need: • 30% of all building envelope components (by cost) meet a Responsible Products Value of at least 10.	3rd-party certificate schemes/methods can be used, but still needs testing +architect input +new products.
8	**Responsible Systems**		1	1	2		0	1	1	For 1 point we need: • 20% of all active building systems meet a Responsible Products Value of at least 6	3rd-party certificate schemes/methods can be used, but still needs testing +architect input +new products.
9	**Responsible Finishes**		1	1	2	Credit achieve	1	0	1	For 1 point we need: • 40% of all internal building finishes (by cost) meet a Responsible Products Value of at least 7.	3rd-party certificate schemes/methods can be used, but still needs testing +architect input +new products.
						Total	6	5	6		

2. Healthy – 14 pts

	Credit	Mini-mum Expect	Credit Achieve Score	High Perform Score	Total points possible	Target perform level	Advised Easier Credits	Possible, Mid-Cost Credits	Toughest Priciest Credits	Green Star Requirements	
10	**Clean Air**	•	2		2	Minimum Expect	0	2	2	For minimum need - ASHRAE separation distances, clean ductwork, high level of fresh air (50% improvement OA) or performance approach (CO2 - 800ppm), direct exhaust pollutants. To get 2 points we need one of the following: • The building's ventilation systems allow for easy maintenance. . • A high level of outdoor air is provided (50% better than Aus standards)	Needs ventilation analysis and redesigns. Where ventilation is by mechanical means, the building must provide a 50% improvement of outdoor air over AS1668.2:2012 for the default occupancy.
11	**Light Quality**	•	2	2	4	Credit achieve	2	0	2	Best practice daylight will be hard, with current design. However, 2 points out of 4 is possible, and it will require best practice artificial lighting, including. • Horizontal illuminance levels must meet or exceed the recommended levels in AS/NZS 1680 for the relevant task for at least 90% of the GFA • At least one wall in the field of view of a regularly occupied area is to be illuminated to create demonstrable contrast and visual interest. The total area of illuminated wall must represent >20% of the area of walls in the field of view • Vertical illuminance in all regularly occupied workplaces (e.g., offices, retail counters, etc), ensure that 50% of the horizontal task illuminance reaches the average eye height for 90% of primary spaces with vertical illuminance calc	Modelling costs and redesigns of windows is usually required. The lighting modelling can be very intricate for artifical lighting, and can add cost. For daylight - for Class 2 and Class 3 buildings, 60% of the combined living and bedroom area of each unit must comply with the daylight requirements. This can mean changes to some windows to ensure adequate daylight.
12	**Acoustic Comfort**	•	2		2	Credit achieve	2	0	0	For credit achievement we must show best practice acoustic design: . To get 2 points, we need to target at least 2 of 3: Maximum internal noise levels; Acoustic Separation; Impact Noise Transfer.	This will add cost through revised acoustic targets and post-occpuancy testing. Extra internal insulation usually required
13	**Exposure to Toxins**	•	2		2	Credit achieve	2	0	0	Paints, sealants, adhesives and carpets MUST comply with TVOC limits. Engineered wood products must also comply with formaldehyde emission limits. To get 2 points, in addition to these Minimum Expectations, we will also need: • On-site tests verify the building has low Volatile Organic Compounds (VOC) and formaldehyde levels.	Low-cost added for responsible paints and products. Architects and design team will need to check and change some selections. Cost will be added through the post-occpuancy tests.
14	**Amenity and Comfort**		2		2		0	0	2	To get 2 points we need the following (very tricky): • Provide Dedicated amenity rooms: parent room, relaxation/ meditation/ prayer or exercise based on number of occupants. This is not easy for residents since 1m2 per resident will mean some very large facilities.	Not recommended unless significant plan changes can be implemented.
15	**Connection to Nature**		1	1	2		0	1	1	Not easy and will need more plants - incorporates nature-inspired design, provide indoor plants every 15m2 + maintenance, 60% of area has a view. For 1 point we need 2 items and for 2 points we need 3 of: •The building provides views - 60% of area. •The building includes indoor plants + uses nature-inspired design. •5% of the building's floor area/ or site area (whichever is greater) is allocated to nature in which occupants can directly engage with.	Indoor planting is the best way to meet the credit, unless 5% of the floor area can be changed to gardens. Indoor plants must be provided in regularly occupied areas (needs 500cm² for every 15m² of the regularly occupied spaces). Costs also from mandatory 2 year maintenance plan to ensure plant health is maintained.
						Total	**6**	**3**	**7**		

3. Resilient – 8 pts

	Credit	Mini-mum Expect	Credit Achieve Score	High Perform Score	Total points possible	Target perform level	Advised Easier Credits	Possible, Mid-Cost Credits	Toughest Priciest Credits	Green Star Requirements	
16	Climate Change Resilience	•	1		1	Credit achieve	1	0	0	The project team MUST complete the climate change pre-screening checklist (minimum for all projects). In addition to the Minimum Expectation (to get 1 point): • The project team develops a project-specific climate change risk and adaptation assessment for the building. • Extreme and high risks are addressed.	This can add cost through quite expensive testing and reports. The conultants are VERY specific. In the context of this credit, this is a professional with a tertiary qualification in a relevant field with a minimum 5 years' experience in climate risk and adaptation assessments.
17	Operations Resilience		2		2		0	2	0	Carry out comprehensive risk assessment, manage risk and address power loss. The points are not easy and will need design changes to allow for generators and/or batteries to provide services during blackouts. To get points, all items must be achieved below: • The project team undertakes a comprehensive review of the acute shocks & chronic stresses likely to influence future building operations. • The building's design and future operational plan addresses any high or extreme system-level interdependency risks. • The building's design maintains a level of survivability and design purpose in a blackout.	May need batteries and/or changes to energy infrastructure, to deal with blackouts. Also, this credit can add cost through quite expensive testing and reports. The conultants are VERY specific. This should comprise a professional with a formal tertiary qualification in environmental science, risk management, or engineering with a minimum five years' experience in risk management or business continuity.
18	Community Resilience		1		1	Credit achieve	1	0	0	For 1 point - Project team must do a needs analysis of the community, identifies shocks and stresses that impact the building's ability to service the community, and develops responses to manage these.	Some time and cost is incurred through community consulting and minor design changes. Also, this credit can add cost through expensive analysis and reports. The conultants qualifications are VERY specific.
19	Heat Resilience		1		1	Credit achieve	1	0	0	For 1 point - 75% of the site area must be designed for heat island mitigation: For example - Vegetation and planting, High SRI roofing materials, High SRI and shaded hardscaping; PV to absorb heat.	Recommended and low to zero cost.
20	Grid Resilience		3		3	Credit achieve	3	0	0	For 3 points, the project must comply with at least one of the following criteria (option 1 is best for this site): 1. Active Generation and Storage Systems (will likely need batteries) 2. Demand Response (needs loading shedding) 3. Passive Design Solutions (no AC for >80% area due to good design)	Some cost for modelling and proving option 1: ''Active Generation +Storage Systems''. This will need batteries and more PV to show Grid Resilience. Electrical engineer will need modelling and reports.
						Total	6	2	0		

4. Positive – 30 pts

	Credit	Mini-mum Expect	Credit Achieve Score	High Perform Score	Total points possible	Target perform level	Advised Easier Credits	Possible, Mid-Cost Credits	Toughest Priciest Credits	Green Star Requirements	
21	**Upfront Carbon Emissions**	•	3	3	6	Credit achieve	3	0	3	Reduce building upfront carbon emissions by 20% and offset demo works (to get 3 points). Calculating upfront carbon will need either: • Model the proposed and reference buildings following the methodology of the Life Cycle Impacts credit (eTOOL or similar) • Complete the Upfront Carbon Emissions calculator. The GBCA's Upfront Carbon Emissions calculator uses Modules A1 to A3	May need some low-carbon changes to concrete, steel and structure. Life Cycle Assessment report is also needed (suggested pathway) and this can add extra cost (usually 15-20 k for analysis and report by eTOOL). This can be used elsewhere (see credit 26).
22	**Energy Use**	•	3	3	6	Credit achieve	3	0	3	To get 3 points (6 points too tricky) we need both of the following: • Part 1 - Building has a weighted average of NatHERS 7 stars and can adjust (slightly) to get a minimum 5.5 stars NatHERS for each unit. • Part 2 - The building addresses four out of nine building services energy uses. These nine uses include hot water, HVAC, fans, dryers, car parking, lifts, lobbies/corridors, PV and hot water generation.	Some cost for design changes (small such as fans) to get a minimum 5.5 stars NatHERS for each unit. • Part 2 is quite low cost and may need minor changes to four out of nine building services energy uses (hot water, HVAC, fans, dryers, car
23	**Energy Source**	•	3	3	6	Minimum Expect	0	3	3	3 points will need both a Zero carbon action plan + 100% of building ELECTRICITY has to be from Renewables (incl. green power contract). All electricity under the control of the building owner or operator must be accounted for and sourced from renewables. Electricity use for tenant loads is excluded from this credit. Both on-site and off-site renewables are acceptable. Where the project team claims the credit through off-site renewables, the building owner must sign a renewable energy contract for • 5 years or • 3 years, where building is owned and managed by an entity that has signed to the Global Commitment for Net Zero Carbon Buildings	Main cost for credit compliance is from: • 100% of the building's electricity comes from renewable electricity. Usually this will mean a 5 year contract (where the project team claims the credit through off-site renewables). The building owner must sign a renewable energy contract.
24	**Other Carbon Emissions**		2	2	4	Credit achieve	2	2	0	High GWP Refrigerants to be eliminated or 100% of emissions from refrigerants must be offset. In addition to the Credit Achievement: For 4 points, in addition to the Credit Achievement, we need: • All other emissions not captured in the Positive category are eliminated or offset.	This needs detailed research and possible changes to fridges or other HVAC/appliances. All refrigerants from building systems or domestic appliances must be analysed. This includes where fridges or freezers are provided
25	**Water Use**	•	3	3	6	Credit achieve	3	0	3	3 points will require 40% less water consumption compared to a reference building. This will require more greywater and/or stormwater reuse.	This may need more rainwater and/or stormwater reuse, for both residential and non-residential, pending final podium designs.
26	**Life Cycle Impacts**		2		2	Credit achieve	2	0	0	The project MUST demonstrate a 30% reduction in life cycle impacts when compared to standard practice. This will need more timber and upgraded specs for concrete and steel. An LCA model may be worthwhile as it will help other credits too. Companies like eTOOL can do this quite quickly, but it is not too cheap (usually >$15,000)	Life Cycle Assessment report is needed (suggested pathway) and this can add extra cost (usually 15-20 k for analysis and report by eTOOL). This can be used elsewhere (see credit 21).
						Total	**13**	**5**	**12**		

5. Places – 8pts

	Credit	Mini-mum Expect	Credit Achieve Score	High Perform Score	Total points possible	Target perform level	Advised Easier Credits	Possible, Mid-Cost Credits	Toughest Priciest Credits	Green Star Requirements	
27	**Movement and Place**	•	3		3	Credit achieve	3	0	0	This demands (for minimum specs): EV charging facilities, encourage walking, bicycle parking, sustainable transport plan. To get 3 points, we also need: • The building's access prioritises cycling and includes bicycle parking facilities. • A Sustainable Transport Plan has been prepared and implemented. • The building has EV charging capabilities. • Transport options that reduce the need for private fossil fuel powered vehicles are prioritised.	Costs will result from the analysis and transport plan. Changes will also be required to things like EV and electric car sharing. As a minimum for example, for Electric vehicle charging, the building must provide: • Ready to charge EV charging points to at least 5% of all car parking spaces. • Connections for car sharing parking spaces, regardless of whether the vehicles are electric at the time of practical completion (in addition to the 5%
28	**Enjoyable Places**		2		2	Credit achieve	2	0	0	Create accessible community space, to activate and support community-based activities (2.5% of GFA). To get 2 points we need: • The building delivers memorable, beautiful, vibrant communal or public places where people want to gather and participate in the community. • The spaces are inclusive, safe, flexible, and enjoyable.	May need extra reporting and minor tweaks: The communal or public space must be >1.75 m2 / dwelling (minimum of 250 m2) and • Accommodate community-based activities • Have capacity/flexibility to operate in multiple modes • Demonstrate relevance of the space for local people • Demonstrate space is designed for enjoyment • Be available to the community to use for free
29	**Contribution to Place**		2		2	Credit achieve	2	0	0	To get 2 points we need one of the following: 1. The building's design contributes to the livability of the wider urban context and enhances the public realm. OR 2. Independent reviews are held during the design development Note: for Urban Context Report (option 1 above) the team must do • Urban context analysis: • Design responses:	Option 1 is suggested as the cheaper and easier (and usually more beneficial) option. This still needs analysis and reporting (and maybe design adjustments). The urban context report and public realm interface design MUST include: • Urban context analysis: • Design responses:
30	**Culture, Heritage and Identity**		1		1		0	0	1	Community led design response required in early design stage. The project team must show that they have undertaken local analysis to identify culture, heritage, and identity unique to the project site and area. The project team must undertake community engagement as part of this local analysis. As a result of community engagement, the project must reflect local identity, culture, and heritage in the design in a publicly demonstrable way. This can be achieved through: • Community art or placemaking projects • Selection of suppliers/designers of artwork or cultural elements • Building elements that tell stories of the past and heritage • Spaces and uses that reflect the local identities	This is possible, but very tricky and expensive to add this late in the design process. The project must comply with one of the following criteria: • Community Led Design Responses • Independent Design Review Either one will suffice to achieve the Credit Achievement.
						Total	**7**	**0**	**1**		

6. People – 9 pts

	Credit	Mini-mum Expect	Credit Achieve Score	High Perform Score	Total points possible	Target perform level	Advised Easier Credits	Possible, Mid-Cost Credits	Toughest Priciest Credits	Green Star Requirements	
31	**Inclusive Construction Practices**	•	1		1	Credit achieve	1	0	0	Minimum requirements include: During the building's construction, the head contractor provides gender inclusive facilities and protective equipment. The head contractor also installs policies on-site to increase awareness & reduces instances of discrimination, racism, and bullying. To get 1 point, we need: • Policies and programs implemented are relevant to workers. • The head contractor provides high quality staff support on-site to reduce at least five key physical and mental health impacts. • The effectiveness of the interventions is evaluated.	This can be beneficial and relatively low-cost. However, cost will result from: • The head contractor provides high quality staff support on-site to reduce at least five key physical and mental health impacts. • The effectiveness of the interventions is evaluated and documented.
32	**Indigenous Inclusion**		2		2		0	2	0	To get 2 points (not easy and maybe too late), we need: • The project team plays an active role in the organisational Reconciliation Action Plan. or • The building's design and construction incorporates design elements using the Indigenous design and planning strategies and principles.	Costs from consultation and design adjustments. For the first option (RAP approach), for example: • A key member of the Project Team is part of the organisational RAP Working Group • 90% of RAP targets have been met on the project • All implemented actions related to the RAP are publicly reported on the project's website
33	**Procurement and Workforce Inclusion**		2	1	3		0	2	1	To get 2 points (not easy and maybe too tricky at this stage), we need: • The project implements a social procurement plan. • At least 2% of the building's total contract value has been directed to generate employment opportunities for disadvantaged and under-represented groups.	Costs from consultation, construction and procurement adjustments. For example evidence must show: • Money spent as proportion of building contract value • Supplier(s) engaged • Where workforce targets are in place, the number of jobs created per target group + Jobs supported
34	**Design for Inclusion**		2	1	3		0	2	1	Design reflects Inclusive Building design: equal access, diverse wayfinding, inclusive spaces. To get 2 points (not easy and maybe too late), we need: • Equal access to the building: Provide equitable, appealing, safe, and secure access in a manner that does not segregate or stigmatise users through all principal entrance points and main thoroughfares inside and outside the building. • Diverse wayfinding: Introduce visual, physical, olfactory, and auditory solutions to help individuals navigate the site in a safe & enjoyable manner. • Inclusive spaces: Introduce internal/external spaces for a diverse range of users, including parents, family restrooms, emergency rooms, quiet rooms, & social interaction rooms.	Costs may result from consultation and design change to meet the 3 points (see left). To get 3 points we also need a Needs Analysis to achieve: • The project team must consult with distinct community types to develop a needs analysis that will influence the project during the design phase • Consultation must be undertaken early in the design process and include a balanced cross-section of representation of the target group • Various reporting requirements, etc
						Total	**1**	**6**	**2**		

7. Nature – 14 pts

	Credit	Mini-mum Expect	Credit Achieve Score	High Perform Score	Total points possible	Target perform level	Advised Easier Credits	Possible, Mid-Cost Credits	Toughest Priciest Credits	Green Star Requirements	
35	**Impacts to Nature**	•	2		2	Minimum Expect	0	0	2	Minimum requirements demand: Site not situated on forest, agricultural land, wetland or be listed in EPBC Act 1999, external lighting pollution managed. In addition to that Minimum Expectation, in order to get 2 points, we need: • The building's design and construction conserves existing natural soil, hydrological flows, and vegetation elements. • If deemed necessary by an Ecologist, at least 50% of existing site with high biodiversity value is retained.	Minimum expectation is required but the extra credit can be very hard (near impossible) for a densely-developed site.
36	**Biodiversity Enhance-ment**		2	2	4	Credit achieve	2	2	0	To get 2 points (not easy and maybe too late, pending the resolution of landscape designs), we need: • The building's site includes an appropriate landscape area. • The landscaping includes a diversity of species and prioritises the use of climate resilient and indigenous plants. • The project team develops a site-specific Biodiversity Management Plan and provides it to the building owner or building owner representative.	Extra design changes and research will be required for landscaping. Costs can be incurred from developing and implementing the site-specific Biodiversity Management Plan (and also providing it to the building owner or building owner representative).
37	**Nature Connectivity**		2		2		0	0	2	This is designed to encourage species connectivity through the site. To get 2 points: The site must be built to encourage species connectivity through the site, and to adjacent sites. If the project sits within a blue or green grid strategy it must contribute to the goals of the strategy.	This credit is also not recommended. It can be very hard (near impossible) for a densely-developed site.
38	**Nature Stewardship**		2		2		0	0	2	This requires land restoration through an organisation (outside the site) based on GFA. This will always need biodiversity to be restored beyond the building site. To get 2 points (not easy), we need: • Areas of restoration or protection are provided. • Restoration or protection activities are beyond the development's boundary. • The building owner, as part of the project's development, undertakes activities that protects or restores biodiversity at scale. • These actions occur beyond legislated requirements.	This credit is also not recommended. It can be very hard (near impossible) for a densely-developed site.
39	**Waterway Protection**		2	2	4	Credit achieve	2	0	2	Reduce stormwater discharge volume and achieve pollution reduction targets, To get 2 points (not easy), we need: • The project demonstrates a reduction in average annual stormwater discharge (ML/yr) of 40% across the whole site. • Specified pollution reduction targets are met.	Extra design changes and testing will be required for stormwater design, even to get 2 points. Costs can be incurred from developing and implementing the site-specific Stormwater Plan (and also proving that the volumes and treatment can be met). 4 points not suggested since it needs a reduction in average annual stormwater discharge of 80% across the site.
						Total	**4**	**2**	**8**		

8. Leadership

	Leadership				0						
	Credit	Mini-mum Expect	Credit Achieve Score	High Perform Score	Total points possible	Target perform level	Advised Easier Credits	Possible, Mid-Cost Credits	Toughest Priciest Credits	Green Star Requirements	
40	Market Transform-ation				0		0	0	0		
41	Leader-ship Challenges				0		0	0	0		
						Total	0	0	0		
	TOTALS										
						TOTALS	43	23	36		

APPENDIX 1 - GREEN STAR QUICK SUMMARY

Submission planner

Climate Positive Pathway

Registering from / certified	2020 onwards	Desired Green Star rating	5 Star

Green Star rating

Core points targeted	43	Minimum expectations met		Yes
Leadership points targeted	0	Green Star rating targeted		5 Star
Total points targeted	43	Climate Positive Pathway met		

	Credit	Minimum Expectation	Credit Achievement	Exceptional Performance	Total points available	Targeted performance level	Total points targeted
	Responsible				**17**		
1	Industry Development		1		**1**	Credit Achievement	**1**
2	Responsible Construction	•	1		**1**	Credit Achievement	**1**
3	Verification and Handover	•	1		**1**	Credit Achievement	**1**
4	Operational Waste	•			**0**	Minimum Expectation	•
5	Responsible Procurement		1		**1**		**0**
6	Responsible Structure		3	2	**5**		**0**
7	Responsible Envelope		2	2	**4**	Credit Achievement	**2**
8	Responsible Systems		1	1	**2**		**0**
9	Responsible Finishes		1	1	**2**	Credit Achievement	**1**
						Total	**6**

	Healthy				14		
10	Clean Air	•	2		**2**	Minimum Expectation	•
11	Light Quality	•	2	2	**4**	Credit Achievement	**2**
12	Acoustic Comfort	•	2		**2**	Credit Achievement	**2**
13	Exposure to Toxins	•	2		**2**	Credit Achievement	**2**
14	Amenity and Comfort		2		**2**		**0**
15	Connection to Nature		1	1	**2**		**0**
						Total	**6**

	Resilient				8		
16	Climate Change Resilience	•	1		**1**	Credit Achievement	**1**
17	Operations Resilience		2		**2**		**0**
18	Community Resilience		1		**1**	Credit Achievement	**1**
19	Heat Resilience		1		**1**	Credit Achievement	**1**
20	Grid Resilience		3		**3**	Credit Achievement	**3**
						Total	**6**

	Positive				30		
21	Upfront Carbon Emissions	•	3	3	**6**	Credit Achievement	**3**
22	Energy Use	•	3	3	**6**	Credit Achievement	**3**
23	Energy Source	•	3	3	**6**	Minimum Expectation	•
24	Other Carbon Emissions		2	2	**4**	Credit Achievement	**2**
25	Water Use	•	3	3	**6**	Credit Achievement	**3**
26	Life Cycle Impacts		2		**2**	Credit Achievement	**2**
						Total	**13**

	Places				8		
27	Movement and Place	•	3		**3**	Credit Achievement	**3**
28	Enjoyable Places		2		**2**	Credit Achievement	**2**
29	Contribution to Place		2		**2**	Credit Achievement	**2**
30	Culture, Heritage and Identity		1		**1**		**0**
						Total	**7**

	People				9		
31	Inclusive Construction Practices	•	1		**1**	Credit Achievement	**1**
32	Indigenous Inclusion		2		**2**		**0**
33	Procurement and Workforce Inclusion		2	1	**3**		**0**
34	Design for Inclusion		2	1	**3**		**0**
						Total	**1**

	Nature				14		
35	Impacts to Nature	•	2		**2**	Minimum Expectation	•
36	Biodiversity Enhancement		2	2	**4**	Credit Achievement	**2**
37	Nature Connectivity		2		**2**		**0**
38	Nature Stewardship		2		**2**		**0**
39	Waterway Protection		2	2	**4**	Credit Achievement	**2**
						Total	**4**

	Leadership				0		
40	Market Transformation				**0**		**0**
41	Leadership Challenges				**0**		**0**
						Total	**0**