



March 2021

Baptist Church Como – 109- 113 Robert St

Sustainable Design Options
Review

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Title:	Baptist Church Como – 109-113 Robert St: Sustainability Plan - DA Report
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Client:	dem / Baptist Church
Contact:	Rudi Valla
Description:	<p>This report provides FCDS review of the current design for the 109-113 Robert Street – Como Baptist Church Development Site. The project intends to exceed the minimum requirements of the Green Star Design and As Built V1.3 tool for Australian Excellence, through formal certification at the 5-star level and implementation of Fitwel initiatives for health and wellbeing of occupants and visitors.</p> <p>This report is to outline the project team proposed approach suitable for review and action within the design team and approval by the City of South Perth.</p> <p>Rev D is the DA report, submitted for review.</p>

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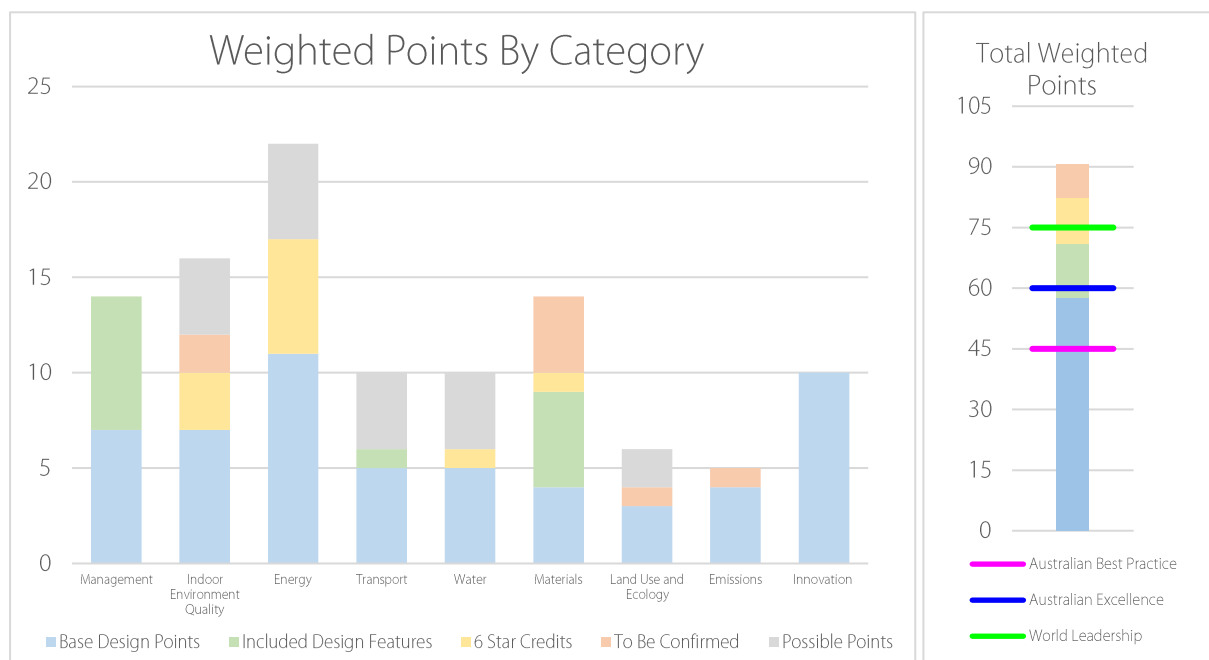
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Executive Summary

FCDS have been commissioned to provide project strategic advice for sustainable design relating to the proposed mixed-use redevelopment of the Baptist Church (and adjacent site) in Como WA. This document presents the proposed project approach for review by the City of South Perth.

In making our recommendations, FCDS have taken into account information provided by dem in terms of the project intent, location and initial thoughts regarding sustainable design targets for the development. We have also noted a desire by the City of South Perth for the project to achieve a 6-star Green Star or equivalent – certification for the project. Whilst FCDS support formal certification, we believe that the project – and community – would benefit more from achieving a 5-Star Green Star certified outcome as well as including features which will contribute to the health and wellbeing of occupants and the community – taken from the Fitwel rating tool.

Currently, FCDS assessment of the project design is that it includes around 71% of the Green Star initiatives, easily exceeding the 5 star target by almost 20%.



As can be seen above, the design has focused on features which improve IEQ (Indoor Environment Quality), reduce energy consumption and improve management outcomes for the building. Strong materiality outcomes are also intended. Some of the key features intended to be included are:

- Solar Generation
 - The design team are seeking to include around 70-80kW of peak electrical generation capacity.
- Central Plant
 - Services will utilise a central plant area, taking advantage of improved efficiency, less maintenance and lower noise impacts for occupants.
- Efficient Envelope
 - Exceeding BCA requirements for building envelope performance, including representative sampling of building leakage rates.
- Post Occupancy
 - Ongoing building tuning and optimisation, as well as occupant engagement features to improve building outcomes post practical completion.

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1. Introduction

1.1 Site Description

The proposed Como Baptist developments are to be located on the corner of Robert St and Canning Highway in Como WA..



The developments cover two sites, one being over the existing Como Baptist Church (109-113 Robert St), the other on an adjacent, triangle shaped site at 469-471 Canning Highway. At completion, the project will create significant public space and amenity on the ground plane and will enhance and support the Church offerings, with features such as child-care, commercial, medical and café tenancies.

This report addresses the site on Robert Street, including around 110 dwellings, worship, café and small retail spaces at ground floor and multipurpose, office and commercial/medical tenancies on first floor.

The building is located over two levels of basement car parking and has a sizable waste store for separation and segregation of waste and recycling.

In addition to car parking, the upper basement level includes large end-of-trip facilities serving the whole development site.

Portions of the apartments delivered as part of this development will be allocated to affordable housing and will be made universally accessible to support aging in place. These features are expected to add value to the community and improve the social cohesion of the development.

1.2 Project Strategic Aims

This project is part of the Canning Bridge redevelopment area and has sustainability targets set by the City of South Perth. Specifically, the design is to achieve a 6-Star Green Star, or equivalent, rating in order to access height and plot ratio bonuses which will improve the viability of the project.

Beyond the minimum requirements however, the design is also seeking to demonstrate leadership in the sustainable design space by including design features which add value to occupants and owners, reduce environmental impact of the development and improve the social cohesion of the area.

Specific design themes are outlined below:

- **Social connectivity of the development.** The facility should provide a memorable and marketable presence at ground plane.
 - Pedestrian friendly with strong transport outcomes
 - High air quality
 - Outside air / natural ventilation
 - Shaded and controlled local climates
 - Planting / vegetation
 - Tenant Selection
 - Social offering
 - Health and well being
 - Waste control
 - Community space



The residential component of the development is targeting a range of occupants from diverse backgrounds and life stages. A mix of young people, couples, families and downsizers are anticipated and encouraged to improve the social cohesion within the community. To this end, the design includes a mix of apartment sizes (studios, 1 bed, 2 bed and 3 bed). The target market will likely include active people, across a wide age range but who will value a connection to the amenity and features at ground plane.

- Apartment features to improve sales will include health and well-being:
 - Water quality – filtration to all apartments
 - Thermal comfort – High NatHERS ratings, building envelope performance
 - Daylight – glare protection and control
 - Naturally ventilated common areas
 - Low toxicity

The development is intended to be a long-term asset, so should be future proofed to cater for changing needs and societal expectations. Similarly, sustainable design features must add value for the project, sustainability features with limited tangible benefits are low priority:

- Future ready
 - Potential to go 'all electric' – to take advantage of decarbonising grid
 - Onsite renewable generation – solar PV
 - Embedded network – share solar infrastructure across retail and residential
 - Electric vehicles / car share schemes
 - Climate change resilient
- Economic Sustainability
 - Value add proposition with economic payback
 - Leading edge, not bleeding edge



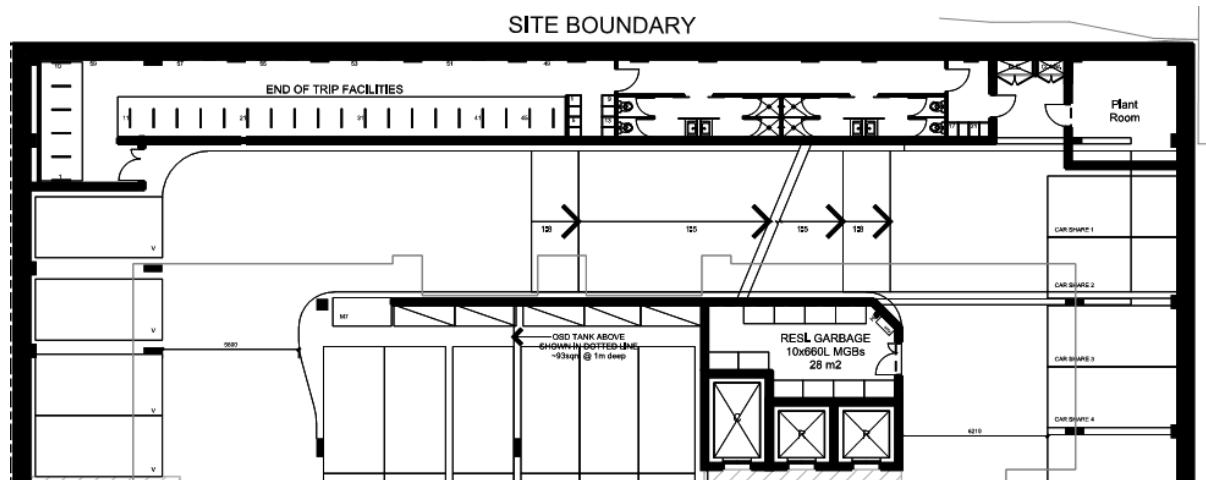
The site is located in an ideal location to reduce reliance on car parking and promote alternative transport options, including car share, active transport and public transport. This approach could significantly reduce project cost by reducing required basement size:

- **Transport Hub**
 - Bike friendly, easy parking, clearly visual
 - Pedestrian connection
 - Street furniture and support for active transit
 - Upgrade of pedestrian connection to local train station
 - Development specific bus stop / overpass to facilitate public transport use

The design intends to include features which align with the above. If all recommended features are included the design would be expected to score over 60% in the Green Star Design and As Built V1.3 tool – representative of Australian Excellence in sustainable design.

In addition to ecological benefits, sustainable design should positively influence most stakeholder groups, particularly where independently verified outcomes can be demonstrated. Sustainable design inclusions should; provide marketing collateral, improve owner confidence about the wisdom of their investment, reduce time and complications at planning and Design Approval Stage, assist in engagement with the local community and reduce investor risk.

- **Certified Sustainability**
 - Independently assessed and certified
 - Authentic sustainable design claims
 - No 'Green Wash'



2. Management Features

The following design elements are intended to be included by the project team:

2.1 Building Commissioning

The designers will be seeking to complete commissioning in accordance with internationally recognised standards such as Airah or CIBSE. The commissioning will also include some building envelope pressure testing to confirm build quality and reduce energy loss through air leakage.

2.2 Building Tuning

Buildings are generally understood to take between 3 and 12 months to settle down and operate in accordance with the design intent, however, the process of management and control of this process is often left to chance or to follow an informal process during the Defects Liability Phase.

FCDS will assist the building to optimise its operation during the first 12 months of operation. Scope will include energy consumption review against budgets and engagement with contractors to demonstrate satisfactory operation of installed systems in all weather and load conditions.

2.3 Commissioning Agent

The design team expect to utilise a commissioning agent across the whole site. This individual will assist in reviewing designs and specify strict commissioning and operational requirements for the contractors delivering the project. The Commissioning Agent will be independent of the design and construction teams.

2.4 Climate Change

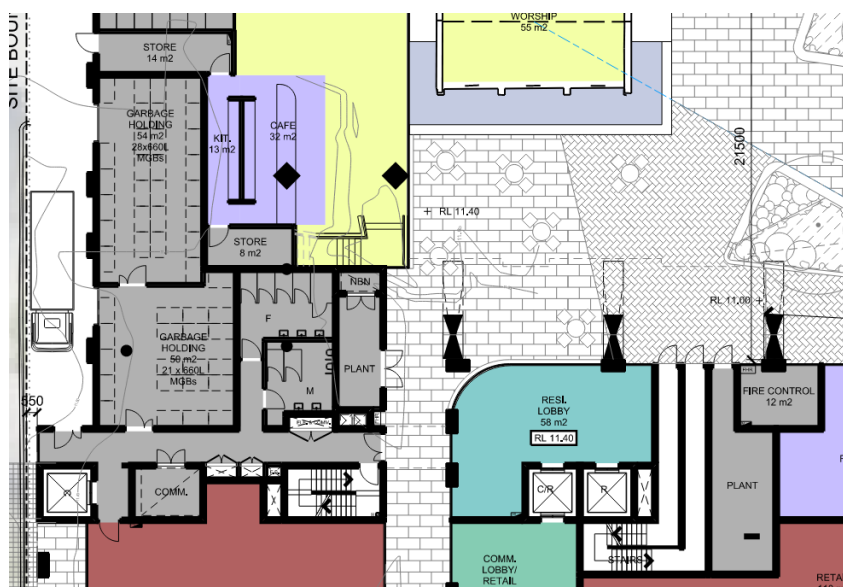
The project will represent a significant and long-term investment in the Como community and, as such, will consider the likely risks brought about by climate change. Specific features to address climate change issues, such as improved façade performance and solar generation, will be implemented to future-proof the development.

2.5 Waste Management

The design will include systems and infrastructure to allow and promote recycling. This includes large and convenient stores at ground level which can service the retail, commercial and residential components separately. The residential towers are provided with general waste stores in the basement and recycling chutes to ensure recycling is convenient for occupants.

The provision of the ability to segregate waste streams will provide operational flexibility in the future and would be expected to reduce operational costs, particularly as the cost of landfill increases over time.

Recycling bins are also expected to be provided through the public access area.



2.6 Construction Practices

The design team expect the main contractor for the project will implement a site-specific environmental management plan, including reporting and audit to a third-party standard such as ISO 14001. The contractor will be expected to provide mental and physical health support to their staff.

2.7 Metering and Monitoring

The design team will be looking to include an embedded, private metering network to assist in management of energy consumption. The system will allow the site to share solar power generation between retail and residential uses and serve central systems – improving its viability.

The system will also allow the development to tender power provision, resulting in reduced operating costs for owners and providing more flexibility to choose low or no carbon power supplies.

Meter data will also be used to tune the building in operation and engage with tenants to reduce their use.



3. Indoor Environment Quality

A high level of indoor amenity will be of paramount importance to the success of the project. Occupants, visitors and staff for the building will expect comfortable conditions internally, without glare or noise and good access to views and daylight. Some of the key design features are summarised below:

3.1 Air Quality

Air quality is important for all uses; however, the intended design approach is expected to vary. For the retail and childcare facilities, filtered outside air will be ducted into the occupied space, with quantities controlled to ensure high quality air, without compromising energy efficiency. Commercial areas are expected to include CO₂ monitoring and control to reduce peak load, without compromising free cooling during periods of mild ambient conditions. Retail tenancies will be able to operate in mixed mode functions, allowing improved air quality when conditions are suitable.

For the residential space, outside air provision is likely to be occupant controlled, however, exhaust rates from toilets and kitchens will draw in more outside air than is required for minimum code compliance.

The design will include ducted exhaust for contaminated spaces such as kitchens, print rooms and the car park.

3.2 Glare Control

The design includes balconies for all apartments, providing overhang shading as well as improving occupant amenity.

For the retail spaces, the development provides a high degree of self-shading with overhangs and adjacent buildings limiting low-angle western sun to occupied areas.

3.3 Noise Levels

FCDS recommend the design team target compliance with the recommended noise levels in AS 2107 and consider improving noise isolation between the retail level and apartments above minimum standard. FCDS note a design team target aiming to reduce transmission between apartments.

3.4 Low Toxicity Products

The design team will be selecting finishes and composite wood products with low Volatile Organic Compound (VOC) and low formaldehyde content. This includes carpets, adhesives and sealants. Wall and ceiling paints will target a level <5 g/L for VOC content.

3.5 Thermal Comfort

A review of the current design has shown expected NatHERS outcomes of more than 7 stars for most apartments. Low-e single glazing will be used to reduce heat loss whilst shading permits the design to limit glass tinting – maximising diffuse light transmission.

4. Energy and Green House Gases

The design team are targeting the following performance features:

4.1 Services

The mechanical and electrical designs are seeking to improve over minimum BCA requirements by at least 10%. LED lighting and efficient air conditioning systems are expected to reduce building operational costs and energy consumption.

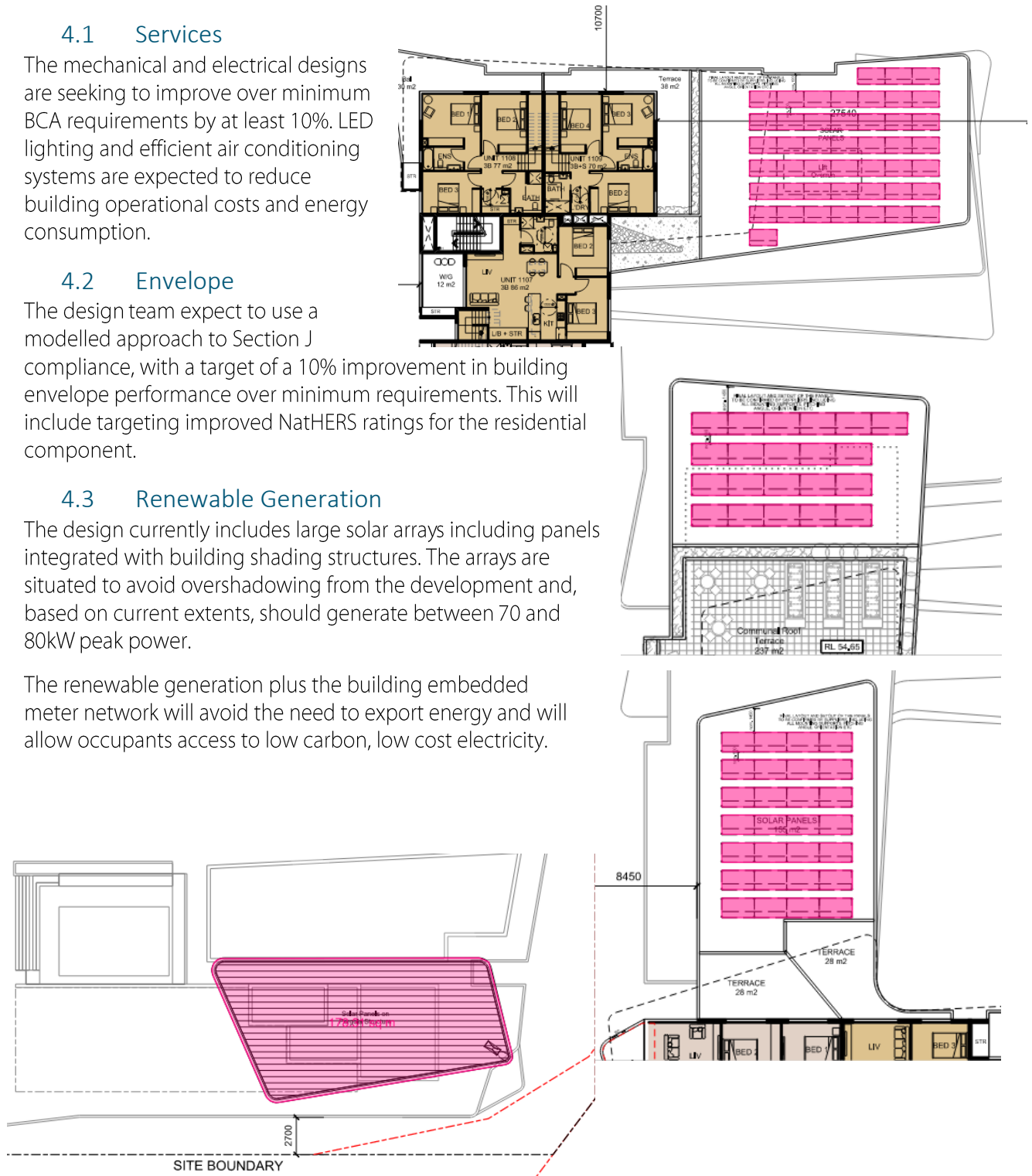
4.2 Envelope

The design team expect to use a modelled approach to Section J compliance, with a target of a 10% improvement in building envelope performance over minimum requirements. This will include targeting improved NatHERS ratings for the residential component.

4.3 Renewable Generation

The design currently includes large solar arrays including panels integrated with building shading structures. The arrays are situated to avoid overshadowing from the development and, based on current extents, should generate between 70 and 80kW peak power.

The renewable generation plus the building embedded meter network will avoid the need to export energy and will allow occupants access to low carbon, low cost electricity.



5. Transportation

5.1 Local Amenities

The project is well situated for access to local amenity and, when completed, will provide significant additional features to assist the local community.

The development site is already considered walkable by walkscore.com.au, a rating which will increase when the development comes online.

5.2 Public Transport

The design is ideally located to connect to major bus and train routes to the City or to Fremantle. In addition, the maintenance of a vehicular turn-around on Roberts St provides an excellent chance for the development to integrate with ride share and alternate transport options.

5.3 Vehicle Infrastructure

The design has separated pedestrians from cars, with car parking in two basement levels below ground. In addition, the design will consider the provision of electric vehicle parking and charging facilities within the car park, with a chance that Tesla may fund the installation as part of their Tesla Destination program.

5.4 Bike Infrastructure

The design currently includes connections to local pedestrian ways for connectivity of bikes. Bike parking facilities, including end-of-trip facilities to services the entire development are located at Basement Level 1.

469 Canning Highway

[Add scores to your site](#)

Como, Perth, 6152

Commute to **Downtown Perth**

🚗 10 min 🚌 20 min 🚲 30 min 🚶 60+ min View Routes

Favorite

Map

Nearby Apartments

Walk Score
64

Somewhat Walkable

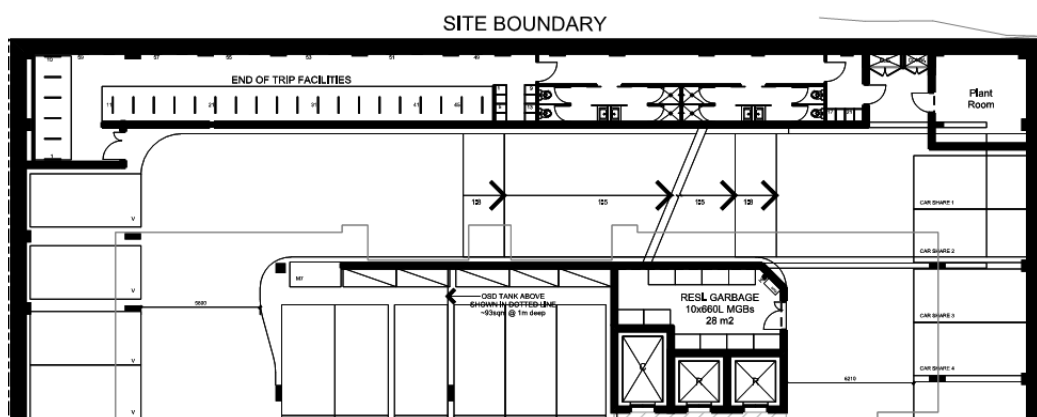
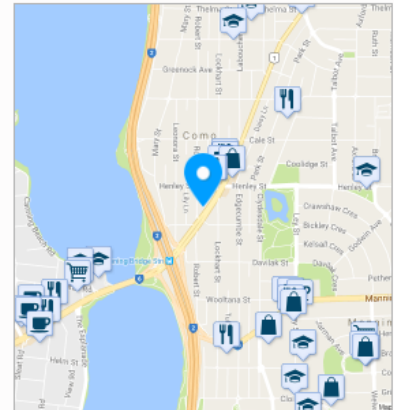
Some errands can be accomplished on foot.

Transit Score
64

Good Transit

Many nearby public transportation options.

[About your score](#)



6. Water Consumption

6.1 Sanitary Fixtures

All sanitary fixtures in the project to are seeking to meet the performance requirements below, subject to maintenance and operational requirements.

Fixture Type	Minimum WELS rating	Maximum Flow Allowable
Taps	5 stars	4.5-6 L/min
Urinals	5 stars	1.0 L / Flush + Smart demand flush device
Toilets	4 stars	<3.5 L average flush <4.7L full flush <3.2 half flush
Showers	3 stars	6.0 – 7.5 L/min
Clothes Washing Machines	4 stars	
Dishwashers	5 stars	

6.2 Heat Rejection

At this stage, air conditioning systems are not expected to consume water as part of their heat rejection process.

6.3 Fire Systems

The building sprinkler design will seek to capture water used for testing and will include floor by floor isolation valves to avoid wastage during maintenance or modification of the system.

6.4 Landscape

The design includes extensive landscaped areas which will require irrigation. The design intent will be to utilise smart irrigation controls which can detect rainfall and reduce irrigation volumes to match.

7. Sustainable Materials

The design team are aiming for sustainable materiality selections as follows:

7.1 High Durability

The design team will select finishes which are able to achieve an economic life of at least 10 years. This includes preferential selection of modular or repairable elements (for example, carpet tiles) or natural finishes. Similarly, higher efficiency and quality services design, e.g. VRF air conditioning or LED lighting will also be considered.

This option reduces operational maintenance expenditure and is expected to improve visual amenity for the building over the long term.

7.2 Sustainable Credentials

During the construction phase, consideration will be given to utilisation of steel, PVC, insulation, finishes and the like with strong sustainable design credentials. Generally, this will include being produced under and ISO 14001 certified EMS, inclusion of a high recycled content and with product stewardship arrangements.

The design team will target reduction of Portland cement content in concrete where practical.

8. Emissions and Ecology

The site emissions and ecological value are to be addressed as follows:

8.1 Ground Plane

The proposed development is likely to add significant value at street level, with connection to pedestrian infrastructure, public access spaces and small format retail which can cater to local occupants or commuters using the space as a transport hub.

The project also includes the retention of worship space and the Baptist Church – a place with heritage significance within Como.



8.2 Heat Island and Ecology

The design intends to utilise light colours and integrate planting within the building façade to reduce the urban heat island effect – making this a cool, welcoming space for visitors and occupants.



9. Innovation

In addition to the above, the design includes features which would be expected to be awarded under the Green Star Innovation category. This category considers things such as social sustainability, exceeding Green Star Benchmarks and contributions to industry development.

Key outcomes to be targeted are as follows:

9.1 Tenancy Design Review

The design team will complete a maintenance and services review on any proposed tenancy. This assists tenants in achieving strong design outcomes, as well as making sure the design is integrated with the overall project intent.

9.2 Ultra-Low VOC Paints

The design team intend to select paints with a VOC (Volatile Organic Content) below 5g/l for walls and ceilings. This level of VOC will significantly improve occupant comfort during initial building occupation.

9.3 Affordable Housing and Community Benefits

The design includes a range of apartment sizes, including studio, 1, 2- and 3-bedroom apartments which will improve housing affordability in the area. In addition, by providing community uses such as childcare, mixed commercial and small format retail as well as making apartments universally accessible assists with aging in place. This will improve social cohesion and is expected to be of significant benefit to the local economy and community.

9.4 Tenant Engagement

As noted above, the building metering system will provide the potential for occupants and tenants to engage with building management and understand their utility use. Live performance monitoring, bill reconciliation and peer group comparisons can be used to air occupants in managing their own use and improving overall building performance.

9.5 Plants, Amenity and Groundskeeping

The design provides extensive planted spaces. The design team expect that occupants and visitors to the development will benefit from these features and plan to include maintenance practices which minimise ecological impacts whilst maintaining a high-quality outlook.



10. Fitwel

The design team recognise that this development is required to achieve a 6-Star Green Star certification, or equivalent. Having completed the initial assessment for the site, it was determined that more benefit could be achieved by obtaining a 5-Star Green Star certification, with a Fitwel certification, rather than chasing points to meet a 6-Star Green Star rating.

This section of the report provides background information on the Fitwel tool and compares design features aiming to be included against those that would have been under a 'six-star' Green Star rating.

10.1 Background

FitWel is a tool which assesses elements of the design and operation of buildings, with an emphasis on promoting health outcomes. The tool has been developed by U.S. Centre for Disease Control and Prevention (CDC) and the General Services Administration (GSA). The Centre for Active Design (CfAD) is the operator of FitWel and responsible for the third-party certification.

The Fitwel tool has a maximum score of 144 points. Design teams are awarded varying points for the inclusion of design features, operational elements or facilities within or adjacent the building. The tool can assess either base buildings, owner occupied buildings or commercial tenancies, with assessment criteria and methodology varying slightly between each rating type.

Scores are allocated across a number of categories – like Green Star– as follows:

- Location;
- Building Access;
- Outdoor Spaces;
- Entrances + Ground Floor;
- Stairwells;
- Indoor Environments;
- Workspaces;
- Shared Spaces;
- Water Supply;
- Cafeterias + Prepared Food Retail;
- Vending Machines + Snack Bars; and
- Emergency Procedures.

With a goal of achieving improvement for occupants across seven impact categories:

- Impacts Community;
- Reduces Morbidity + Absenteeism;
- Supports Social Equality for Vulnerable Populations;
- Increases Physical Activity;
- Promotes Occupant Safety;
- Provides Healthy Food Options; and
- Instils Feelings of Well-Being.

The benchmark for achieving a rating is quite high, with a score of 90 out of 144 required for a 1-star certification. 2 Stars requires a score of 105 and 3 stars (the best possible rating) requires a score of 125.

10.2 Fitwel Features

The following table describes some of the design features aiming to be included as part of a FitWel Certification:

Feature	Details
Bike Share Access	Provide a bike share station Bike share programs support active transportation and convenience, contributing to increased physical activity, equity for those who cannot drive or afford private vehicle use, and reduced congestion and air pollution.
Efficiency Parking	Implement parking efficiency practices Efficient parking practices can reduce congestion and support increased public transit use, contributing to regular physical activity and improved air quality and water quality.
Stair Signage	Place educational point-of-decision signs promoting stair use at elevator call areas Point-of-decision signs that promote stair use encourage occupants to take the stairs when travelling across floors, contributing to increased daily physical activity.
Stair Visibility	Increase the stair visibility Increasing stair visibility can encourage occupants to use the stairs when travelling across floors, contributing to increased daily physical activity.
Indoor Air Quality (IAQ) Policy	Establish and implement an Indoor Air Quality (IAQ) Policy A comprehensive Indoor Air Quality (IAQ) policy identifies areas for improvement in air quality and provides benchmarks to ensure air quality remains high over time, contributing to enhanced respiratory and mental health.
Indoor Air Quality Testing	Conduct regular Indoor Air Quality (IAQ) testing Regular Indoor Air Quality (IAQ) testing can identify areas for improvement in indoor air quality and provide benchmarks to ensure air quality remains high over time, contributing to enhanced respiratory and mental health.
Indoor Air Quality Testing Results	Share Indoor Air Quality (IAQ) testing results with regular occupants Sharing Indoor Air Quality (IAQ) testing results can increase transparency, environmental awareness, and encourage the improvement of IAQ, contributing to enhanced respiratory and mental health.
Integrated Pest Management	Establish and implement an Integrated Pest Management (IPM) plan An Integrated Pest Management plan reduces occupant exposure to dangerous toxins and allergens, supporting healthy indoor air quality and contributing to enhanced physical and mental health.
Operable Windows in Common Spaces	Provide regular occupants access to operable windows in common spaces Operable windows in common spaces allow occupants to control the comfort of their living environment and increases access to daylight and fresh air, contributing to enhanced mental health.
Occupant Satisfaction Survey	Conduct an occupant satisfaction survey for regular occupants An annual survey provides information about occupant satisfaction with the design and operations of the site, highlighting areas to prioritize for future health-promoting upgrades. Findings can be used to improve features and programs designed to support physical, mental, and social health.
Stakeholder Collaboration Process	Establish and implement a Stakeholder Collaboration Process A stakeholder collaboration initiative establishes a framework to engage and prioritize stakeholders' health concerns, which contributes to enhanced occupant health.

Feature	Details
Universally Accessible Water Supply	Provide universally accessible water supplies Universally accessible potable water improves regular hydration and can decrease consumption of sugar-sweetened beverages, contributing to improved dietary habits and enhanced social equity among vulnerable populations.
Water Bottle Refilling Station	Provide bottle refilling stations at water supplies Water bottle refilling stations increase access to potable water, and can prompt improved hydration and decreased consumption of sugar-sweetened beverages.
Water Quality	Conduct regular water quality testing Water quality testing can reduce exposure to pathogens and contaminants found in water, reducing rates of disease and prevention adverse health effects.
Water Access	Provide access to free water supplies in a prepared food area Readily accessible drinking water in cafeterias and prepared food retail areas can increase access to potable water, and can prompt improved hydration and decreased consumption of sugar-sweetened beverages.

10.3 Alternate Green Star Features

If the project had elected to achieve a 6-Star Green Star certification the following features would have been part of the solution:

- Additional Consultancy
 - Additional roles undertaking building analysis and commissioning could be added, with limited expected benefit to the project – other than achieving Green Star points.
- Increased Renewable Generation
 - This would include either increasing the size of the solar array or the provision of wind generation on site. Whilst this would reduce the carbon footprint of the building, wind generation would likely have noise implications and both options would be less economically effective than the current proposed array.
- Improved Building Envelope
 - The design is expected to average in excess of 7-Star NatHERS based on the use of clear, low-e single glazing. If this was improved to low-e double glazing average ratings may exceed 8-Stars. This would have significant costs and provide incremental improvement in occupant comfort and energy consumption.

FCDS are therefore satisfied that the proposed 5-Star Green Star plus Fitwel provides a better overall outcome for the development and the local community.

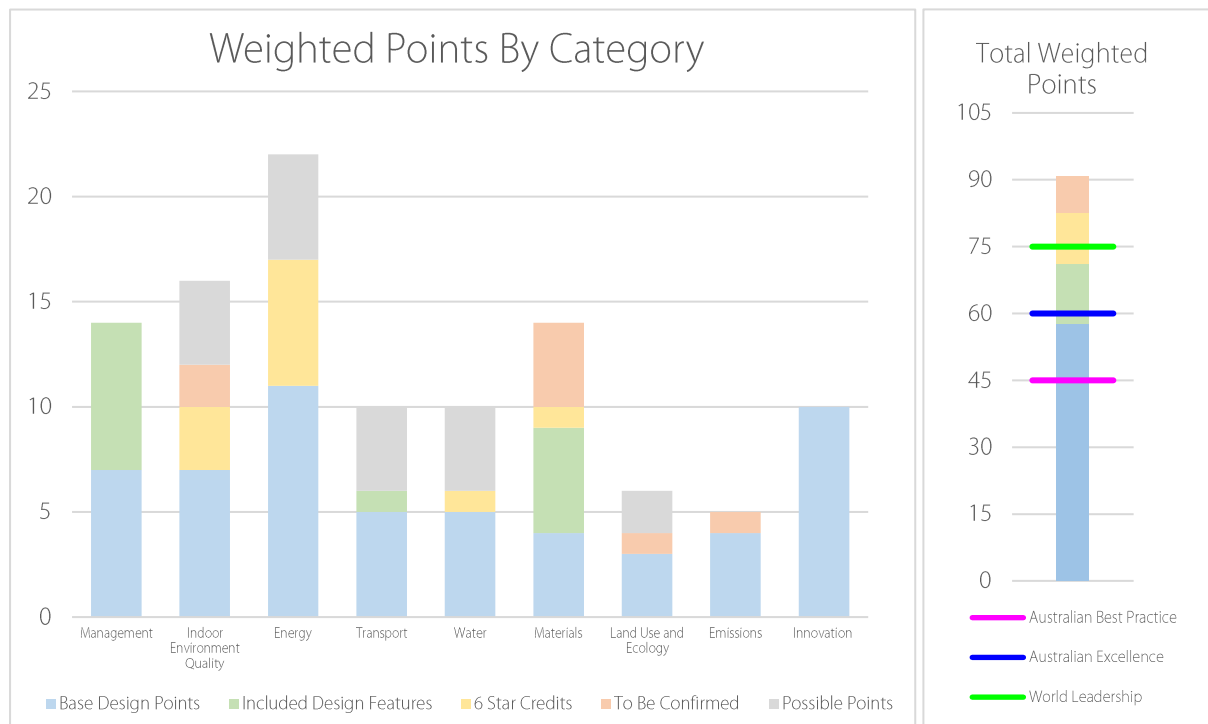
11. Self-Assessment Summary

FCDS note that this is a self-assessment of design intent and options against published Green Star benchmarks. It is in no way equivalent to a formal assessment by a third party or the GBCA. This report represents our current expectation of performance, based on design intent, our experience and the project planning.

Currently, FCDS believe the project would score at least ~71 points – almost 20% over the 5 star target and only four points below 6 Stars.

The team have also identified an additional 8 points which may be included, depending on the progression of building modelling and contractor procurement. If required, there are a further 11 points which could be included to ensure the project exceeds the 5-Star target. In addition, the design team are seeking to achieve certification using the Fitwel tool which is a clear benefit over and above an additional 4 Green Star Points.

Further details of our assessment are provided in the attached scorecard.





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March 2021

469-471 Canning Highway Como

Sustainability Plan – DA Report

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FULL CIRCLE DESIGN SERVICES

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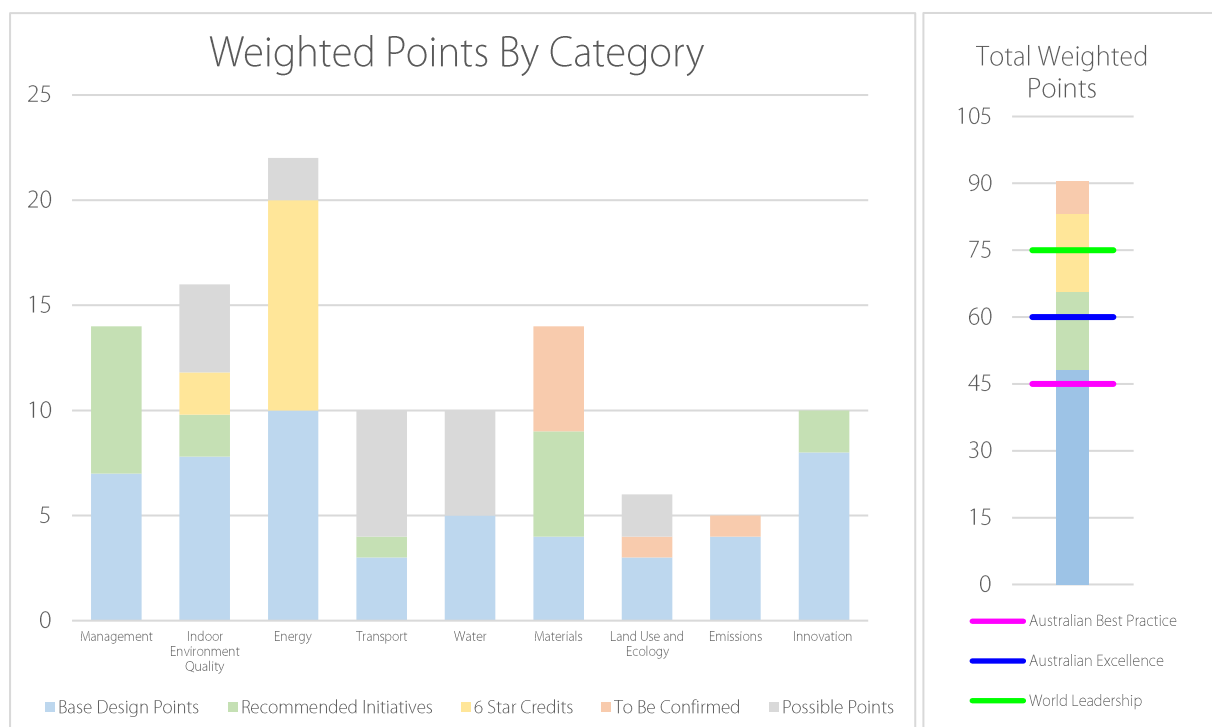
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Executive Summary

FCDS have been commissioned to provide some early project strategic advice for sustainable design relating to the proposed mixed-use redevelopment of the Baptist Church (109-113 Robert St) and the adjacent site (469-471 Canning Highway) in Como WA. This document presents FCDS review of the current design of the 469-471 Canning Highway site, including features which are already evident within the documentation and those planned to be included by the design team as the project progresses.

This development is to be the first stage within the overall master plan and is seeking to achieve Australian Excellence in Sustainable Design, by self-assessing to at least 60% of the credits included in the Green Star Design and As Built V1.3 rating tool. In addition, the overall development includes features which will contribute to the health and wellbeing of occupants and the community – taken from the Fitwel rating tool.

Currently, FCDS assessment of the project design is that it includes around 70% of the Green Star credits – easily exceeding project targets (60%).



As can be seen above, the design has focused on features which improve IEQ (Indoor Environment Quality), reduce energy consumption and improve management outcomes for the building. Strong materiality outcomes are also intended.

Some of the key features intended to be included are:

- Solar Generation
 - The design team are seeking to include around 50-60kW of peak electrical generation capacity.
- Central Plant
 - Services will utilise a central plant area, taking advantage of improved efficiency, less maintenance and lower noise impacts for occupants.
- Efficient Envelope
 - Exceeding BCA requirements for building envelope performance, including representative sampling of building leakage rates.
- Post Occupancy
 - Ongoing building tuning and optimisation, as well as occupant engagement features to improve building outcomes post practical completion.

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1. Introduction

1.1 Site Description

The proposed Como Baptist developments are to be located on the corner of Robert St and Canning Highway in Como WA.



The developments cover two sites, one being over the existing Como Baptist Church (109-113 Robert St), the other on an adjacent, triangle shaped site at 469-471 Canning Highway. At completion, the project will create significant public space and amenity on the ground plane and will enhance and support the Church offerings, with features such as child-care, commercial, medical and café tenancies.

This report addresses the site on Canning Highway, including around 87 dwellings, childcare and small format retail at ground plane.

The building is located over two levels of basement car parking and has a sizable waste store for separation and segregation of waste and recycling.

Portions of the apartments delivered as part of this development will be allocated to affordable housing and will be made universally accessible to support aging in place. These features are expected to add value to the community and improve the social cohesion of the development.

1.2 Project Strategic Aims

This project is part of the Canning Bridge redevelopment area and has sustainability targets set by the City of South Perth. Specifically, the design is to achieve a 5-Star Green Star – or equivalent, rating.

Beyond the minimum requirements however, the design is also seeking to demonstrate leadership in the sustainable design space by including design features which add value to occupants and owners, reduce environmental impact of the development and improve the social cohesion of the area.

Specific design themes are outlined below:

- **Social connectivity of the development.** The facility should provide a memorable and marketable presence at ground plane.
 - Pedestrian friendly with strong transport outcomes
 - High air quality
 - Outside air / natural ventilation
 - Shaded and controlled local climates
 - Planting / vegetation
 - Tenant Selection
 - Social offering
 - Health and well being
 - Waste control
 - Community space



The residential component of the development is targeting a range of occupants from diverse backgrounds and life stages. A mix of young people, couples, families and downsizers are anticipated and encouraged to improve the social cohesion within the community. To this end, the design includes a mix of apartment sizes (studios, 1 bed, 2 bed and 3 bed). The target market will likely include active people, across a wide age range but who will value a connection to the amenity and features at ground plane.

- Apartment features to improve sales will include health and well-being:
 - Water quality – filtration to all apartments
 - Thermal comfort – High NatHERS ratings, building envelope performance
 - Daylight – glare protection and control
 - Naturally ventilated common areas
 - Low toxicity

The development is intended to be a long-term asset, so should be future proofed to cater for changing needs and societal expectations. Similarly, sustainable design features must add value for the project, sustainability features with limited tangible benefits are low priority:

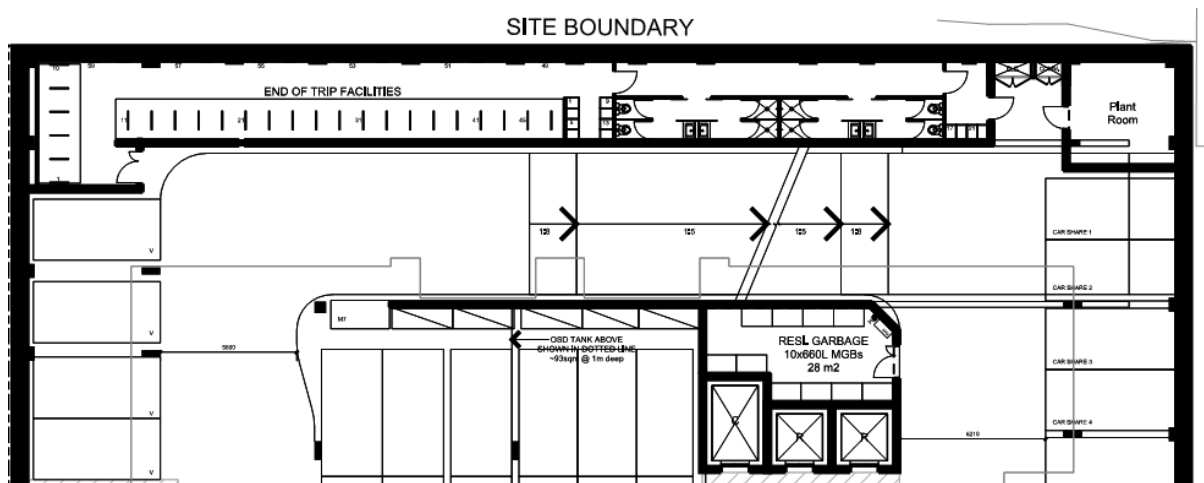
- Future ready
 - Potential to go 'all electric' – to take advantage of decarbonising grid
 - Onsite renewable generation – solar PV
 - Embedded network – share solar infrastructure across retail and residential
 - Electric vehicles / car share schemes
 - Climate change resilient
- Economic Sustainability
 - Value add proposition with economic payback
 - Leading edge, not bleeding edge



The site is located in an ideal location to reduce reliance on car parking and promote alternative transport options, including car share, active transport and public transport. This approach could significantly reduce project cost by reducing required basement size:

- Transport Hub
 - Bike friendly, easy parking, clearly visual
 - Pedestrian connection
 - Street furniture and support for active transit
 - Upgrade of pedestrian connection to local train station
 - Development specific bus stop / overpass to facilitate public transport use

The design intends to include features which align with the above. If all recommended features are included the design would be expected to score over 60% in the Green Star Design and As Built V1.3 tool – representative of Australian Excellence in sustainable design.



1. Management Features

The following design elements are intended to be included by the project team:

1.1 Building Commissioning

The designers will be seeking to complete commissioning in accordance with internationally recognised standards such as Airah or CIBSE. The commissioning will also include some building envelope pressure testing to confirm build quality and reduce energy loss through air leakage.

1.2 Building Tuning

Buildings are generally understood to take between 3 and 12 months to settle down and operate in accordance with the design intent, however, the process of management and control of this process is often left to chance or to follow an informal process during the Defects Liability Phase.

FCDS will assist the building to optimise its operation during the first 12 months of operation. Scope will include energy consumption review against budgets and engagement with contractors to demonstrate satisfactory operation of installed systems in all weather and load conditions.

1.3 Commissioning Agent

The design team expect to utilise a commissioning agent across the whole site. This individual will assist in reviewing designs and specify strict commissioning and operational requirements for the contractors delivering the project. The Commissioning Agent will be independent of the design and construction teams.

1.4 Climate Change

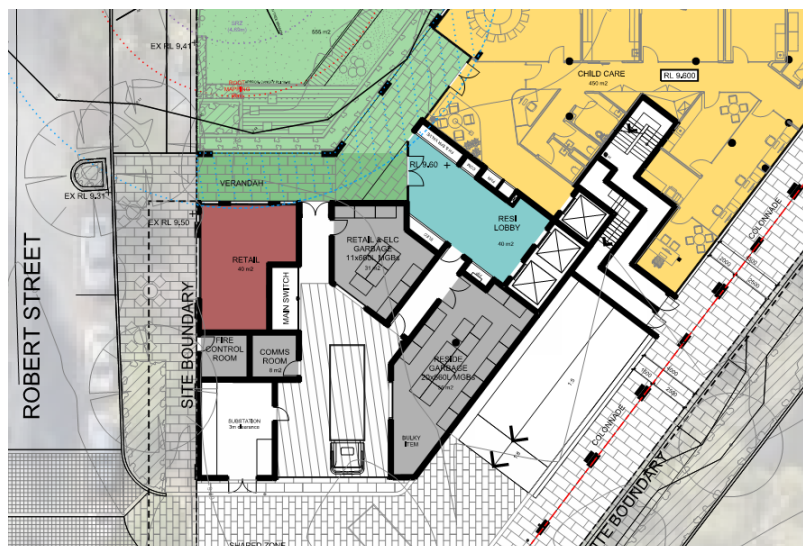
The project will represent a significant and long-term investment in the Como community and, as such, will consider the likely risks brought about by climate change. Specific features to address climate change issues, such as improved façade performance and solar generation, will be implemented to future-proof the development.

1.5 Waste Management

The design will include systems and infrastructure to allow and promote recycling. This includes large and convenient stores at ground level which can service the retail, childcare and residential components separately.

The provision of the ability to segregate waste streams will provide operational flexibility in the future and would be expected to reduce operational costs, particularly as the cost of landfill increases over time.

The design currently includes waste stores strategically located to serve major uses, including the retail area, childcare and residential components. Recycling bins are also expected to be provided through the public access area.



1.6 Construction Practices

The design team expect the main contractor for the project will implement a site-specific environmental management plan, including reporting and audit to a third-party standard such as ISO 14001. The contractor will be expected to provide mental and physical health support to their staff.

1.7 Metering and Monitoring

The design team will be looking to include an embedded, private metering network to assist in management of energy consumption. The system will allow the site to share solar power generation between retail and residential uses and serve central systems – improving its viability.

The system will also allow the development to tender power provision, resulting in reduced operating costs for owners and providing more flexibility to choose low or no carbon power supplies.

Meter data will also be used to tune the building in operation and engage with tenants to reduce their use.



2. Indoor Environment Quality

A high level of indoor amenity will be of paramount importance to the success of the project. Occupants, visitors and staff for the building will expect comfortable conditions internally, without glare or noise and good access to views and daylight. Some of the key design features are summarised below:

2.1 Air Quality

Air quality is important for all uses; however, the intended design approach is expected to vary. For the retail and childcare facilities, filtered outside air will be ducted into the occupied space, with quantities controlled to ensure high quality air, without compromising energy efficiency. Commercial areas are expected to include CO₂ monitoring and control to reduce peak load, without compromising free cooling during periods of mild ambient conditions. Retail tenancies will be able to operate in mixed mode functions, allowing improved air quality when conditions are suitable.

For the residential space, outside air provision is likely to be occupant controlled, however, exhaust rates from toilets and kitchens will draw in more outside air than is required for minimum code compliance.

The design will include ducted exhaust for contaminated spaces such as kitchens, print rooms and the car park.

2.2 Glare Control

The design includes balconies for all apartments, providing overhang shading as well as improving occupant amenity.

For the retail spaces, the development provides a high degree of self-shading with overhangs and adjacent buildings limiting low-angle western sun to occupied areas.

2.3 Noise Levels

FCDS recommend the design team target compliance with the recommended noise levels in AS 2107 and consider improving noise isolation between the retail level and apartments above minimum standard. FCDS note a design team target aiming to reduce transmission between apartments.

2.4 Low Toxicity Products

The design team will be selecting finishes and composite wood products with low Volatile Organic Compound (VOC) and low formaldehyde content. This includes carpets, adhesives and sealants. Wall and ceiling paints will target a level <5 g/L for VOC content.

2.5 Thermal Comfort

A review of the current design has shown expected NatHERS outcomes of more than 7 stars for most apartments. Low-e single glazing will be used to reduce heat loss whilst shading permits the design to limit glass tinting – maximising diffuse light transmission.

3. Energy and Green House Gases

The design team are targeting the following performance features:

3.1 Services

The mechanical and electrical designs are seeking to improve over minimum BCA requirements by at least 10%. LED lighting and efficient air conditioning systems are expected to reduce building operational costs and energy consumption.

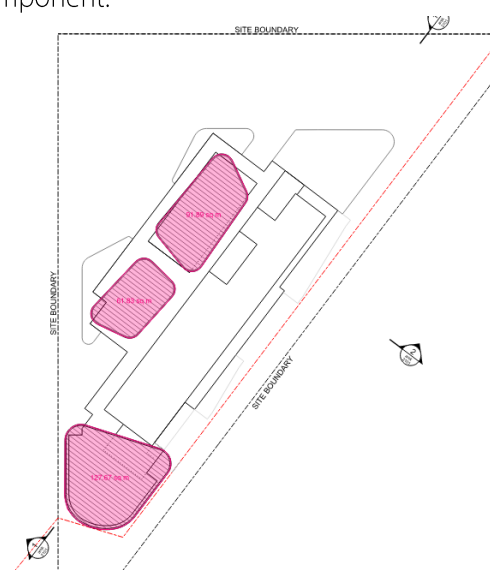
3.2 Envelope

The design team expect to use a modelled approach to Section J compliance, with a target of a 10% improvement in building envelope performance over minimum requirements. This will include targeting improved NatHERS ratings for the residential component.

3.3 Renewable Generation

The design currently includes a large solar array integrated with building shading structures. The array is situated to avoid overshadowing from the development and, based on current extents, should generate between 40 and 50kW peak power.

The renewable generation plus the building embedded meter network will avoid the need to export energy and will allow occupants access to low carbon, low cost electricity.



4. Transportation

4.1 Local Amenities

The project is well situated for access to local amenity and, when completed, will provide significant additional features to assist the local community.

The development site is already considered walkable by walkscore.com.au, a rating which will increase when the development comes online.

4.2 Public Transport

The design is ideally located to connect to major bus and train routes to the City or to

Fremantle. In addition, the maintenance of a vehicular turn-around on Roberts St provides an excellent chance for the development to integrate with ride share and alternate transport options.

4.3 Vehicle Infrastructure

The design has separated pedestrians from cars, with car parking in two basement levels below ground. In addition, the design will consider the provision of electric vehicle parking and charging facilities within the car park, with a chance that Tesla may fund the installation as part of their Tesla Destination program.

4.4 Bike Infrastructure

The design currently includes connections to local pedestrian ways for connectivity of bikes. Bike parking facilities, including end-of-trip will be provided in later stages of the development on 109-113 Robert St.

469 Canning Highway

[Add scores to your site](#)

Como, Perth, 6152

Commute to **Downtown Perth**

🚗 10 min 🚌 20 min 🚲 30 min 🚶 60+ min [View Routes](#)

📍 Favorite

🗺 Map

🔍 Nearby Apartments

Walk Score
64

Somewhat Walkable

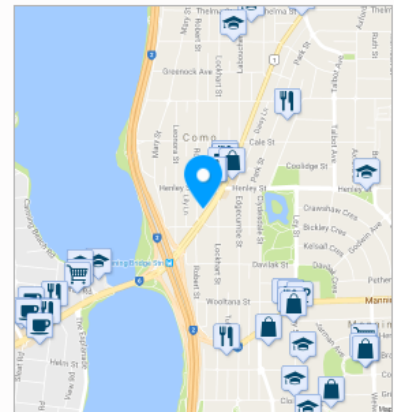
Some errands can be accomplished on foot.

Transit Score
64

Good Transit

Many nearby public transportation options.

[About your score](#)



5. Water Consumption

5.1 Sanitary Fixtures

All sanitary fixtures in the project to are seeking to meet the performance requirements below, subject to maintenance and operational requirements.

Fixture Type	Minimum WELS rating	Maximum Flow Allowable
Taps	5 stars	4.5-6 L/min
Urinals	5 stars	1.0 L / Flush + Smart demand flush device
Toilets	4 stars	<3.5 L average flush <4.7L full flush <3.2 half flush
Showers	3 stars	6.0 – 7.5 L/min
Clothes Washing Machines	4 stars	
Dishwashers	5 stars	

5.2 Heat Rejection

At this stage, air conditioning systems are not expected to consume water as part of their heat rejection process.

5.3 Fire Systems

The building sprinkler design will seek to capture water used for testing and will include floor by floor isolation valves to avoid wastage during maintenance or modification of the system.

5.4 Landscape

The design includes extensive landscaped areas which will require irrigation. The design intent will be to utilise smart irrigation controls which can detect rainfall and reduce irrigation volumes to match.

6. Sustainable Materials

The design team are aiming for sustainable materiality selections as follows:

6.1 High Durability

The design team will select finishes which are able to achieve an economic life of at least 10 years. This includes preferential selection of modular or repairable elements (for example, carpet tiles) or natural finishes. Similarly, higher efficiency and quality services design, e.g. VRF air conditioning or LED lighting will also be considered.

This option reduces operational maintenance expenditure and is expected to improve visual amenity for the building over the long term.

6.2 Sustainable Credentials

During the construction phase, consideration will be given to utilisation of steel, PVC, insulation, finishes and the like with strong sustainable design credentials. Generally, this will include being produced under and ISO 14001 certified EMS, inclusion of a high recycled content and with product stewardship arrangements.

The design team will target reduction of Portland cement content in concrete where practical.

7. Emissions and Ecology

The site emissions and ecological value are to be addressed as follows:

7.1 Ground Plane

The proposed development is likely to add significant value at street level, with connection to pedestrian infrastructure, public access spaces and small format retail which can cater to local occupants or commuters using the space as a transport hub:



7.2 Heat Island and Ecology

The design includes the retention of a significant tree in the northern portion of the site. By combining the child-care outdoor space in this area, the tree will provide improved value to more people than currently within private property.

In addition, the design intends to utilise light colours and integrate planting within the building façade to reduce the urban heat island effect – making this a cool, welcoming space for visitors and occupants.



8. Innovation

In addition to the above, the design includes features which would be expected to be awarded under the Green Star Innovation category. This category considers things such as social sustainability, exceeding Green Star Benchmarks and contributions to industry development.

Key outcomes to be targeted are as follows:

8.1 Tenancy Design Review

The design team will complete a maintenance and services review on any proposed tenancy. This assists tenants in achieving strong design outcomes, as well as making sure the design is integrated with the overall project intent.

8.2 Ultra-Low VOC Paints

The design team intend to select paints with a VOC (Volatile Organic Content) below 5g/l for walls and ceilings. This level of VOC will significantly improve occupant comfort during initial building occupation.

8.3 Affordable Housing and Community Benefits

The design includes a range of apartment sizes, including studio, 1, 2- and 3-bedroom apartments which will improve housing affordability in the area. In addition, by providing community uses such as childcare, mixed commercial and small format retail as well as making apartments universally accessible assists with aging in place. This will improve social cohesion and is expected to be of significant benefit to the local economy and community.

8.4 Tenant Engagement

As noted above, the building metering system will provide the potential for occupants and tenants to engage with building management and understand their utility use. Live performance monitoring, bill reconciliation and peer group comparisons can be used to air occupants in managing their own use and improving overall building performance.

8.5 Plants, Amenity and Groundskeeping

The design provides extensive planted spaces, internally and externally. The design team expect that occupants and visitors to the development will benefit from these features and plan to include maintenance practices which minimise ecological impacts whilst maintaining a high-quality outlook.

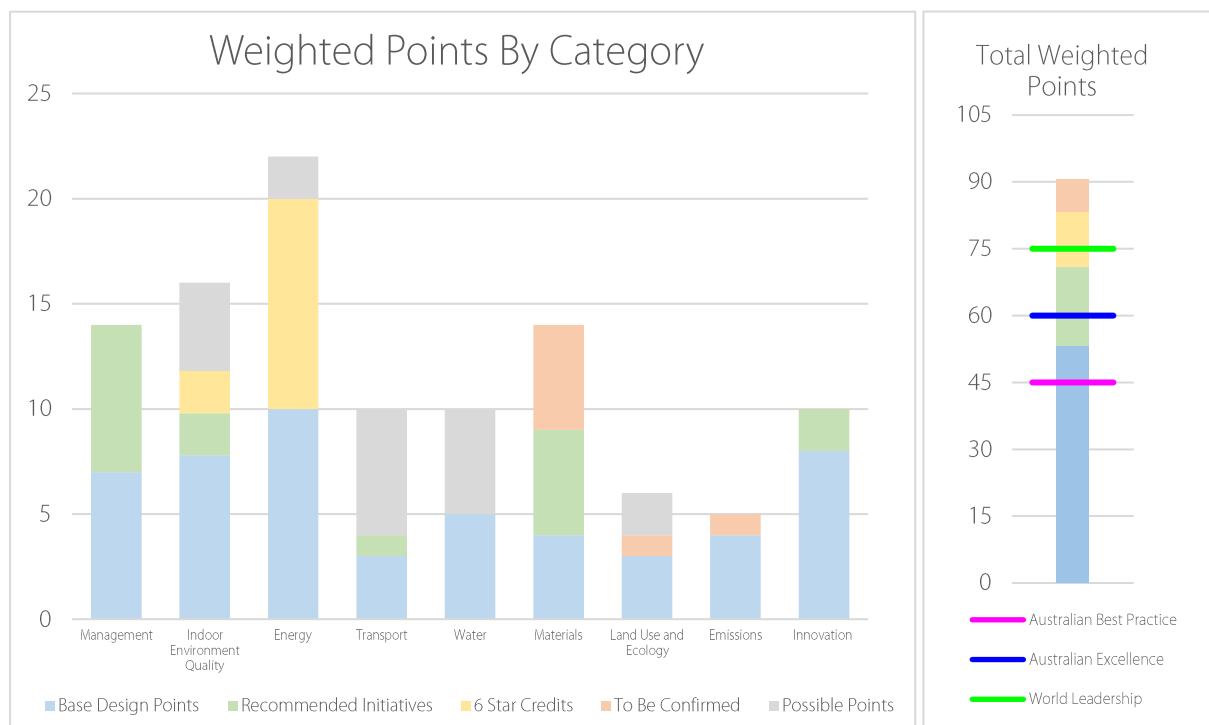
9. Self-Assessment Summary

FCDS note that this is a self-assessment of design intent and options against published Green Star benchmarks. It is in no way equivalent to a formal assessment by a third party or the GBCA. This report represents our current expectation of performance, based on design intent, our experience and the project planning.

Currently, FCDS believe the project would score at least 70 points under the Green Star Design and As Built V1.3 tool, based on current planning and expected design inclusions.

The team have also identified an additional 18 points which are recommended for inclusion and another 14 points which could be included if required and 7 points which require further development to determine whether or not they will be achieved. Therefore, the project is expected to easily exceed its 60 point target which is a 5-star / Australian Excellence level.

Further details of our assessment are provided in the attached scorecard.





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Project:	Baptist Church Development – Como
Service:	Sustainable Design
Subject:	Proposed ESD Features
Revision:	E
Date:	18 th March 2021
Author:	Graham Agar

FCDS have been commissioned to provide sustainable design advice for the proposed development of the Baptist Church site in Como.

The project includes the development of two addresses, in stages. The first stage to be developed the 'triangle site' 469-471 Canning Highway is not seeking any bonus provisions and is aiming to achieve a 5-star Green Star Certification at completion. The second site, 109-113 Robert St, is seeking a dispensation to allow additional height and is therefore seeking to demonstrate an improved outcome over 5-Star Green Star. Specifically, the development team are proposing the second site achieve a 5-Star Green Star certified outcome, with additional design features, including numerous health and wellbeing features from the Fitwel rating system.

The initial DA submission did not provide a clear comparison between the proposed sustainable design approach and what would be expected under a 6-star certified project. This note is intended to provide clarity for the intended Green Star approach, including additional health and wellness features not captured under Green Star. The note also outlines sustainable design features which would be included under a 6-star certified project simply as a point of comparison.

General Approach:

The design team intend to achieve a 5-star certified Green Star outcome for the main site. The adjacent, triangle site will be self-assessing as many of the features required to achieve the rating will only be delivered as the later stages of the development are complete.

It is noted that the Triangle Site is not seeking any height or floor space bonuses under the provisions of Clause 21 of the CBACP. Under Base M10 provisos the Triangle site is only required to achieve a 5 Star rating but as a result of the combined development approach it will reap the wider ESD and Health & Well-being benefits of the overall development.

A 5-Star certification is representative of "Australian Excellence" in sustainable design. It should be noted that the Green Star tool has been recently updated following the release of the 2019 Building Code. Hence, this certification represents a significant improvement in performance over projects which have been certified under previous, legacy tools.

In addition to certifying under the new and more stringent tool, the Baptist Church have elected to implement a pathway to certification that provides a greater benefit than may be expected through a 'lowest certification cost' pathway. In addition, they have also chosen to implement design features which prioritise occupant and community health and wellness which are not well captured within the Green Star process. This objective dovetails and compliments the Church's wider aspirations for the development to create a community hub and facilities and public spaces of significance to the wider South Perth precinct.

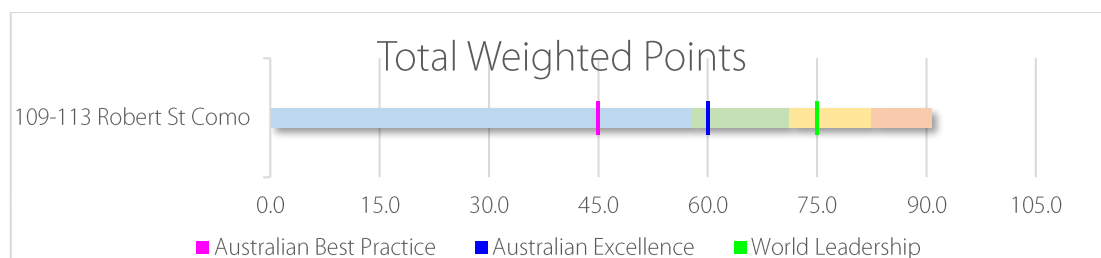
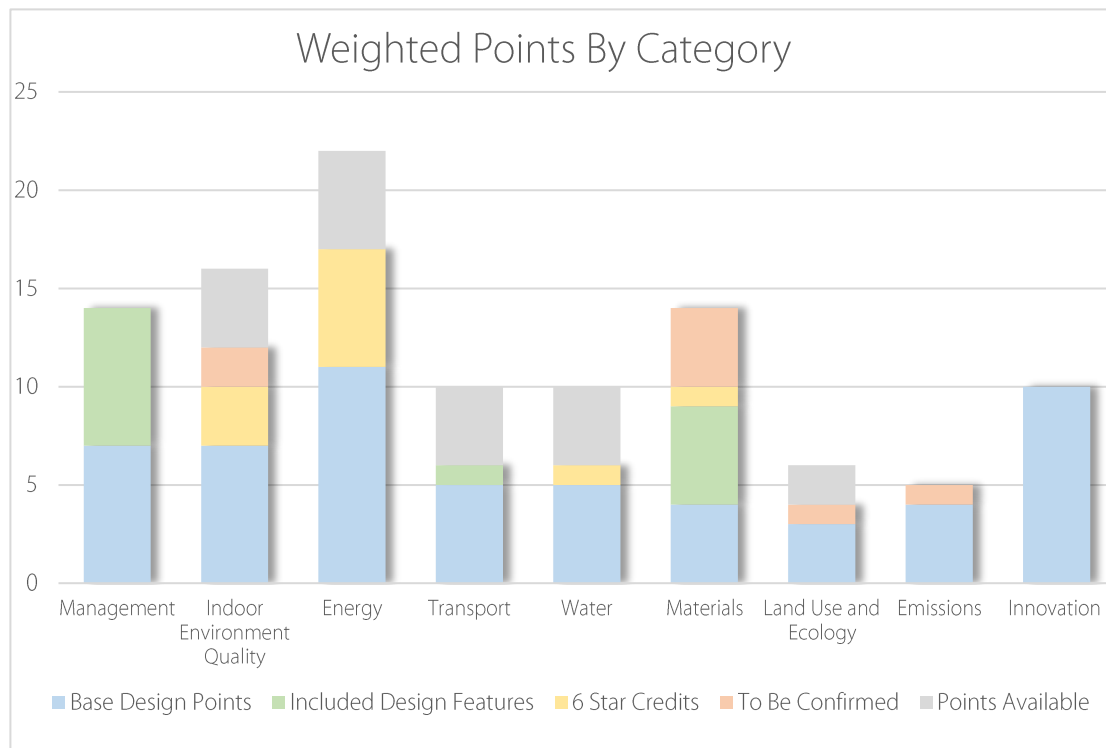
The design remains in relatively early stages – particularly with respect building services. However, the project team have identified sufficient credits to be included to achieve the proposed design targets.

In addition, there remain ~8% of the target credits which simply require further design before they can be appropriately assessed (To be Confirmed).

We have highlighted features which would be required to be included if the building was to target a 6-Star certification. These target initiatives have been deemed not suitable for the development as they have been found to be either not feasible from a financial / procurement perspective or inappropriate when applied to the local Perth climate and property market on the basis of:

- practical application and long-term benefits derived
- suitability for the local Perth climate
- suitability for the local Perth property market
- ability to be successfully delivered within the supply and contracting constraints of the local Perth building industry
- cost verse benefit

The chart below shows the expected make up of credits for the project:



The design approach clearly preferences innovative design solutions which will reduce operational costs and improve occupant comfort and experience. A 6-Star certification would involve more materiality considerations and procurement of offsite renewable energy.

A further discussion of the specific approach is provided below.

Base Design Points

These are design features which are inherent based on the current project brief. They represent design elements already delivered, committed to, or which are achieved simply by the nature and location of the development.

The following list is not exhaustive but is representative of the features FCDS consider of interest for the review panel.

Green Star Reference	Design Inclusion	Comment
4. Building Information	A full set of O+M Manuals and Building Users Guides will be provided for building management and occupants.	This level of documentation is well in excess of typical practice for residential
5. Commitment to Performance	<p>The building metering systems will be configured to provide feedback to users with respect their energy and water performance against building averages and design expectations.</p> <p>In addition, common area finishes will be selected and maintained for long durability – targeting at least 10 years life cycle.</p>	As a long term owner of the site the Baptist Church are committed to efficient operation in use, as well as just at initial design stages.
9.3 Exhaust of Pollutants	All apartments will be provided with ducted kitchen exhausts.	This feature improves air quality and reduces internal maintenance requirements.
10.1 Noise Levels	Internal noise levels will meet AS 2107 guidelines.	This feature provides better occupant comfort.
11. Lighting Comfort	Light fittings will be selected to achieve a CRI (Colour Rendering Index) of >80, with no more than 3 MacAdam ellipses.	Design feature improves lighting quality within occupied spaces
12. Visual Comfort	Apartment layout and glass selection is intended to provide good access to natural light and views.	This design feature will reduce the need for artificial lighting and greatly improve occupant amenity.
14. Thermal Comfort	The façade is to exceed BCA minimum requirements by around 10%	This feature improves occupant comfort and operational energy consumption.
15. Greenhouse Gas Emission Reduction	<p>The building will implement numerous design features to reduce carbon emissions over its operational life, including:</p> <ul style="list-style-type: none"> • Façade to improve over BCA 2019 by around 10% • Services to improve over BCA 2019 by between 10-15% • The design is to include a plan to eliminate fossil fuels on site. 	
15. Greenhouse Gas Emission Reduction	The designers intend to include a solar array with ~100kW of peak output across the development.	

Green Star Reference	Design Inclusion	Comment
16. Peak Energy Demand Reduction	100kW generation capacity will significantly reduce strata levies and operational costs for occupants.	
17.2 Reduced Car Parking	The use of the site permits far more car parking than currently documented in order to achieve 1 Green Star credit.	
17.3 Low emission vehicle infrastructure	Provide electric vehicle chargers and/or car share scheme on site	Credit is part of a scheme to reduce on site car parking and provide better alternate transport arrangements for building users.
17.4 Active Transport Facilities	The designers intend to provide end-of-trip facilities to cater for staff and visitors to allow the building to operate as an active transport hub.	Showers, lockers and change facilities on site will encourage cycle-to-train behaviour for local families.
18.1 Sanitary Fixtures	Low flow tapware and appliances.	Tapware selections will meet WELS ratings requirements.
18.4 Landscape Irrigation	Landscape irrigation will utilise sub-soil irrigation, drought tolerant planting and smart controls to minimise water wastage.	Feature will support green groundskeeping practices.
24.2 Contamination and Hazardous Materials	The project team will complete a thorough hazmat survey for lead, PCB's and asbestos, with appropriate remediation and decontamination.	Existing buildings on site to be thoroughly reviewed and remediated.
25 Urban Heat Island Effect	The project team will utilise landscaping and light finishes to minimise urban heat island effect on site.	Solar panels will also assist with meeting this requirement.
27 Light Pollution	The design will seek to minimise light spill to neighbours and the night sky.	Safety and security lighting will not be compromised in achieving this outcome.
Innovation – Ultra Low VOC Paints	Designers will ensure ceiling and wall paints have a total VOC (Volatile Organic Compound) concentration of <5g/L	Credit is expected to improve indoor air quality for occupants, particularly on first occupation.
Innovation – Sustainable Operations	The Baptist Church Facilities Management team will implement sustainable procurement, groundskeeping and cleaning practices across the site.	Facilities team will review the potential for Green Star or NABERS certification in operation.
Innovation – Occupant Engagement	Carry out pre and post occupancy analysis with residents.	Surveys will improve facilities management and help guide future developments and stages of construction.

Proposed Initiatives

These are design features which are expected to be implemented by the design team and are either shown schematically on the DA drawings or noted within the technical DA reports. These targets will be confirmed as part of the Design Development process. Any targeted credits that cannot be confirmed during the design development process will be replaced with other suitable credits and ESD initiatives to ensure the mandated 5 Star target is achieved. The recommended initiatives are as follows:

Green Star Ref.	Design Inclusion	Comment
2.1 Services and Maintainability	The design team and contractor will undertake a thorough review of the proposed design prior to construction commencement.	
2.2 Building Commissioning	The building will undertake building envelope pressure leakage testing.	The ICA will assist through design phase to beyond practical completion.
2.3 Building Tuning	The building performance will be monitored over the first 12 months of operation to ensure performance meets design intent.	This knowledge of the site and construction process will assist Baptist church in operational efficiency.
2.4 Independent Commissioning Agent	A dedicated professional will be appointed to the project team to review services design, commissioning and initial building operational tuning.	
3. Adaptation and Resilience	The site will undergo a risk review for the impacts of climate change, with design features implemented to address high or extreme risks.	Design features are expected to include building envelope performance upgrades and use of renewable energy.
6. Metering and Monitoring	The buildings will include a sophisticated embedded meter network which will be able to trend energy and water consumption, identify meter failures, leaks or consumption imbalances.	Occupants will have access to a consumption database to assist with understanding and optimising their own operational efficiency.
17.3 Low emission vehicle infrastructure	Provide electric vehicle chargers and/or car share scheme on site	Approach will include car charging and small car bays as well as a car share scheme for residents.
19.A Life Cycle Impacts	Appoint an LCA modeller to generate reporting to meet Green Star requirements, noting that LCA modelling is unlikely to add any significant value to the design process. Reporting is simply for Green Star credits.	Energy efficient design with high durability is already included in the project planning.
20 Responsible Materials	Selection of low environmental impact steel and PVC.	These products are relatively simple to procure and meet Green Star requirements.

6 Star Credits

These are design features which could be implemented, however are not part of the recommended approach due to their poor cost/benefit ratio. These are the credits most likely to be added to the project in the event that a 6-star certification is required:

Green Star Reference	Design Inclusion	Comment
14. Thermal Comfort	An additional credit could be achieved by pursuing a 30% improvement in building envelope over BCA 2019.	This is likely to restrict glazing and viewing outcomes, with a significant reduction in occupant amenity for marginal improvement in thermal comfort.
15. Greenhouse Gas Emission Reduction		
15. Greenhouse Gas Emission Reduction	Utilise electric heat pumps for hot water generation.	Centralised hot water heat pumps are considered expensive and require significant water storage volumes to cater for peaks in water use.
15. Greenhouse Gas Emission Reduction	Increase renewable generation on site to a 300kW peak output.	Additional generation has a much worse economic return due to energy export from site.
18.2 Rainwater Reuse	Provide a 300+kL tank(s) to service toilet flushing	Rain water is not a practical design solution in Perth, particularly for multi-residential projects due to our rainfall patterns and health concerns over raw water.
20. Responsible Materials	Utilise PEFC or FSC certified timber products on site.	Credit represents a significant increase in documentation requirements for contractors. Administrative cost is significant in comparison to environmental benefits.
Innovation – Soft Landings	Increase ICA, contractor and project team scope to meet CIBSE Soft Landings requirements for building briefing, design and handover.	This requirement is considered excessive for a fairly simple residential project.

Health and Wellbeing

In lieu of the 6-Star credits above, the design team intend to implement the following features intended to improve occupant and community health and wellbeing outcomes:

Feature	Details
Bike Share Access	Provide a bike share station Bike share programs support active transportation and convenience, contributing to increased physical activity, equity for those who cannot drive or afford private vehicle use, and reduced congestion and air pollution.
Local Connection	Provide street furniture and integrate building ground plane with local pedestrian / cyclist infrastructure. The proposed development provides a pedestrian friendly precinct at ground plane improving local activation and linking the suburb with local sustainable transport options.
Community Shuttle Bus	Provide a community shuttle bus to assist with connection to and from the site.
Universal Accessibility	The design is to be considerate of universal access, seeking to improve accessibility options for visitors and allow aging in place for local Como residents.
Efficiency Parking	Implement parking efficiency practices Efficient parking practices can reduce congestion and support increased public transit use, contributing to regular physical activity and improved air quality and water quality. Feature includes keeping parking off grade and provided designated pedestrian zones through parking areas
Stair Signage	Place educational point-of-decision signs promoting stair use at elevator call areas Point-of-decision signs that promote stair use encourage occupants to take the stairs when travelling across floors, contributing to increased daily physical activity.
Stair Visibility	Increase the stair visibility Increasing stair visibility can encourage occupants to use the stairs when travelling across floors, contributing to increased daily physical activity. Stairs will be collocated with lifts and provided with features such as natural lighting, comfortable treads and temperature management to encourage their use.
Indoor Air Quality (IAQ) Policy and Testing	Establish and implement an Indoor Air Quality (IAQ) Policy A comprehensive Indoor Air Quality (IAQ) policy identifies areas for improvement in air quality and provides benchmarks to ensure air quality remains high over time, contributing to enhanced respiratory and mental health. Policy will include regular measurement and reporting of performance.
Indoor Air Quality Testing Results	Share Indoor Air Quality (IAQ) testing results with regular occupants Sharing Indoor Air Quality (IAQ) testing results can increase transparency, environmental awareness, and encourage the improvement of IAQ, contributing to enhanced respiratory and mental health.

Feature	Details
Integrated Pest Management	Establish and implement an Integrated Pest Management (IPM) plan An Integrated Pest Management plan reduces occupant exposure to dangerous toxins and allergens, supporting healthy indoor air quality and contributing to enhanced physical and mental health.
Operable Windows in Common Spaces	Provide regular occupants access to operable windows in common spaces Operable windows in common spaces allow occupants to control the comfort of their living environment and increases access to daylight and fresh air, contributing to enhanced mental health.
Occupant Satisfaction Survey	Conduct an annual occupant satisfaction survey for regular occupants An annual survey provides information about occupant satisfaction with the design and operations of the site, highlighting areas to prioritize for future health-promoting upgrades. Findings can be used to improve features and programs designed to support physical, mental, and social health.
Stakeholder Collaboration Process	Establish and implement a Stakeholder Collaboration Process A stakeholder collaboration initiative establishes a framework to engage and prioritize stakeholders' health concerns, which contributes to enhanced occupant health.
Universally Accessible Water Supply	Provide universally accessible water supplies Universally accessible potable water improves regular hydration and can decrease consumption of sugar-sweetened beverages, contributing to improved dietary habits and enhanced social equity among vulnerable populations. Water provision extends to residential common areas and retail / commercial spaces.
Water Bottle Refilling Station	Provide bottle refilling stations at water supplies Water bottle refilling stations increase access to potable water, and can prompt improved hydration and decreased consumption of sugar-sweetened beverages.
Water Quality	Conduct regular water quality testing Water quality testing can reduce exposure to pathogens and contaminants found in water, reducing rates of disease and prevention adverse health effects.
Water Access	Provide access to free water supplies in a prepared food area Readily accessible drinking water in cafeterias and prepared food retail areas can increase access to potable water, and can prompt improved hydration and decreased consumption of sugar-sweetened beverages.

It is FCDS opinion that the features above are of greater benefit than those that would be implemented in a simple certification exercise.

Conclusion

The design team have provided the attached reports and scorecards, showing the proposed approach for each site. The reports and scorecards show, as far as practical, the proposed sustainable design features and demonstrate the expected Green Star approach for each site.

At this stage, the projects are targeting in excess of 70 points (against a target of 60 points for a 5 star certification) with additional health and wellness benefits, as described above.

Essentially, the project is seeking to provide:

- Bike share access
- Community shuttle bus.
- Improved connection to local amenities and pedestrian infrastructure
- Universal accessibility
- Promotion of stair usage
- Air and water quality testing
- Integrated pest management
- Natural ventilation to common areas
- Occupant engagement, through surveys
- Universally accessible water supply and bottle filling stations

In lieu of:

- Increased solar PV array – causes spatial and utility provider compliance issues.
- Soft Landings – increase scope of independent commissioning agent
- Envelope improvement – reduction in window area
- Certified timber – PEFC or FSC certified timber
- Rainwater Tank

It is our opinion that the proposed design features are of greater benefit to the project and the local community than the features that would be required for a 6-Star certification.

Design and As Built V1.3 Green Star Credit List

109-113 Robert St Como

This is FCDS initial self-assessment of the proposed residential and commercial mixed use development at the western site of the proposed Como Baptist Church: 109-113 Robert St in Como.
The design team are targeting formal certification under Green Star Design and As Built V1.3 at a five star level. The team also aim to include health and wellness initiatives from the FitWell tool, with the intent of certification following project completion.
This scorecard presents the current design intent for review by the City of South Path as well as aiding the design team to document the target design features.
This is a self-assessment and is in no way equivalent to a formal certification or a guarantee of performance.

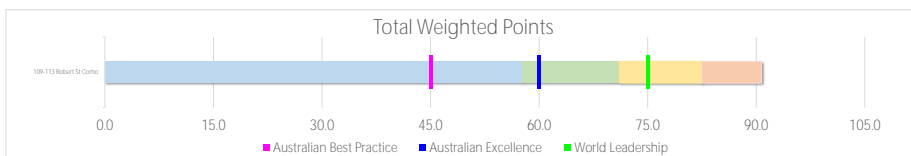
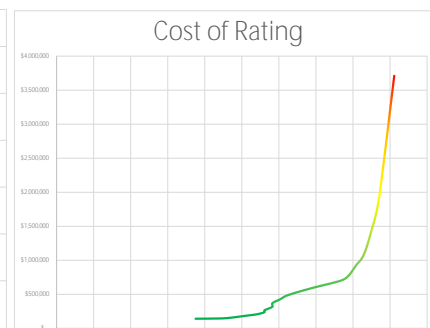
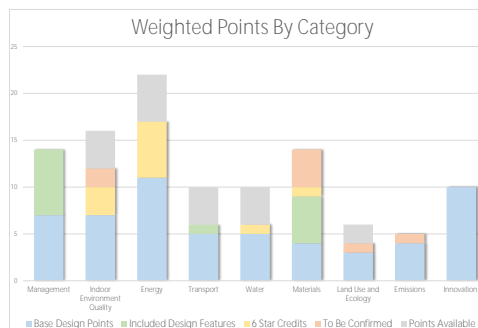
Project Name	109-113 Robert St Como
Project Number	2020_019
Client Name	dem / Baptist Church
Issue Date	18th March 2021
Revision	5
Reason for Issue	DA Submission

GFA	16145
NLA	633
Building Type	Residential / Mixed Use
Building UFA	14370
Building GFA	16145
Number of Car Bays	193
Number of Occupants	1812
Local Council	City of South Path
Building Owner	Baptist Church
Building Tenant	Various

ESD Consultant	FCDS
Project Manager	Baptist Church
Architect	dem
Fire Engineer	Fire Engineer
Mechanical Engineer	Mechanical Engineer
Electrical Engineer	Electrical Engineer
ICA	ICA
Building Surveyor	Building Surveyor
Hydraulic Engineer	Hydraulic Engineer
Structural Engineer	Structural Engineer
Civil Engineer	Civil Engineer
Acoustic Engineer	Acoustic Engineer
Waste Consultant	Waste Consultant
Climate Change Modeller	Climate Change Modeller
Transport Planner	Carshare
Landscape	Landscape
Life Cycle Modeller	Life Cycle Modeller
Quantity Surveyor	Quantity Surveyor
Facade Engineer	Facade Engineer

Builder / Main Contractor	Builder / Main Contractor
Mechanical Contractor	Mechanical Contractor
Electrical Contractor	Electrical Contractor
Hydraulic Contractor	Hydraulic Contractor
Fire Contractor	Fire Contractor
Facade Contractor	Facade Contractor
Lift Contractor	Lift Contractor

Category	Available Points	New Design Points	Included Design Features	5 Star Credits	To Be Confirmed	Points Not Achieved	Total Cost	Ongoing Cost	Cost Per Point
Management	14	7	7	0	0	0	\$ 303,000	\$ 12,000	\$ 21,643
Indoor Environment Quality	16	7	0	3	2	4	\$ 308,900	-	\$ 25,742
Energy	22	11	0	6	0	5	\$ 2,053,900	\$ 18,900	\$ 120,818
Transport	10	5	1	0	0	4	\$ 30,000	-	\$ 5,000
Water	10	5	0	1	0	4	\$ 480,000	-	\$ 80,000
Materials	14	4	5	1	4	0	\$ 380,000	-	\$ 27,143
Land Use and Ecology	6	3	0	0	1	2	\$ -	-	-
Emissions	5	4	0	0	1	0	\$ 153,500	-	\$ 15,350
Innovation	10	10	0	0	0	0	\$ -	-	-
	97	57.7	13.4	11.3	8.2	19	\$ 3,709,300	\$ 6,900	\$ 40,887
		57.7	71.1	82	91				



Credit	Cost	Cumulative Points	Cumulative Cost
19A.1b - LCA - Materials	\$ 1,000	58.76	\$ 142,000
19A.2a - LCA - Additional Category Reporting	\$ 1,000	59.76	\$ 143,000
19A.2d - LCA - Design Review	\$ 1,000	60.72	\$ 144,000
3.1 - Implementation of a Climate Adaptation Plan	\$ 6,000	62.89	\$ 150,000
19A.1a - LCA - Energy Efficiency	\$ 27,000	64.95	\$ 177,000
2.1 - Services and Maintainability Review	\$ 15,000	65.98	\$ 192,000
2.3 - Building Systems Tuning	\$ 15,000	67.01	\$ 207,000
17.3 - Low emission vehicle infrastructure	\$ 30,000	68.04	\$ 237,000
19A.305.9 - Occupant Engagement	\$ 30,000	68.07	\$ 267,000
2.2 - Building Commissioning	\$ 50,000	69.10	\$ 317,000
19A.11 - Façade Pressure Testing	\$ 53,500	69.13	\$ 370,500
6.1 - Advanced Monitoring Strategy	\$ 57,000	70.16	\$ 427,500
2.4 - Independent Commissioning Agent	\$ 60,000	71.20	\$ 487,500
11 - GHG reduction - 350kW Solar Panels	\$ 100,000	71.25	\$ 587,500
7.2 - Provision of Outdoor Air	\$ 114,000	72.35	\$ 701,500
19A.11 - Soft Landings	\$ 10,000	72.35	\$ 711,500
15.1 - Façade Improvement	\$ 15,000	80.41	\$ 726,500
14.2 - Advanced Thermal Comfort	\$ 15,000	81.44	\$ 741,500
31.2 - Certified Timber	\$ 20,000	82.47	\$ 761,500
13.2 - Rainwater Reuse	\$ 180,000	83.51	\$ 941,500
11 - Overall Services Efficiency	\$ 1,300,000	86.53	\$ 2,241,500

Ref No.	Title	Aim of Credit	Sub-Element	Credit Criteria Summary	Design Team Actions	No. of Points Available	Base Design Points	Included Design Features	6 Star Credits	To Be Confirmed	Unlikely Points	Comments	Capital Cost	Ongoing Cost
1.1	Green Star Credited Professional	To recognise the appointment and active involvement of a Green Star Accredited Professional in order to ensure that the rating tool is applied effectively and as intended.	GSAP	1 point is available where a Green Star Accredited Professional – Design & As Built (GSAP) has been contractually engaged to: * Provide advice, support and information related to Green Star principles, structure, timing and processes; * Provide guidance and support in all stages of the project leading to certification.		1	1					ECOS are undertaking this scope of works.	\$ 85,000	
2.0			Environmental Performance Targets	This is a minimum mandatory requirement for this credit.	Provide a design intent report - form early within the design phase - or an Owners Project Requirements document.	0	0					ECOS are undertaking this scope of works.		
2.1			Services and Maintainability Review	1 point is available where a comprehensive services and maintainability review of the project is performed.	Undertake a maintainability review of services and fabric to construction.	1		1				Comprehensive services and maintainability review would be of benefit for minimising long term operational costs and maximising flexibility.	\$ 15,000	
2.2			Building Commissioning	1 point is available where comprehensive pre-commissioning activities are performed for all nominated building systems. As a minimum building air permeability testing must be undertaken.	Develop commissioning plan and follow international system for commissioning.	1		1				Commissioning and tuning scope is considered standard practice, building pressure testing is a good check for construction quality.	\$ 50,000	
2.3			Building Systems Tuning	1 point is available where a tuning process is in place that addresses all nominated building systems.	Tuning requirements to be communicated with prospective tenants.	1		1				Building tuning process is strongly recommended to improve performance long term and assist with engagement with building users.	\$ 15,000	\$ 12,000
2.4			Independent Commissioning Agent	1 point is available for utilisation of an independent Commissioning Agent (ICA) to advise, monitor, and verify the commissioning and tuning of the nominated building systems throughout the design, tender, construction, commissioning and tuning phases.	Appoint commissioning agent to assist during design and construction phases.	1		1				Providing a commissioning agent to oversee the commissioning and tuning of the building would be well above best practice for a development such as this.	\$ 60,000	
3.1	Adaptation and Resilience	To encourage and recognise projects that are resilient to the impacts of a changing climate and natural disasters.	Implementation of a Climate Adaptation Plan	2 points are available where: * A project specific climate adaptation plan has been developed in accordance with a recognised standard and * Solutions have been included into the building design and construction that specifically address the risk assessment component of the adaptation plan.	Find someone to complete an action plan and implement the findings.	2		2				Climate change adaptation planning and design is recommended considering magnitude of investment and excavation requirements.	\$ 6,000	
4.1	Building Information	To recognise the development and provision of building information that facilitates understanding of a building's systems, operation and maintenance requirements, and environmental targets to enable the optimised performance.	Building Operations and Maintenance and User Information	1 point is awarded where it is demonstrated that comprehensive Operations and Maintenance information is developed and made available to the facilities management team and a relevant and current building user information is developed and made available to all relevant stakeholders.	Address the following systems: * Mechanical * BMS * Lighting Controls * Electrical Systems * Hydraulic Systems * Fire Protection Systems * Lifts and other vertical transport systems * Building Envelope	1	1					Building users guides and operations and maintenance manuals would be considered standard.		
5.1	Commitment to Performance	To recognise practices that encourage building owners, building occupants and facilities management teams to set targets and monitor environmental performance in a collaborative way.	Environmental Building Performance	1 point is awarded where there is a commitment to set targets and measure results for environmental performance.	* Outline mechanism for setting and monitoring targets * Approach for prevention and rectification if obligations not met. * 80% of floor area (GFA - not car park) to be covered * At least two metrics (energy, water, waste or ECQ)	1	1					Energy monitoring and reporting is strongly recommended as part of the building tuning element.		
5.2			End of Life Waste Performance	1 point is awarded where there is a commitment to set targets and measure results that minimise construction waste from end of life of meter, flouss or other building attributes.	* Agree best practice methodology for tenants and land lords at end of flouss life, including clear metrics.	1	1					Selection of highly durable and repairable common area finishes would be considered standard practice for a development like this.		
6.0			Effective Metering	Accessible metering must be provided to monitor energy and water consumption of all energy and water common uses, major uses, and sources. The metering system must be self-checking and reporting.	Include meters and separate sub-meters for all major uses. All meters downstream of the main building meter must be sub-metered.	0	0					Energy and water metering are recommended to be provided as part of a billing and building maintenance strategy.		
6.1	Metering and Monitoring	To recognise the implementation of effective energy and water metering and monitoring systems.	Advanced Monitoring Strategy	1 point is available where a monitoring strategy is addressed through a monitoring system, capable of capturing and processing the data produced by the installed energy and water meters, and accurately and clearly presenting data consumption trends.	Include meter reading and processing system as part of BMS.	1		1				The provision of meter analysis and billing software / programs is recommended for recovery of costs and reduced maintenance requirements.	\$ 57,000	
7.0			Environmental Management Plan	The conditional requirement is met where a comprehensive project-specific Environmental Management Plan (EMP) is in place for construction.	Develop project specific best practice EMP.	0	0					Contractors likely to undertake this project would be expected to meet these requirements.		
7.1			Formalised Environmental Management System	1 point is available where a formalised systematic and methodical approach to planning, implementing and auditing is in place during construction, to ensure conformance with the EMP. * ISO 14001 certification. Otherwise, auditor statement.	Demonstrate systematic and methodical approach to planning, implementing and auditing during construction to comply with EMP.	1	1							
7.2	Responsible Construction Practices	To reward projects that use best practice formal environmental management procedures during construction.	High Quality Staff Support	1 point is available where high quality staff support practices are in place that: * Promote positive mental and physical health outcomes of site activities and culture of site workers, through programs and solutions on site and * Enhance site workers' knowledge on sustainable practices through on-site, off-site, or online education programs.	Contractor to address three distinct issues with workplace programs and policies which go beyond minimum OH&S requirements and extend to wellbeing promotion. Issues include: * healthier eating and active living * reduced harmful alcohol and drug and tobacco-free living * increase social cohesion, community, and cultural participation * understanding depression * preventing violence and injury * suicide prevention * decrease psychological distress In addition the contractor must provide ISO training to site staff.	1	1					These requirements are increasingly being undertaken by main contractors as part of their business as usual approach.		
8.1	Operational Waste	To recognise projects that implement waste management plans that facilitate the re-use, recycling or conversion of waste into energy and stewardship of items to reduce the quantity of outgoing waste.	Operational Waste Performance Approach	1.1 A Waste Management Plan has been developed, by a qualified waste auditor, that addresses best practice requirements as outlined in this credit.	Deliver OWWP by Qualified Waste Auditor	1	1					The building has large waste storage and separation spaces.	\$ 15,000	

Ref No.	Title	Aim of Credit	Sub-Element	Credit Criteria Summary	Design Team Actions	No. of Points Available	Base Design Points	Included Design Features	6 Star Credits	To Be Confirmed	Unlikely Points	Comments	Capital Cost	Ongoing Cost
9.1	Quality of Indoor Air	To recognise projects that provide high air quality to occupants.	Ventilation System Attributes	1 point is awarded where: * The entry of outside air pollutants is mitigated AND * The system is designed for ease of maintenance and cleaning AND * The system has been cleaned prior to occupation and use.	Require tenants to implement these requirements. * Locate outside air intakes appropriately * Provide cleaning access to all elements of HVAC system * Clean prior to use and occupation - Construction Management process for new systems.	1				1		GC&C has released a ruling allowing for DX units with basic coils to be compliant with the provision of filtration.	\$ 41,000	
9.2			Provision of Outside Air	2 points are awarded where the nominated area is provided with sufficient outside air to ensure levels of indoor pollutants are maintained at acceptable levels. For mechanically ventilated or mixed mode spaces: * 1 point is awarded where outside air is provided at a rate 50% greater than that required in AS1668.2:2012 or CO2 concentrations are maintained below 800ppm. * 2 points are awarded where outside air is provided at a rate 100% greater than that required in AS1668.2:2012 or CO2 concentrations are maintained below 700ppm.	Provide capacity and control for outside air systems to deliver improved air quality internally. Provide CO2 sensors as often as thermostats if performance based approach is taken.	2			2			Outside air provision to commercial spaces would comply; residents would require ducted outside air to air conditioning units. Supports briefed outcome.	\$ 114,000	
9.3			Exhaust or Elimination of Pollutants	1 point is awarded where the nominated pollutants, such as those arising from printing equipment, cooking processes and equipment and vehicle exhaust, are limited by either removing the source of pollutants from the nominated area, or exhausting the pollutants directly to the outside of the project while limiting their entry into other areas.	Provide dedicated kitchen exhaust risers and photocopy exhaust for each office.	1	1					Apartments will be provided with a dedicated kitchen exhaust, as well to commercial tenancies at ground level.		
10.0	Acoustic Comfort	To reward projects that provide appropriate and comfortable acoustic conditions for occupants.	Internal Noise Levels	1 point is available where internal ambient noise levels in the nominated area are suitable and relevant to the activity type in the room. This includes all sound generated by the building systems and any external noise ingress.	Employ Acoustic consultant to demonstrate that internal ambient noise levels, in the nominated area, are no more than 5dB(A) above the "satisfactory" sound levels provided in Table 1 of AS/NZS 2107:2016.	1	1					Design to AS 2107 is expected for occupant comfort.		
			Reverberation	1 point is available where the nominated area has been built to reduce the persistence of sound to a level suitable to the activities in the space.	Employ acoustic consultant and specify appropriate finishes and fixtures - achieve less than maximum recommended time in AS 2107.	0	NA					This credit is NA for residential projects.		
			Acoustic Separation	1 point is available where the nominated enclosed spaces have been built to minimise crosstalk between rooms and between rooms and open areas.	Employ acoustic consultant and specify appropriate separation between spaces. At the partition between the spaces should be constructed to achieve a weighted sound reduction index (Rw) of at least 45 dB. The sound insulation between enclosed spaces complies with: $D_w + LAeqT > 75$	1					1	Difficult and expensive to implement for residential projects. Has been briefed, should be reviewed with design team.		
11.0	Lighting Comfort	To encourage and recognise well-lit spaces that provide a high degree of comfort to users.	Minimum Lighting Comfort	It is a requirement for this credit that lights are flicker free and that the lights adequately address the perception of colour in the space.	* A minimum Class A1 ballast. * High frequency ballasts for all fluorescent lamps, or * Electronic ballasts in high intensity discharge (HID) lighting. To address the perception of colour, all light sources must have a minimum Colour Rendering Index (CRI) of 80.	0	0					LED lighting and high quality fittings should be a minimum briefing requirement.		
11.1			General Illuminance and Glare Reduction*	1 point is awarded where in the nominated areas: 1.1 Lighting levels comply with best practice guidelines And 1.2 Glare is eliminated	* Comply with 8.3.4 of AS 180.1:2006 AS 1680 * All bare light sources provided with diffuser of some form, including prevention from glare looking directly up or * Unified Glare Rating calculated for the lighting on a representative floor is < Table 8.2 of 1860.1 (Can be modelled)	1						Credit is unlikely to be achieved for residential or retail spaces due to increased requirements for light fittings and design.		
11.2			Surface Illuminance	1 point is available where, in the nominated area, a combination of lighting and surfaces improve uniformity of lighting to give visual interest	Average surface reflectance > 0.75 for ceilings, 30% of working plane illuminance on ceiling or * All spaces modelled to show average ceiling luminance < 0.5 lxcd/m2 and every point < 1.5lxcd/m2 and the ceiling has an average surface illuminance of >30% and * For rooms less than 100m2 or with 20% of workstations within 3m of walls, the wall area above the working plane has an average surface illuminance of at least 50% of the lighting levels on the working plane. For residential, provide at least one wall in each living space, kitchen and bedroom with specific wall washing or wall mounted fittings.	1						Credit is unlikely to be achieved for residential or retail spaces due to increased requirements for light fittings and design.		
11.3			Localised Lighting Control	1 point is available where, in the nominated area, occupants have the ability to control the lighting in their immediate environment.	* Provide occupants with lighting control in their direct environment eg. a two component lighting system	1						Credit will be achieved for residential areas, may be problematic for commercial spaces at low levels within the building.		
12.0	Visual Comfort	To recognise the delivery of well-lit spaces that provide high levels of visual comfort to building occupants.	Glare Reduction	It is a condition of this credit that glare in the nominated area from sunlight through all viewing apertures is reduced through a combination of blinds, screens, fixed devices, or other means.	Demonstrate exclusion of sun either by blinds or modelling	0	0					Building has a strong solar passive response. Glare at low levels to retail to be reviewed as design progresses.		
12.1			Daylight	Up to 2 points are available where a percentage of the nominated area receives high levels of daylight during 80% of the nominated area: * 40% Nominated Area - 1 point * 60% Nominated Area - 2 points	40 / 60% OF the nominated area has a Daylight factor of at least 2.0% at finished floor level.	2	1			1		Would require an intervention to increase light levels to retail/commercial spaces.		
12.2			Views	1 point is awarded where 60 % of the nominated area has a clear line of sight to a high quality internal or external view.	Complete assessment of space.	1	1					Project has a relatively shallow plan, with good access to light and interesting common area views.		
13.1	Reduced Exposure to Pollutants	To recognise projects that safeguard occupant health through the reduction in internal air pollutant levels.	Paints, Adhesives, sealants and Carpets	1 point is available where at least 95% of all internally applied paints, adhesives, sealants and carpets meet stipulated Total VOC Limits*, or where no paints, adhesives, sealants or carpets are used in the building.	Paints, adhesives and sealants to comply with Green Star criteria.	1	1					Low toxicity products would be considered standard practice for this type of development.		
13.2			Formaldehyde	1 point is available where at least 95% of all engineered wood products meet stipulated formaldehyde limits or no new engineered wood products are used in the building.	All composite wood product to be low or no formaldehyde.	1	1							
14.1	Thermal Comfort	To encourage and recognise projects that achieve high levels of thermal comfort.	Thermal Comfort	1 point is available where a high degree of thermal comfort is provided to occupants in the space equivalent to 80% of all occupants being satisfied in the space.	Complete building energy / thermal model. PMV with +/-1	1	1					Recommend targeting 8 star NatHERS performance on average, would require double glazing. Budget based on \$90/m2 for glass, 1% apartments, 30m2 glass per apartment. Cost split with energy below.	\$ 153,900	
14.2			Advanced Thermal Comfort	1 additional point is available where a high degree of thermal comfort is provided to occupants in the space equivalent to 90% of all occupants being satisfied in the space.	Complete building energy / thermal model. PMV with +/0.5	1			1					

Ref No.	Title	Aim of Credit	Sub-Element	Credit Criteria Summary	Design Team Actions	No. of Points Available	Base Design Points	Included Design Features	6 Star Credits	To Be Confirmed	Utility Points	Comments	Capital Cost	Ongoing Cost
15.0	Green House Gas Emissions	To encourage the reduction of greenhouse gas emissions associated with the use of energy in building operations.	Energy Conditional Requirement	Up to 5 points out of 20 points are available where it is demonstrated that the building's predicted greenhouse gas impact has been reduced by employing 'best practice' attributes.	Complete building energy / thermal model.	0	0							
			Facade Improvement		Complete building energy / thermal model. 1 Point per 2% improvement over reference, to a maximum of 4 Points. Inductively 1 point for: * 10% increase in roof and ceiling R values + <0.4 Solar Abs for roofs + <0.3.3 for Roof Lights + 15% reduction in roof light SHGC. * 10% reduction in wall glazing U value + SHGC <90% of Method 2 Allowance + Display glazing U-5 and SHGC <85% Maximum.	4	1		1			Cost is to achieve performance improvement over BCA minimum requirements, refer thermal comfort above. Cost is split with thermal comfort credit.	\$ 153,900	
			Overall Services Efficiency	Up to 20 points are available where it is demonstrated that there is a percentage reduction in the predicted energy and greenhouse gas performance of the proposed building.	Complete building energy / thermal model. 2 Points for meeting benchmark case, plus 1.4 points for every 10% further improvement. Inductively 1 point for: * 10% Reduction in lighting energy + Automated systems for 95% of nominated area + <100m2 switching zones. * 15% reduction in fan power + 10% reduction in pump power + 4% increase in gas water heaters + 5% increase in EER for splits + 15% higher EER for chillers. * Use of renewable energy or electric heat pump (COP > 3.5) for DHW.	4	4		2			* 10% Reduction in lighting energy + Automated systems for 95% of nominated area + <100m2 switching zones. * 15% reduction in fan power + 10% reduction in pump power + 4% increase in gas water heaters + 5% increase in EER for splits + 15% higher EER for chillers. * Use of renewable energy or electric heat pump (COP > 3.5) for DHW.	\$ 1,800,000	
			Off Site Renewable Energy		Points are increased by 50% where a commitment is made to procure 100% Green Power.									
			District Services		Connect Building to low carbon district energy system and complete Green House Gas calculator.									
			Transition Plan		1 Point to provide a plan to eliminate fossil fuels on site by 2050 and make plan public.		1					Gas not included in current budget.		
			Fuel Switching		2 Points are awarded where no fossil fuels are burnt on site <1% of total energy is acceptable if there are no other options and carbon offsets are implemented up front.									
			On-Site Storage		1 Point where on site renewable energy storage is provided to match the requirements of the building to reduce evening peak demand.									
			GHG reduction - 100kW Solar Panels		Solar PV		3					Allowing 0.6 kW per apartment PV array would be expected to provide significant operational benefit for cost and carbon emissions.		
			GHG reduction - 300kW Solar Panels		Additional Solar PV				3			Increasing solar array beyond 100kW considered problematic in terms of space and Western Power requirements.	\$ 100,000	\$ 10,900
16.1A	Peak Energy Reduction	To encourage the reduction of peak demand load on the electricity network infrastructure by the provision of embedded electricity generation systems.	GHG reduction - Initiative 3											
			Peak Energy DTS	1 Point awarded if project provides 15% of building peak in renewable energy.	Provide renewable energy based on electrical engineer assessment of building peak load.	2						Based on provision of a 100kW PV Array.		
			Peak Energy Reference Building	Reduce peak energy by 20% for 1 point or 30% for 2 points.	Complete building energy / thermal model and justify reduction.		2							
			Public Transport Access	Up to 3 points are awarded based on the accessibility of the site by public transport. This score is determined by the Access by Public Transport Calculator.	Complete assessment of space.	3	2					Site is considered to have good public transport access.		
			Reduced provision of car parking	1 is awarded where there is a reduction of car parking spaces for staff or visitors in the proposed building when compared against the maximum rates allowed as determined by the accessibility of the site.	GBCA limits car bays to 230 for 1 point. GBCA limits car bays to 478 for 0.5 points.	1	1					Site has far less parking than GBCA allowance.		
			Low emission vehicle infrastructure	1 point is awarded where parking spaces for staff or visitors and/or dedicated infrastructure is provided to support the uptake of low-emission vehicles.	Provide alternate vehicle support. Requires 29 hybrid or small car bays, 10 electric vehicle bays and charging points or 5 car share spaces and vehicles.	1		1				Provision of electric vehicle bays or car shares are recommended as significant value add for development. Budget cost is based on 5 charging facilities for this site.	\$ 30,000	
			Active transport facilities	1 point is awarded where bicycle parking and associated facilities are provided to a proportion of staff, occupants, and short term visitors.	Provide 85 Residential Cyclist Facilities, 6 Commercial / Retail bike parks plus 53 Visitor cyclist bays.	1	1					Provision of bike parking infrastructure for patrons and occupants would be advantageous for reduction of transportation carbon emissions.		
			Walkable neighbourhoods	1 point is awarded where either: At least 4 amenities (Class 7) or at least 8 amenities (all other classes) are within 400m of the development. OR The project achieves a walk score of at least 70 (Class 7) or at least 80 (all other classes), as determined by the website www.walkscore.com , using their 'street smart' method of calculation.	Complete assessment of space.	1	1					There are currently a large number of amenities close to the site, with this development providing additional features and amenities.		
			Sanitary Fixtures	1 point is awarded where all fixtures are within one star of the best available WELS rating.	Provide suitable fixtures.	1	1					Low flow tapware and appliances is expected.		
			Rainwater Reuse	1 point is awarded when a rainwater tank is installed to collect and reuse rainwater within the project's site boundary and the rainwater tank size meets the following criteria:	161.45 kL tank required	1			1			Rainwater tank is large and unlikely to have positive economic operation. Could be undertaken as an overt ESD feature.	\$ 480,000	
18.1	Potable Water	To encourage building design that minimises potable water consumption in operations.	Heat Rejection	2 points are awarded where no water is used for heat rejection.		2	2					Cooling towers not typical for a project of this nature.		
			Landscape Irrigation	Drip irrigation and moisture sensor override installed or no water used for irrigation.		1	1					Control of irrigation would be expected for maintenance and operational requirements.		
			Fire System Test Water	The fire system does not egep water for testing or The fire system includes temporary storage for 80% of the routine fire protection system test water and maintenance drain-down for reuse on site, and if sprinkler systems are installed, each floor must be fitted with isolation valves or shut-off points for floor-by-floor testing.	Credit is NA if: A sprinkler system is not required under Part E of the NCC, or A sprinkler system is not provided by the project team, and Does not include a water-based fire protection system.	1	1					Considered standard practice.		

Ref No.	Title	Aim of Credit	Sub-Element	Credit Criteria Summary	Design Team Actions	No. of Points Available	Base Design Points	Included Design Features	6 Star Credits	To Be Confirmed	Unlikely Points	Comments	Capital Cost	Ongoing Cost
19A.1a	Material Life Cycle Impacts - LCA Approach	Assess and reduce the environmental impacts of building materials for the whole building over its entire life cycle.	LCA - Energy Efficiency	Up to 6 points are available where a whole-of-building whole-of-life (cradle-to-grave) life cycle assessment (LCA) is conducted for the project and a reference case. Points are awarded based on the extent of environmental impact reduction against six environmental impacts categories when compared to the reference case. Energy Points are capped at 3.	Employ ETool and request analysis - Includes Peer Review (Unless EN 15978, 60 year life cycle (unless otherwise specified), all modules A to D Assess Climate Change, Stratospheric ODP, Acidification Potential, Eutrophication potential, Tropospheric Ozone Formation, Mineral and Fossil Fuel depletion	2		2				Credits should be achieved based on energy efficiency outcomes.	\$ 27,000	
19A.1b			LCA - Materials					1				Additional credit would require appointment of specialist consultant to model and report.	\$ 1,000	
19A.2a			LCA - Additional Category Reporting		Report on: Human Toxicity, Land Use, Resource Depletion, Ionising Radiation, Particulate Matter	5		1					\$ 1,000	
19A.2b			LCA-Material Selection Improvement	Up to 4 additional points are available for additional reporting and analysis, as follows:	Change at least one material selection following the initial LCA.					1				
19A.2c			LCA - Construction process improvement		Change at least one construction process after the first iteration of the LCA.					1				
19A.2d			LCA - Design Review		Complete initial LCA review during concept design and present findings to the report as design progresses.			1					\$ 1,000	
20.1	Responsible Materials	To reward projects that include building materials that are responsibly sourced or have a sustainable supply chain.	Responsible Steel Fabricator	1 point is awarded when 95% of the buildings steel is sourced from a Responsible Steel Maker and/or steel framed buildings, at least 40% of the fabricated structural steelwork is supplied by a steel fabricator/steel contractor accredited to the Environmental Sustainability Charter of the Australian Steel Institute (ASI) or * For concrete framed buildings, at least 60% (by mass) of all reinforcing bar and mesh is produced using energy-reducing processes in its manufacture (measured by average mass by steel maker annually).	Discuss requirements with main contractor and steel supplier	1	1					Use of sustainable steel is generally achievable in Perth		
20.2			Certified Timber	1 point where at least 95% (by cost) of all timber used in the building and construction works is either: * certified by a forest certification scheme that meets the GBCA's 'Essential' criteria for forest certification or * is from a treated source.		1			1			Sustainable timber can be achieved, depending on the extent in use.	\$ 350,000	
20.3			Best Practice PVC	1 point is available where 90% (by cost) of all cables, pipes, flooring and blinds in a project either: * Do not contain PVC and have an Environmental Product Declaration (EPD) or * Meet Best Practice Guidelines for PVC.		1	1					Considered standard practice.		
31.00	Product Transparency and Sustainability	To encourage sustainability and transparency in product specification.	Product Transparency and Sustainability	Up to 3 points are awarded when products meet transparency and sustainability requirements under one of the following initiatives: 1.1 Reused Products 1.2 Environmental Product Declarations 1.3 Third-Party Certification 1.4 Stewardship Programs 1.5 Manufacturer ISO 14001 certification	Points are calculated based percentage of compliant products. This is demonstrated by the Product Score (PS), which is the value of the compliant products multiplied by the Product Sustainability Factor, divided by the Project Contract Value (PCV). 3% = 1 Point, 6% = 2 Points, 9% = 3 Points	3	1			2		Products to be reviewed as the design progresses. Expect to achieve at least one point, second point to be targeted at 6 star level.		
22.2	Reduction of Construction and Demolition Waste	To reward projects that reduce construction waste going to landfill by reuse or recycling building materials.	Percentage Benchmark	1 point is awarded where the project reduces the amount of construction and demolition waste going to landfill to less than 40% of the total construction waste. Waste shall be reported in kg/m2	Specify requirement for waste reduction and deliver outcome.	1	1					Waste diversion from Landfill is generally readily achieved in Perth.		

Ref No.	Title	Aim of Credit	Sub-Element	Credit Criteria Summary	Design Team Actions	No. of Points Available	Base Design Points	Included Design Features	6 Star Credits	To Be Confirmed	Unlikely Points	Comments	Capital Cost	Ongoing Cost
23.0	Ecological Value	To reward projects that improve the ecological value of their site	Endangered, Threatened or Vulnerable Species	To be awarded points in this credit, the project must demonstrate that no endangered, threatened or vulnerable species were present on the site at time of purchase.		0	0					Credit should be achievable based on the use of native planting, to be reviewed as design progresses.		
23.1			Ecological Value	Up to 3 points are awarded where the ecological value of the site is improved by the project.	The number of points is determined by the Green Star Change in Ecological Value Calculator.	3				1				
24	Sustainable Sites	To reward projects that choose to develop sites that have limited ecological value, re-use previously developed land and remediate contaminate land.	Conditional Requirement	The Conditional Requirement is met where, 5 years prior to the project's Green Star Registration date, the project site met the following conditions: * The project is not on land containing old-growth forest. * The project does not impact on any wetland listed as being 'High National Importance'. * Where the project may have an impact on any wetland NOT listed as being of 'High National Importance', Wetland Protection Measures must be in place. * The project must not have a significant impact on 'Matters of National Significance' listed under the Environmental Protection and Biodiversity Conservation Act 1999.		0	0					Site is not of high ecological value.		
24.1			Reuse of Land	1 point is awarded where either: 75% of the site was Previously Developed Land at the date of site purchase (see Compliance Requirements) or at the project's Green Star registration date for previously owned land.		1	1					Site has been previously built on.		
24.2			Contamination and Hazardous Materials	1 point is available where the site, or an existing building, was previously contaminated and the site has been remediated in accordance with a best practice remediation strategy.	* The site was contaminated such that the uses permitted under the relevant planning scheme were initially precluded or * A comprehensive hazardous materials survey has been carried out on any existing buildings or structures on the project site, in accordance with the relevant Environmental and Occupational Health and Safety (OH&S) legislation. * Where the survey identified asbestos, lead or PCBs in any existing buildings or structures the materials have been stabilised, or removed and disposed of in accordance with best practice guidelines, or the survey concluded that no hazardous materials were found in any existing buildings or structures on the project site.	1	1					Site would be expected to include some hazardous materials for decontamination.		
25.1	Heat Island Effect	To encourage and recognise projects that reduce the contribution of the project site to the heat island effect.	Heat Island Effect	To meet the credit at least 75% of the site comprises one, or a combination, of the following: * Vegetation * Green roofs * Roofing materials, including shading structures, having the following: o For roof pitched <15° a three year SR >44 o For roof pitched >15° a three year SR >34 Only where three year SR for products is not available use the following: o For roof pitched <15° an initial SR > 42 o For roof pitched >15° an initial SR > 39 * Un-shaded hard-scaping elements with a three year SR > 34 or an initial SR > 39. * Hard-scaping elements shaded by overhanging vegetation or roof structures. * Water bodies and/or water courses, and * Areas directly to the south of vertical building elements, including green walls and shaded by these elements at the summer solstice.	Review design and confirm finishes and colours.	1	1					Use of light roof colours and finishes is required for BCA 2019 compliance. Use of native planting will provide shade and improve site ecology.		
26.1	Stormwater	To reward projects that minimise peak storm water flows and reduce pollutants entering public sewer infrastructure	Reduced Peak Discharge to Sewer	1 point is awarded where the post-development peak 2 year Average Recurrence Interval (ARI) event discharge from the site does not exceed the predevelopment peak 2 year ARI event discharge.	Detention requirements	1	1					Development would not be expected to increase storm water flows, movement of car parks under cover should reduce contaminant flows.		
26.2			Reduced Pollution Targets	1 one additional point, the first point must be awarded and all stormwater discharged from site meets the Pollution Reduction Targets in Column A of Table 1.	Filtration Requirements: * TSS - 80% * Gross Pollutants - 85% * Total Nitrogen - 30% * Phosphorus - 30% * Petroleum Hydrocarbons - 60% * Free Oils - 90%	1	1							
27.0	Light Pollution	To reward projects that minimise light pollution	Light Pollution to Neighbouring Bodies	For the project to be awarded a point for this credit, the project must comply with AS 4282 'Control of the Obtrusive Effects of Outdoor Lighting'.	External lighting compliance to meet this requirement.	0	0					Lighting design to be reviewed, light spill may be part of building functional aesthetics. Credit to be incorporated within design briefs.		
27.1			Light Pollution to Night Sky	1 point is available where it can be demonstrated that a specified reduction in light pollution has been achieved by the project. Two options are available for demonstrating a reduction in light pollution.	2a Relative to its particular mounting orientation, no external luminaire has an Upward Light Output Ratio that exceeds 5%; OR 2b Direct Illuminance from external luminaires produces a maximum initial point illuminance value no greater than 0.5 Lux to the site boundary and no greater than 0.1 Lux to 4.5 metres beyond the site into the night sky, when modelled using a calculation plane set at the highest point of the building.	1	1							
28	Microbial Control	To recognise projects that implement systems to minimise the impacts associated with harmful microbes in building systems.	Legionella Impacts in Refrigeration Systems	1 point is awarded, where the building either: * Is naturally ventilated * Has waterless heat rejection systems, or * Has a water based heat rejection system that includes measures for Legionella control and a Legionella Risk Management Plan has been provided.	Avoid the use of cooling towers.	1	1					Cooling towers are not expected on site.		
29	Refrigerant Impacts	To encourage operational practices that minimise the environmental impacts of refrigeration equipment.	Refrigerants Impacts	1 point is awarded where: The combined Total System Direct Environmental Impact of the refrigerant systems in the building is less than 15, OR The combined Total System Direct Environmental Impact (TSDEI) of the refrigerant systems is between 15 and 35, AND a leak detection system is in place. OR All refrigerants in the project have an ozone depletion potential of zero, and a global warming potential of 10 or less.	Specify refrigerant detection and low impact refrigerants. Note: 0 ODP is minimum criteria	1				1		Not likely to be achieved without central thermal plant. Could be reviewed with air cooled and reverse cycle chillers.		

Ref No.	Title	Aim of Credit	Sub-Element	Credit Criteria Summary	Design Team Actions	No. of Points Available	Base Design Points	Included Design Features	6 Star Credits	To Be Confirmed	Utility Points	Comments	Capital Cost	Ongoing Cost
EQ-ii	30A - Innovative Technology or Process	Indoor Plants	Plants	1 Additional point may be achieved when indoor plants are evenly distributed across the nominated area and are regularly maintained. At least 0.005m ² of planting per m ² of occupied space is required (excluding enclosed spaces < 10m ²)	72 m ² of Planting							Not relevant for residential projects. Would require 2 off 500mm diameter plants in each apartment.		
EQ-iv		Individual Thermal Comfort	Individual Thermal Comfort	One additional point is available where the project has achieved either the first or second Thermal Comfort point, is mechanically ventilated, and meets the requirements of the following requirements for individual thermal comfort control.	The individual comfort control system must allow control over at least one of the following: * air velocity; * temperature (whether radiant or from direct air temperature); or * air direction							Not relevant for residential projects.		
ENE-i		Onsite Renewable Energy	Renewable Energy	Up to two points may be rewarded in the Innovation Category for installing renewable energy sources on site.	Renewable Energy Contribution (including shared renewable services) 15% - 1 Point 30% - 2 Points		1					To be reviewed during modelling. Expect to achieve one point based on 600W peak solar.		
ENE-iv		Building Integrated Photovoltaics	BPVs	1 point is available where Building Integrated Photovoltaic (BIPV) systems contribute to the reduction of greenhouse gas emissions by at least 15%. This point can be awarded in addition to the 'Onsite Renewable Energy' points highlighted above.	Incorporate a Building Integrated Photovoltaic (BIPV) systems that contributes to the reduction of greenhouse gas emissions by at least 15%.					1		Could be considered as an option, local manufacturers ClearVue may be interested.		
Em-ii		Legionella Impacts	Microbial Control	A project team may claim an Innovation point where it is demonstrated that warm water systems have also been designed to manage the risk of microbial contamination. This may be done in association with operational practices that are to be implemented, as long as there are also design features that facilitate the achievement of the aim of the credit.						1		Credit would depend on hot water system, would require centralised system with UV disinfection.		

Ref No.	Title	Aim of Credit	Sub-Element	Credit Criteria Summary	Design Team Actions	No. of Points Available	Base Design Points	Included Design Features	6 Star Credits	To Be Confirmed	Unlikely Points	Comments	Capital Cost	Ongoing Cost
Man-i	30B - Market Transformation	Soft Landings Framework	Soft Landings	1 additional point may be awarded where project teams carry out commissioning and tuning of the building in accordance with the Soft Landings Framework (BSRIA)	Contact GBICA to discuss this requirement.				1			Strong recommendation, considering client and ongoing involvement in site. Can be briefed now.	\$ 70,000	
ENE-v		Greenhouse Gas Emissions	Passive Design	Projects that achieve more than 15 points through passive design or without energy generation or the purchase of offsets or Green Power in the 'Greenhouse Gas Emissions' credit can claim an Innovation point.										
ENE-ii		Early Adoption of BCA 2019	BCA 2019	2 Points are awarded where projects adopt BCA 2019 before the end of the transition phase in April 2019.	Provide certificate from approving authority.									
Mat-ii		Life Cycle Impacts - Concrete	Sustainable sourcing of Concrete Aggregates	Project teams who demonstrate the use of concrete aggregates that have chain of custody, or come from a responsible source can claim an Innovation Category point										
Man-i	30C - Exceeding Benchmarks	Supplementary or Tenancy Fitout Systems Review	Tenancy Review	1 Point may be awarded where project teams and building owners carry out a comprehensive services and maintainability review of supplementary or tenancy fitout systems.			1					Tenancy design review should be standard practice.		
Man-ii		Building Air Permeability Rates	Facade Pressure Testing	Up to 2 points may be awarded where project teams can demonstrate air permeability rates from the normal (1 point) or Best practice (2 points) columns.				1				Targeting best practice facade design.	\$ 53,500	
EQ-I		Indoor Pollutants	Ultra Low VOC Paints	One additional point may be awarded where over 50% of paints (by cost) specified in the building have a maximum TVOC content of 5g/L.	This must be verified by one of the approved paint test methods.		1					Targeting low toxicity finishes, wall and ceiling paint to be <5g/L.		
EQ-II		Indoor Pollutants	Mattresses	One additional point may be awarded where 95% of all mattresses that are to be supplied to the building meet the GreenGuard emission criteria for bedding listed in the table below. Health and Hospitality only.	Formaldehyde 0.0135ppm (0.0165mg/m3) Total VOC 0.22mg/m									
ENE-ii		1 point is available where a reduction in Peak Electricity Demand of 45% is achieved 2 point is available where a reduction in Peak Electricity Demand of 60% is achieved	Peak Electricity Demand Reduction	Incorporate systems to reduce peak electricity demand significantly. This should be achieved through a mixtures of energy efficiency, on-site renewable energy and other technologies.										
Tra-i		Sustainable Transport	No new car parks on site	One (1) point will be awarded where no new car parking is provided on site. This applies regardless of who operates the car parking, even if it's operated by an external party.										
Wat-ii		Potable Water	Discharge to sewer	An Innovation point can be claimed for a 90% or greater reduction in flow to sewer as determined by the Potable Water calculator.										
Mat-i		Life Cycle Carbon Analysis	LCA	Exceed minimum performance in LCA by at least 150%	One additional point - up to two points - is available for each 20% improvement over 150%					1		Point may be achieved, subject to modelling.		
Mat-ii		Sustainable Products	Product Transparency and Sustainability	One (1) Innovation point is awarded where the percentage of compliant products is increased by 3% to 12%. A further 3% improvement is rewarded with a second point.							1	Recommendation to source sustainable products for apartment finishes. Allowance of \$5,000 per apartment.		
Mat-iv		Reduction of Construction and Demolition Waste	Reduction of Construction and Demolition Waste	1 point is available where the construction and demolition waste going to landfill meets a fixed benchmark of 1.5 kg of waste per square meter of NLA.										
Eme-i		Stormwater Pollution Targets	Increased Reduction Targets	Up to two additional points may be awarded where projects can demonstrate achieving Pollution Reduction Targets from column B (1 point) or C (2 points) as stated in Table 26.1.	Currently, the use of biological treatment systems is generally considered the only viable method of achieving compliance with the Pollution Reduction Targets of column C.					1		Point may be achieved, subject to system design.		
Eme-ii		Water Sensitive Urban Design	WSUD	Project teams may develop an Innovation Challenge that demonstrate that the criteria of the credit have been exceeded by employing Water Sensitive Urban Design principles.										

Ref No.	Title	Aim of Credit	Sub-Element	Credit Criteria Summary	Design Team Actions	No. of Points Available	Base Design Points	Included Design Features	6 Star Credits	To Be Confirmed	Unlikely Points	Comments	Capital Cost	Ongoing Cost
Im-300.2	Innovation 300 - Innovation Challenges	1 Point to encourage investment by projects in infrastructure for use by the broader community such as the incorporation of spaces that are publicly accessible.	Community Benefits	To claim this Innovation Challenge your project team must: * Perform a 'needs analysis' of the surrounding community. This may include community briefings, meetings or workshops; * Develop a strategy for how the project will provide social/community benefits and consult with the broader community on the proposed plan; and * Implement the plan and deliver outcomes as defined by the community benefits strategy.						1		Project appears to be targeting this outcome		
Im-300.3		1 Point to encourage the use, interpretation and celebration of buildings with cultural heritage.	Culture, Heritage and Identity	To claim this Innovation Challenge your project team must: * Demonstrate that the building selected is recognised as a place of heritage value, as defined in the Burra Charter or through a heritage listing within a state or local register. * Demonstrate how the building is occupied or has been significantly refurbished, in such a manner as to celebrate and makes visible heritage elements. * Make information on the heritage values of the building available to the public visitors to the site through site displays or a context aware smart phone application.			1					Retention of Baptist Church is expected to achieve this outcome.		
Im-300.4		1 Point To increase the amount of information available to industry on the costs and benefits of sustainable building.	Financial Transparency	To claim this Innovation Challenge your project team must: * Agree to complete the 'Financial Transparency Disclosure Template' that comprehensively itemises design, construction, documentation and project costs, in the case of building operations, the information provided will relate to the cost of collecting documentation, building operations and any building upgrades. * Provide this information in Excel format at the time of the project's Green Star submission. * Agree to participate in the yearly GBCA report, using anonymized data provided by project teams.			1					FCDS will complete this scope as part of the Green Star submission.		
Im-300.5		1 Point To improve the sustainability performance of site offices thus increasing health and productivity outcomes of site workers.	High Performance Site Offices	To claim this Innovation Challenge your project team must: * Review the High Performance Site Office Checklist to understand the Innovation Challenge requirements. * Demonstrate that a site shed(s) that complies with at least 75% of the requirements in the Checklist has been procured and has been used by the majority of construction workers on site. * Demonstrate that an assessment of the satisfaction of the occupants of the site office was done during its use, and where issues were found, they have been addressed, ideally using BDCOA.										
Im-300.6		1 Point To support high-performance, cost-effective and health-promoting project outcomes through an early analysis of the interrelationships among systems.	Integrating Healthy Environments	* Conduct an analysis of community health needs and outline the distribution of health issues among impacted communities. * Prioritise strategies to address identified needs. Identify actions that could be taken to enhance health-supportive features of the project and those that could minimize potential risks. Identify actions that can be taken within the project's design, construction or operation that will promote health equity. * Intentionally implement selected strategies to address identified community and occupant health needs. * Develop a monitoring plan with performance metrics to evaluate the project's impact on occupant and community health throughout the project life cycle (design, construction and operations).										
Im-300.7		2 Points To encourage projects that use materials, products or services produced or generated within Australia.	Local Procurement	There are two criteria available for this Innovation Challenge: Each is independent of the other. Local Products and Materials 1 point is awarded where the project team demonstrates that a percentage of the products and materials used in the project were produced or manufactured in Australia. Local Services and Skilled Labour 1 point is awarded where the project team demonstrates that a percentage of the services and skilled labour employed by the project come from the local area surrounding the site.										
Im-300.8		1 Point To engage, educate and sell the benefits of sustainable building practices and Green Star to building occupants and the wider community through marketing information developed on the basis of comprehensive market research.	Marketing Excellence	To claim this Innovation Challenge your project team must: * Develop methodology and perform market research on the investment drivers of end-users of the building (flood or community e.g. likely investors, occupants or staff. Note that this is not intended to be generic market research based on published reports. Rather, it is market research that involves the project itself and potential likely end users. * Develop a marketing strategy that addresses these drivers in relation to the sustainability measures implemented. * Implement this marketing strategy and provide developed samples at the time of the project's Green Star submission. * Provide information on the benefits of sustainability in a public and prominent way within your building (or sales office). * Provide the information required to create a case study at the time of the project's Green Star submission.										
Im-300.9		1 Point To increase the availability of information on the benefits and outcomes of sustainable design practices and sustainable operation practices across the industry.	Occupant Engagement	A. Occupant Survey 1 point is awarded where the Applicant carries out a pre and post occupancy survey. B. Connection to Nature 1 point is awarded where the project commits to providing ongoing feedback to 'SoCiphic' research undertaken by Dr. Peter Fisher at RMIT University.			1					Could be considered as part of Well or Triwell approach. Building sustainability plan, community building.	\$30,000	
Im-300.10		Carbon Positive Roadmap	Powered By Renewables	* 1 Point if building services are 50% more efficient than typical and use 100% renewable energy (tenant buildings only). Or * 3 Points available where building services are 50% more efficient than typical with the remainder and all occupants using 100% renewable energy.						3		Baptist church could pursue this point, would benefit from early engagement with power providers.		
Im-300.11		Carbon Positive Roadmap	Responsible Carbon Impacts	3 Points where building material carbon impacts are eliminated or offset.										
Im-300.12		Carbon Positive Roadmap	Carbon Positive - New Buildings	1 Point where Refrigerant, Water, Waste and Transport Carbon Emissions are eliminated or offset.										
Im-300.13		Reconciliation Action Plan	Reconciliation Action Plan	1 Point to encourage organisations to take formalised steps to provide opportunities for Aboriginal and Torres Strait Islander peoples.	To claim this Innovation Challenge your project team must: 1. Develop a Reconciliation Action Plan (RAP) as defined and endorsed by Reconciliation Australia. The RAP must be endorsed by Reconciliation Australia. The Green Star project being rated must play a central role in the delivery of the Reconciliation Action Plan.									
Im-300.14		Social Enterprise for Affordable Housing	Affordable Housing	A. Commercial Property(ies) * One point is awarded when the commercial property (or all commercial properties) that make up the Green Star project / are registered as an 'H4H Participating Property(ies)', whereby the property owner agrees to donate to H4H 0.1% of the sale price at the time the property(ies) / are sold (i.e. has a PC registered on title) or * One point is awarded when the property owner enters an H4H Participation Agreement agreeing to donate to H4H 0.1% of the / all participating property(ies)' lease income during the term and extended term(s), payable at the start of each term or extended term. B. Residential Wholesale Property(ies) * One point is awarded when a wholesaler (developer, or urban renewal authority) sells all its residential properties that make up a Green Star project as 'H4H Participating Properties' (i.e. PC registered, or agreed to be registered, on title) and * One additional point is awarded if the wholesaler also makes a donation to H4H of an amount equal to, or exceeding, 0.1% of the total of the sale prices of all properties that make up the Green Star project.						1		Provision of varying unit sizes and affordable housing to be confirmed as design progresses.		
Im-300.15		Social Return on Investment	Social Return on Investment	1 Point To recognise holistic methods to assess return on investment on the productivity, health and other social benefits provided by a project.	* Complete an analysis of the direct costs and benefits provided by elements of the project above and beyond standard practice. This analysis can include those costs and benefits resulting from the sustainability initiatives implemented in targeting credits for your project's Green Star rating (excluding Unlikely credits) and									
Im-300.16		Universal Design	Universal Design	1 Point is awarded where the design meets best practice for Universal Design.						1		Recommended inclusion to assist with aging in place. Credit under review.		
Im-300.17		Tenant Energy Disclosure	Tenant Energy Disclosure	1 Point is awarded where tenants provide detailed reporting on their energy consumption.			1					Tenant meeting will be configured to provide data on consumption and relative performance against peers.		

Ref No.	Title	Aim of Credit	Sub-Element	Credit Criteria Summary	Design Team Actions	No. of Points Available	Base Design Points	Included Design Features	6 Star Credits	To Be Confirmed	Unlikely Points	Comments	Capital Cost	Ongoing Cost
in-30E.1a	Innovation 30E - Global Sustainability	Green Star Interiors	Quality of Amenities Performance Pathway Needs Analysis	1 point is available where a percentage of the nominated area is provided as a high quality, universally accessible, indoor/outdoor amenity space(s) intended for use by staff or regular occupants and suitable for their enjoyment. The size and qualities of the space(s) are determined via a needs analysis involving the target group.										
in-30E.1b			Quality of Amenities Perceptive Pathway Amenity Space	1 point is available where at least 5% of the nominated area comprises high quality amenity space(s) (a general amenity area or additional breakout space), intended for use by staff or regular occupants, and which meet at least three of the specified criteria for: interaction, ventilation, daylight, views, landscaping and noise.		1						Site amenities would be expected to meet this requirement.		
in-30E.5		Green Star Performance	Green Cleaning	1 point is available where cleaning services are delivered in accordance with a green cleaning policy or scope of works and are applicable to all common areas (i.e. areas controlled solely by the building owner).	Develop green cleaning policy include details regarding: a. Environmental goals and objectives; b. Implementation procedures and strategies; c. Environmental performance measurements, including metrics; d. Quality assurance for ongoing improvement; e. Responsible parties; and f. Cleaning personnel requirements (including documented monitoring and reporting procedures).	1						To be implemented by Baptist Church.		\$15,000
in-30E.6			Procurement and Purchasing	1 point is available where a Sustainable Procurement Framework is used to set commitment targets and measure results for purchasing consumables during the performance period.		1						To be implemented by Baptist Church.		
in-30E.7			Groundkeeping Practices	Site Maintenance Procedures	1 point is available where a best practice process to maintain landscaped areas and hard surface is in place and operational during the performance period.	1						To be implemented by Baptist Church.		\$5,000

Design and As Built V1.3 Green Star Credit List

469-471 Canning Highway Como

This is FCDS initial self-assessment of the proposed residential and commercial mixed use development at the eastern site of the proposed Como Baptist Church: 469-471 Canning Highway in Como. The design team are targeting a self-assessed 60% of the Green Star credits available under the Design and As Built V1.3 tool - equivalent to a 5 - Star outcome. This scorecard presents the current design intent for review by the City of South Perth as well as aiding the design team to document the target design features. This is a self-assessment and is in no way equivalent to a formal certification or a guarantee of performance.

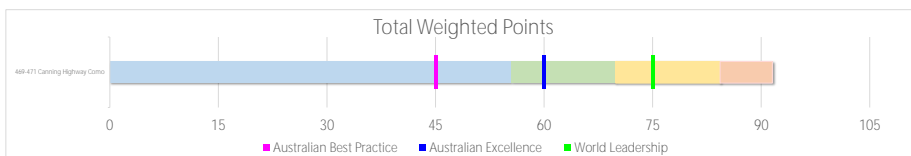
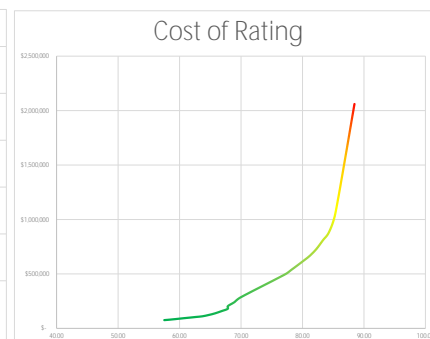
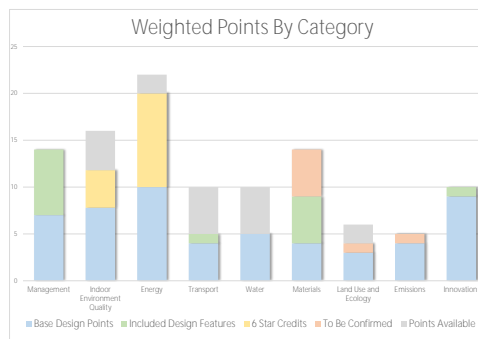
Project Name	469-471 Canning Highway Como
Project Number	2020_019
Client Name	dem / Baptist Church
Issue Date	18th March 2021
Revision	0
Reason for Issue	DA Submission

GFA	9005
NLA	559
Building Type	Residential / Mixed Use
Building UFA	7908
Building GFA	9005
Number of Car Bays	102
Number of Occupants	1217
Local Council	City of South Perth
Building Owner	Baptist Church
Building Tenant	Various

ESD Consultant	FCDS
Project Manager	Baptist Church
Architect	dem
Fire Engineer	Fire Engineer
Mechanical Engineer	Mechanical Engineer
Electrical Engineer	Electrical Engineer
ICA	ICA
Building Surveyor	Building Surveyor
Hydraulic Engineer	Hydraulic Engineer
Structural Engineer	Structural Engineer
Civil Engineer	Civil Engineer
Acoustic Engineer	Acoustic Engineer
Waste Consultant	Waste Consultant
Climate Change Modeller	Climate Change Modeller
Transport Planner	Landscaper
Landscaper	Landscaper
Life Cycle Modeller	Life Cycle Modeller
Quantity Surveyor	Quantity Surveyor
Facade Engineer	Facade Engineer

Builder / Main Contractor	Builder / Main Contractor
Mechanical Contractor	Mechanical Contractor
Electrical Contractor	Electrical Contractor
Hydraulic Contractor	Hydraulic Contractor
Fire Contractor	Fire Contractor
Facade Contractor	Facade Contractor
Lift Contractor	Lift Contractor

Category	Available Points	Base Design Points	Included Design Features	5 Star Credits	To Be Confirmed	Points Not Achieved	Total Cost	Ongoing Cost	Cost Per Point
Management	14	7	7	0	0	0	\$ 194,750	\$ 12,000	\$ 13,911
Indoor Environment Quality	16	8	0	4	0	4	\$ 206,300	\$ -	\$ 17,483
Energy	22	10	0	10	0	2	\$ 1,288,300	\$ -	\$ 64,415
Transport	10	4	1	0	0	5	\$ 20,000	\$ -	\$ 4,000
Water	10	5	0	0	0	5	\$ -	\$ -	\$ -
Materials	14	4	5	0	5	0	\$ 30,000	\$ -	\$ 2,143
Land Use and Ecology	6	3	0	0	1	2	\$ -	\$ -	\$ -
Emissions	5	4	0	0	1	0	\$ -	\$ -	\$ -
Innovation	10	9	1	0	0	0	\$ 305,750	\$ -	\$ 30,575
	97	55	14	14	7	18	\$ 2,065,100	\$ 12,000	\$ 22,339
		55	70	84	92				



Credit	Cost	Cumulative Points	Cumulative Cost
3.1 - Implementation of a Climate Adaptation Plan	\$ 4,000	57.52	\$ 76,000
2.1 - Services and Maintainability Review	\$ 5,000	58.56	\$ 81,000
19A.1a - LCA - Energy Efficiency	\$ 12,000	60.52	\$ 93,000
19A.1b - LCA - Materials	\$ 6,000	61.65	\$ 99,000
19A.2a - LCA - Additional Category Reporting	\$ 6,000	62.68	\$ 105,000
19A.2d - LCA - Design Review	\$ 6,000	63.71	\$ 111,000
2.3 - Building Systems Tuning	\$ 12,000	64.74	\$ 123,000
Emi-III - Microbial Control	\$ 15,000	65.77	\$ 138,000
17.3 - Low emission vehicle infrastructure	\$ 20,000	66.80	\$ 158,000
2.2 - Building Commissioning	\$ 21,750	67.84	\$ 179,750
Em-30D.9 - Occupant Engagement	\$ 25,000	67.87	\$ 204,750
2.4 - Independent Commissioning Agent	\$ 35,000	68.90	\$ 239,750
6.1 - Advanced Monitoring Strategy	\$ 45,000	69.93	\$ 284,750
6.1 - GHG reduction - Initiative 2	\$ 270,000	77.11	\$ 554,750
7.1 - Ventilation System Attribution	\$ 41,000	78.14	\$ 595,750
7.2 - Provision of Disinfectant	\$ 11,000	78.21	\$ 606,750
Man-III - Facade Pressure Testing	\$ 46,750	81.24	\$ 653,500
Man-IV - Soft Landings	\$ 60,000	82.27	\$ 713,500
19.1 - Facade Improvement	\$ 78,250	83.30	\$ 791,750
1.1.2 - Advanced Thermal Comfort	\$ 78,250	84.32	\$ 870,000
Em-30D.1b - Universal Design	\$ 11,000	85.35	\$ 881,000
3 - Overall Performance	\$ 1,000,000	86.45	\$ 1,881,000

Ref No.	Title	Aim of Credit	Sub-Element	Credit Criteria Summary	Design Team Actions	No. of Points Available	Base Design Points	Included Design Features	6 Star Credits	To Be Confirmed	Utility Points	Comments	Capital Cost	Ongoing Cost
1.1	Green Star Credited Professional	To recognise the appointment and active involvement of a Green Star Accredited Professional in order to ensure that the rating tool is applied effectively and as intended.	GSAP	1 point is available where a Green Star Accredited Professional - Design & Built (GSAP) has been contractually engaged to: * Provide advice, support and information related to Green Star principles, structure, timing and processes. * Provide guidance and support in all stages of the project leading to certification.		1	1					TCDS are undertaking this scope of works.	\$ 70,000	
2.0			Environmental Performance Targets	This is a minimum mandatory requirement for this credit.	Provide a design intent report - form early within the design phase - as an Owners Project Requirements document.	0	0					TCDS are undertaking this scope of works.		
2.1			Services and Maintainability Review	1 point is available where a comprehensive services and maintainability review of the project is performed.	Undertake a maintainability review of services and fabric prior to construction.	1		1				Comprehensive services and maintainability review would be of benefit for minimising long term operational costs and maximising flexibility.	\$ 5,000	
2.2			Building Commissioning	1 point is available where comprehensive pre-commissioning activities are performed for all nominated building systems. As a minimum building air permeability testing must be undertaken.	Develop commissioning plan and follow international system for commissioning.	1		1				Commissioning and tuning scope is considered standard practice, building pressure testing is a good check for construction quality.	\$ 21,750	
2.3			Building Systems Tuning	1 point is available where a tuning process is in place that addresses all nominated building systems.	Tuning requirements to be communicated with prospective tenants.	1		1				Building tuning process is strongly recommended to improve performance long term and assist with engagement with building users.	\$ 12,000	\$ 12,000
2.4			Independent Commissioning Agent	1 point is available for utilisation of an Independent Commissioning Agent (ICA) to advise, monitor, and verify the commissioning and tuning of the nominated building systems throughout the design, tender, construction, commissioning and tuning phases.	Appoint commissioning agent to assist during design and construction phases.	1		1				Providing a commissioning agent to oversee the commissioning and tuning of the building would be well above best practice for a development such as this.	\$ 35,000	
3.1	Adaptation and Resilience	To encourage and recognise projects that are resilient to the impacts of a changing climate and natural disasters.	Implementation of a Climate Adaptation Plan	2 points are available where: * A project specific climate adaptation plan has been developed in accordance with a recognised standard and * Solutions have been included into the building design and construction that specifically address the risk assessment component of the adaptation plan.	Find someone to complete an action plan and implement the findings.	2		2				Climate change adaptation planning and design is recommended considering magnitude of investment and excavation requirements.	\$ 6,000	
4.1	Building Information	To recognise the development and provision of building information that facilitates understanding of a building's systems, operation and maintenance requirements, and environmental targets to enable the optimised performance.	Building Operations and Maintenance - and User Information	1 point is awarded where it is demonstrated that comprehensive Operations and Maintenance information is developed and made available to the facilities management team and a relevant and current building user information is developed and made available to all relevant stakeholders.	Address the following systems: * Mechanical * BMS * Lighting Controls * Electrical Systems * Hydraulic Systems * Fire Protection Systems * Lifts and other vertical transport systems * Building Envelope	1	1					Building users guides and operations and maintenance manuals would be considered standard.		
5.1			Environmental Building Performance	1 point is awarded where there is a commitment to set targets and measure results for environmental performance.	* Outline mechanism for setting and monitoring targets * Approach for prevention and rectification if obligations not met. * 100% of floor area (GFA - excl car park) to be covered * At least two metrics (energy, water, waste or ECQ)	1	1					Energy monitoring and reporting is strongly recommended as part of the building tuning element.		
5.2			End of Life Waste Performance	1 point is awarded where there is a commitment to set targets and measure results that minimise construction waste from end of life of interior fitouts or other building attributes.	* Agree best practice methodology for tenants and land lords at end of fitout life, including clear metrics.	1	1					Selection of highly durable and repairable common area finishes would be considered standard practice for a development like this.		
6.0			Effective Metering	Accessible metering must be provided to monitor energy and water consumption of all energy and water common uses, major uses, and sources. The metering system must be self checking and reporting.	Include meters and separate sub meters for all major uses. All meters downstream of the main building meter must be sub metered.	0	0					Energy and water metering are recommended to be provided as part of a billing and building maintenance strategy.		
6.1			Advanced Monitoring Strategy	1 point is available where a monitoring strategy is addressed through a monitoring system, capable of capturing and processing the data produced by the installed energy and water meters, and accurately and clearly presenting data consumption trends.	Include meter reading and processing system as part of EMS.	1		1				The provision of meter analysis and billing software / programs is recommended for recovery of costs and reduced maintenance requirements.	\$ 45,000	
7.0			Environmental Management Plan	The conditional requirement is met where a comprehensive project specific Environmental Management Plan (EMP) is in place for construction.	Develop project specific best practice EMP.	0	0					Contractors likely to undertake this project would be expected to meet these requirements.		
7.1			Formalised Environmental Management System	1 point is available where a formalised systematic and methodical approach to planning, implementing and auditing is in place during construction, to ensure conformance with the EMP.	Demonstrate systematic and methodical approach to planning, implementing and auditing during construction to comply with EMP <150M – ISO 14001 certification. Otherwise, auditor statement.	1	1							
7.2			High Quality Staff Support	1 point is available where high quality staff support practices are in place that: * Promote positive mental and physical health outcomes of site activities and culture of site workers, through programs and solutions on-site and * Enhance site workers' knowledge on sustainable practices through on-site, off-site, or online education programs.	Contractor to address three distinct issues with workplace programs and policies which go beyond minimum OH&S requirements and extend to wellbeing promotion. Issues include: * healthier eating and active living * reduced harmful alcohol and drug and tobacco-free living * increase social cohesion, community and cultural participation * understanding depression * preventing violence and injury * suicide prevention * decrease psychological distress In addition the contractor must provide ISO training to site staff.	1	1					These requirements are increasingly being undertaken by main contractors as part of their business as usual approach.		
8.1	Operational Waste	To recognise projects that implement waste management plans that facilitate the re-use, recycling or conversion of waste into energy and stewardship of items to reduce the quantity of outgoing waste.	Operational Waste Performance Approach	1.1 A Waste Management Plan has been developed, by a qualified waste auditor, that addresses best practice requirements as outlined in this credit.	Deliver OMPMP by Qualified Waste Auditor	1	1					The building has an ample waste collection and segregation area.		

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9.1	Quality of Indoor Air	To recognise projects that provide high air quality to occupants.	Ventilation System Attributes	1 point is awarded where: * The entry of outdoor pollutants is mitigated AND * The system is designed for ease of maintenance and cleaning AND * The system has been cleaned prior to occupation and use.	Require tenants to implement these requirements. * Locate outdoor air intakes appropriately * Provide cleaning access to all elements of HVAC system * Clean prior to use and occupation - Construction Management process for new systems.	1			1			GSCK has released a ruling allowing for DX units with basic coils to be compliant with the provision of filtration.	\$ 41,000	
9.2			Provision of Outside Air	2 points are awarded where the nominated area is provided with sufficient outside air to ensure levels of indoor pollutants are maintained at acceptable levels. For mechanically ventilated or mixed mode spaces: * 1 point is awarded where outside air is provided at a rate 50% greater than that required in AS1668.2:2012 or CO2 concentrations are maintained below 800ppm. * 2 points are awarded where outside air is provided at a rate 100% greater than that required in AS1668.2:2012 or CO2 concentrations are maintained below 700ppm.	Provide capacity and control for outside air systems to deliver improved air quality internally. Provide CO2 sensors as often as thermostats if performance based approach is taken.	2			2			Outside air provision to commercial spaces would comply; residents would require ducted outside air to air conditioning units. Supports briefed outcome.	\$ 87,000	
9.3			Exhaust or Elimination of Pollutants	1 point is awarded where the nominated pollutants, such as those arising from printing equipment, cooking processes and equipment and vehicle exhaust, are limited by either removing the source of pollutants from the nominated area, or exhausting the pollutants directly to the outside of the project while limiting their entry into other areas.	Provide dedicated kitchen exhaust risers and photocopy exhaust for each office.	1	1					Apartments will be provided with a dedicated kitchen exhaust, as well to commercial tenancies at ground level.		
10.0	Acoustic Comfort	To reward projects that provide appropriate and comfortable acoustic conditions for occupants.	Internal Noise Levels	1 point is available where internal ambient noise levels in the nominated area are suitable and relevant to the activity type in the room. This includes all sound generated by the building systems and any external noise ingress.	Employ Acoustic consultant to demonstrate that internal ambient noise levels, in the nominated area, are no more than 2dB(A) above the "satisfactory" sound levels provided in Table 1 of AS/NZS 2107:2016.	1	1					Design to AS 2107 is expected for occupant comfort.		
			Reverberation	1 point is available where the nominated area has been built to reduce the persistence of sound to a level suitable to the activities in the space.	Employ acoustic consultant and specify appropriate finishes and fixtures - achieve less than maximum recommended time in AS 2107.	0	NA					This credit is NA for residential projects.		
			Acoustic Separation	1 point is available where the nominated enclosed spaces have been built to minimise crosstalk between rooms and between rooms and open areas.	Employ acoustic consultant and specify appropriate separation between spaces. A) The partition between the spaces should be constructed to achieve a weighted sound reduction index (Rw) of at least 45 dB. The sound insulation between enclosed spaces complies with $Rw + C_{50Hz} > 75$.	1						Difficult and expensive to implement for residential projects. Has been briefed, should be reviewed with design team.		
11.0	Lighting Comfort	To encourage and recognise well lit spaces that provide a high degree of comfort to users.	Minimum Lighting Comfort	It is a requirement for this credit that lights are flicker free and that the lights accurately address the perception of colour in the space.	* A minimum Class A1 ballast * High frequency ballasts for all fluorescent lamps, or * Electronic ballasts in High Intensity Discharge (HID) lighting to address the perception of colour. All light sources must have a minimum Colour Rendering Index (CRI) of 80.	0	0					LED lighting and high quality fittings should be a minimum briefing requirement.		
11.1			General Illuminance and Glare Reduction*	1 point is awarded where in the nominated areas: 1.1 Lighting levels comply with best practice guidelines And 1.2 Glare is eliminated	* Comply with 8.3.4 of AS 180 1-2006 AS 1680 * All bare light sources provided with diffuser of some form, including prevention from glare looking directly up or * Unified Glare Rating calculated for the lighting on a representative floor is < Table 8.2 of 1860.1 (Can be modelled)	1						Credit is unlikely to be achieved for residential or retail spaces due to increased requirements for light fittings and design.		
11.2			Surface Illuminance	1 point is available where, in the nominated area, a combination of lighting and surfaces improve uniformity of lighting to give visual interest	Average surface reflectance > 0.75 for ceilings, 30% of working plane illuminance on ceiling or * All spaces modelled to show average ceiling luminance < 0.5 lx/cm ² and every point < 1 lx/cm ² and the ceiling has an average surface illuminance of >30% and * For rooms less than 100m ² or with 20% of workstations within 3m of walls, the wall area above the working plane has an average surface illuminance of at least 50% of the lighting levels on the working plane. For residential, provide at least one wall in each living space, kitchen and bedroom with specific wall washing or wall mounted fittings.	1						Credit is unlikely to be achieved for residential or retail spaces due to increased requirements for light fittings and design.		
11.3			Localised Lighting Control	1 point is available where in the nominated area, occupants have the ability to control the lighting in their immediate environment.	* Provide occupants with lighting control in their direct environment eg. a two component lighting system	1	0.8					Points will be achieved for the residential component of the development.		
12.0	Visual Comfort	To recognise the delivery of well lit spaces that provide high levels of visual comfort to building occupants.	Glare Reduction	It is a condition of this credit that glare in the nominated area from sunlight through all viewing facades is reduced through a combination of blinds, screens, fixed devices, or other means.	Demonstrate exclusion of sun either by blinds or modelling.	0	0					Building has a strong solar passive response. Glare at low levels to retail to be reviewed as design progresses.		
12.1			Daylight	Up to 2 points are available where a percentage of the nominated area receives high levels of daylight during 80% of the nominated areas. * 40% Nominated Area - 1 point * 60% Nominated Area - 2 points	40 / 60% Of the nominated area has a Daylight factor of at least 2.0% at finished floor level.	2	1					Building has a narrow floor plate with good access to natural light.		
12.2			Views	1 point is awarded where 60% of the nominated area has a clear line of sight to a high quality internal or external view.	Complete assessment of space.	1	1					Project has a relatively shallow plan, with good access to light and interesting common area views.		
13.1	Reduced Exposure to Pollutants	To recognise projects that safeguard occupant health through the reduction in internal air pollutant levels.	Paints, Adhesives, sealants and Carpets	1 point is available where at least 95% of all internally applied paints, adhesives, sealants and carpets meet stipulated Total VOC Limits, or where no paints, adhesives, sealants or carpets are used in the building.	Paints, adhesives and sealants to comply with Green Star criteria.	1	1					Low toxicity products would be considered standard practice for this type of development.		
13.2			Formaldehyde	1 point is available where at least 95% of all engineered wood products meet stipulated formaldehyde limits or no new engineered wood products are used in the building.	All composite wood product to be low or no formaldehyde.	1	1							
14.1	Thermal Comfort	To encourage and recognise projects that achieve high levels of thermal comfort.	Thermal Comfort	1 point is available where a high degree of thermal comfort is provided to occupants in the space equivalent to 80% of all occupants being satisfied in the space.	Complete building energy / thermal model PMV with +/-1	1	1					Building will achieve -7 star NATHERS based on current plans and use of low-e single glazing.		
14.2			Advanced Thermal Comfort	1 additional point is available where a high degree of thermal comfort is provided to occupants in the space equivalent to 90% of all occupants being satisfied in the space.	Complete building energy / thermal model PMV with +/-0.5	1			1			Budget based on \$90/m ² for glass, 82 apartments, 20m ² glass per apartment. Cost split with energy below.	\$ 78,300	

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15.0	Energy	Green House Gas Emissions	To encourage the reduction of greenhouse gas emissions associated with the use of energy in building operations.	Energy Conditional Requirement	Up to 5 points out of 20 points are available where it is demonstrated that the building's predicted greenhouse gas impact has been reduced by employing 'best practice' attributes	Complete building energy / thermal model	0	0							
15.1				Facade Improvement	Complete building energy / thermal model. 1 Point per 2% improvement over reference, to a maximum of 4 Points. Inductively 1 point for: * 10% increase in roof and ceiling R values + <0.4 Solar Abs for roofs + <0.3.3 for Roof Lights + 15% Reduction in Roof light SHGC. * 10% Reduction in wall glazing U value + SHGC <90% of Method 2 Allowance + Display Glazing U-5 and SHGC <85% Maximum.	4	1		1		Cost is to achieve performance improvement over BCA minimum requirements, refer thermal comfort above. Cost is split with thermal comfort credit.	\$	78,300		
				Overall Performance	Up to 20 points are available where it is demonstrated that there is a percentage reduction in the predicted energy and greenhouse gas performance of the proposed building			3		3		* 10% Reduction in lighting energy + Automated systems for 95% of nominated area + <100m2 switching zones. * 15% reduction in fan power + 10% reduction in pump power + 4% increase in gas water heaters + 5% increase in EER for splits + 15% higher EER for chillers. * Use of renewable energy or electric heat pump (COP > 3.5) for DHW.	\$	1,000,000	
				Off Site Renewable Energy	Points are increased by 50% where a commitment is made to procure 100% Green Power	16									
				District Services	Connect Building to low carbon district energy system and complete Green House Gas calculator										
				Transition Plan	1 Point to provide a plan to eliminate fossil fuels on site by 2050 and make plan public.	1					Gas not included in current budgets.				
				Fuel Switching	2 Points are awarded where no fossil fuels are burnt on site (<1% of total energy is acceptable if there are no other options and carbon offsets are implemented up front).										
				On-Site Storage	1 Point where on site renewable energy storage is provided to match the requirements of the building to reduce evening peak demand.										
				GHG reduction - Initiative 1	Solar PV	3					Allowing 0.5 kW per apartment PV array would be expected to provide significant operational benefit for cost and carbon emissions.				
				GHG reduction - Initiative 2	Additional Solar PV			6			Increasing solar array to 100kW. Not likely to be economically effective.	\$	210,000	\$	
				GHG reduction - Initiative 3											
16.1A	Peak Energy Reduction	To encourage the reduction of peak demand load on the electricity network infrastructure by the provision of embedded electricity generation systems.	Peak Energy DTS	1 Point awarded if project provides 15% of building peak in renewable energy	Provide renewable energy based on electrical engineer assessment of building peak load	2						Based on a ~50kW PV Array at roof level.			
16.1B			Peak Energy Reference Building	Reduce peak energy by 20% for 1 point or 30% for 2 points.	Complete building energy / thermal model and justify reduction	2	2								
17.1	Transport	Sustainability Impacts from Transport	To reward projects that implement design and operational measures to reduce the carbon emissions from staff transport to and from the project compared to a benchmark building.	Public Transport Access	Up to 3 points are awarded based on the accessibility of the site by public transport. This score is determined by the Access by Public Transport calculator	Complete assessment of space.	3	2				Site is classified as having good transit under walkscore.com.au			
17.2				Reduced provision of car Parking	1 is awarded where there is a reduction of car parking spaces for staff or visitors in the proposed building when compared against the maximum rates allowed as determined by the accessibility of the site.	GBCA limits car bays to 184 for 1 point. GBCA limits car bays to 266 for 0.5 points.	1	1			Site has fewer car bays than allowed for Green Star points.				
17.3				Low emission vehicle infrastructure	1 point is awarded where parking spaces for staff or visitors and/or dedicated infrastructure is provided to support the uptake of low emission vehicles.	Provide alternate vehicle support. Requires 12 hybrid or small car bays, 6 electric vehicle bays and charging points or 3 car share spaces and vehicles.	1		1		Design includes multiple electric car charges and car share bays.	\$	20,000		
17.4				Active transport facilities	1 point is awarded where bicycle parking and associated facilities are provided to a proportion of staff, occupants, and short term visitors.	Provide 73 Residential Cyclist facilities, 2 Commercial / Retail bike parks plus 24 Visitor cyclist bays.	1				Provision of bike parking infrastructure for patrons and occupants would be advantageous for reduction of transportation carbon emissions. May not be provided in Stage 1.				
17.5				Walkable neighbourhoods	1 point is awarded where either: At least 4 amenities (Class 7) or at least 8 amenities (all other classes) are within 400m of the development. OR The project achieves a walk score of at least 70 (Class 7) or at least 80 (all other classes), as determined by the website www.walkscore.com, using their 'street smart' method of calculation.	Complete assessment of space.	1	1			There are sufficient amenities around the site to achieve this outcome.				
18.1	Water	Potable Water	To encourage building design that minimises potable water consumption in operations.	Sanitary Fixtures	1 point is awarded where all fixtures are within one star of the best available WELS rating.	Provide suitable fixtures	1	1				Low flow tapware is to be provided.			
18.2				Rainwater Reuse	1 point is awarded when a rainwater tank is installed to collect and reuse rainwater within the project's site boundary and the rainwater tank size meets the following criteria: R0.05 kL tank required	R0.05 kL tank required	1			1	Rainwater tank is large and unlikely to have positive economic operation. Could be undertaken as an overt ESD feature.				
18.3				Heat Rejection	2 points are awarded where no water is used for heat rejection.		2	2			Cooling towers not typical for a project of this nature.				
18.4				Landscape Irrigation	Drip irrigation and moisture sensor override installed or no water used for irrigation.	1	1				Control of irrigation would be expected for maintenance and operational requirements.				
18.5				Fire System Test Water	The fire system does not egeet water for testing or The fire system includes temporary storage for 80% of the routine fire protection system test water and maintenance drains down for reuse on-site, and fire sprinkler systems are installed, each floor must be fitted with isolation valves or shut-off points for floor by floor testing.	Credit is NA if: A sprinkler system is not required under Part E of the NCC, or A sprinkler system is not provided by the project team, and Does not include a water based fire protection system.	1	1			Considered standard practice.				

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19A.1a	Material Life Cycle Impacts - LCA Approach	Assess and reduce the environmental impacts of building materials for the whole building over its entire life cycle.	LCA - Energy Efficiency	Up to 6 points are available where a whole-of-building whole-of-life (cradle-to-grave) life cycle assessment (LCA) is conducted for the project and a reference case. Points are awarded based on the extent of environmental impact reduction against six environmental impacts categories when compared to the reference case. Energy Points are capped at 3.	Employ ETool and request analysis - Includes Peer Review (Unless EN 15978, 60 year life cycle (unless otherwise specified); all modules A to D Assess Climate Change, Stratospheric ODP, Acidification Potential, Eutrophication potential, Tropospheric Ozone Formation, Mineral and Fossil Fuel depletion	2		2				Credits should be achieved based on energy efficiency outcomes.	\$ 12,000	
19A.1b			LCA - Materials					1				Additional credit would require appointment of specialist consultant to model and report.	\$ 6,000	
19A.2a			LCA - Additional Category Reporting	Up to 4 additional points are available for additional reporting and analysis, as follows:	Report on: Human Toxicity, Land Use, Resource Depletion, Ionising Radiation, Particulate Matter	5		1					\$ 6,000	
19A.2b			LCA-Material Selection Improvement		Change at least one material selection following the initial LCA					1				
19A.2c			LCA - Construction process improvement		Change at least one construction process after the first iteration of the LCA					1				
19A.2d			LCA - Design Review		Complete initial LCA review during concept design and present findings to the report as design progresses			1					\$ 6,000	
20.1	Responsible Materials	To reward projects that include building materials that are responsibly sourced or have a sustainable supply chain.	Responsible Steel Fabricator	1 point is awarded when 95% of the buildings steel is sourced from a Responsible Steel Maker and/or steel framed buildings, at least 40% of the fabricated structural steelwork is supplied by a steel fabricator/steel contractor accredited to the Environmental Sustainability Charter of the Australian Steel Institute (ASI) or * For concrete framed buildings, at least 60% (by mass) of all reinforcing bar and mesh is produced using energy-reducing processes in its manufacture (measured by average mass by steel maker annually)	Discuss requirements with main contractor and steel supplier	1	1					Use of sustainable steel is generally achievable in Perth		
20.2			Certified Timber	1 point where at least 95% (by cost) of all timber used in the building and construction works is either: * certified by a forest certification scheme that meets the GBCA's 'Essential' criteria for forest certification or * is from a treated source		1				1		Sustainable timber can be achieved, depending on the extent in use.		
20.3			Best Practice PVC	1 point is available where 90% (by cost) of all cables, pipes, flooring and blinds in a project either: * Do not contain PVC and have an Environmental Product Declaration (EPD) or * Meet Best Practice Guidelines for PVC		1	1					Considered standard practice.		
31.00	Product Transparency and Sustainability	To encourage sustainability and transparency in product specification.	Product Transparency and Sustainability	Up to 3 points are awarded when products meet transparency and sustainability requirements under one of the following initiatives: 1.1 Reused Products 1.2 Environmental Product Declarations 1.3 Third-Party Certification 1.4 Stewardship Programs 1.5 Manufacturer ISO 14001 certification	Points are calculated based percentage of compliant products. This is demonstrated by the Product Score (PS), which is the value of the compliant products multiplied by the Product Sustainability Factor, divided by the Project Contract Value (PCV). 3% = 1 Point, 6% = 2 Points, 9% = 3 Points	3	1			2		Products to be reviewed as the design progresses. Expect to achieve at least one point, second point to be targeted at 6 star level.		
22.2	Reduction of Construction and Demolition Waste	To reward projects that reduce construction waste going to landfill by reuse or recycling building materials.	Percentage Benchmark	1 point is awarded where the project reduces the amount of construction and demolition waste going to landfill to less than 40% of the total construction waste. Waste shall be reported in kg/m2	Specify requirement for waste reduction and deliver outcome.	1	1					Waste diversion from Landfill is generally readily achieved in Perth.		

Ref No.	Title	Aim of Credit	Sub-Element	Credit Criteria Summary	Design Team Actions	No. of Points Available	Base Design Points	Included Design Features	6 Star Credits	To Be Confirmed	Unlikely Points	Comments	Capital Cost	Ongoing Cost
23.0	Ecological Value	To reward projects that improve the ecological value of their site	Endangered, Threatened or Vulnerable Species	To be awarded points in this credit, the project must demonstrate that no endangered, threatened or vulnerable species were present on the site at time of purchase.		0	0					Credit should be achievable based on the use of native planting, to be reviewed as design progresses.		
23.1			Ecological Value	Up to 3 points are awarded where the ecological value of the site is improved by the project.	The number of points is determined by the Green Star Change in Ecological Value Calculator	3				1				
24	Sustainable Sites	To reward projects that choose to develop sites that have limited ecological value, re-use previously developed land and remediate contaminate land.	Conditional Requirement	The Conditional Requirement is met where, 5 years prior to the project's Green Star Registration date, the project site met the following conditions: * The project is not on land containing old-growth forest * The project does not impact on any wetland listed as being 'High National Importance' * Where the project may have an impact on any wetland NOT listed as being of 'High National Importance', Wetland Protection Measures must be in place. * The project must not have a significant impact on 'Matters of National Significance' listed under the Environmental Protection and Biodiversity Conservation Act 1999		0	0					Site is not of high ecological value.		
24.1			Reuse of Land	1 point is awarded where either: 75% of the site was Previously Developed Land at the date of site purchase (see Compliance Requirements) or at the project's Green Star registration date for previously owned land.		1	1					Site has been previously built on.		
24.2			Contamination and Hazardous Materials	1 point is available where the site, or an existing building, was previously contaminated and the site has been remediated in accordance with a best practice remediation strategy	* The site was contaminated such that the uses permitted under the relevant planning scheme were initially precluded or * A comprehensive hazardous materials survey has been carried out on any existing buildings or structures on the project site, in accordance with the relevant Environmental and Occupational Health and Safety (OH&S) legislation. * Where the survey identified asbestos, lead or PCBs in any existing buildings or structures the materials have been stabilised, or removed and disposed of in accordance with best practice guidelines, or the survey concluded that no hazardous materials were found in any existing buildings or structures on the project site.	1	1					Site would be expected to include some hazardous materials for decontamination.		
25.1	Heat Island Effect	To encourage and recognise projects that reduce the contribution of the project site to the heat island effect.	Heat Island Effect	To meet the credit at least 75% of the site comprises one, or a combination, of the following: * Vegetation * Green roofs * Roofing materials, including shading structures, having the following: o For roof pitched < 15° a three year SR > 44 o For roof pitched > 15° a three year SR > 34 Only where three year SR for products is not available use the following: o For roof pitched < 15° an initial SR > 82 o For roof pitched > 15° an initial SR > 39 * Un-shaded hard-scaping elements with a three year SR > 34 or an initial SR > 39 * Hard-scaping elements shaded by overhanging vegetation or roof structures * Water bodies and/or water courses, and * Areas directly to the south of vertical building elements, including green walls and shaded by these elements at the summer solstice.	Review design and confirm finishes and colours.	1	1					Use of light roof colours and finishes is required for BCA 2019 compliance. Use of native planting will provide shade and improve site ecology.		
26.1	Stormwater	To reward projects that minimise peak storm water flows and reduce pollutants entering public sewer infrastructure	Reduced Peak Discharge to Sewer	1 point is awarded where the post-development peak 2 year Average Recurrence Interval (ARI) event discharge from the site does not exceed the predevelopment peak 2 year ARI event discharge.	Detention requirements	1	1					Development would not be expected to increase storm water flows, movement of car parks under cover should reduce contaminant flows.		
26.2			Reduced Pollution Targets	1 one additional point, the first point must be awarded and all stormwater discharged from site meets the Pollution Reduction Targets in Column A of Table 1.	Filtration Requirements: * TSS - 80% * Gross Pollutants - 85% * Total Nitrogen - 30% * Phosphorus - 30% * Petroleum Hydrocarbons - 60% * Free Oils - 90%	1	1							
27.0	Light Pollution	To reward projects that minimise light pollution	Light Pollution to Neighbouring Bodies	For the project to be awarded a point for this credit, the project must comply with AS 4282 'Control of the Obtrusive Effects of Outdoor Lighting'	External lighting compliance to meet this requirement.	0	0					Lighting design to be reviewed, light spill may be part of building functional aesthetics. Credit to be incorporated within design briefs.		
27.1			Light Pollution to Night Sky	1 point is available where it can be demonstrated that a specified reduction in light pollution has been achieved by the project. Two options are available for demonstrating a reduction in light pollution	2a Relative to its particular mounting orientation, no external luminaire has an Upward Light Output Ratio that exceeds 5%.	1	1							
28	Microbial Control	To recognise projects that implement systems to minimise the impacts associated with harmful microbes in building systems.	Legionella Impacts in Refrigeration Systems	1 point is awarded, where the building either: * Is naturally ventilated * Has waterless heat rejection systems, or * Has a water based heat rejection system that includes measures for Legionella control and a Legionella Risk Management Plan has been provided	Avoid the use of cooling towers.	1	1					Cooling towers are not expected on site.		
29	Refrigerant Impacts	To encourage operational practices that minimise the environmental impacts of refrigeration equipment.	Refrigerants Impacts	1 point is awarded where: The combined Total System Direct Environmental Impact of the refrigerant systems in the building is less than 15, OR The combined Total System Direct Environmental Impact (TSDEI) of the refrigerant systems is between 15 and 35, AND a leak detection system is in place, OR All refrigerants in the project have an ozone depletion potential of zero, and a global warming potential of 10 or less.	Specify refrigerant detection and low impact refrigerants. Note: 0 ODP is minimum criteria	1				1		Not likely to be achieved without central thermal plant. Could be reviewed with air cooled and reverse cycle chillers.		

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EQ-ii	30A - Innovative Technology or Process	Indoor Plants	Plants	1 Additional point may be achieved when indoor plants are evenly distributed across the nominated area and are regularly maintained. At least 0.005m ² of planting per m ² of occupied space is required (excluding enclosed spaces < 10m ²)	40 m ² of Planting							Not relevant for residential projects. Would require 2 off 500mm diameter plants in each apartment.		
EQ-iv		Individual Thermal Comfort	Individual Thermal Comfort	One additional point is available where the project has achieved either the first or second Thermal Comfort point. It is mechanically ventilated, and meets the requirements of the following requirements for individual thermal comfort control.	The individual comfort control system must allow control over at least one of the following: * air velocity, * temperature (whether radiant or from direct air temperature) or * air direction							Not relevant for residential projects.		
ENE-i		Onsite Renewable Energy	Renewable Energy	Up to two points may be rewarded in the Innovation Category for installing renewable energy sources on site.	Renewable Energy Contribution (including shared renewable services): 15% – 1 Point 30% – 2 Points		1					To be reviewed during modelling. Expect to achieve one point based on 30kW peak solar.		
ENE-iv		Building Integrated Photovoltaics	BPVs	1 point is available where Building Integrated Photovoltaic (BIPV) systems contribute to the reduction of greenhouse gas emissions by at least 15%. This point can be awarded in addition to the 'Onsite Renewable Energy' points highlighted above.	Incorporate a Building Integrated Photovoltaic (BIPV) systems that contributes to the reduction of greenhouse gas emissions by at least 15%.					1		Could be considered as an option, local manufacturers ClearVue may be interested.		
Em-iii		Legionella Impacts	Microbial Control	A project team may claim an Innovation point where it is demonstrated that warm water systems have also been designed to manage the risk of microbial contamination. This may be done in association with operational practices that are to be implemented, as long as there are also design features that facilitate the achievement of the aim of the credit.				1				Credit would depend on hot water system, would require centralised system with UV disinfection.	\$ 15,000	
Man-ii	30B - Market Transformation	Soft Landings Framework	Soft Landings	1 additional point may be awarded where project teams carry out commissioning and tuning of the building in accordance with the Soft Landings Framework (BSRIA)	Contact GBCA to discuss this requirement.				1			Strong recommendation, considering client and ongoing involvement in site. Can be briefed now.	\$ 60,000	
ENE-v		Greenhouse Gas Emissions	Passive Design	Projects that achieve more than 15 points through passive design or without energy generation or the purchase of offsets or Green Power in the 'Greenhouse Gas Emissions' credit can claim an Innovation point.										
ENE-ii		Early Adoption of BCA 2019	BCA 2019	2 Points are awarded where projects adopt BCA 2019 before the end of the transition phase in April 2019.	Provide certificate from approving authority.									
Mat-ii		Life Cycle Impacts - Concrete	Sustainable sourcing of Concrete Aggregates	Project teams who demonstrate the use of concrete aggregates that have chain of custody, or come from a responsible source can claim an Innovation Category point.										

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Man-i	30C - Exceeding Benchmarks	Supplementary or Tenancy Fitout Systems Review	Tenancy Review	1 Point may be awarded where project teams and building owners carry out a comprehensive services and maintainability review of supplementary or tenancy fitout systems.			1					Tenancy design review should be standard practice.		
Man-ii		Building Air Permeability Rates	Facade Pressure Testing	Up to 2 points may be awarded where project teams can demonstrate air permeability rates from the normal (1 point) or Best practice (2 points) columns.					1			Targeting best practice facade design.	\$ 46,750	
EQ-i		Indoor Pollutants	Ultra Low VOC Paints	One additional point may be awarded where over 50% of paints (by cost) specified in the building have a maximum TVOC content of 5g/L.	This must be verified by one of the approved paint test methods.		1					Targeting low toxicity finishes, wall and ceiling paint to be <5g/L		
ENE-ii		1 point is available where a reduction in Peak Electricity Demand of 45% is achieved 2 point is available where a reduction in Peak Electricity Demand of 60% is achieved	Peak Electricity Demand Reduction	Incorporate systems to reduce peak electricity demand significantly. This should be achieved through a mixtures of energy efficiency, on-site renewable energy and other technologies.										
Tra-i		Sustainable Transport	No new car parks on site	One (1) point will be awarded where no new car parking is provided on-site. This applies regardless of who operates the car parking, even if it's operated by an external party.										
Wat-ii		Potable Water	Discharge to sewer	An innovation point can be claimed for a 90% or greater reduction in flow to sewer as determined by the Potable Water calculator.										
Mat-i		Life Cycle Carbon Analysis	LCA	Exceed minimum performance in LCA by at least 150%	One additional point - up to two points - is available for each 20% improvement over 150%.					1		Point may be achieved, subject to modelling.		
Mat-ii		Sustainable Products	Product Transparency and Sustainability	One (1) Innovation point is awarded where the percentage of compliant products is increased by 3% to 12%. A further 3% improvement is rewarded with a second point.							1	Recommendation to source sustainable products for apartment finishes. Allowance of \$5,000 per apartment.		
Mat-iv		Reduction of Construction and Demolition Waste	Reduction of Construction and Demolition Waste	1 point is available where the construction and demolition waste going to landfill meets a fixed benchmark of 1.5 kg of waste per square meter of NLA.										
Eme-i		Stormwater Pollution Targets	Increased Reduction Targets	Up to two additional points may be awarded where projects can demonstrate achieving Pollution Reduction Targets from column B (1 point) or C (2 points) as stated in Table 26.1.	Currently, the use of biological treatment systems is generally considered the only viable method of achieving compliance with the Pollution Reduction Targets of column C.					1		Point may be achieved, subject to system design.		
Eme-ii		Water Sensitive Urban Design	WSUD	Project teams may develop an Innovation Challenge that demonstrate that the criteria of the credit have been exceeded by employing Water Sensitive Urban Design principles.										

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Im-300.2	Innovation 300 - Innovation Challenges	1 Point To encourage investment by projects in infrastructure for use by the broader community, such as the incorporation of spaces that are publicly accessible.	Community Benefits	To claim this Innovation Challenge your project team must: * Perform a 'needs analysis' of the surrounding community. This may include community briefings, meetings or workshops. * Develop a strategy for how the project will provide social/community benefits and consult with the broader community on the proposed plan and * Implement the plan and deliver outcomes as defined by the community benefits strategy.			1					Project appears to be targeting this outcome.		
Im-300.3		1 Point To encourage the use, interpretation and celebration of buildings with cultural heritage.	Culture, Heritage and Identity	To claim this Innovation Challenge your project team must: * Demonstrate that the building selected is recognised as a place of heritage value, as defined in the Burra Charter or through a heritage listing within a state or local register. * Demonstrate how the building is occupied or has been significantly refurbished, in such a manner as to celebrate and makes visible heritage elements. * Make information on the heritage values of the building available to the public: visitors to the site through site displays or a contact aware smart phone application.										
Im-300.4		1 Point To increase the amount of information available to industry on the costs and benefits of sustainable building.	Financial Transparency	To claim this Innovation Challenge your project team must: * Agree to complete the 'Financial Transparency Disclosure Template' that comprehensively itemises design, construction, documentation and project costs. In the case of building operations, the information provided will relate to the cost of collecting documentation, building operations and any building upgrades. * Provide this information in Excel format at the time of the project's Green Star submission. * Agree to participate in the yearly GBCA report, using anonymised data provided by project teams.						1		This scope would be achieved under a formal certification.		
Im-300.5		1 Point To improve the sustainability performance of site offices thus increasing health and productivity outcomes of site workers.	High Performance Site Offices	To claim this Innovation Challenge your project team must: * Review the High Performance Site Office Checklist to understand the Innovation Challenge requirements. * Demonstrate that a site (shed) that complies with at least 75% of the requirements in the Checklist has been procured and has been used by the majority of construction workers on site. * Demonstrate that an assessment of the satisfaction of the occupants of the site office was done during its use, and where issues were found, they have been addressed, ideally using BOSSA.										
Im-300.6		1 Point To support high-performance, cost-effective and health-promoting project outcomes through an early analysis of the interrelationships among systems.	Integrating Healthy Environments	* Conduct an analysis of community health needs, and outline the distribution of health issues among impacted communities. * Prioritize strategies to address identified needs. Identify actions that could be taken to enhance health supportive features of the project and those that could minimize potential risks. Identify actions that can be taken within the project's design, construction or operation that will promote health equity. * Intentionally implement selected strategies to address identified community and occupant health needs. * Develop a monitoring plan with performance metrics to evaluate the project's impact on occupant and community health throughout the project life cycle (design, construction and operations).										
Im-300.7		2 Points To encourage projects that use materials, products or services produced or generated within Australia.	Local Procurement	There are two criteria available for this Innovation Challenge. Each is independent of the other. Local Products and Materials: 1 point is awarded where the project team demonstrates that a percentage of the products and materials used in the project were produced or manufactured in Australia. Local Services and Skilled Labour: 1 point is awarded where the project team demonstrates that a percentage of the services and skilled labour employed by the project come from the local area surrounding the site.										
Im-300.8		1 Point To engage, educate and sell the benefits of sustainable building practices and Green Star to building occupants and the wider community through marketing information developed on the basis of comprehensive market research.	Marketing Excellence	To claim this Innovation Challenge your project team must: * Develop methodology and perform market research on the investment drivers of end-users of the building. (House or community e.g. Realty investors, occupants or staff. Note that this is not intended to be generic market research based on published reports. Rather, it is market research that involves the project itself and potential Realty end users). * Develop a marketing strategy that addresses these drivers in relation to the sustainability measures implemented. * Implement this marketing strategy and provide developed samples at the time of the project's Green Star submission. * Provide information on the benefits of sustainability in a public and prominent way within your building (or sales office). * Provide the information required to create a case study at the time of the project's Green Star submission.										
Im-300.9		1 Point To increase the availability of information on the benefits and outcomes of sustainable design practices and sustainable operation practices across the industry.	Occupant Engagement	A Occupant Survey 1 point is awarded where the Applicant carries out a pre and post occupancy survey. B Connection to Nature 1 point is awarded where the project commits to providing ongoing feedback to 'Strophic' research undertaken by Dr. Peter Fisher at RMIT University.		1						A building occupant survey will be undertaken pre and post occupancy.	\$25,000	
Im-300.10		Carbon Positive Roadmap	Powered By Renewables	* 1 Point if building services are 50% more efficient than typical and use 100% renewable energy (tenanted buildings only). Or * 3 Points available where building services are 50% more efficient than the remainder and all occupants using 100% renewable energy.						3		Rapitst church could pursue this point, would benefit from early engagement with power providers.		
Im-300.11		Carbon Positive Roadmap	Responsible Carbon Impacts	3 Points where building material carbon impacts are eliminated or offset.										
Im-300.12		Carbon Positive Roadmap	Carbon Positive - New Buildings	1 Point where Refrigerant, Water, Waste and Transport Carbon Emissions are eliminated or offset.										
Im-300.13		Reconciliation Action Plan	Reconciliation Action Plan	1 Point To encourage organisations to take formalised steps to provide opportunities for Aboriginal and Torres Strait Islander peoples. To claim this Innovation Challenge your project team must: 1. Develop a Reconciliation Action Plan (RAP) as defined and endorsed by Reconciliation Australia. The RAP must be endorsed by Reconciliation Australia. The Green Star project being rated must play a central role in the delivery of the Reconciliation Action Plan.										
Im-300.14		Social Enterprise for Affordable Housing	Affordable Housing	A Commercial Property(ies) * One point is awarded when the commercial property (or all commercial properties) that make up the Green Star project is / are registered as an 'HAB Participating Property(ies)', whereby the property owner agrees to donate to HAB 0.1% of the sale price at the time the property(ies) is / are sold (i.e. has a PC registered on Title) or * One point is awarded when the property owner enters an HAB Participation Agreement agreeing to donate to HAB 0.1% of the / all participating property(ies)' lease income during the term and extended term(s), payable at the start of each term or extended term. B Residential Wholesale Property(ies) * One point is awarded when a wholesaler (developer, or urban renewal authority) sells all its residential properties that make up a Green Star project as 'HAB Participating Properties' (i.e. PC registered, or agreed to be registered, on Title) and * One additional point is awarded if the wholesaler also makes a donation to HAB of an amount equal to, or exceeding, 0.1% of the total of the sale prices of all properties that make up the Green Star project.		1						Design includes affordable housing with a mix of unit sales including studio apartments.		
Im-300.15		Social Return on Investment	Social Return on Investment	1 Point To recognise holistic methods to assess return on investment on the productivity, health and other social benefits provided by a project. * Complete an analysis of the direct costs and benefits provided by elements of the project above and beyond standard practice. This analysis can include those costs and benefits resulting from the sustainability initiatives implemented in ongoing credits for your project's Green Star rating (including innovation credits) and										
Im-300.16		Universal Design	Universal Design	1 Point is awarded where the design meets best practices for Universal Design.					1			Recommended inclusion to assist with aging in place. Allowance of \$2000 per apartment.	\$174,000	
Im-300.17		Tenant Energy Disclosure	Tenant Energy Disclosure	1 Point is awarded where tenants provide detailed reporting on their energy consumption.						1		Could be considered as part of building sustainability community.		

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inn-30E.1b	Innovation 30E - Global Sustainability	Green Star Interiors	Quality of Amenities Prescriptive Pathway: Amenity Space	1 point is available where at least 5% of the nominated area comprises high quality amenity space(s) (a general amenity area or additional breakout space), intended for use by staff or regular occupants, and which meet at least three of the specified criteria for: interaction, ventilation, daylight, views, landscaping and noise.			1					Roof top amenity space will meet this requirement.		
inn-30E.5		Green Star Performance	Green Cleaning	1 point is available where cleaning services are delivered in accordance with a green cleaning policy or scope of works and are applicable to all common areas (i.e. areas controlled solely by the building owner). Develop green cleaning policy include details regarding: a. Environmental goals and objectives b. Implementation procedures and strategies c. Environmental performance measurements, including metrics d. Quality assurance for ongoing improvement e. Responsible parties and f. Cleaning personnel requirements (including documented monitoring and reporting procedures).			1					To be implemented by Baptist Church.		\$15,000
inn-30E.6			Procurement and Purchasing	1 point is available where a Sustainable Procurement Framework is used to set commitment targets and measure results for purchasing consumables during the performance period.			1					To be implemented by Baptist Church.		
inn-30E.7			Groundkeeping Practices	Site Maintenance Procedures 1 point is available where a best practice process to maintain landscaped areas and hard surface is in place and operational during the performance period.			1					To be implemented by Baptist Church.		\$5,000