Non-Certified Green Star Delivery Pathway.

Brisbane Housing Company
Maidenhair Place Yeronga
Brisbane

01/06/2023

PLANS AND DOCUMENTS
referred to in the PDA
DEVELOPMENT APPROVAL

Approval no: DEV2023/1367

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DOCUMENT DETAILS

Project	Client	Document Type
Park Maidenhair Pl. Yeronga	Brisbane Housing Co.	Pathway.

DOCUMENT CONTROL

Issue	Date	Written	Checked	Distribution
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Background

Brisbane Housing Company (BHC) is a leading provider of affordable housing with a demonstrated ability to deliver innovative provision of social and affordable housing.
Since incorporation in 2002, and a registered Tier 1 Community Housing Provider (CHP), BHC has a well-earned reputation as a solid and reliable organisation, built through effective working relationships and a personalised approach to customer service.

Since BHCs' entry to the social housing market, many social, political and environmental issues have changed by varying degrees. The impact of these changes has resulted in increased pressure to deliver high-quality, well-located, target marketed accommodation to meet the ever-changing needs of the housing market. In response BHC has focused on locating its projects around transport hubs, shopping areas and medical centres means the company favours the multi storey class 2 building as a cost-effective way to maximise the investment. Experience over the past twenty years has demonstrated that many tenants become long term occupants and view the apartments as a permanent home. This semi-permanent occupancy means these units benefit from high levels of personal care and create a greater community focus and safer environment overall.

Given that the majority if BHC tenants are on low or fixed income, providing affordable living options is important. These outcomes are achieved through site selection in superior locations where tenants can efficiently live without a private vehicle through the use public transport or walk to essential services. Through sustainable design BHC provide living environments where energy bills can be kept low and comfort and community support high.
BHC continues to keep low operational costs (outgoings) as a fundamental deliverable in all their projects. To match these needs, BHC has developed common design features that result in:

- Low operational energy and potable water costs
- A focus on security through security doors that allow easy contact and good cross ventilation through the day.
- Naturally ventilated corridors on each floor
- Outdoor private verandas, where possible
- Natural ventilation apartments rather than conditioned spaces

Extreme weather conditions that result in prolonged hot and cold periods has seen BHC put a greater focus on designing assets that meet the needs of the changing climatic conditions. To

respond to this change and the increased societal expectation of the need to reduce carbon emissions, BHC engaged a consulting company to work with their internal team and develop a low-carbon focused design and construction approach to their new projects. This will also be extended to encompass existing asset makeovers, and maintenance as well as the internal administration of the organisation. With several new projects in the pipeline, the initial work has focused on the new stock where initiatives have resulted in a well-developed design and construct system principally focusing on:

- land choice,
- design solutions
- material use
- recycling efforts
- occupants' education

The system is built around early intervention requiring a set of Design Guidelines to be referenced by the design team and included in the early concepts. This subsequently influences all decision after that point ensuring that the finished product demonstrates best practice for that particular project. Variances from the guidelines only occur after due consideration by the entire team and only where the degree of difficulty makes adherence unviable. The guidelines are based on a number of parameters including the organisations' learned experiences and market knowledge referencing the well-respected auditing tools of Green Star and Enviro-Development. The body of work contained in these two tools draws from a global shopping list of best practice that will make sure that BHC is delivery high quality, resilient and efficient buildings.

Priority Development Area (PDA)

Priority Development Areas are areas that serve a given purpose under the Economic Development Act of 2012.

"Priority Development Areas (PDAs) are parcels of land within Queensland identified for development to deliver significant benefits to the community."
https://www.statedevelopment.qld.gov.au/economic-development-qld/priority-development-areas-and-projects

The declaration of the land at Fitzgibbon Chase , CUV and KGUV as PDA's are good examples of community benefits derived from the application of this Act. The buildings in these areas meet performance caveats that increase the sustainability of the housing stock while ensuring its affordability. Yeronga PDAs also carries these caveats however, a mandatory requirement to achieve a certified 5 Star Green Star result rather than a benchmarked 5 Star Green Star can only be justified, in our opinion, where the project would otherwise have delivered at a level equivalent to

NCC compliance or where required by the Development Scheme or preliminary Approval. . These provisions result in sustainable and affordable housing outcomes for buildings in the BHC portfolio. .

“Preliminary Approval for Material Change of Use in accordance with the Preliminary Approval Master Plan Report and Development Permit for Reconfiguring a Lot (1 lot into 11 lots, easements and road) at 70 Park Road, Yeronga described as Lot 3 on SP300888” issued on the 3/5/2022 states:

6.	**Environmental Sustainability (future MCUs)** Subsequent material change of use applications for buildings on the lots created by this approval, shall be designed to achieve best-practice environmental sustainability in design and construction, as measured against a recognised rating system such as Green Star.	To be submitted with each Material Change of Use application

The outcomes delivered by the application of the BHC Guidelines fulfill the requirement of this clause without the undue impact of the fee associated with certification.

Rating Tools

The Green Star(GS) tool was originally developed using the American LEED tool as its model. The majority of information in Green Star and LEED is available in the public domain, so in its simplest form the Green Star tool is a very sophisticated quality management system. It was, and still is, undertaken voluntarily, with the intention of offering the construction industry a pathway that will bring best practice sustainability and operational efficiencies to the table and reward it. The adoption of these tools over the past 20 years has meant that many of the elements once considered near impossible are now common inclusions in projects and inform the National Construction Codes (NCC) performance standard.

The Green Star (GS) approach seeks to bring all parties to the table early and develop a synergistic approach to the project. The primary vehicle for this is the collaborative decision made by the client, the architect and the ESD consultant at the concept stage, culminating in the establishment of the Owners Performance Requirements **(OPR).** Site characteristics, budget constraints, planning restrictions and a multitude of other influencers which impact a project’s viability, means that the early engagement of the client, the architect and the ESD consultant is critical. Agreeing on the number of credits that can provide enough points to meet the required target, mapped against the cost impacts and building feasibility results in the **OPR** forming the core of the tools inclusions. As documented above, BHC has already developed a portfolio wide set of OPR’s, which are benchmarked against Green Star credits in the current iteration of the tool Green Star Building

V1.(see attachment). This benchmarking gives an equivalence to the operational performance of the building including the three critical sectors of performance Energy, Water & Indoor Air Quality. The application of these OPR's results in a cohesive and informed team from the outset, delivering:

- An early understanding by the design team what performance levels must be included in the project and a documented response agreed.
- An active dialogue between the clients representative, the architects and an appointed advising builder, adds early value management opportunities and avoids unnecessary late design and specification changes. This protects the integrity of the performance, while allowing alternative pathways to be pursued.
- A commitment between all parties that the building will include the agreed ESD performance standards.
- Each stage is put on notice of the documentation that may be required to submit for audit, where the material or methodology is not easily confirmed.
- Improvements which are recorded and used to inform the next project through updates to the design and specification.
- A requirement for the builder to sign off at PC that the elements agreed on were included in the build and where deviations occurred, they were agreed to by the owner's representative prior to being used in the construction
- A requirement for documented evidence to substantiate some of the specified items such as, the percentage of construction waste recycled, the use of recycled materials wherever specified, high performing appliances and domestic hot water systems, low water use fittings, low VOC materials, no formaldehyde fumes low cement concrete, as an example of some of the considerations.

A full Green Star certification is a significant undertaking from a time and cost perspective. At this point the appropriate tool is Green Star Buildings V1. This tool is the most recent iteration and refines the previous Design and As Built v1.3 by removing many of the well understood and commonly chosen credits and making their delivery mandatory if a certification is to be awarded. The remaining credits have been adjusted to suit new benchmarks and the credits required on top of mandatory have been adjusted to account for the changes.

The document Sustainability Initiatives for Maidenhair Place (attached) has been employed to demonstrate the mapping of the included initiatives in the BHC Design Guidelines to the present iteration of the Green Star tool Green Star Buildings V1 . Additionally it shows the global

relationship of the initiatives in the context of the 17 ESG's which are universally accepted as the pathway to a more sustainable future.

Green Star Rating Table

The introduction of the new green star tool *Green Star Buildings v1* in 2021 saw the targets redefined for certification. This reflects the movement of some of the previous initiatives into minimal requirement and therefore not capable of adding to the score.

Certification Levels

4 star requires **15 points**
5 star requires **35 points**
6 star requires **75 points.**

The Advantages of an no certified approach

The costs associated with registration and the associated fees can be quite significant. The redirection of this money to improve the quality of the project or to include additional benefits for the tenant, would seem a more logical approach. Fees are set out below.

Registration Fees.

Green Star Buildings certification fees

For new buildings or major refurbishments

The certification fee for Green Star Buildings is based on the project's contract value. Fees excl. GST.

Contract value($ million)	GBCA member discounted fee	Non-member full fee
$0 - $1m	$9.000	$14,000
$1 - $3m	$12,300	$17,300
$3 - $5m	$14,600	$19,600
$5 - $10m	$16,700	$21,700
$10 - $20m	$20,100	$25,100
$20 - $30m	$22,300	$27,350
$30 - $50m	$25,600	$30,600

Consultancy fees.

Consultancy fees vary subject to the star rating being pursued and the delivery organisation size and complexity. The large consultancy firms charged approximately $ 100,000-$120,000 to complete the works ,while smaller consultancies can be around $80,000 - $90,000. Additionally there is modelling for daylight, energy, water and climate resilience which can amount to $50,000.
Given BHC has already developed guidelines inhouse under the stewardship of a Green Star Accredited Professional and mapped the elements against their equivalent Green Star deliverables it would be fair to say the above costs represent almost 100% of additional costs. Approximately $250,000 of fees could be applied to the project with significantly more appropriate and customer centric benefits...

Conclusion

A critical consideration in looking at this proposed delivery framework is to understand that, unlike mainstream tools:

1. The BHC approach sees the client engaged from day one and critically, stays engaged throughout, driving the change to deliver its own delivery parameters.
2. The consultants and builder are onboard right from the start and develop an appreciation of what is required to deliver for each other and ultimately the client.

Unlike the Green star model, which needs a more prescriptive approach if it is going to keep quality control in a more diversified market, the local context of these projects means that the teams may well be involved in more than one project for BHC and will be able to carry their skills and lessons learned across multiple projects
Post construction a final report will be provided, by a suitably qualified person, confirming the inclusion of the initiatives and supporting documentation where appropriate.

ATTACHMENTS

Sustainability Initiatives for *Maidenhair Place* Yeronga

SUSTAINABILITY INITIATIVES MAIDENHAIR PLACE YERONGA

June 2023

Item	Element	Sustainability Initiative	Response	Responsibility	Stage	Check	Mapped to.	Potential GS Score.	Benefits	Carbon Reduction	SGC Goals Delivery
	Site Characteristics										
1	**Site space allocation.**	Apply similar focus to external living as internal. Allocate essential areas early. Benign climate means active outdoor most of the year. Build value into the external national amenity. Bees. Nesting trees, etc	• Building design should create interesting interactive areas by design. • Orchard and onsite food growth where possible • Community gardens, • Cycle access, storage.	Architect	Early	Please Select	**Green Star Buildings (Health: Connection to nature. Credit 14 &15.)**	**2**	Building provides internal amenities that improve occupant experience of the building	Y	
2	**Community footprint. Special provision spaces.**	Can the building accommodate the changing nature of human occupancy?	• Accessibility requirements. • Community enhancement through cooperative initiatives. • Transport options	Developer/Architect/ Marketer	Early	Please Select	**Green Star Buildings (Health: Connection to nature. Credit 14 &15.)**	**1**	Building provides internal amenities and some future proofing for the changing lifestyles a future climate.		
3	**Stormwater**	Minimise stormwater discharge through the following: + Water pervious hardscaping + Retain / re-instate vegetation, particularly deep-rooted trees + Implement water sensitive urban design principles + Consider the impact of climate change on stormwater discharge.	Manage stormwater so that the post-development peak Average Recurrence Interval (ARI) event discharge from the site does not exceed the pre-development peak ARI event discharge.	Architect / Landscape Architect / Civil Engineer	Early	Please Select	**Green Star Buildings (Nature: Stewardship Credit 39.)**	**1**	Stormwater can cause problems downstream when peak events cause flooding. It can also be a source of pollution when litter, sediment, nutrients and chemicals are washed into waterways.	Y	
	Carbon/Energy										
		Structure									
4	**Embodied Carbon**	**Prioritise the following:** • Reused materials • Materials with recycled content • Materials with waste products • FSC / PEFC Certified timber • Climate Active Carbon Neutral Certification	1.Portland cement reduction of 30% across all concrete uses in the project. 2.Minimum 5% reduced use of steel reinforcement compared to a standard building 3. FSC/PEFC Certified timber to be specified as preferred	Architect / Structural Engineer / Interior Designer	Planning/ Design	Please Select	**Green Star Buildings Positive: Up front Carbon Emissions Credit 21)**	**2**	Carbon emissions of a building are highest during the use phase, however as buildings become more efficient, the impact of the embodied carbon is becoming more significant. Materials with high embodied carbon include concrete, steel, bricks etc. The World Green Building Council has set a target that by 2030, all new buildings, infrastructure and renovations will have at least 40% less embodied carbon with significant upfront carbon reduction.	Y	
		Appliances/ Energy Generation									
5	**On- site Generation**	On site generation through PV system capable of providing off set for community power demands.	PV System capable of covering communal power use provided	Electrical Engineer	Planning/ Design	Please Select	**Green Star Buildings Positive: Grid Resilience, Credit 20)**	**1**		Y	
6	**Energy use / Greenhouse Gas Emissions (Use phase)**	Low Energy Water Heating (High efficiency electric instantaneous, or heat Pump) Provide a 'Home User Guide' to each apartment EV Charging Low Energy appliances Bicycle parking is provided for each apartment	**All electric Building by 2030** 1. High energy star rated appliances 2. No pool present 3. PV's (see initiative 7) 4.EV Charging capabilities via conduit and electrical board allocation, ready for future charger requirements. 5. Users Guide (see initiative 21) 6. High Efficiency electronic instantaneous HWS. 7.Encourage tenants to purchase new or replacement appliances to meet energy star rating as follows: Refrigerator 4.5 Star Energy Rating Washing machine 4.5 Star Energy Rating Dishwasher 4.5 Star Energy Rating Dryer 6 Star Energy Rating	Electrical Engineer Architect	Planning/ Design	Please Select	**Green Star Buildings Positive: Grid Resilience, Credit 20)**	**2**	Buildings are currently responsible for 39% of global energy related carbon emissions: 28% from operational emissions, from energy needed to heat, cool and power them, and the remaining 11% from materials and construction. Current industry trends are aiming for all new buildings to be net zero carbon in operation. Electrification is the direction in which the property industry is moving as it is one of the most important tactics for decarbonising the building sector. Major industry players such as Lendlease and Australia's GPT Group have electrification high on their agendas. Note Split cycle AC where included should be •Peak Smart/ •R32 gas. •EER 3.3-3.5	Y	

Comfort											
	Thermal Comfort										
7	**modelling**	• Achieve a high Nathers rating for all apartments • Install ceiling fans to all bedrooms where required • Install efficient window systems that reduce heat gain and loss (See modelling) • Management of air infiltration through good building practices and air tightness testing	All units are 7 stars average and minimum individual rating 6 stars. No QDC allowances Blower door test at least one of each design on level 1 and top level.	Architect / Nathers Assessor / Head Contractor	Planning/ Design		**Green Star Buildings Positive: Energy Use, Credit 22)**	**2**		Y	
Water											
		Potable Water Minimisation.									
8	**Water Use**	Select high WELS rated fixtures.	The building will reach at least a 30% reduction in potable water usage through high efficiency fittings. (Benchmarked against BAU requirements). The following WELS ratings will be provided as a minimum and surpassed where viable and available: •Taps (Kitchen) – 4 stars with a maximum flow rate of 7.5L/min •Taps (Laundry & Bathroom) – 5 stars with a maximum flow rate of 6L/min •Toilets – 4-star dual flush with a maximum flow rate 3.5L/flush •Showers – 4 stars with a maximum flow rate of 6L/min **Appliances:** •Washing machine – 4 stars (where supplied) •Dishwasher – 5 stars(where supplied)	Architect / Hydraulic Engineer / Fire Engineer / Landscape Architect	Planning/ Design	Please Select	**Green Star Buildings Positive: Energy Use, Credit 25)**	**3**	Australia is the driest inhabited continent on earth, yet per capita is amongst the highest consumers of water. The impacts of climate change on rainfall will mean longer periods of drought and a reduction in rainfall in highly populated areas such as Eastern and Southern Australia, with an increase of intense rain periods and extreme rain events.	Y	
9	**Storage**	Water storage on site for collection and reuse.	Install appropriately sized rainwater tanks for landscape irrigation (root drip feed) and where possible collect and save fire test water for reuse.	Hydraulics Engineer	Planning/ Design	Please Select	**Green Star Buildings Positive: Energy Use, Credit 25)**	**1**	Black bitumen and dark roofs compound hot days by creating a heat island effect, where heat is absorbed during the day and reradiated back at night increasing surrounding air temperatures. It is estimated that on ground temperatures can be as high as 55 degrees C in the sun. Creating a micro-climate around the building can reduce the urban heat island effect, reducing the need for cooling and therefore creating less carbon emissions	Y	
Indoor Environmental Quality											
		IEQ									
10	**Indoor Comfort & Amenity**	**Internal Performance Levels** • Moisture management prevents the growth of mould • Install thermal breaks in steel framed buildings • High quality artificial light should be provided throughout • Low VOC paints / carpets / adhesives / sealants • Low formaldehyde engineered wood products • Internal noise levels from services and the outside are limited through an acoustic comfort strategy. • Point source pollutants exhausted directly outside (kitchens). • Determine the extent of the fugative leakage of poor quality external air into the closed apartment. • Provide continuous fresh air to apartments to retain air quality	Ensure an appropriate condensation management strategy is used for the external fabric of the building. 95% of all paints, carpets, adhesives and sealants are low VOC as defined by the Green Building Council of Australia. 95% of all engineered wood products are low formaldehyde as defined by the Green Building Council of Australia. Blower door pressure test 20% of the apartments to determine average leakage. Provide independent mechanical air exchanger to apartments.	Architect / Interior Designer / Mechanical Engineer / Head Contractor / Acoustic Consultant	Planning/ Design	Please Select	**Green Star Buildings Positive: Energy Use, Credit 10 - 15)**	**9**	Our homes impact our health and wellbeing. With 90% of our time spent indoors and two thirds of that being spent at home, it is essential to provide high levels of indoor environment quality. This means good ventilation and daylight, avoiding the build-up of moisture and reducing harmful emissions from materials used during construction. **Moisture Control**: The drying capacity of the building's envelope is fundamental for its long-term durability. To achieve this, careful consideration needs to be given to the required performance of the system based on the climatic conditions of the location where the building is constructed. **Thermal bridges: These** occur where there's a break in the buildings insulation layer, resulting in localised heat loss and gain. If unaddressed, the impact on a building's energy performance can be significant. Importantly, these areas may cause cold spots on which condensation may form. Low formaldehyde and VOC's products and fittings are readily available and should be specified as standard.		

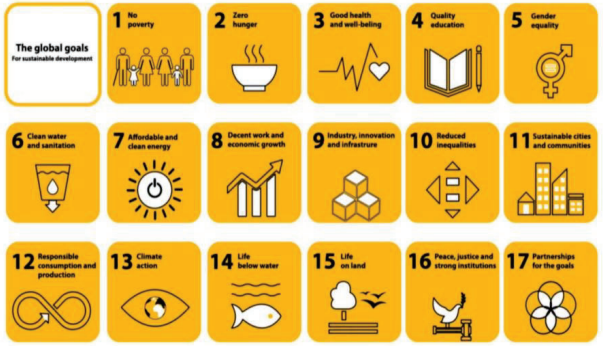
External Environment											
		Landscaping /External lighting									
11	**Water Resources**	Landscaping includes: + A high proportion of indigenous planting species + No invasive species + A diversity of species / genus' is selected + Root watering from onsite water retention + Xeriscape planting where possible	External landscape in the building, horizontal and vertical, must be provided at a ratio of either 15% of the site area or at a ratio of 1:500 of the GFA. Greater than 60% of plants should be indigenous and the site must include at least one significant (nesting) tree or equivalent habitat provision.	L'scape Architect	Planning/ Design	Please Select	**Green Star Buildings Nature: Energy Use, Credit 36)**	**2**			6 Clean water and sanitation
12	**Urban Heat Island Effect**	Create a cooler microclimate around the building through the following: • Light coloured roof (Colourbond Surf mist or Whitehaven) • Light coloured paving (White concrete or equivalent) • Shading hardscaping elements through overhanging vegetation or roof structures • Space for deep planting incl. shade trees, pergolas • Solar panels	Minimum: 75% of whole site area to be a combination of heat reducing elements including light colours, vegetation, water bodies, low thermal mass, shading etc.	Architect.	Planning/ Design	Please Select	**Green Star Buildings Resilient: Heat Resilience, Credit 19)**	**1**		Y	11 Sustainable cities and communities
		Owner Focus									
13	**Occupant driven performance.**	• Provide a 'Home User Guide' to each apartment •Bicycle parking is provided for each apartment • Noise / Fumes	**Minimum:** Provide a 'Home User Guide' to each apartment to inform residents about the operational and maintenance requirements of the ESD initiatives in their homes. **Where viable** One bicycle parking space is provided for each apartment. **Minimum:** Kitchen rangehoods to be exhausted externally. **Minimum:** Consideration must be given to internal ambient noise levels in the apartments. They should be no less than 5 dB below the lower range value and no greater than the upper range value relevant to the activity type in each space as recommended in AS/NZS 2107. Additionally, noise levels should not exceed recommended Sleep Disturbance criteria as defined in the NSW EPA Road Noise Policy 2011	Full team		Please Select	**Green Star Buildings Various incl Responsible : Responsible Procurement, Credit 16)**	**1**	Buildings built now are expected to have a typical lifespan of 50 years or more. Climate change adaptation is the principal way to deal with the impacts of climate change. It can help to manage risks, adjust economic activity and reduce vulnerability. For building owners and managers it can also improve long term business certainty. Australia's climate is changing. Four priority climate change impacts have been identified including extreme heat, drought and water scarcity, sea level rise, and extreme storm and flash flood. Climate change projections show that the occurrence of these events will increase, as well as the intensity.		9 Industry, innovation and infrastructure
Additional Considerations and Trends											
14	**Accessibility**	Apartments should be future proofed so that they are capable of catering for all age groups and life situations.	The apartments are designed to comply with the Livable Housing Guidelines at varying levels and in varying numbers		Early Planning	Please Select	**NCC 2022**	**2**	This is likely to have a gestation period once the NCC is released. A 1-year industry adaption Is not uncommon. By including the provisions into your projects now you will have minimum disruption when the provision become mandatory. Additionally, this is an opportunity to get ahead of the market and provide evidence that BHC are market considerate rather than minimum performance.		10 Reduced inequalities
15	**Parking and Cycle facilities**	Cycle The access points must be connected to the relevant cycle storage facilities. Building must include Car Share parking spaces. Infrastructure to all future car charging facilities and an EV load management system.	The cycle access points will be connected to the relevant cycle storage facilities. Car share parking has been included and EV energy supply conduits will be fitted to all spaces. EV Loading provision will be made Parking ratio is 50% of BAU. This saves significant construction carbon and ongoing carbon emissions through less vehicles on the road consuming fossil fuels.			Please Select	**Green Star Buildings Positive: Movement and Place, Credit 27)**	**1**	In Queensland the QDC will be adjusted most likely to 2019 levels instead of 2009. This will mean that some additional bonuses will be available but starting from a higher minimum base.	Y	7 Affordable and clean energy
							Potential GS Buildings V1 score	**31**			

Metrics

ESG

People	Planet	Profit
Social measures	Environmental measures	Economic and financial measures
• Quality of life	• Air and water quality	• Revenue and cost
• Unemployment rate	• Energy consumption	• Efficiency and productivity
• Gender equality	• Natural resources	• Organisational size and value
• Income	• Solid and toxic waste	• Company growth
• Relative poverty	• Land use and land cover	• Employment distribution by sector
• Higher education		• Percentage of firms in each sector
• Average commute time		• Revenue by sector
• Crime		• Profit margin
• Life expectancy		

3 P's



17 SDG's (Sustainable Development Goals)