If a building becomes architecture, then it is art. Clearly, if a building is not functionally and technically in order, then it isn't architecture either – it's just a building.
Arne Jacobsen

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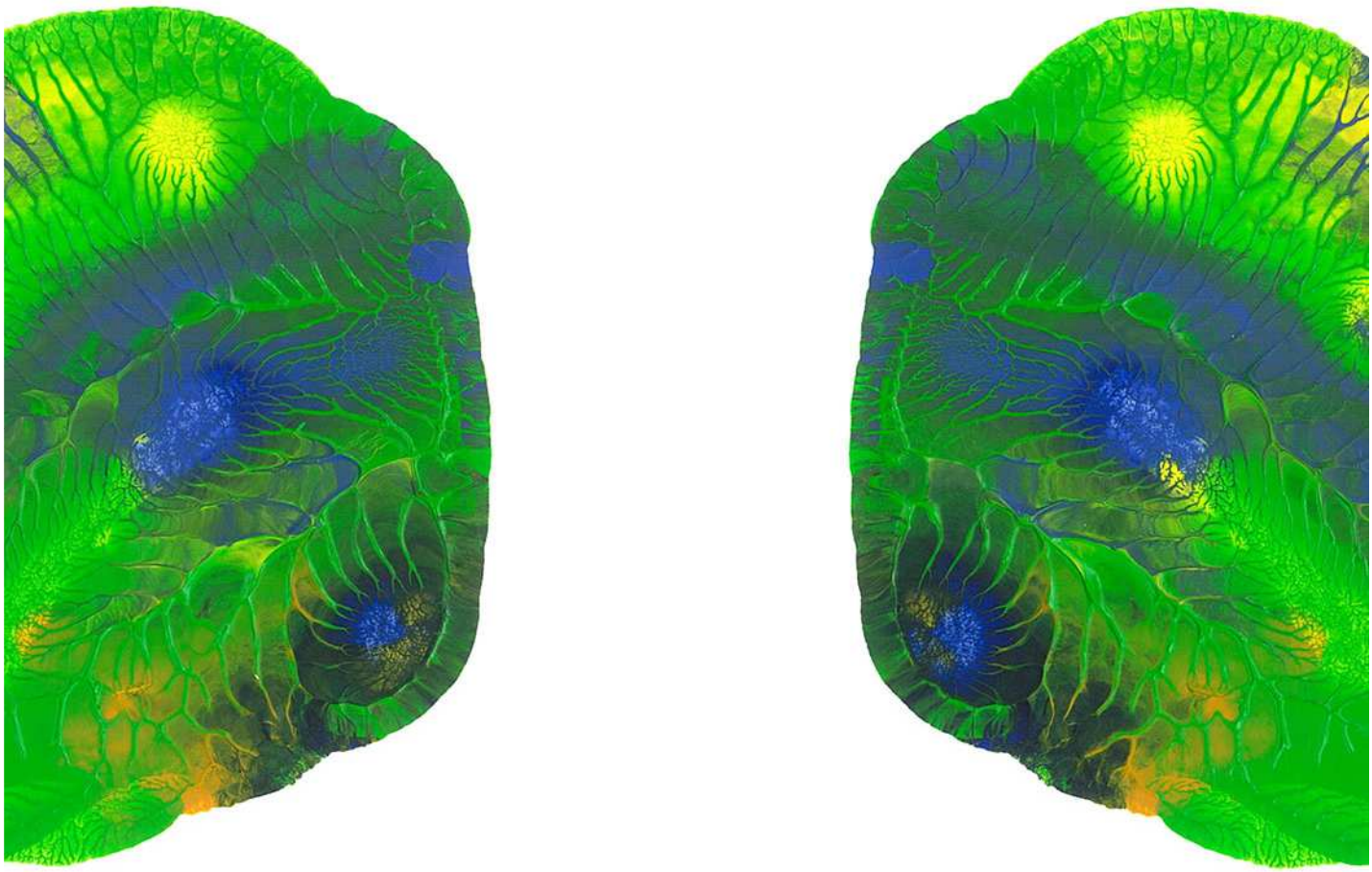
SUSTAINABLE DESIGN

STEENSEN VARMING

Bulli Aged Care Centre of Excellence (ACCE) ESD Schematic Design Report



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Sydney July 13th, 2016
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1.0 Executive Summary

This report provides an overview of the key sustainable initiatives being considered by the project team for the Bulli Aged Care Centre of Excellence (ACCE) development. The Bulli Aged Care Centre of Excellence will comprise a partnership between the Illawarra Shoalhaven Local Health District (ISLHD) and the IRT, a private residential aged care provider.

- Private Facility – IRT RACF Wing (Residential Aged Care Facility); and
- Public Facility - ISLHD Wing (Illawarra-Shoalhaven Local Health District).

The key emphasis for Healthcare buildings of this type is to improve occupant comfort whilst reducing energy consumption and maintaining the specific functional needs. Healthcare buildings are complex building types, as they consist of a wide range of functional and servicing requirements that typically place a higher demand on energy and water consumption, and can lead to substantial waste generation.

To reduce the energy and water demands, suitable and appropriate sustainable design initiatives should be considered in the design of the ACCE development in order to achieve an environmentally sensitive and energy efficient building.

For RACF wing, the design places greater emphasis on the quality of the space from an occupant comfort and wellbeing perspective. With greater emphasis on occupant comfort, through access to views, daylight, and high indoor air and environmental quality, a response to these priorities have been included within this report.

Sustainable design strategies have been considered for the ISLHD such as natural ventilation etc. however due to functional requirements of the majority of spaces; such passive strategies would not be suitable.

The ACCE is also targeting an aspirational 4 Star Green Star equivalency rating, utilising the current Green Star Design and As-built rating tool v1.1. In aligning with the core occupant comfort priorities for development, an emphasis has been placed on targeting credits that provide improved occupant comfort, supported by low energy systems and water conservation strategies.

Those credits deemed applicable to ACCE in achieving a 4 Star Green Star equivalency have been identified in the Green Star pre-assessment and circulated to the design team for their consideration.

We note that some credits require input from external parties that are not currently engaged such as a transport planner, ICA, LCA Practitioner. We assume these will not be engaged for an equivalency rating and in the absence of these consultants we will have to make a collective assumption on performance and ensure the most appropriate design considerations have been captured.

A Green Star Equivalency Rating can never be of a true equivalency. It is the ESD consultant's responsibility in combination with the design team to ensure that initiatives and strategies are applicable, provide best outcome for the project, and are not solely selected as part of a tick the box exercise. A copy of the Green Star Pre-assessment identifying the credits targeted has been in included in this report.

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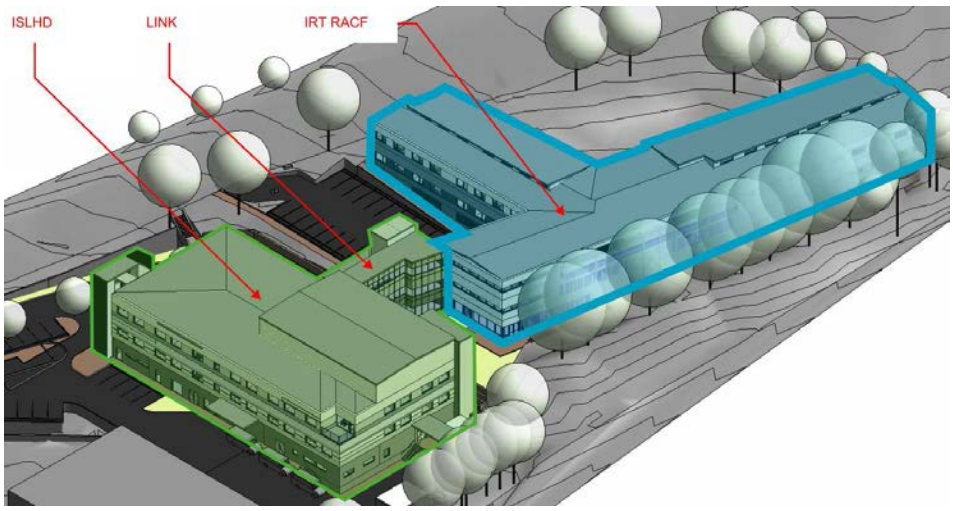
2.0 Introduction

This report was prepared by Steensen Varming for the Bulli Aged Care Centre of Excellence (ACCE) development is located in Bulli, NSW. The Environmentally Sustainable Design (ESD) initiatives presented in this report have been based on discussions with the project design team during Schematic Design Stage.

The Bulli Aged Care Centre (ACC) of Excellence will comprise a partnership between the Illawarra Shoalhaven Local Health District (ISLHD) and the IRT, a private residential aged care provider.

- Private Facility – IRT RACF Wing (Residential Aged Care Facility); and
- Public Facility - ISLHD Wing (Illawarra-Shoalhaven Local Health District);



This report has been separated into the following sections:

- Regulatory requirements;
- Sustainable design approach;
- Key Design considerations;
- An overview of the Green Star Equivalency Rating

2.1 Regulatory Requirements

The NSW Government is committed to sustainable development and to advancing sustainable practices in the design, construction and operation of healthcare buildings. Within NSW, the design of healthcare facilities is governed by many regulations and technical requirements. The proposed development is required to respond to the following key regulations as a minimum:

- NSW Health requirements (In particular: Design Guidance Note No 6 Rev B)
- HI Engineering services guides;
- Environmental Performance Guide for buildings (EPGB)

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- NSW Government Sustainability Policy
- NCC (BCA) Section-J

The Engineering Services Guides require a 10% improvement in energy consumption when compared to NCC Section J minimum energy performance standards. An improvement of 10% comprises of both building envelope and systems combined improvement.

It is expected that only ISHLD Wing would be required to achieve the requirements of Design Guidance Note No 6 Rev B.

The nature of the RACF Wing does not lend itself to the same façade performance requirements as a traditional hospital building, and has greater emphasis on maximising daylight, views and external connectivity associated with residential/habitable spaces. The design will however continue to align with those principles identified, and seek a good performing façade that is considerate of capital cost, maintainability, weather protection and overall longevity.

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3.0 Sustainable Design Approach

Sustainable building design comes from a holistic and integrated design approach that builds on an increased awareness of site opportunities, form and function, to encompass and target a broad range of topics; that include but are by no means limited to the following.

- Site selection;
- Positioning, massing and orientation of buildings;
- Occupant comfort;
- Energy and water reduction (Refer to Green Star Pre-assessment);
- Material selection (Refer to Green Star Pre-assessment);
- Emissions reduction (Refer to Green Star Pre-assessment);
- Waste reduction (Refer to Green Star Pre-assessment).

An aspirational 4 Star Green Star equivalency rating is being pursued for the ACCE. This demonstrates the projects commitment to the practice of sustainable design during the design, construction and operation of this facility.

Section 4.0 – Key Design Considerations, further develops on those sustainable design initiatives that are critical to aged care facilities. Initiatives for sustainable design such as waste, water, ecology and transport that were previously identified in the concept report, have been largely superseded by the Green Star Equivalency Matrix (See Section 6.0)

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4.0 Key Design Considerations

4.1 Key Passive Design Strategies

The primary objective of passive design systems is to provide a habitable environment that is comfortable without reliance on active systems that consume energy, such as air-conditioning. For a passive design approach to be of success, excessive demands for heating and cooling (associated with solar heat gain, internal gains and infiltration) must be reduced/controlled and kept within acceptable levels for strategies such as natural ventilation to be effective within occupant comfort levels and with minimal engagement of active space conditioning.

The key passive design strategies considered for the Bulli Centre for Aged Care of Excellence are listed below:

- Minimising gains/losses through the building fabric;
- Natural ventilation (IRT RACF only);
- Maximising natural daylight in order to minimise levels of artificial lighting;
- Appropriate levels of glazing based on space type and priority for views and daylight.
- Minimising solar gain through solar control glazing and/or external shading in summer (IRT RACF only);
- Promotion of passive heating through permitting solar radiance to penetrate in winter;
- Minimising structural cold bridges, that can act as a single point of high heat gain/loss;
- Minimising unwanted air leakage and the avoidance of draughts;
- Internal blinds required in all non-transient spaces for glare control and privacy;

4.1.1 Mixed Mode Ventilation

For many hours of the year, ambient external conditions are considered favourable (between 19 and 26°C) to natural ventilate relatively transient spaces such as these. In utilising a mixed mode ventilation, the design must be considerate of the following:

- Local Climate (air temperature and humidity)
- Prevailing wind direction
- Local built environment
- Minimise impacts of noise and airborne pollution
- Building functional use and occupancy patterns
- Thermal comfort temperature and relative humidity range

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In opting for a mixed mode ventilation strategy, large energy savings can be achieved in comparison to a standard air-conditioning approach.

There are two main drivers for natural ventilation;

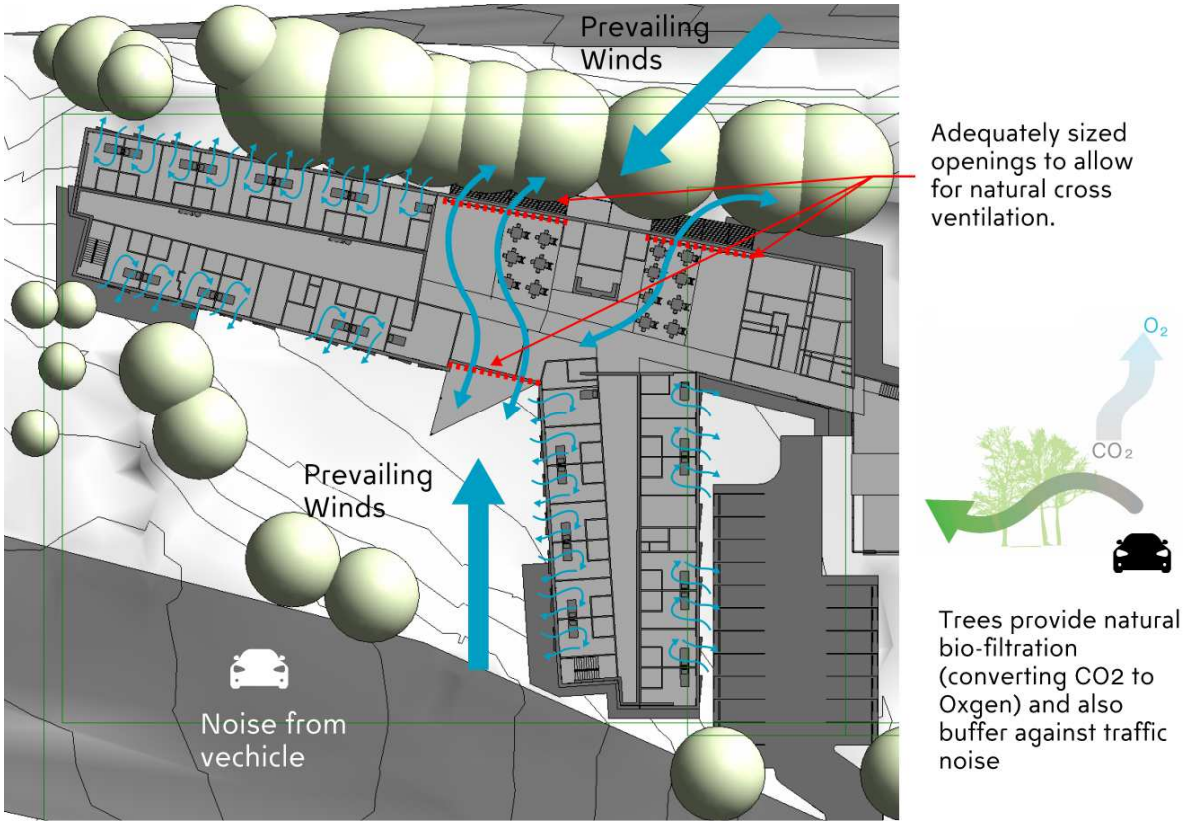
- Stack or buoyancy ventilation which works on the principal of hot air rising due to a density difference. Hot air inside will rise and accumulate at roof level where it will be exhausted, this results in cooler fresh air being drawn in at low level.

- Cross ventilation occurs when two opposite sides of the building have openings that promote external breezes to pass through due to a difference in pressure created across the two facades. Through utilizing existing openings in the east and west facades of the atrium, cross ventilation could be maximised through the foyer and adjacent spaces.

Mixed mode ventilation has been considered for the RACF Wing as follows. It is not expected that mixed mode ventilation would be suitable for the ISHLD Wing,

Cross Ventilation / Stack Ventilation

Communal and dining area in the RACF as shown in the following image is considering the use of cross ventilation. For the vast majority of a typical day, these spaces are subject to a low internal loads (moderate occupant levels), making the acceptable to a passive servicing approach.



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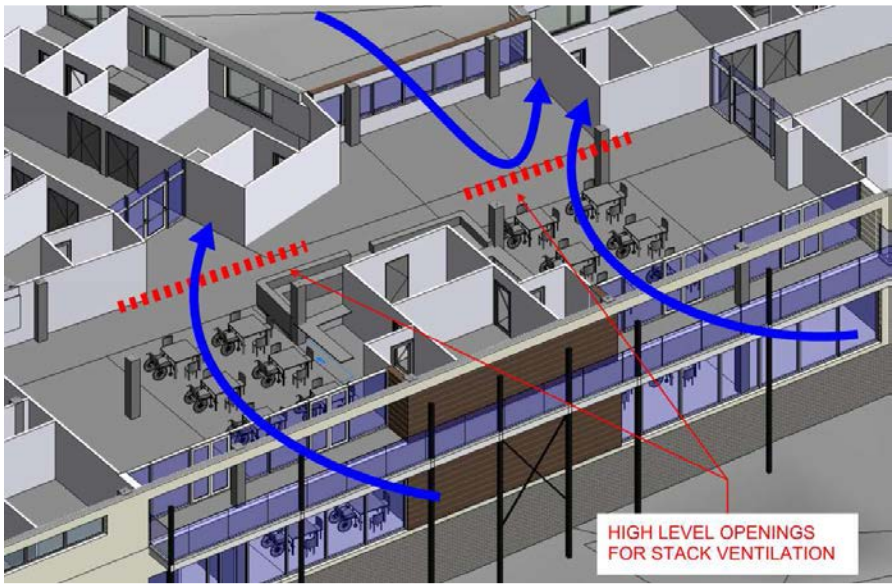
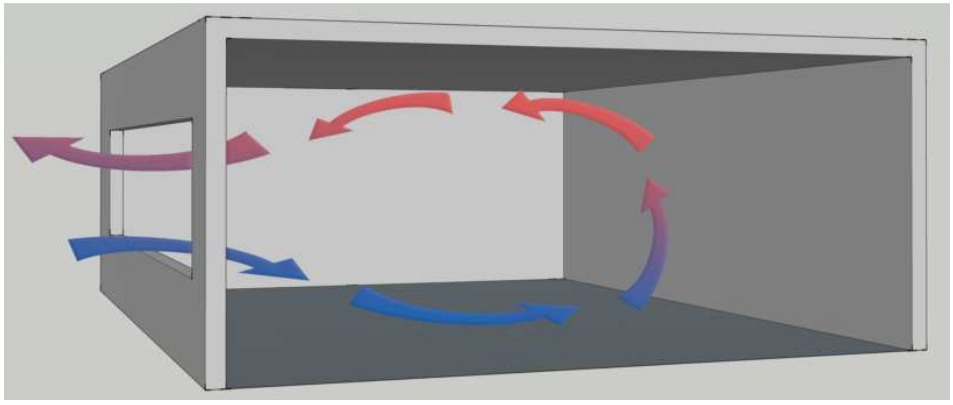
In addition, a high level window opening can be considered above the communal area to allow for stack ventilation. Stack ventilation would allow the communal area to utilise natural ventilation during still days (i.e. prevailing winds are insufficient to effectively cross ventilate). Air would be drawn in at occupant level, providing a cooling to occupants, oxygenated air, then rising (as it is heated) and relieved at high level.



Single Sided Ventilation

Bedrooms to the RACF Wing could employ single sided ventilation. Single sided ventilation is most effective through the use of low and high level openings. It is understood that the bedrooms to level 2 will consist of low risk patients and therefore openable windows are expected to be acceptable. It is recommended that windows with limited opening distance be considered for security and safety to patients.



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Limitations to this strategy include traffic noise and pollution (vehicle exhaust) from Hospital road. However, trees from along hospital road will assist with buffering noise and naturally filtering (bio-filtration) of incoming outdoor air

The mechanical services must be zoned and controlled to facilitate such a strategy in these areas. Further detailed studies would occur during the next stage in evaluating its appropriateness, controls, opening types etc.

4.1.2 Solar Shading

Shading systems play an integral role in the thermal performance of a building in controlling solar loads. The design parameters for external shading systems included consideration to:

- Building / window orientation
- Seasonally selective - controls summer solar heat gains and allows winter sun penetration for passive heating
- Sympathetic to daylight access
- Preservation of views to outside
- Compliment building aesthetics and are considerate to maintenance requirements

The diagram below illustrates the annual sun path over the site. It is important to understand how the sun travels over the site and where the sun is positioned in relation to each facade orientation at certain times of the day/season and the appropriate type of shading (i.e. horizontal, vertical or both).

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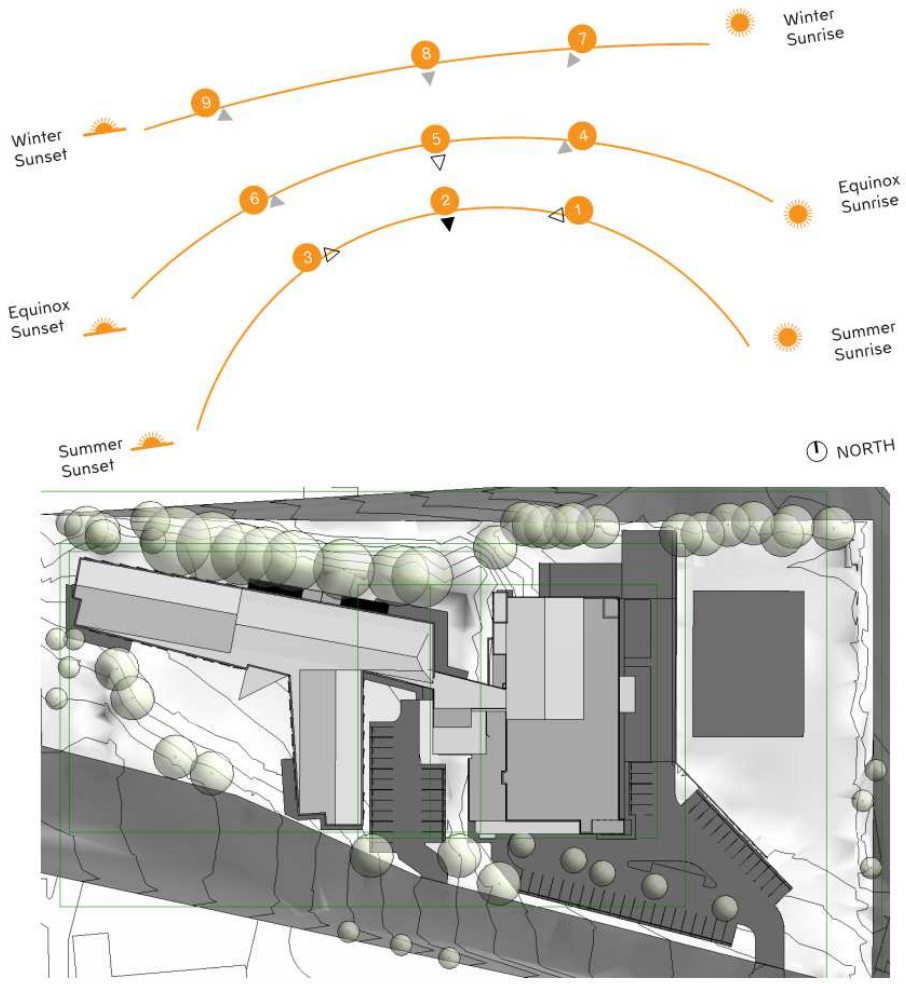

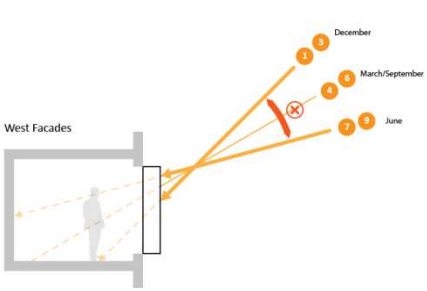

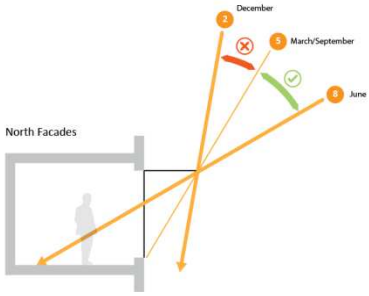

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Effective strategies for solar control include solar control glazing, internal reflective blinds, vertical shading devices, awnings, natural shading from trees, and southerly orientated pop out windows among others.

The design team have been progressing the façade design with the work to date, and have reflected solar shading (IRT RACF only) in the architectural elevation drawings. The ISLHD is considering the use of solar control glazing on appropriate orientations i.e. north, east and west, to be developed during design development phase.

4.1.3 Natural Daylighting

Promote natural daylight to all ward, communal areas and general circulation spaces. The main drivers for the promotion of daylight are as follows:

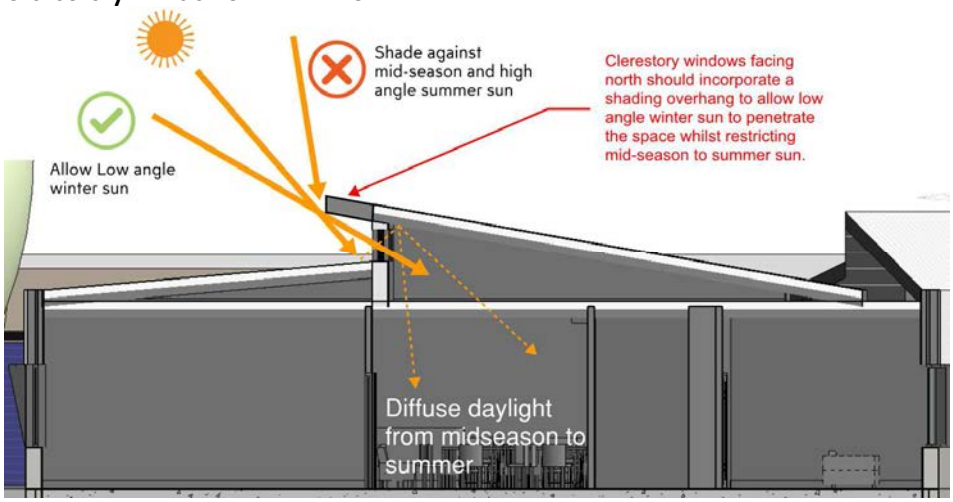
- Reduced energy consumption associated with electric lighting
- Benefits to human health and well-being
- Appearance of the space
- Passive Way finding

Through the promotion of daylight, the consultant team must be considerate in the management of glare, privacy, and solar heat gain ingress. The proposed building envelope must identify the correct balance between these competing factors, in providing a comfortable and welcoming environment for patients, staff and visitors.

Some initial strategies include:

- High level windows can assist to ensure an even distribution of daylight across the floorplate. However due to the sensitive nature of the space, daylight should enter in a controlled and diffuse manner, so as to avoid the issues of excessive heat gain (treated by mechanical systems) and glare to those occupants within.
- Appropriately sized façade glazing, supporting the space type and requirement for natural daylighting and views.

Clerestory Windows – IRT RACF



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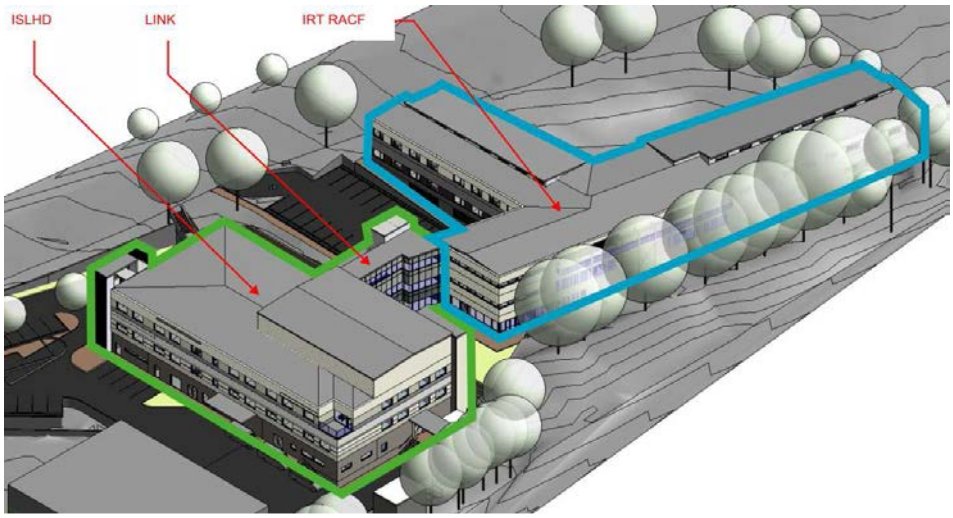
Clerestory windows have been included above the corridors to the RACF (serving RACF), with skylight glazing included at specific intervals, rather than a continuous strip. This approach will create highlights within the corridor to align with the architectural intent. In addition, the skylight orientations (east and north) will generally experience higher intensity natural light and therefore would not require the entire vertical face of the clerestory to be glazed in achieving adequate levels of daylight. Reduced glazing area will also assist with reducing solar heat gains and heat losses in winter.

Façade Glazing

The glazing area for each space is based on the need for daylighting and views as per the following table.

Percentage Glazing	**Space Use**
High	Living / Communal areas Circulation
Medium	Wards / Bedrooms / Offices
Low	Consultation
No Glass	Utility / Storage / Plantrooms



This approach ensures the Bulli ACCE balances the requirement of providing adequate views and natural daylight to spaces, whilst minimising the unwanted heat gains and heat losses as a result of extensive glazing.

The following façade glazing strategies have been considered:

- Façade glazing with a high VLT (Visible Light Transmission) is preferable.

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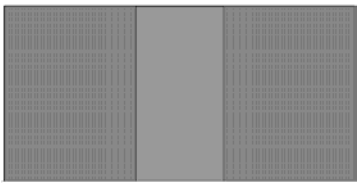
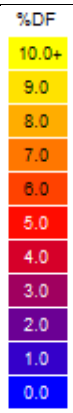
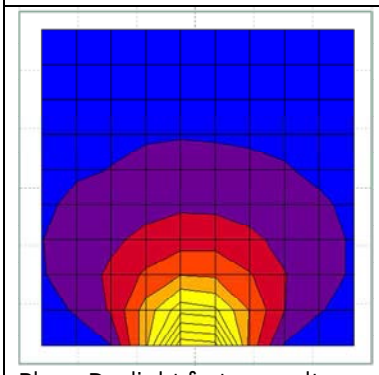
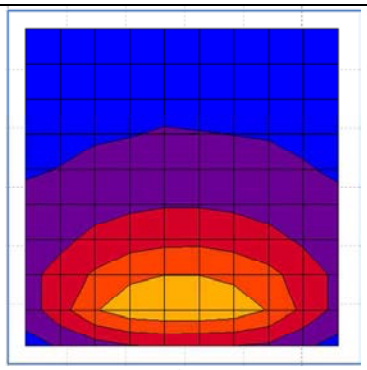
- Regular glazing elements at periodic intervals provide better daylight uniformity and integration of daylighting strategies with artificial lighting systems. Windows at regular intervals have been proposed predominantly throughout for daylight uniformity and in providing easy access to views.

Example: Vertical Window vs Horizontal Window daylight factor comparison		
Vertical Window	Horizontal Window	**Daylight Factor Scale**
Elevation  Façade: 6m (w) x 3m (h) Glazing: 1.5m (w) x 3m (h)	Elevation  Façade: 6m (w) x 3m (h) Glazing: 1.2m (w) x 4m (h) Sill Height: 0.8m	
 Plan - Daylight factor results	 Plan - Daylight factor results	
Notes: - Each grid spacing is 0.5m x 0.5m - Glazing Visible Light Transmittance (VLT) is 70%.		

- Locating glazing at the appropriate height relative to space use/task and depth of room. Small cellular rooms (such as consultation rooms/wards/offices) benefit from mid-level glazing,

4.1.4 Secure Places of Respite

Balconies and secure external courtyards provide easily accessible breakout space for the happiness and wellbeing of patients, staff and visitors. The following external areas include:

- IRT RACF Garden;
- IRT RACF Balcony for patients on level 3; and
- External areas surrounding the ISLHD.

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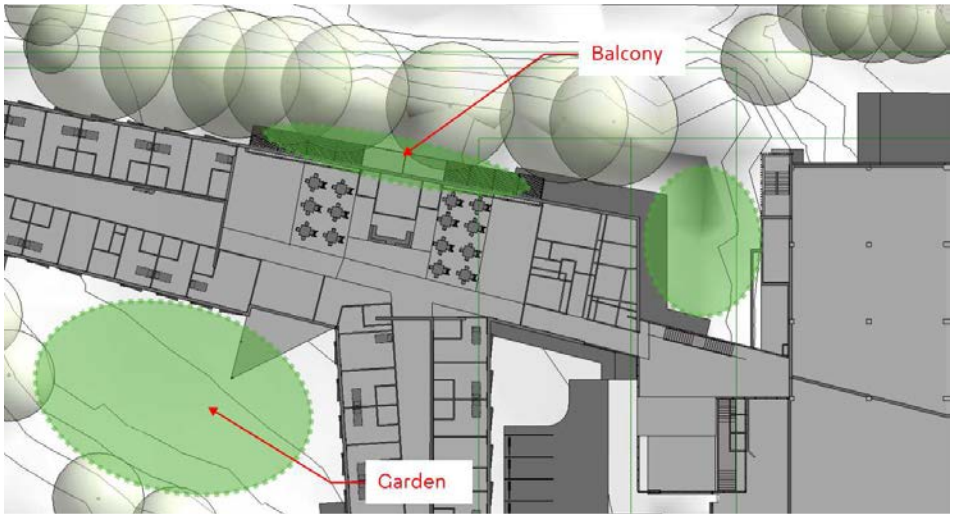

4.2 Active Strategies

Refer to the building services (mechanical, electrical and hydraulic) report for details regarding low energy active strategies proposed for the Bulli Aged Care Centre of Excellence.

4.3 Renewables

Onsite Renewable integration reduces the reliance on the grid electricity, provides resilience against rising electricity prices and demonstrates the Aged Care Centre's commitment to reducing carbon emissions.

Opportunities exist to integrate onsite renewable energy for Bulli Aged Care Centre of Excellence. Although their contribution would be minimal, given the size and ideal orientation of roof (large area of north facing roof), solar PV integration would be appropriate. Small amounts of power can be generated in offsetting energy use for specific/nominated tasks.

Onsite renewable integration in the form of Solar Photovoltaics (PV) and Solar thermal preheat for domestic hot water have been considered for the Bulli ACCE during Schematic Design Phase. However, due to the cost constraints, Solar PV and Solar thermal have not been incorporated within the design.

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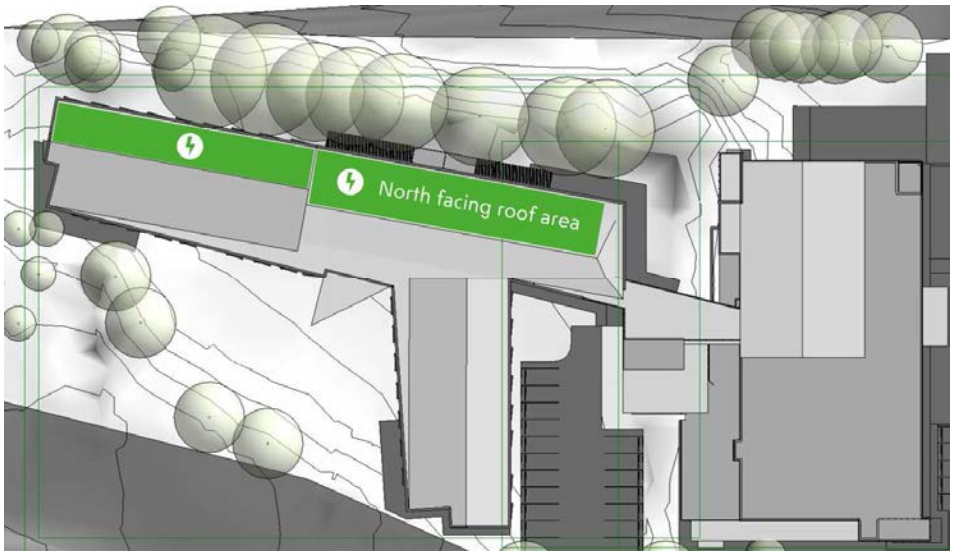

Should solar technology be incorporated, it is vital that a review of the overshadowing impact of the trees to the north is undertaken to ensure significant shading does not occur to solar panels.

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5.0 Green Star Equivanlency

5.1 Overview

The purpose of the pre-assessment is to identify which points we believe the design can achieve in meeting the required 4 star Green Star Equivalency Rating requested by the project brief. The points targeted are based on a preliminary review of the current design, and assumed achievable by Steensen Varming. We have requested that all consultants review their responsible credits and provide confirmation by addressing the points outlined in the comments column i.e. Achievable, Risk Level, Additional Points, and Proposed Systems.

To achieve a 4 Star Green Star equivalency rating, the project must achieve 45 points. Currently, we have identified 46 points as achievable (also shown in the pre-assessment). Refer to Appendix A for the Green Star Preassessment.

In understanding the structure of the pre-assessment, please refer to the table below.

The categories covered under Green Star include:
- Management
- IEQ (Indoor Environmental Quality)
- Energy
- Transport
- Water
- Materials
- Land Use & Ecology
- Emissions
- Innovation

CATEGORY / CREDIT	CODE	CREDIT CRITERIA	POINTS AVAILABLE	POINTS ACHIEVABLE	POINTS TBC	RESPONSIBILITY	RISK IN ACHIEVING FOR 4 STAR	ASSESSMENT COMMENT FOR 4 STAR	CONSULTANT COMMENTS	Cost Impact (QS to advise based on Consultant comments)
Credit Tile	Credit Ref. number	Credit Criteria title	Maximum Points available for the credit	Point this project is targeting. If no points are targeted, this means it is assumed that these are not being targeted to achieve the 4 star equivalency.	Points TBC column	Identifies the primary credit responsibility and secondary responsibilities. The primary responsibility is to lead in acquiring information from the secondary consultants.	Risk Level in achieving the credit. This should be confirmed by each responsible consultant.	The assessment comment provides a summary of the credit requirements and the assumptions made by Steensen Varming in relation to achievability of the credit. This comment is intended to provide an overview of the credit, however, each consultant is still required to review the technical manual in detail and provide.	The Consultants comment column is reserved for commentary from the design team. The comments provided for each credit must address the 3 points outlined in the header, they are: 1. Achievable: 2. Risk Level: 3. Additional Points: 4. Proposed Systems:	The Cost impact comment is reserved for the QS to identify cost comments.

We note that some credits are determined based on a Green Star excel calculator. These can be provided on request to each consultant or are downloadable from the GBCA website. Calculators include:

- Access by Public Transport Calculator
- Ecological Value Calculator
- Greenhouse Gas Emissions Calculator
- Potable Water Calculator
- Refrigerant Impacts Calculator
- Sustainable Products Calculator

- Sustainable Transport Calculator

Each consultant is expected to complete their respective calculator in informing the credit score.

5.2 Limitations

- We note that some credits require input from external parties that are not currently engaged such as a transport planner, ICA, LCA Practitioner. We assume these will not be engaged for an equivalency rating and in the absence of these consultants we will have to make a collective assumption on performance and ensure the most appropriate design considerations have been captured.
- The category of innovation is subjective. The GBCA (Green Building Council Australia) would determine if an initiative was considered innovative. In the absence of the GBCA assessor, the design team will have to decide if this remains applicable or if the category should be excluded from this assessment and the points pro-rated.
- A Green Star Equivalency Rating (in consideration of the above) can never be of a true equivalency. It is the ESD consultant's responsibility in combination with the design team to ensure that initiatives and strategies provide best outcome for the project and aren't solely selected as part of a tick the box exercise.

5.3 Next Steps

- We have requested that each consultant provides comments to their respective credits.
- QS to review any items considered additional;
- The design team to recalculate the Green Star score.
  - Should the score exceed that required for a 4 Star Green Star Equivalency Rating then continue to monitor and update on a regular basis;
  - Should the score less than that required for a 4 Star Green Star Equivalency Rating then discuss with the design team and identify if additional initiatives can be pursued.

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6.0 Appendix A – Green Star Preassessment

Green Star Pre-assessment Summary Rev00

CATEGORY / CREDIT	CODE	CREDIT CRITERIA	POINTS AVAILABLE	POINTS ACHIEVABLE	POINTS TBC	RESPONSIBILITY	RISK IN ACHIEVING FOR 4 STAR	ASSESSMENT COMMENT FOR 4 STAR	Consultant Comments	Cost Impact (QS to advise based on Consultant comments)
Management			**14**							
Green Star Accredited Professional	1.0	Accredited Professional	1	1		STEENSEN VARMING (GSAP)	LOW	4 STAR TARGET: 1 point is being targeted. GSAP to be appointed at SD phase, to provide advice during all phases of the project.	Steensen Varming Date: 25/05/2016 Comment: Steensen Varming (GSAP) has been appointed, This credit is achievable.	
Commissioning and Tuning	2.0	Environmental Performance Targets	Conditional Requirement	1		PRIMARY CLIENT SECONDARY BLP ARCHITECTS HYDRAULIC ELECTRICAL MECHANICAL FIRE ENGINEERING	LOW	4 STAR TARGET: This initiative is a conditional requirement, and will need to be achieved by establishing environmental performance targets for the project. The design team must prepare an Owner's Project Requirements (OPR) document, and this should be signed-off by the Client representatives. The project Return Brief should be prepared at Schematic Design phase can be used as the OPR document. Minor updates may be required during later design phases. (OPR to be prepared by the design team and approved by client) The commissioning agent will be required to verify the final design and installation against the targets noted in the OPR.	Mechanical, Electrical and Hydraulic consultants to comment if this cannot be achieved.	
	2.1	Services and Maintainability Review	1	1		PRIMARY CLIENT SECONDARY BLP ARCHITECTS HYDRAULIC ELECTRICAL MECHANICAL FIRE ENGINEERING	LOW	4 STAR TARGET: 1 point is being targeted. The client shall appoint a suitable member of their FM team to undertake a maintainability review of the building services and building facade, during the following stages: * During SD / DD phase; AND * Prior to Tender issue. Action items resulting from this maintainability review shall be incorporated in the OPR report. The services and maintainability review is to facilitate input from the design team, the facilities manager and operations staff (if known), and any relevant suppliers and subcontractors (if engaged).	Currently assumed that this will be targeted- BLP Architect to comment on likelihood.	
	2.2	Building Commissioning	1	1		PRIMARY HEAD CONTRACTOR ICA SECONDARY CLIENT HYDRAULIC ELECTRICAL MECHANICAL FIRE ENGINEERING FACADE CONSULTANT BLP ARCHITECTS	LOW	4 STAR TARGET: 1 point is being targeted. * A Commissioning Specification must be prepared and issued to the Head Contractor as part of the Tender documents. AND * A Commissioning Plan must be developed. To achieve this credit, the commissioning must have taken place in accordance with the requirements laid out in the above two documents. The commissioning report must certify that this is the case, and be signed by: * the designer, * the head or main contractor, * the commissioning manager (or ICA), and * the project manager (or CLIENT representative).	Mechanical, Electrical and Hydraulic consultants to comment if the commissioning requirements are achievable. Excerpt from technical guidelines below, but please refer to full document. The Commissioning Specification must not just state that systems must be commissioned to the relevant standard, but must also: · list design parameters for each system · list required commissioning activities · define how each system is intended to operate · list acceptable tolerances during commissioning Contractual documentation must clearly indicate divisions o responsibilities, pre-commissioning procedures, commissioning requirements, witnessing requirements, phased completion requirements (if needed), post occupancy checks, and any training requirements for the operator. The Commissioning Plan must include: · objectives/ basis of design · scope of the commissioning plan · commissioning team list, individual responsibilities and interface matrix · general sequencing of commissioning · proposed commissioning procedures · witnessing requirements · commissionign programme · requirements for subcontractor commissioning manuals	
	2.3	Building Systems Tuning	1	1		PRIMARY HEAD CONTRACTOR ICA SECONDARY CLIENT HYDRAULIC ELECTRICAL MECHANICAL FIRE ENGINEERING FACADE CONSULTANT BLP ARCHITECTS	LOW	4 STAR TARGET: 1 point is being targeted. This point is awarded where, CLIENT has formally committed to a tuning process for all nominated building systems, At a minimum, the commitment must include quarterly adjustments and measurement for the first 12 months after occupation and a review of building system manufacturer warranties during the entire duration of building tuning. The commitment must include at least the following: * O&M Manuals to be developed by the Head Contractor, as per approved Green Star Standards * Building tuning manual and Plan, to be developed; and * Appointment of a building tuning team, for the entire duration of the Tuning period. The requirement for a 12-month (post-occupancy) building tuning process must be specified as a Contractual obligation for the Head Contractor. This would allow for seasonal performance testing and fine-tuning.	Mechanical, Electrical and Hydraulic consultants to comment if this cannot be achieved.	
	2.4	Independent Commissioning Agent	1	1		ICA	LOW	4 STAR TARGET: 1 point is being targeted. If the Client wishes to pursue this credit, then the ICA must be appointed during the Schematic Design phase, and the ICA must be involved upto the end of the building tuning process. (i.e. upto atleast 12 months after practical completion). The ICA shall advise, monitor, and verify the commissioning and tuning of the nominated building systems throughout the design, tender, construction, commissioning and tuning phases. NB: This point can only be awarded if at least one of the credits from 2.1,2.2 or 2.3 has been achieved.	Mechanical, Electrical and Hydraulic consultants to comment if this cannot be achieved- can any of the consultants act as the commissioning agent?	
Adaptation and Resilience	3.1	Implementation of a Climate Adaptation Plan	2			PRIMARY TBC SECONDARY BLP ARCHITECTS CLIENT HYDRAULIC ELECTRICAL MECHANICAL FIRE ENGINEERING FACADE CONSULTANT	MEDIUM	4 STAR TARGET: 1 point is being targeted. The client should appoint a suitably qualified professional to prepare a project-specific Climate Adaptation Plan (CAP) in accordance with the Standards prescribed by the GBCA. (Such as AS 5334, ISO-31000 and AGO Guide) Climate change risks will need to be identified in the CAP and suitable risk-mitigation strategies need to be developed. Developing the CAP is of high significance, as it would ensure liveable conditions to be maintained in the event of natural disasters, loss of power, or other interruptions in normally available services. NOTE: All the risk items identified in the Climate Adaptation Plan must be addressed by specific design responses. This credit has also been noted as medium risk as it is a new credit in comparison to the legacy tools. Steensen Varming has not been involved on other projects which have targeted this credit.	Will an environmental planner be appointed? BLP Architect to comment	
Building Information	4.1	Building Operations and Maintenance Information	1	1		PRIMARY HEAD CONTRACTOR SECONDARY CLIENT HYDRAULIC ELECTRICAL MECHANICAL FIRE ENGINEERING FACADE CONSULTANT BLP ARCHITECTS	LOW	4 STAR TARGET: 1 point is being targeted. The Head Contractor and the project team must provide comprehensive O&M information to the CLIENT FM team, covering all nominated building services. The O&M information must be provided via the following two documents, and must cover all nominated building systems: 1. Operations and Maintenance Information Project teams must ensure that operations and maintenanc information is provided to the FM team, for all nominated building systems. 2. Building Log Book The project team must develop a Building Log Book to present to the building owner before practical completion of the project. * The log book must be developed in line with CIBSE TM 31: Building Log Book Toolkit.	BLP Architects & Mechanical, Electrical and Hydraulic consultants to comment if this cannot be achieved.	

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	4.2	Building User Information	1	1		PRIMARY CLIENT HYDRAULIC ELECTRICAL MECHANICAL FIRE ENGINEERING FACADE CONSULTANT BLP ARCHITECTS SECONDARY HEAD CONTRACTOR	LOW	4 STAR TARGET: 1 point is being targeted. A digital Building information display must be installed within the high-traffic areas of the building, in order to provide live monitoring of the building's environmental performance. The Building user information must be provided by the tim of Practical completion of the project.	All to comment if this cannot be achieved.	
Commitment to Performance	5.1	Environmental Building Performance	1			CLIENT	HIGH	4 STAR TARGET: This credit has not been targeted in the current assessment. This initiative requires a performance-based evaluation, to be undertaken atleast 1 year after occupation. It can be targeted at the discretion of the client.	Assumed that HI will not undertake this. Please comment i otherwise.	
	5.2	End of Life Waste Performance	1	1		PRIMARY CLIENT SECONDARY BLP ARCHITECTS	LOW	4 STAR TARGET: 1 point is being targeted. The following two options are available. We would recommend option-1 for the project: OPTION-1 Building Owner/Occupier Commitment The client must commit to extending the life of the interior fitout or finishes to at least 10 years (barring minor wear and tear or minor repairs) for these compliance requirements to be met. At least 80% of the project's GFA (excluding carparks) should comply with the requirements of the criterion. OPTION-2 Green Star Performance Rating Where a project has committed to achieve a Green Star-Performance rating, the 'Materials- Waste from Alterations' credit may be used to report on the measured results of th commitments set in this criterion. Note: This credit can be targeted at the discretion of the client.	BLP Architects to comment	
Metering and Monitoring	6.0	Metering Strategy	Conditional Requirement			PRIMARY HYDRAULIC ELECTRICAL MECHANICAL	LOW	4 STAR TARGET: This credit is a conditional requirement and must be met in order to achieve credit 6.1. To achieve compliance, energy and water sub-metering must be provided in accordance with the below requirements. Metering requirements * If a floor has multiple uses, the different uses shall be metered individually. * If the energy load of a single item exceeds 100kW, it must be separately metered. * The maximum load per meter must not exceed 10kVA. Metering Protocol Utility meters must meet the protocols set-out in the National Measurement Regulations. & Non-utility meters must follow the NABERS protocols.	Mechanical, Electrical and Hydraulic consultants to comment if this cannot be achieved.	
	6.1	Monitoring Strategy	1	1		PRIMARY HYDRAULIC ELECTRICAL MECHANICAL	LOW	4 STAR TARGET: To achieve this credit, an automatic monitoring system must be installed, that records both consumption and demand of energy or water, and are capable of producing reports on quarter hourly, hourly, daily, monthly, and annual energy use for all meters. Monitoring strategy The monitoring strategy must be developed in accordance with a recognised standard, such as CIBSE TM39 Building Energy Metering. The monitoring strategy must include a metering schedule.	Mechanical, Electrical and Hydraulic consultants to comment if this cannot be achieved.	
Construction Environmental Management	7.0	Environmental Management Plan	Conditional Requirement	CR		PRIMARY HEAD CONTRACTOR BLP ARCHITECTS SECONDARY CLIENT	LOW	4 STAR TARGET: The conditional requirement is met where the Head Contractor develops a comprehensive project-specific Environmental Management Plan (EMP) for Excavation, demolition and construction. The EMP must be prepared in accordance with the NSW Environmental Management Systems Guidelines.	BLP Architects. Please confirm if this will be targeted	
	7.1	Formalised Environmental Management System	1	1		PRIMARY HEAD CONTRACTOR BLP ARCHITECTS SECONDARY CLIENT	LOW	4 STAR TARGET: 1 point is being targeted, for implementing a formalised EMS during the construction phase, to ensure conformance with the project-specific EMP. The Environmental Management System must be certified against one of the following standards; AS/NZS ISO 14001, BS 7750 or the European Community's EMAS. NOTE: The Head Contractor must provide EMS Audit records for the project, to report on non-conformities, corrective and preventive actions.	BLP Architects. Please refer to technical guidelines and confirm if this will be targeted What is the project value? Different approach for more/less than $10million	
Operational Waste	8A	Performance Pathway - Specialist Plan	-	1		PRIMARY CLIENT APPOINTED WASTE AUDITOR SECONDARY BLP ARCHITECTS	LOW	4 STAR TARGET: The Prescriptive Pathway (below) is being targeted. It is assumed that the performance target will not be targetd. To achieve this point under the performance target, the followin is required: 1 point is awarded when a qualified waste auditor prepares an Operational Waste Management Plan (WMP) for the project in accordance with best practices. The requirements or recommendations made in the waste management plan must then be reflected in the building design.		
	8B	Prescriptive Pathway - Facilities	1				LOW	4 STAR TARGET: 1 point is being targeted. This option requires waste storage and segregation of comingled waste onsite: - general waste - paper and cardboard - glass - at least one other waste stream	BLP Architects. Please confirm if this will be targeted	
Total			**14**	**12**	**0**	**CLIENT**				

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Indoor Environment Quality			**17**							
Indoor Air Quality	9.1	Ventilation System Attributes	1	1		PRIMARY MECHANICAL SECONDARY HEAD CONTRACTOR	LOW	4 STAR TARGET: 1 point is being targeted. As part of the design of Mechanical services, The Mechanical Consultant shall ensure that the outdoor air-intakes are positioned to exclude pollutants. A cleaning and maintenance strategy should be developed for the mechanical services, in consultation with the clients FM team. The Head Contractor must be advised to implement cleaning of the ductwork prior to occupation.	Mechanical consultant to comment if otherwise	
	9.2	Provision of Outdoor Air	2	2		MECHANICAL	MEDIUM	4 STAR TARGET: 2 points are being targeted. The mechanical services schematic design by MECHANICAL, will aim to provide higher ventilation rates of 100% over AS 1668.2.	Mechanical consultant to comment if otherwise	
	9.3	Exhaust or Elimination of Pollutants	1	1		MECHANICAL	LOW	4 STAR TARGET: 1 point is being targeted. A dedicated exhaust riser must be provided to the spaces containing potential pollutant sources. (such as photocopiers, cooking equipment, etc) OR This type of equipment must be located away from the regularly occupied space, within enclosures that have self-closing doors.	Mechanical consultant to comment if otherwise	
Acoustic Comfort	10.1	Internal Noise Levels	1	1		PRIMARY ACOUSTIC CONSULTANT SECONDARY MECHANICAL BLP ARCHITECTS HEAD CONTRACTOR	MEDIUM	4 STAR TARGET: 1 point is being targeted. The acoustic consultant must 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 2107:2000. During schematic Design phase, the acoustic consultant must provide advice on the noise requirements for each room. These requirements must be addressed in the architectural and building services design, At practical completion, the Head Contractor must undertake noise-level testing to verify whether the Green Star requirements are met.	Acoustic consultant to confirm	
	10.2	Reverberation	1	1		PRIMARY ACOUSTIC CONSULTANT SECONDARY MECHANICAL BLP ARCHITECTS HEAD CONTRACTOR	MEDIUM	4 STAR TARGET: 1 point is being targeted. The above point is awarded where the reverberation time in the nominated area is below the maximum stated in the 'Recommended Reverberation Time' provided in table 1 of AS/NZ 2107:200. Installation of acoustic ceiling tiles or sound-absorbing wall panels should be considered. Acoustic consultant to advise on the specific requirements for each space type. Noise measurement must be conducted by the Head Contractor, prior to occupancy, and the tests must account for all internal and external noise sources when the space is unoccupied but ready for occupancy.	Acoustic consultant to confirm	
	10.3	Acoustic Separation	1	1		PRIMARY ACOUSTIC CONSULTANT SECONDARY MECHANICAL BLP ARCHITECTS HEAD CONTRACTOR	MEDIUM	4 STAR TARGET: One point is being targeted. To achieve this point, the enclosed spaces shall be built to minimise cross-talk between rooms and between rooms and open areas. Appropriate noise control strategies must be advised by the acoustic consultant (for partition walls and ceilings). At practical completion, the Head Contractor must undertake noise-level testing, in accordance with ISO 140-4:1998. Measurements must be based on finished rooms, accounting for any carpets and acoustically absorbent ceilings specified. The measurements can be conducted in either furnished or unfurnished spaces.	Acoustic consultant to confirm	
Lighting Comfort	11.0	Minimum Lighting Comfort	Conditional Requirement	CR		ELECTRICAL / LIGHTING	LOW	4 STAR TARGET: One point is being targeted. High frequency / electronic ballasts must be specified and installed for all fluorescent luminaires, to restrict flicker. Nowadays, high-frequency ballasts have become a standard practice, without any additional cost impact. To ensure perception of colour, all light sources must have a minimum Colour Rendering Index (CRI) of 80, unless the project team can demonstrate that, in a particular area, the activity is not impeded by a lower CRI. The proposed design shall comply with Table 7.2 in AS 1680.1:2006.	Electrical/ Lighting consultant to confirm	
	11.1	General Illuminance and Glare Reduction	1	1		ELECTRICAL / LIGHTING	LOW	4 STAR TARGET: One point is being targeted, by designing the electric lighting to meet the following criteria. General illuminance: The Lighting designer must verify the proposed electric lighting design (via calculations / computational modelling) and ensure that the maintained illuminance meets the level recommended in relevant standards - AS 1680.1 and AS 1680.2. Glare reduction: The lighting designer must ensure that glare from lamps is limited. All bare light sources must be fitted with baffles, louvres or other means that obscures the direct light source from all viewing angles of occupants, including looking directly upwards.	Electrical/ Lighting consultant to confirm	
	11.2	Surface Illuminance	1	1		PRIMARY ELECTRICAL / LIGHTING SECONDARY BLP ARCHITECTS	LOW	4 STAR TARGET: One point is being targeted. This can be achieved by designing the electric lighting and internal surfaces, to improve uniformity of lighting (i.e. how evenly light spreads over a task). The lighting designer shall demonstrate compliance, via either of the following options. Prescriptive Method *An average surface reflectance for ceilings of at least 0.75 and * A direct/indirect lighting system is present such that the ceiling area has an average surface illuminance of at least 30% of the lighting levels on the working plane. Performance Method * The average ceiling luminance (excluding light fixtures) does not exceed 0.5 kcd/m² and the maximum luminance at any point on the ceiling does not exceed 1.5 kcd/m². * The ceiling area has an average surface illuminance of at least 30% of the lighting levels on the working plane.	Electrical/ Lighting consultant and Architect to confirm	
	11.3	Localised Lighting Control	1	1		ELECTRICAL/ LIGHTING SECONDARY CLIENT	HIGH	4 STAR TARGET: 1 point is being targeted One (1) point is awarded where project team can demonstrate that, in the nominated area, occupants have the ability to control the lighting in their immediate environment. This includes turning the lights on and off and adjusting their light levels. One light can be controlled by one or more individuals, however, the project team must justify why and how, this is conducive to localised control. Applicability	Electrical/ lighting consultant to confirm	
	12.0	Glare Reduction	Conditional Requirement	CR		BLP ARCHITECTS	LOW	4 STAR TARGET: This credit is a conditional requirement. The conditional requirement is met where the glare in the nominated area from sunlight through all viewing facades is reduced through a combination of blinds, screens, fixed devices, or other means.	Architects to confirm	

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Visual Comfort	12.1	Daylight	2	1		PRIMARY STEENSEN VARMING SECONDARY BLP ARCHITECTS	HIGH	4 STAR TARGET: One point is being targeted, by achieving high levels of daylight, across atleast 60% of the nominated area. (during 80% of the nominated hours). Preliminary calculations must be undertaken during Schematic design phase, to verify feasibility, and identify suitable strategies for maximising daylight ingress. Note: The nominated area is defined by the project team.	Steensen Varming Date: 25/05/2016 Comment: Difficult to confirm the point score without daylight modelling. However based on the extent of façade glazing and assuemd nominated areas , this should be achievable.	
	12.2	Views	1	1		BLP ARCHITECTS	LOW	4 STAR TARGET: One point is being targeted. This can be achieved where 60% of the nominated area has a clear line of sight to a high quality internal or external view.	Architects to confirm as design develops	
Indoor Pollutants	13.1	Paints, Adhesives, Sealants and Carpets	1	1		PRIMARY BLP ARCHITECTS SECONDARY HYDRAULIC ELECTRICAL MECHANICAL FIRE ENGINEERING	LOW	4 STAR TARGET: One point is being targeted. At least 95% of all internally applied paints, adhesives, sealants and carpets must meet the stipulated 'Total VOC Limits'. The above requirements must be addressed in both the architectural and Building services specifications.	Architects, and relevant consultants to advise.	
	13.2	Engineered Wood Products	1	1		BLP ARCHITECTS	LOW	4 STAR TARGET: One point is being targeted. The architects shall ensure that at least 95% of all engineered wood products meet the stipulated formaldehyde limits. Engineered wood products include particleboard, plywood Medium Density Fibreboard (MDF), Laminated Veneer Lumber (LVL), High-Pressure Laminate (HPL), Compact Laminate and decorative overlaid wood panels. Timber veneers are excluded. The following applications of engineered wood products are excluded from this credit: * Formwork; * Car park applications; * Non-engineered wood products such as milled timber.	Architect to confirm as design develops	
Thermal Comfort	14.1	Thermal Comfort	1	1		PRIMARY MECHANICAL SECONDARY BLP ARCHITECTS FACADE CONSULTANT	LOW	4 STAR TARGET: One point is being targeted. To obtain 1 point, project teams must demonstrate that, for atleast 95% of the nominated area and 98% of the year, a high degree of thermal comfort is provided, to atleast 80% of all occupants. For Mechanically ventilated spaces- The following two options are available for demonstrating compliance: 1. Performance Path: Demonstrate via thermal modelling that the Predicted Mean Vote (PMV) levels are between -1 and +1 , inclusive. 2. Prescriptive path FACADE - Facade glazing SHGC must be less than 0.30 & Total system U-value is less than 3.0 W/m².K HVAC - Relative Humidity (RH) must be controlled between 40 to 60%. DBT must be between 20 and 24°C Air velocity must be no higher than 0.2m/sec The HVAC system must have distinct perimeter and internal zones, with maximum area of 75m² and 120m² respectively.	Mechanical consultant to comment if otherwise	
	14.2	Advanced Thermal Comfort	1	1		PRIMARY MECHANICAL SECONDARY BLP ARCHITECTS FACADE CONSULTANT	MEDIUM	4 STAR TARGET: 1 point is being targeted for 4 Star. Occupant thermal comfort can be improved by a combination of passive and active design strategies (for both facade and HVAC design). PMV modelling shall be undertaken to verify the likely PMV levels. Higher levels of PMV have been considered as a stretch target, and need to be verified via thermal modelling.	Mechanical consultant to comment on achievability	
Total			**17**	**16**	**0**					

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Energy			**22**							
Greenhouse Gas Emissions	15E.0	Conditional Requirement: Reference Building Pathway	-	CR		PRIMARY MECHANICAL SECONDARY / SOX ARCHITECTS FACADE CONSULTANT ELECTRICAL HYDRAULIC VERTICAL TRANSPORTATION & CLIENT	LOW	4 STAR TARGET This is a conditional requirement and must be achieved in order to obtain Green Star certification For this pathway, the project teams must demonstrate that the Proposed Building greenhouse gas (GHG) emissions are atleast 10% less than a building which achieves minimal compliance with the NCC Section J DTS provisions. The conditional 10% improvement can be achieved by a combination of building fabric & building services improvements.	Mechanical consultant to comment	
	15E.1	Comparison to a Reference Building Pathway	20	2.6		PRIMARY MECHANICAL SECONDARY BLP ARCHITECTS ELECTRICAL HYDRAULIC VERTICAL TRANSPORTATION & CLIENT	HIGH	4 STAR TARGET: Total of 3 points are being targeted. A high performance facade with efficient building services would roughly provide 30% reduction in energy consumption. Further reductions would require onsite renewable energy or contribution from 'Accredited Green Power'. Building Fabric - Improvement of fabric performance beyond Section-J DTS, will result in the following points: - 5% improvement - **1 point** - 10% improvement - 2 points - 15% improvement - 3 points - 20% improvement - 4 points We assume 1 point (5% improvement) would be achievable for the building fabric, due to the nature of the building. Whole building - Atleast 10% reduction in the overall energy consumption, as compared to Section-J DTS, will result in **1.6 points**. Green Power - 1 point can be claimed where Green Power is supplied to the building. Client to advise if they would commit to Green Power procurement for a period of 10 years. (This will improve the score by 1 point if we can adopt this?- BLP ARCHITECTS please comment) ASSUMPTIONS: The points noted above assumes the following systems / strategies would be included to achieve the 6.8 points: 1. High performance facade (1 point) 2. Efficient Systems and Controls The following strategies are assumed not targeted. a. Green Power - Client to advise if they would commit to Green Power procurement for a period of 10 years. (This will improve the score by 1 point) b. Onsite Renewable Energy generation i.e. small PV.- we assume this is not targeted on this project c. Ground Source Heat Pumps (GSHP) / Fuel Cells / Onsite Bio Gas Generation for Trigen / Wind Turbines / Other new innovative technology etc.- we assume this is not targeted on this project The points targeted have been assumed. Further points can be targeted through greater onsite energy generation.	Architect, Mechanical consultant to comment	
Peak Electricity Demand Reduction	16A	Prescriptive Pathway - On-site Energy Generation	-			-	-	-		
	16B	Performance Pathway - Reference Building	2			PRIMARY ELECTRICAL SECONDARY MECHANICAL	HIGH	4 STAR TARGET: No points are currently being targeted. By aiming for a 15% reduction in Peak electricity demand. A 30% reduction will provide 2 points.	Electrical & Mechanical services consultants to evaluate the opportunities for peak demand reduction.	
Total			**22**	**2.6**	**0**					

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Transport			**10**							
Sustainable Transport The Prescriptive pathway is being considered as it may be simpler to achieve points for transport facilities without the need to produce a transport plan. Note: This option has a Maximum of 7 points that can be achieved. The Performance pathway offers a maximum of 10 points.	17A.1	Performance Pathway	-	-	-	-		For this option, it is mandatory to have a project-specific Travel Plan. The client will need to appoint a travel planner to develop the travel plan. The performance pathway requires the proposed building to reduce emissions associated with transport when compared to a reference building. The reference building is established using GBCA transport templates. Up to 10 points are available for this pathway. Points are awarded based on a holistic approach to reducing the impacts from transport, where the proposed building performance is improved when compared to a Reference Building across four indicators: - Emissions reduction; - Active mode encouragement; - Vehicle kilometres travelled reduction; and - Walkable location. Due to the limited supporting public transport and amenities around the site, the primary mode of transport will likely be through passenger vehicles. To achieve points using the performance pathway, it is expected that initiatives associated with reduced car parking, carpooling/car share schemes, low emission vehicle spaces and shutter services would provide points. Achieving points through bike spaces, walking and amenities is limited due to the limited supporting public transport.	The performance pathway can be pursued; however, the client should advise if this is desired.	
	17B.1	Access by Public Transport	3	0		PRIMARY BLP ARCHITECTS	HIGH	4 STAR TARGET: This credit is not targeted for the 4 Star rating. The points score is determined through use of the Access by Public Transport Calculator. Points are awarded based on the percentage of people within the Greater Capital City Statistical Area (GCCSA) that can access the site by public transport within 45 minutes during peak hour. Projects located outside of a GCCSA use the 'rest of the state' population for assessment.	Steensen Varming: Date: 25/05/2016 A preliminary calculation has been undertaken using the Access by Public Transport calculator and indicated the project is of 'Accessibility Rating 1' and would acheive 0 points out of 3. This is based on the following assumptions: - Address of the project: 29/33 Hospital Rd, Bulli NSW 2516 - Building Type: Healthcare Should the above change, should advise SV	
	17B.2	Reduced Car Parking Provision	1	1		PRIMARY BLP ARCHITECTS SECONDARY CLIENT	MEDIUM	4 STAR TARGET: Total of 1 point is being targeted for the 4 Star rating. The facilities provided must comply with the prescriptive requirements- maximum ratio of peak building occupancy to car parking spaces. Refer to technical guidelines This credit is applicable regardless of the location of the project, or the nature of local planning requirements, as neither of these factors lessens the environmental impact of the use of private motor vehicles.	Architect to confirm if this is achievable. Please refer to 'Access by Public Transport Calculator' to determine the number of parking spaces required to achieve 0.5 or 1 point.	
	17B.3	Low Emission Vehicle Infrastructure	1	1		PRIMARY BLP ARCHITECTS SECONDARY CLIENT	MEDIUM	4 STAR TARGET: Total of 1 point is being targeted for the 4 Star rating. The facilities provided must comply with the prescriptive requirements- either providing parking for fuel efficient vehicles, parking and infrasrtucture for electric vehicles, and/or dedicated spaces for car share vehicles. Refer to Technical Guidelines for full details.	Architect to confirm if this is achievable. Architect to first determines the number of carspaces as per the credit above to determine if this is achievable.	
	17B.4	Active Transport Facilities	1	1		PRIMARY BLP ARCHITECTS SECONDARY CLIENT	MEDIUM	4 STAR TARGET: Total of 1 point is being targeted for the 4 Star rating. The facilities provided must comply with the prescriptive requirements- particular numbers of bicycle parking provision dependent for both regular building occupants and building visitors.	Architect to confirm if this is achievable	
	17B.5	Walkable Neighbourhoods	1	0		PRIMARY BLP ARCHITECTS	HIGH	4 STAR TARGET: One (1) point is awarded where the project team demonstrates that the building complies with one of the following requirements: A. The project is located so that at least 4 amenities (for Class 7 buildings), or at least 8 amenities (for all other Classes of buildings) are within 400 m of the development; OR B. The project achieves a walk score of at least 70 (for Class 7 buildings) or at least 80 (for all other Classes of buildings), as determined by the website www.walkscore.com, using the 'street smart' method of calculation.	Date: 25/05/2016 A preliminary calculation has been undertaken using walkscore.com. Based on the address, the site achieves a walkscore of 75. This would result in 0 points. Assumptions. - Address of the project: 29/33 Hospital Rd, Bulli NSW 2516 - Class 9b	
Total			**7**	**3**	**0**					
Water			**12**							
Potable Water	18A.1	Potable Water - Performance Pathway	12	1		PRIMARY HYDRAULIC SECONDARY CLIENT	HIGH	4 STAR TARGET: Total of 1 point is being targeted for the 4 Star rating. (by aiming for a 5% reduction in potable water demand). The Hydraulic services consultant will need to advise whether a 5% reduction is feasible. The following strategies would contribute to reducing potable water consumption: * Sanitary Fixture Efficiency * Rainwater Reuse * Heat Rejection * Landscape Irrigation * Fire System Test Water * Waste water treatment * Storm Water Detention ponds * Grey Water Recycling * Reed Beds / natural black water treatment etc. We are assuming the last 3 points are not being targeted, but please confirm	Architect & hydraulic consultant to comment	
Total			**12**	**1**	**0**					

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Materials			**14**							
Life Cycle Impacts	19A.1	Comparative Life Cycle Assessment	6			LCA Practitioner	HIGH	4 STAR TARGET: Not currently being targeted. An LCA expert should undertake whole-of-building whole-of-life LCA for the project and a reference building. The standard practice reference building and the proposed project building must have the same: • Structural requirements • Scale • Function • Location • Tenant requirements • Aeetics • Site conditions including underlying geology • Planning constraints • Orientation • Season of construction Preliminary LCA must be commenced during the schematic design phase, to inform the early design decisions. NOTE: This credit is a new credit in comparison to the legacy tools. Steensen Varming has not been involved on other projects which have targeted this credit.	Architect to advise if this credit is being targeted (requires appointment of a Life Cycle Assessor) - an individual or organisation who have produced, co-produced and/or independently peer reviewed at least five LCA studies	
	19A.2	Additional Life Cycle Impact Reporting	1			CLIENT & LCA Practitioner	HIGH	4 STAR TARGET: Not currently being targeted. This 1 additional point is available where the LCA conducted by projects includes reporting of five impact categories in addition to those required under the Comparative Life Cycle Assessment credit element. We suggest the client appointed LCA expert advise the reporting requirements, and what is involved with achievin this point. NOTE: This credit is a new credit in comparison to the legacy tools. Steensen Varming have not been involved on other projects which have targeted this credit.	Architect to advise if this credit is being targeted (requires appointment of a Life Cycle Assessor) - an individual or organisation who have produced, co-produced and/or independently peer reviewed at least five LCA studies	
	19B .1.1	Concrete	2			CLIENT & LCA Practitioner	HIGH	4 STAR TARGET: Not currently being targeted. Up to 2 points are available where the Portland cement content in all concrete used in the project has been reduce by replacing it with supplementary cementitious materials.	Architect to advise if this credit is being targeted (requires appointment of a Life Cycle Assessor) - an individual or organisation who have produced, co-produced and/or independently peer reviewed at least five LCA studies	
	19B .1.2	Water Reduction	0.5			CLIENT & LCA Practitioner	HIGH	4 STAR TARGET: Not currently being targeted. 0.5 points are available where the mix for all concrete used in the project contains at least 50% captured or reclaimed water (measured across all concrete mixes in the project)	Architect to advise if this credit is being targeted (requires appointment of a Life Cycle Assessor) - an individual or organisation who have produced, co-produced and/or independently peer reviewed at least five LCA studies	
	19B .1.3	Aggregates Reduction	0.5			CLIENT & LCA Practitioner	HIGH	4 STAR TARGET: Not currently being targeted. 0.5 points are available where the mix for all concrete used in the project contains at least 50% captured or reclaimed water (measured across all concrete mixes in the project)	Architect to advise if this credit is being targeted (requires appointment of a Life Cycle Assessor) - an individual or organisation who have produced, co-produced and/or independently peer reviewed at least five LCA studies	

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CATEGORY / CREDIT	CODE	CREDIT CRITERIA	POINTS AVAILABLE	POINTS ACHIEVABLE	POINTS TBC	RESPONSIBILITY	RISK IN ACHIEVING FOR 4 STAR	ASSESSMENT COMMENT FOR 4 STAR	Consultant Comments	Cost Impact (QS to advise based on Consultant comments)
Responsible Building Materials	20.1	Structural and Reinforcing Steel	1	1		PRIMARY STRUCTURAL SECONDARY QUANTITY SURVEYOR HEAD CONTRACTOR	MEDIUM	4 STAR TARGET: 1 point is being targeted. To achieve this point, the following requirements need to be reviewed by the Structural Consultant and addressed in the Tender structural specifications. * Atleast 95% of the building's steel is sourced from a Responsible Steel Maker; AND * For steel framed buildings, at least 60% 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 processed in its manufacture (measured by average mass by steel maker annually). Note: This credit may be difficult to achieve due to limited product selections / suppliers available. We recommend the Architects and Structural engineers review materials early on to check acceptability.	Structural engineer to comment	
	20.2	Timber Products	1	1		PRIMARY BLP ARCHITECTS SECONDARY STRUCTURAL	MEDIUM	4 STAR TARGET: 1 point is being targeted. 1 point is available where at least 95% (by cost) of all timbe used in the building and construction works is certified by a forest certification scheme that meets the GBCA's 'Essential' criteria for forest certification OR is from a reused source. The requirements must be addressed in the structural and architectural specifications, prior to Tender. Note: This credit may be difficult to achieve due to limited product selections / suppliers available. We recommend review materials early on to check acceptability.	Architect to comment.	
	20.3	Permanent Formwork, Pipes, Flooring, Blinds and Cables	1	1		PRIMARY BLP ARCHITECTS STRUCTURAL MECHANICAL ELECTRICAL HYDRAULIC FIRE ENGINEERING	MEDIUM	4 STAR TARGET: 1 point is being targeted. 1 point is available where 90% (by cost) of all cables, pipes, flooring and blinds in a project either: A. Contain no PVC and have an Environmental Product Declaration (EPD); OR B. Meet Best Practice Guidelines for PVC. 1 point is available where 90% (by cost) of all cables, pipes, flooring and blinds in a project either: A. Contain no PVC and have an Environmental Product Declaration (EPD); OR B. Meet Best Practice Guidelines for PVC. The requirements must be addressed in the architectural and building services specifications, prior to Tender. The Contractor must be advised to obtain GSAP's approval prior to material procurement. Note: This credit may be difficult to achieve due to limited product selections / suppliers available. We recommend the design team review materials early on to check acceptability.	All design team to comment	
Sustainable Products	21	Product Transparency and Sustainability	3			PRIMARY BLP ARCHITECTS SECONDARY CLIENT QUANTITY SURVEYOR	HIGH	4 STAR TARGET: Not currently being targeted. To achieve points for this credit, at percentage of eligible products must be compliant. The percentage to points score is shown below: - 1 point : 3% - 2 points : 6% - 3 points : 9% Preference must be given to products that have a third-party certification OR have an environmental product declaration. The Quantity Surveyor and the Contractor must both be involved in the PSV calculation. Otherise, there may be risk of discrepancy in cost-calculations. (i.e. between the Desig phase and As-Built cost evaluation). Note: This credit may be difficult to achieve due to limited product selections / suppliers available. We recommend the Architects review materials early on to check acceptability.	Architect to comment.	
Construction and Demolition Waste	22A	Fixed Benchmark	-			-		4 STAR TARGET: Not currently being targeted. 1 point is available where the construction waste going to landfill meets a fixed benchmark defined in kilograms of waste per square metre of GFA.	Architect to comment whether construction waste contractor will be appointed.	
	22B	Percentage Benchmark	1	1		PRIMARY HEAD CONTRACTOR SECONDARY CLIENT	MEDIUM	4 STAR TARGET: 1 point is being targeted for 5 Star. To achieve 1 point, 90% of the waste generated during construction and demolition has been diverted from landfill. Waste shall be reported in kg/m² GFA. The requirements of this credit must be included as a contractual requirement for the Head Contractor. NOTE: The Head Contractor must provide a 'Compliance Verification Summary' issued by a Suitably Qualified Auditor.	Architect to comment.	
Total			**14**	**4**	**0**					

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Land Use & Ecology			**6**							
Ecological Value	23.0	Endangered, Threatened or Vulnerable Species	Conditional Requirement	CR		PRIMARY CLIENT SECONDARY MECHANICAL	LOW	4 STAR TARGET: This credit is being targeted as it is a Conditional requirement. The proposed site must comply with this conditional requirement, For project sites that have been owned for less than 5 years (from the registration date), the site condition at the time of purchase shall be considered.	Conditional Requirement, therefore must be achieved.	
	23.1	Ecological Value	3	1		BLP ARCHITECTS	HIGH	4 STAR TARGET: 1 point is being targeted for the 4 Star rating. It is assumed the site consist of low to medium weighted land types such as exotic vegetation (including exotic garden, lawns, weed infestation, non-native plantation forest, crop-farming) or Non-improved pastures (paddocks with minimal cover of native grasses (+-25% cover) To achieve 2 points, the design will need to achieve a 40% 'Relative Improvement of Ecological Value'. This can be achieved through the incorporation land types with high weightings such as native vegetation etc.to areas including roof tops. NOTE: If the project is claiming land types with a weighting over 0.5 this must be confirmed in a report by a qualified Ecologist.	Architect to comment	
Sustainable Sites	24.0	Conditional Requirement	Conditional Requirement	CR		CLIENT	LOW	4 STAR TARGET: This credit is being targeted as it is a Conditional requirement. The proposed site satisfies this conditional requirement, as it is not classified as one of the below: A. old growth forest B. Prime Agricultural Land C. Wetland of 'High National Importance', OR D did not impact on 'Matters of National Significance.	Conditional Requirement, therefore must be achieved.	
	24.1	Reuse of Land	1	1		CLIENT	LOW	4 STAR TARGET: This credit is not being targeted. The site would be considered Previously Developed Land i.e. carpark.	Architect to comment/ confirm	
	24.2	Contamination and Hazardous Materials	1			PRIMARY HEAD CONTRACTOR SECONDARY CLIENT	LOW	4 STAR TARGET: This credit is not being targeted. No existing building was onsite, and it is assumed that the site is not contaminated requiring remediation in accordance with a best practice remediation strategy.	Architect to comment/ confirm	
Heat Island Effect	25.0	Heat Island Effect Reduction	1	1		BLP ARCHITECTS	HIGH	4 STAR TARGET: 1 point is being targeted 1 point is available if at least 75% of the total project site area comprises building or landscaping elements that reduce the impact of heat island effect. It should be feasible to achieve via a Roof with a high solar reflectance index (SRI) and shaded hardscape elements. Hard-scaping elements shaded by overhanging vegetation or roof structures, including solar hot water panels and photovoltaic panels can be considered as elements reducing the impact of heat island effect.	Architect to comment.	
Total			**6**	**3**	**0**					
Emissions			**5**							
Stormwater	26.1	Reduced Peak Discharge	1	1		PRIMARY HYDRAULIC (CIVIL) SECONDARY CLIENT & CLIMATE CHANGE CONSULTANT	HIGH	4 STAR TARGET: 1 point is being targeted for 4 star rating. 1 point is available where the post-development peak event discharge from the site does not exceed the pre-development peak event discharge (under different climate change scenarios). This requirement needs to be read in conjunction with the Climate Change Adaptation Plan prepared for the project (Credit-3 Adaptation ad Resilience). If the project is targeting the 'Adaptation and Resilience' credit (3), the Risk Assessment included in the Climate Change Adaptation Plan, shall be used to determine the climate change scenarios for this credit. If the project is NOT targeting the 'Adaptation and Resilience' credit (3), the project may refer to local council flood level guidance. Strategies such as Retention Ponds and Natural Storage (low flow discharge) can be employed to achieve this point. These strategies can also be used to achieve the 'Ecological Value 23.0' credit.	Architect to comment. If a project Climate Change Consultant is appointed, they will need to provide input?	
	26.2	Reduced Pollution Targets	1			HYDRAULIC (CIVIL)	HIGH	4 STAR TARGET: This additional point is not being targeted 1 additional point is available, where the above point (Credit 26.1) has been achieved and all stormwater discharged from site meets specified Pollution Reduction Targets (more stringent targets).	Architect to comment	
Light Pollution	27.0	Light Pollution to Neighbouring Bodies	Conditional Requirement	CR		ELECTRICAL	LOW	4 STAR TARGET: This credit is being targeted, as it is a Conditional requirement. 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. This requirement is not to be considered as a Green Star addition to the project, because it is a standard requirement under AS standards.	Conditional requiremet- must be achieved.	
	27.1	Light Pollution to Night Sky	1	1		ELECTRICAL	LOW	4 STAR TARGET: 1 point is being targeted. 1 point is available where it can be demonstrated that a specified reduction in light pollution has been achieved by the project. The lighting designer must ensure that the proposed design demonstrates a reduction in light pollution, to * The site boundary; AND * Into the night sky.	Electrical/ lighting consultant to comment	
Microbial Control	28.0	Legionella Impacts from Cooling Systems	1	1		MECHANICAL	MEDIUM	4 STAR TARGET: 1 point is being targeted. As per Green Star criteria, the water contained in a water based Heat-rejection system must never be at a temperature between 20°C and 50°C while not moving.	Mechanical consultant to comment What type of heat rejection will be used, if any?	
Refrigerant Impacts	29.0	Refrigerants Impacts	1	1		MECHANICAL	LOW	4 STAR TARGET: 1 point is being targeted. Refrigerants with a low ODP and GWP must be specified, for all HVAC systems.	Mechanical consultant to comment	
Total			**5**	**4**	**0**					

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Innovation			**10**							
								We assume that no innovation credits will be targeted within this project as they are normally over and above traditional design scope.		
Total			**10**	**0**	**0**					

	Minimum Required for 4 Star Rating	Achievable	Additional	Total (Achievable + Additional)
4 Star Total	**45**	**45.6**	**0**	**46**