BCA Section J Deemed to Satisfy Compliance Report

2019

4 Spencers Creek Road, Charlotte Pass NSW

Southern Alps Ski Club Lodge. Alterations to existing building

Report No. EC 4247-DTS
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Prepared By: Manuel Basiri
Eco Certificates Pty Ltd

BCA Section J Deemed to Satisfy Compliance Report

Building Code of Australia Volume 1 – 2019 – Amendment 1

4 Spencers Creek Road, Charlotte Pass, NSW

Prepared under instructions from

Porebski Architects

By

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1.0 INTRODUCTION

The National Construction Code (NCC) is a performance-based code containing all Performance Requirements for the construction of buildings in Australia. It is a set of technical design and construction provisions for buildings which is an initiative of the COAG. It is produced and maintained by the ABCB on behalf of the Australian Government and each State and Territory government. As a performance-based code, it sets the minimum required level for the safety, health, amenity, accessibility and sustainability of certain buildings. A building solution will comply with the NCC if it satisfies the Performance Requirements, which are the mandatory requirements of the NCC.

Energy efficiency means improving the performance of services and systems that directly consume energy (such as lighting, air-conditioning and heating) and having greater control over the way that heat flows into and out of the building through its fabric.

The building sector is one of the fastest growing GHG emissions sources. Energy used in buildings accounts for more than 20% of all energy-related GHG emissions. Improving the energy efficiency of buildings therefore represents one of the biggest opportunities to reduce GHG emissions in Australia. The use of renewable or low GHG intensity fuels can also reduce the GHG emission rate.

For the purposes of the NCC energy efficiency requirements, "energy" is the electricity (taken both from the electricity grid and generated onsite), gas, oil or other fuels used in buildings for heating, cooling or ventilation, for lighting or heated water supply or to operate other building services.

Burning coal, natural gas and other fuels to produce electricity releases GHG's into the atmosphere unless the source is one of the few considered renewable sources. Renewable sources include photovoltaic (solar) cells, hydroelectric and wind driven generators. Even these sources will be responsible for emissions at some part of their life cycle. The NCC recognises low-emitting energy sources through its Performance Requirements, Verification Methods and DTS Provisions. Since most of the energy consumed in buildings comes from GHG emitting sources, reducing energy use will also reduce emissions and their unwanted impacts.

NCC allows on-site renewable energy sources and re-claimed energy from another process to be deducted from the annual GHG emissions of the proposed building. This means that the "annual greenhouse gas emissions" are the sum of the GHG emissions drawn annually from the electrical grid, the gas network or fuel brought in by road transport and not the total of the energy consumed by the services that use energy.

To obtain this concession, the renewable energy must be used and generated on-site. This means that electricity purchased as GreenPower® for example does not comply with the concession as it is grid distributed. Energy that is exported to the grid cannot be used as part of this concession. A performance-based study like JV3 alternative solution using computer modelling is required in order to calculate the effect of on-site renewable energy source to improve the energy efficiency performance of a building.

The energy efficiency requirements are generally based on eight broadly defined climate regions, termed the NCC climate zones. The energy efficiency requirements will vary from location to location depending upon the climate zone. Each climate zone will have similar thermal requirements irrespective of the State or Territory where the building is located.

Three options are available to demonstrate compliance with the Performance Requirements of the NCC:

- A Performance Solution,
- A DTS Solution, or
- A combination of a Performance Solution and a DTS Solution.

This report presents the findings from the design assessment of the Proposed Development against the Deemed-to-Satisfy (DTS) requirements of Section J of the Building Code of Australia 2019, ENERGY EFFICIENCY.

The purpose of this report is to provide an assessment of the design plans and documentation for the Proposed Development and to list all the necessary provisions and upgrades in order for the development to comply with the requirements of the section J. The scope of this report is limited to the design documentation referenced in Section 2 of this report and only covers Section J of the BCA 2019 provisions.

1.1 DEFINITIONS

The term Proposed Development in this report refers to proposed alterations to Southern Alps ski club lodge located at 4 Spencers Creek Road, Charlotte Pass, NSW.

Rapid roller door means a door that opens and closes at a speed of not less than 0.5 m/s.

A colour rendering index (CRI) is a quantitative measure of the ability of a light source to reveal the colours of various objects faithfully in comparison with an ideal or natural light source. Light sources with a high CRI are desirable in colour-critical applications.

The Kelvin based CCT (Correlated Colour Temperature), is a scale used in lighting to measure the colour temperature of a luminaire. The lower the number, the warmer the light will be and the higher the number, the cooler and bluer the light will appear. A typical incandescent bulb has a colour temperature between 2700K and 3000K. The sun at noon on a clear day produces a light of approximately 5500K.

1.2 REFERENCED DOCUMENTS

The following documents and design plans have been referenced in compilation of this report:

- National Construction Code Series, Volume 1 – Amendment 1, Building Code of Australia 2019, Class 2 to Class 9 Buildings and BCA Volume One Amendment 1.
- NCC 2019 Guide to BCA Volume One, Release date: May 2019
- Handbook: Energy Efficiency NCC Volume One, Publish date: Jun 2019 Print version: 6.0
- Architectural Plans provided by "Porebski Architects" and received by Eco Certificates Consultants at 22/02/2022.
- Email correspondence and response to information request received from the architects of the Proposed Development.

1.3 PROPOSED DEVELOPMENT DETAILS

The Proposed Development is in BCA Climate Zone 8 according to BCA Climate Map for NSW. It is considered a class 3 building according to the BCA standard classification being a hotel ski lodge temporary accommodation.

The following construction elements are being proposed in the building design according to architectural plans and design documents referenced in this report:

External Walls: Replacing the existing timber cladding with new metal cladding with insulation and sarking as per design plans

Roof and Ceiling: new plasterboard ceiling and metal cladding roof proposed with timber structural elements as per design plans.

Floors: no new floor envelope elements proposed.

Windows: new standard Aluminium frame single glazed windows and glazed doors assumed.

Skylights: no skylights proposed.

Air Conditioning System: no new system proposed.

Lighting System: no new system proposed.

2.0 BCA SECTION J DEEMED TO SATISFY COMPLIANCE PROVISIONS

This section analyses the current elements of the of Proposed Development design against the Deemed to Satisfy provisions of Section J of the Building Code of Australia 2019, Energy Efficiency. In case of a non-complying element, advisory notes are provided to bring the building in compliance with Section J DTS requirements.

A summary note of these provisions is provided in the Conclusion Section of this report that can be incorporated into specification blocks of architectural plans and, as a result, be easily referenced and followed during construction. It is however the responsibility of the entity responsible for the submission of the design plans and documents to the council to ascertain each and every element of this report is clearly referenced and reflected on the submitted plans and documents and not only the narrative of the Conclusion Section.

2.1 PART J 1 – BUILDING FABRIC

GENERAL NOTES

The Deemed-to-Satisfy Provisions of PartJ1 apply to building elements that form part of the envelope, where the envelope separates a conditioned space or habitable room from the exterior of the building or a non-conditioned space. This includes roofs, walls, glazing and floors as per the definition of “fabric” in the BCA.

An essential aspect of energy efficiency for a building is to ensure that the building is constructed in a manner that provides an adequate level of comfort for occupants so that they feel less need for artificial heating or cooling. This can be achieved by creating a thermally effective building envelope. This also means that when artificial heating or cooling is needed, the envelope will be more effective at retaining the conditioned air due to the thermal barrier between the internal and external (non-conditioned) environment. This is even more important in a commercial building that is likely to be air-conditioned for much of the time.

The intent of the building fabric DTS Provisions in Part J1 is to ensure that the construction around the conditioned spaces has a sufficient level of thermal performance to ensure energy is not used unnecessarily due to the influence of the external environment.

INSULATION

Insulation is to be fitted tightly to each side of framing members but need not be continuous over the framing member. The insulation requirements are calculated for parts of the roof, walls or floor that are clear of any framing members.

The provisions also state that the installation of insulation should not interfere with the safety or performance of domestic services and fittings such as heating flues, recessed light fittings, transformers for low voltage lighting, gas appliances and general plumbing and electrical components. This includes providing appropriate clearance as detailed in relevant legislation and referenced standards such as for electrical, gas and fuel oil installations.

For reflective insulation to achieve its tested R-Value, the airspace adjoining the insulation needs to be a certain width. Reflective insulating performance is achieved by the ability of the reflective insulation to “reflect” heat at one surface and not transmit it at another, combined with the insulating qualities of the thin air films adjacent to the reflective insulation. Reflective insulation must closely fit against any penetration or door or window opening and must be supported by a wall frame. Overlapping of reflective insulation should be at least 50 mm, otherwise it must be taped together. This aligns with the requirements of Standard AS/NZS 4200, the standard covering the installation of pliable building membranes.

The R-Value of bulk insulation is reduced if it is compressed. The allocated space for bulk insulation is therefore to allow the insulation to be installed so that it maintains its correct thickness unless exempted such as at wall studs. Some reflective insulation is also bonded to bulk, board or other insulation, providing enhanced performance of the composite system. The term “bulk insulation” includes glass fibre, wool, cellulose fibre, polyester and polystyrene foam. These materials tend to have a high percentage of air voids within the insulation that are fundamental to their ability to limit heat flow. The thermal performance of bulk insulation depends on the material retaining the depth specified by the manufacturer, in accordance with the required test results. The depth of the insulation is critical because of the need to retain the air pockets within the material. If the insulation is compressed, it will lose some of these air pockets as the fibre contact increases, which in turn will reduce its capacity to achieve the tested R-Value.

The requirement recognises that the practical limitations of maintaining the position and thickness of bulk insulation where it is likely to be compressed between cladding, supporting members, water pipes and electrical cabling. In these instances, compression of the bulk insulation may occur but should be limited where possible.

To ensure the performance of materials is correctly validated, test reports complying with AS/NZS 4859.1 should be provided in accordance with Part A5 of NCC Volume One and this documentation forms an integral part of the building approval. This standard specifies the testing criteria for insulation including both reflective and bulk insulation products.

Manufacturer's data sheets should be utilised by both building designers and building surveyors as documentary evidence of the performance of the insulation and may be required to form part of the building approval documentation.

CEILING AND ROOF

Where the ceiling space below the roof is used as the return air plenum, it is considered part of the conditioned space. In this instance, the envelope boundary for the roof and ceiling construction is located at the roof.

Insulation can be installed in the roof, the ceiling, or a combination of both provided the required thermal performance is achieved and other aspects of the building's integrity are not compromised. It should be noted that the thermal performance of the roof may vary depending on the position of the insulation, the climatic conditions, the design of the building and the way in which it is operated.

A ventilated roof space can be a roof space with vents that allow air to flow freely without obstructions, ensure there are no spaces with no air movement and have a fixed open area of at least 1.0% of the ceiling area. A ventilated roof space could also be a roof space with at least 2 wind-driven roof ventilators with a total opening area of at least 0.14 m^2. This requirement must be accompanied by vents with a total fixed open area of at least 0.2% of the ceiling area. A ventilated roof space can also be a roof space that is tiled and has no sarking-type material at roof level.

Solar absorptance refers to the proportion of solar radiation that is absorbed by the material. A lower solar absorptance will reflect more heat than a roof with a higher solar absorptance and is therefore usually a lighter colour. Colours with a greater solar absorptance allowance in the DTS provisions will require Performance Solutions like JV3 alternative solution.

WALLS AND GLAZING

For energy flow through the envelope, glazing is often the greatest path of heat transfer and, possibly, of infiltration, making it a critical element in achieving energy efficiency.

Wall-glazing construction means the combination of wall and *glazing* components comprising the *envelope* of a building, excluding

1 Display glazing

2 Opaque non glazed openings such as doors, vents, penetrations and shutters

The Total System U-Value and Total System SHGC of glazing must account for the combined effect of the glass and frame. The measurement of the Total System U-Value and Total System SHGC is specified in the Technical Protocols and Procedures Manual for Energy Rating of Fenestration Products of the AFRC (Australian Fenestration Rating Council).

In summer, sunlight radiates through the glazing, bringing unwanted heat into the interior. However, in winter, solar heat gains through the glazing can contribute effectively to the energy efficiency of a building where heating is desired. This is less important in non-residential commercial buildings where internal heat loads from lighting, appliances, equipment and people can be high enough to require little or no additional heating in most climates. It is recognised that for most commercial buildings in most *climate zones*, the predominate mode is cooling. Therefore, there is a greater emphasis on Total System SHGC over *Total System U-Value* in the section J provisions.

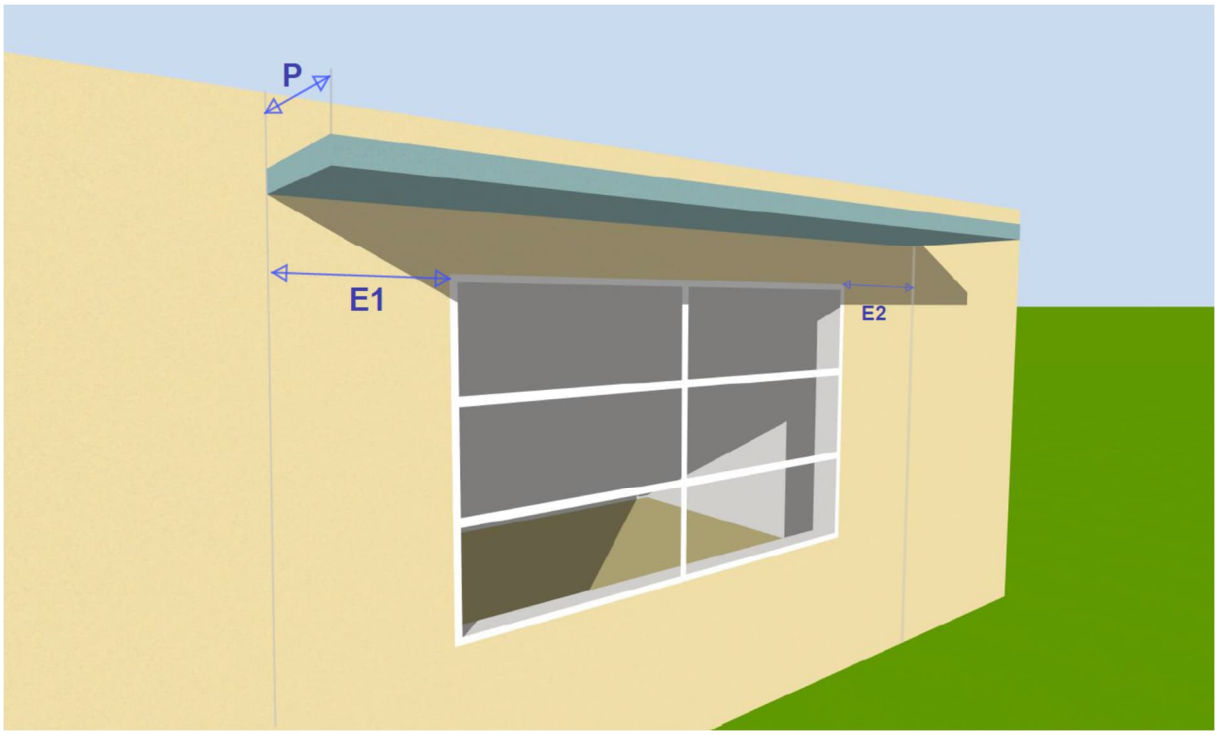
The winter sun appears lower on the horizon at any time of day than the summer sun at the same time. Between the lowest winter position and the highest summer position, there is a difference of about 47°. For unshaded glazing, the angle of the sun's rays onto the glass will affect the amount of solar heat gain transmitted through the glass. The sharper the angle (closer to 90° from the horizontal), the greater the reflectance from the surface of the glass, which results in less solar heat gain.

Generally, during the summer months, glazing facing the East and West receives the largest amount of solar gain, while glazing facing the North or South receives the least solar gain. This is in relation to the higher sun position on the horizon during the summer months, limiting the amount of solar heat transmitted through the North and South facing glazing.

Generally, during the winter months, glazing facing the North is the largest source of solar gain. Glazing facing the East and West still provide gains, however they are less than that of those available from the North due to the lower sun position during winter months. The South facing orientation provides negligible heat gains during the winter months when they are most desirable.

Orientation however is not directly important for conductance. Whether glazing faces North, South, East or West, the same amount of heat loss is calculated to occur because the loss depends on the air temperature inside the building compared to the air temperature outside, which is assumed to be similar in all directions. Good orientation however, can compensate for heat lost through conduction by providing offsetting solar gains.

The presence of shading projections and devices reduces the level of thermal performance required for glazing. However, to be effective, shading projections and devices must restrict a significant proportion of solar radiation. The projection must extend horizontally on both sides of the glazing for the same distance. Below figure explains the type of shading which would be recognised by the section J as project shading. In this figure, both E1 and E2 values must be equal or greater than the P value for the shading to be effective. If a projection shading component does not meet these criteria it cannot be included in the façade calculations and cannot offer any protection benefits for the glazing elements below it. Shading elements which do not meet these criteria will still can be recognised and being addressed under a JV3 alternative assessment approach.



The external shading devices such as shutters, blinds, vertical or horizontal building screens with blades, battens or slats are required to restrict the amount of summer solar radiation that reaches the glazing by 80% or more. Additionally, the device must operate automatically in response to the level of solar radiation if adjustable, as devices operated manually are considered less likely to be used efficiently. Vertical shading is commonly used, however often does not meet the DTS requirements and therefore does not receive the available shading multipliers. Vertical shading provides great benefits, particularly on East and West facing facades as the sun angles are low. Therefore, vertical shading could form the basis of a Performance JV3 Solution if they are unable to restrict the amount of summer solar radiation

that reaches the glazing by 80% or more. The 80% figure acknowledges that while a device may be capable of providing 100% shade during summer, some leakage of solar radiation may occur at the sides of the device. Generally, close fitting blinds or horizontal screens that extend either side of the glazing by the same projection distance should sufficiently restrict the amount of summer solar radiation that reaches the glazing at the sides of the device. The shading projection for walls is measured from the wall face whereas for glazing the projection is measured from the glass face.

2.1 APPLICABLE PART J 1 DTS PROVISIONS

	Building Element	Energy Efficiency Provisions	Corresponding BCA Clause
1	New roof and ceiling construction of the Proposed Development as per architectural plans	install additional insulation to provide a combined roof and ceiling system with total thermal resistance of R 4.8 m^2.k/w.	Part J1.3(a)
2	For the new external modified walls of the Proposed Development as per architectural plans	install additional insulation to provide a wall system with total thermal resistance of R 2.0 m^2.k/w.	Part J1.5(a) and Part J1.5(d)
3	For new windows and glazed door envelope elements as per architectural plans	install windows with Total System U-value no more than 4.6 W/m^2.k and SHGC no more than 0.74	Part J1.5(c)

2.2 PART J 3 –BUILDING SEALING

GENERAL NOTES

The intent of this part is to restrict the unintended leakage of outdoor air into the building and loss of conditioned air from the building. In addition to unnoticed air leakage, drafts caused by poorly sealed external openings and construction gaps can affect building occupants' sense of comfort, causing them to increase their use of heating and air-conditioning. Leakage of humid air into an air-conditioned building can increase energy use for dehumidification.

An external door opening to a conditioned space must have a device to prevent significant amounts of conditioned air being continuously lost. This only applies to conditioned spaces greater than 50 m^2. Devices that maybe installed to comply with this requirement may include an airlock, self-closing door, or revolving door. Provisions for people with a disability should also be considered when selecting the device.

Reasonable judgement is required when applying sealing to windows and doors, i.e., the seal must be durable with no gaps between a conditioned and non-conditioned space.

There are a couple of exemptions to these requirements, such as for roller shutter doors or the like, that are used for out of-hours security purposes only, i.e., when conditioning is not operating. Another exemption has been granted for the main entrance to a café, restaurant or open front shop that has a 3m non-conditioned zone. Where staff are carrying trays of food or drink it may be unsafe to require an airlock, self-closing door or sliding door.

The sealing of "miscellaneous" exhaust fans, such as smaller fans used for domestic kitchen exhaust as well as sealing of roofs, walls and floors applies to the same spaces and in the same climate zones as described for roof lights. The provisions do not apply to smoke exhaust fans and the like.

Similarly to exhaust fans, an evaporative cooler represents a large opening in the building envelope. This opening need sealing when the evaporative cooler is not in use, such as in the winter when a heating system maybe operating.

The exhaust fans are essentially openings in the insulated envelope, through which conditioned air will escape when they are not operating. Accordingly, the requirement is to restrict the extent of air leakage from intermittently operating fans. This can be achieved by strip damper systems that are readily available for most fan types. Alternatively, a filter system, like that used in kitchen range hoods is acceptable as they significantly restrict the flow of air when the fan is not operating.

If the fan was operating as part of the *air-conditioning* system, such as a control return air fan, an additional damper would not be required but, if one is already there for other purposes, it must close on shut down

For sealing of walls, floors and ceiling, in most instances, conventional internal fixing and finishing procedures will be sufficient to comply with the required seal, provided the linings are close fitting and trimmed by skirtings, architraves, cornices and the like. A reasonable interpretation of "close fitting" would be having a gap less than that between a closed window or door and the associated frame, which is typically 2 mm.

It is noted that some lining systems, such as plasterboard, require gaps to allow for movement of sheeting. In such instances, skirtings will be required to seal the wall and floor junctions where a fitted floor is installed and there are gaps between the subfloor and internal space. However, if the floor was a concrete slab or platform particleboard flooring then no gap would exist between the internal and external spaces and sealing is not necessary. Where it is not possible to have close fitting junctions or penetrations, expanding foam, caulking, rubber compressible strip etc. may be used to seal the gap.

2.2 APPLICABLE PART J 3 DTS PROVISIONS

	Building Element	Energy Efficiency Provisions	Corresponding BCA Clause
1	All new openable windows and external doors of the conditioned areas of the Proposed Development except for fire doors, smoke doors and roller shutter doors, roller shutter grille or other security door or device installed only for out-of-hours security if any	provide air seals on all edges or provide windows complying with AS 2047 The air seals can be a foam or rubber compression strip, fibrous seal or the like	Part J3.4 (a & b& c)
2	For the new external doors of the Proposed Development	provide a draft protection device for the bottom edge and for other edges provide air seals like a foam or rubber compression strip or fibrous seal.	Part J3.4 (c)
3	Exhaust fans of the conditioned areas of the Proposed Development if any	must be equipped with a self-closing damper or similar.	Part J3.5
4	New roofs, ceilings, walls, windows frames and doors frames of the conditioned areas of the Proposed Development	must be enclosed by internal lining systems that are close fitting at ceiling, wall and floor junctions OR be sealed at junctions and penetrations by close fitting architrave, skirting, cornice, expanding foam, rubber compressible strip, caulking or the like. These requirements do not apply to openings, grilles or the like required for smoke hazard management.	Part J3.6

2.3 PART J 5 – AIR CONDITIONING AND VENTILATION SYSTEMS

No new system proposed.

2.4 PART J 6 – ARTIFICIAL LIGHTING AND POWER

No new system proposed.

2.5 PART J 7 – HEATED WATER SUPPLY AND SWIMMING POOL AND SPA POOL PLANT

No new system proposed.

2.6 PART J 8 – FACILITIES FOR ENERGY MONITORING

Not applicable to scope of the Proposed Development.

3.0 SUMMARY AND CONCLUSIONS

Considering the design elements nominated on the Proposed Development provided by "Porebski Architects" the following can be concluded for the Proposed Development to meet the Deemed to Satisfy requirements of Section J of the Building Code of Australia 2019, Energy Efficiency;

1. For new roof and ceiling construction of the Proposed Development as per architectural plans, install additional insulation to provide a combined roof and ceiling system with total thermal resistance of R 4.8 m^2.k/w or more.
2. Provide a thermal break consisting of an insulating material with a minimum R0.2 m^2.k/w installed between the new metal sheet roofing and its supporting metal frame elements if the metal roof sheet and ceiling lining are attached to supporting metal framing elements like purlins, rafters or battens.
3. For the external modified walls of the Proposed Development as per architectural plans, install additional insulation to provide a wall system with total thermal resistance of R 2.0 m^2.k/w or more.
4. Provide a thermal break consisting of an insulating material with a minimum R0.2 m^2.k/w installed between the external cladding and its supporting metal frame elements for new metal cladding modified walls if the cladding sheet and internal wall lining are attached to supporting metal framing elements.
5. For new glazed envelope elements install windows with Total System U-value no more than 4.6 W/m^2.k and SHGC no more than 0.74
6. Installed insulation must comply with AS/NZS 4859.1:2018 and be installed in such a way to meet the following requirements:
    a. The insulation must abut or overlap adjoining insulation other than at supporting members such as studs, noggins, joists, furring channels and the like where the insulation must be against the member.
    b. The installed insulation must form a continuous barrier with ceiling, walls, bulkheads, floors or the like that inherently contribute to the thermal barrier while does not affect the safe and effective operation of a service or fitting.
    c. The bulk insulation must maintain its position and thickness other than when it is compressed between cladding and supporting members, water pipes, electrical cabling or the like. In a ceiling, where there is no bulk insulation or reflective insulation in the wall beneath, it overlaps the wall by not less than 50 mm.
    d. Reflective insulation must be installed with the necessary airspace to achieve the required R Value and be adequately supported by framing members. Each adjoining sheet of role

membrane must be overlapped by not less than 50 mm or tapped together. It must be closely fitted against any penetration, door or window opening.

7 For all new openable windows and external doors of the conditioned areas of the Proposed Development except for fire doors, smoke doors and roller shutter doors, roller shutter grille or other security door or device installed only for out-of-hours security if any, provide air seals on all edges or provide windows complying with AS 2047. The air seals can be a foam or rubber compression strip, fibrous seal or the like.

8 For all new external doors provide a draft protection device for the bottom edge and for other edges provide air seals like a foam or rubber compression strip or fibrous seal.

9 New exhaust fans of the conditioned areas of the Proposed Development if any, must be equipped with a self-closing damper or similar.

10 New roofs, ceilings, walls, windows frames door doors frames of the conditioned areas of the Proposed Development must be enclosed by internal lining systems that are close fitting at ceiling, wall and floor junctions OR be sealed at junctions and penetrations by close fitting architrave, skirting, cornice, expanding foam, rubber compressible strip, caulking or the like. These requirements do not apply to openings, grilles or the like required for smoke hazard management.

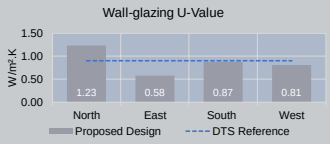
Façade

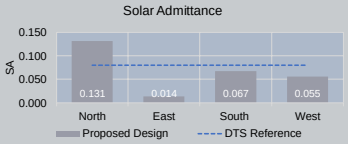
Wall Glazing Areas + Results

User Input | Active Row - All Inputs Required | User Dropdown | Calculator

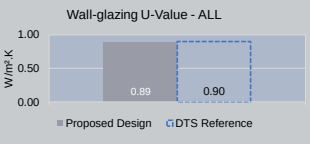
Results | **Class 3 - hotel** | **Climate Zone 8 - Alpine**

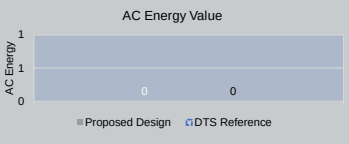
Method 1





Method 2





Wall Glazing Area

Compliant Solution =
Non-Compliant Solution =

North	Glazing Reference	Height (m)	Width (m)	Glazing Area (m²)	Shading Reference	Wall Reference	Wall Area (m²)	Total Area (m²)	Internal
1	G1			30.7		W1	142.6	173.30	
2									
3									
4									
5									
6									

	Result	Target				
Wall-glazing U-Value (W/m².K)	1.23	0.90	Glazing Area (m²)	30.7	Average Glazing U-Value (W/m².K)	4.60
Solar Admittance	0.131	0.080	Wall Area (m²)	142.6	Average Glazing SHGC	0.74
			Glazing to Façade Ratio	18%	Average Wall R-Value (m².K/W)	2.00

East	Glazing Reference	Height (m)	Width (m)	Glazing Area (m²)	Shading Reference	Wall Reference	Wall Area (m²)	Total Area (m²)	Internal
1	G1			2.6		W1	137.5	140.10	
2									
3									
4									
5									
6									

	Result	Target				
Wall-glazing U-Value (W/m².K)	0.58	0.90	Glazing Area (m²)	2.6	Average Glazing U-Value (W/m².K)	4.60
Solar Admittance	0.014	0.080	Wall Area (m²)	137.5	Average Glazing SHGC	0.74
			Glazing to Façade Ratio	2%	Average Wall R-Value (m².K/W)	2.00

South	Glazing Reference	Height (m)	Width (m)	Glazing Area (m²)	Shading Reference	Wall Reference	Wall Area (m²)	Total Area (m²)	Internal
1	G1			14.8		W1	148.4	163.20	
2									
3									
4									
5									
6									

	Result	Target				
Wall-glazing U-Value (W/m².K)	0.87	0.90	Glazing Area (m²)	14.8	Average Glazing U-Value (W/m².K)	4.60
Solar Admittance	0.067	0.080	Wall Area (m²)	148.4	Average Glazing SHGC	0.74
			Glazing to Façade Ratio	9%	Average Wall R-Value (m².K/W)	2.00

West	Glazing Reference	Height (m)	Width (m)	Glazing Area (m²)	Shading Reference	Wall Reference	Wall Area (m²)	Total Area (m²)	Internal
1	G1			10		W1	123.4	133.40	
2									
3									
4									
5									
6									

	Result	Target				
Wall-glazing U-Value (W/m².K)	0.81	0.90	Glazing Area (m²)	10	Average Glazing U-Value (W/m².K)	4.60
Solar Admittance	0.055	0.080	Wall Area (m²)	123.4	Average Glazing SHGC	0.74
			Glazing to Façade Ratio	7%	Average Wall R-Value (m².K/W)	2.00

Reference Building

Include shading?

	Method 1					Method 2		
	Glazing to Façade Ratio	Wall U-Value (W/m².K)	Glazing U-Value (W/m².K)	Shading Multiplier	SHGC	Wall U-Value (W/m².K)	Glazing U-Value (W/m².K)	SHGC
North	18%	0.26	3.86	1.000	0.45	0.26	5.80	0.00
East	2%	0.26	5.80	1.000	0.81			
South	9%	0.26	5.80	1.000	0.81			
West	7%	0.26	5.80	1.000	0.81			

Façade

Report

Calculator

Project Summary

Date
24/02/2022

Name
Manuel Basiri

Company
Eco Certificates Pty Ltd

Position
Sustainability Consultant

Building Name / Address
EC - 4247 - 4 Spencers Creek Road, Charlotte Pass Nsw
0

Building State
NSW

Climate Zone
Climate Zone 8 - Alpine

Building Classification
Class 3 - hotel

Storeys Above Ground
3

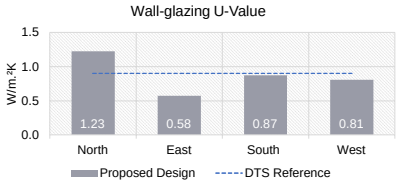
Tool Version
1.2 (June 2020)

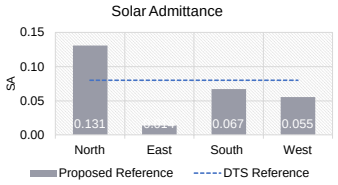
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

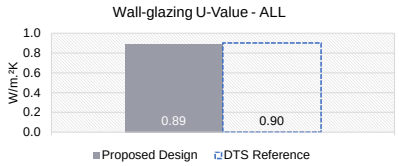
Method 1

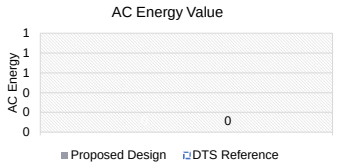
	North	East	South	West	Method 2 All
Wall-glazing U-Value (W/m².K)	1.23	0.58	0.87	0.81	0.89
Solar Admittance	0.13	0.01	0.07	0.06	
AC Energy Value					0





Method 2





Project Details

	North	East	South	West
Glazing Area (m²)	30.7	2.6	14.8	10
Glazing to Façade Ratio	18%	2%	9%	7%
Glazing References	G1	G1	G1	G1
Glazing System Types	DEFAULTS (GENERIC)	DEFAULTS (GENERIC)	DEFAULTS (GENERIC)	DEFAULTS (GENERIC)
Glass Types	DEFAULTS (GENERIC)	DEFAULTS (GENERIC)	DEFAULTS (GENERIC)	DEFAULTS (GENERIC)
Frame Types	DEFAULTS (GENERIC)	DEFAULTS (GENERIC)	DEFAULTS (GENERIC)	DEFAULTS (GENERIC)
Average Glazing U-Value (W/m².K)	4.60	4.60	4.60	4.60
Average Glazing SHGC	0.74	0.74	0.74	0.74
Shading Systems	Device Horizontal	Device Horizontal	Device Horizontal	Device Horizontal
Wall Area (m²)	142.6	137.5	148.4	123.4
Wall Types	Wall	Wall	Wall	Wall
Methodology	Wall			
Wall Construction	Project Wall	Project Wall	Project Wall	Project Wall
Wall Thickness	0	0	0	0
Average Wall R-value (m².K/W)	2.00	2.00	2.00	2.00
Solar Absorptance				