



BUILDING REPORTS PTY LTD

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15 July 2015

North Curl Curl Surf Club
C/- LKS Design & Drafting
PO Box 4101
North Curl Curl NSW 2099

Attention: Keith Smith

Dear Keith,

Re: BCA Part J (Energy Efficiency Report)

Premises: North Curl Curl SLSC – Proposed Additions and Alterations

This document supersedes and replaces the previous version dated 14 July 2015. The attached specification outlines the provisions considered necessary to meet the requirements of BCA Parts J1 to J3, J6, & J7 – Energy Efficiency for the proposed additions and alterations at North Curl Curl SLSC that is based on the following:

Development Description: Additions and alterations to the existing Surf Club building at the above premises. The additions include a new entry, extended members training room, conversion of garage to gymnasium, kitchen addition, modified sanitary facilities and other alterations at the Upper Ground Floor Level of the building. There is minor works proposed to the Lower Ground Floor Level of the building, ie small section of new wall to the storage area. There is a Caretakers Flat above the Upper Ground Floor and no works are proposed to the Flat with the exception of potential adjustments to the kitchen window due to new roofing for the level below.

Documentation: The architectural documentation used for the assessment includes plans prepared by LKS Design & Drafting, Drawing Nos. DA 03(C), 04(B), 05(B), 06(C), 08(A), SK 03(A), SK 04(A), SK 07(A).

BCA Classification: The various uses of the building are;

- Class 4 (Caretakers Flat - existing),
- Class 9b (Surf Club uses, eg training, gymnasium, hall).

Method of Assessment: The building works proposed has been assessed for the purposes of the provisions of BCA Part J as follows:

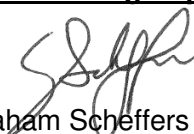
- The climate zone is Zone 5.

- The assessment and specification relates to the new works only as detailed in the plans referenced above.
- The area considered as 'conditioned space' includes the external envelope of the Main Entry, Office, Club Gymnasium, Kitchen, Members Training, Main Hall and Sanitary Facilities and the internal wall separating the gymnasium from the adjacent ATV/IRB Garage.
- The BCA Part J1 (building fabric) provisions are as detailed in the attached specification.
- The BCA Part J2 (glazing) provisions are as detailed in the attached specification.
- The BCA Part J3 (building sealing) provisions are as detailed in the attached specification.
- Assessment of the BCA Part J4 relates to residential works, therefore is not applicable to this development.
- The BCA Part J5 (mechanical ventilation) requirements are not included in this assessment on the basis that such a system is not proposed or is to be detailed and documented separately by the mechanical consultant.
- The BCA Part J6 (lighting) and Part J7 (hot water system) provisions are as detailed in the attached specification.
- Upgrading of existing elements not proposed to be altered, that are not required by the Development Consent or Construction Certificate documentation to be upgraded to satisfy BCA Part J, are noted as not requiring works within the attached specification.
- Reference to the BCA in this document is a reference to BCA Volume 1 unless otherwise stated.
- Construction details and information where not specified in the plans are as advised by the architect Keith Smith.

Trusting this information is to your satisfaction. Should you have any queries regarding this matter please do not hesitate to contact the undersigned.

Yours faithfully,

GRS Building Reports Pty Ltd.



Graham Scheffers

SPECIFICATION

1.0 Application

This specification relates to the new works proposed to be carried out, ie additions and alterations to the existing Surf Club Building with works required as specified in each section.

2.0 External Wall Construction

The new external walls to the Upper Ground Floor are detailed to be constructed from cavity brick work (lower portion) and Fc cladding fixed to a steel column / girt structure (upper portion, eg roof gables). These external walls are to be constructed with a total R-Value of R2.8. This is to comprise a combination of all of the following:

2.1 Cavity Brickwork

The cavity brick construction portions of proposed external walls necessitate that;

- a) Cavity Brick achieves combined R-Value of 0.51 including allowance for two brick layers (R0.09 each), 20mm cavity (R0.17), indoor air film (R0.04) and outdoor air film (R0.12) each side of the external wall construction, and
- b) Additional measures to increase the total R-value is proposed with the installation of extruded polystyrene boards within the cavity to provide increased insulation to the walls of a minimum R-Value of at least 2.3, OR provision of battens with insulation and plasterboard internal wall lining to provide increased insulation to the walls of minimum R-Value of at least 2.3.

2.2 Concrete Blockwork

Concrete blockwork or formed concrete may be an alternative method of construction to cavity brickwork. If proposed these portions of external walls necessitate that;

- a) Concrete blockwork or formed concrete (eg 150mm thick) achieves combined R-Value of 0.27 including 150mm solid wall of concrete blockwork or formed concrete (R0.11), indoor air film (R0.04) and outdoor air film (R0.12) each side of the external wall construction, and
- b) Additional measures to increase the total R-value is proposed with the installation of battens with insulation and plasterboard internal wall lining to provide increased insulation to the walls of minimum R-Value of at least 2.53.

2.3 Fc Clad Walls

The Fc clad portions of external walls necessitate that;

- a) Fc external cladding with plasterboard internal cladding on timber framework achieves combined R-Value of 0.25 including allowance for 6mm Fc cladding (R0.03), 10mm plasterboard lining (R0.06), indoor air film (R0.12) and outdoor air film (R0.04) each side of the external wall construction, and

- b) Additional measures to increase the total R-value is proposed with the installation of bulk insulation or extruded polystyrene boards within the cavity to provide increased insulation to the walls of a minimum R-Value of at least 2.55.

Alternative Construction method and materials may be used that achieves a total R-Value of R2.8 for the external wall construction. Note: No Thermal break is required due to timber framework proposed.

Requirement (External Walls): Proposed new external walls to the Upper Ground Floor Additions and Alterations including insulation must be installed and certified to achieve a total R-value of R2.8 with insulation that satisfies the requirements of the BCA as detailed in item 6.0 below, noting that;

- a) The cavity brick portions of external wall construction are to be provided with additional insulation so that the total wall construction achieves a total R-value of 2.8 noting that the cavity brick wall without insulation normally achieves an R-Value of 0.51.
- b) Concrete blockwork or formed concrete (eg 150mm thick) portions of external wall construction are to be provided with additional insulation so that the total wall construction achieves a total R-value of 2.8 noting that the concrete blockwork or formed concrete without insulation normally achieves an R-Value of 0.27.
- c) The Fc clad portions of external wall construction are to be provided with additional insulation so that the total wall construction achieves a total R-value of 2.8 as determined in accordance with AS/NZS4859.1-2002.

3.0 Roof and Ceiling Construction

It is understood that metal roof sheeting is proposed with a light colour (ie roof upper surface solar absorptance value of not more than 0.4). The new roof construction to the additions/alterations and ceiling below must have a total R-value of R3.2 (Downwards or Up) to be incorporated in the roof / ceiling construction as follows:

- The metal roof is assumed to have a total R-value of at least 1.5 assuming the roof is to be provided with a foil faced blanket below the roof sheeting with reflective surface facing down.
- The ceiling of the new works is to be plasterboard fixed to the underside of timber joists, therefore additional measures to increase the total R-value is necessary, eg bulk insulation above the plasterboard ceiling with a total R-value of at least 1.7.
- Based on the details provided the construction will readily achieve the necessary thermal efficiency, subject to the construction and additional insulation above being installed as set out in the architectural plans and BCA requirements detailed in item 6.0 below.

Requirement (Roof and Ceiling Construction): That the roof sheeting is to have an upper surface solar absorptance value of not more than 0.4 installed and certified to achieve a total R-value of at least R1.5 and the ceiling of the new works comprising timber joists is to be provided with additional measures (eg bulk insulation) on top of the plasterboard ceiling to achieve an R-value of at least 1.7 with insulation that satisfies the requirements of the BCA as detailed in item 6.0 below.

4.0 Floor Construction

There are no new floors proposed to the conditioned space of the building, therefore there are no requirement for the floor construction.

5.0 Internal Wall Construction

There are no new internal walls proposed to the conditioned space of the building, therefore there are no requirement for the internal wall construction.

6.0 Insulation Construction – general

- (a) Insulation where specified is to comply with AS/NZS - 4859.1-2002, be installed in accordance with the Manufacturers Specification and so that it—
- (i) abuts or overlaps adjoining insulation; and
 - (ii) forms a continuous barrier with ceilings, walls, bulkheads, or the like that inherently contribute to the thermal barrier; and
 - (iii) does not affect the safe or effective operation of a service or fitting.
- (b) Reflective insulation where specified is to be installed with—
- (i) the necessary airspace to achieve the required R-Value between a reflective side of the reflective insulation and a building lining or cladding; and
 - (ii) the reflective insulation closely fitted against any penetration, door or window opening; and
 - (iii) the reflective insulation adequately supported by framing members; and
 - (iv) each adjoining sheet of roll membrane being overlapped not less than 50 mm; or taped together.
- (c) Bulk insulation where specified is be installed so that—
- (i) it maintains its position and thickness, other than where it crosses roof battens, water pipes, electrical cabling or the like; and
 - (ii) 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.

7.0 Roof lights

There is one (1) fixed skylight 550mm x 1400mm proposed to the corridor connecting the entry to the club gymnasium, therefore the provisions of BCA Section J1.4 necessitate that the skylight must have a Total System SHGC Value of not more than 0.83 and a Total System U-Value of not more than 8.5. The skylight must be sealed with an imperforate ceiling diffuser or the like installed at the ceiling or internal lining level, or a weather proof seal is provided.

Requirement (Skylight): The skylight to the entry corridor must be certified as having a Total System SHGC Value of not more than 0.83 and a Total System U-Value of not more than 8.5 that is sealed with an imperforate ceiling diffuser or the like installed at the ceiling or internal lining level, or a weather proof seal is provided.

8.0 Sealing of Roofs, Walls and Floors

External walls and any opening such as a window, door or the like to the 'Conditioned Space' of the building (ie the external envelope of the Main Entry, Office, Club Gymnasium, Kitchen, Members Training, Main Hall and Sanitary Facilities and the internal wall separating the gymnasium from the adjacent ATV/IRB Garage) must be constructed to minimise air leakage when forming part of the envelope of the 'conditioned space' of the building in accordance with the provision of BCA Clause J3.6. This necessitates construction around openings being:

- enclosed by internal lining systems that are close fitting at ceiling, wall and floor junctions; or
- sealed by caulking, skirting, architraves, cornices or the like.

Requirement (Sealing of roof, walls and floor to Conditioned Space): The new window, door and other openings to the envelope of the conditioned space (ie the external envelope of the Main Entry, Office, Club Gymnasium, Kitchen, Members Training, Main Hall and Sanitary Facilities and the internal wall separating the gymnasium from the adjacent ATV/IRB Garage) must be certified as being constructed to minimise air leakage to comply with the provisions of BCA Clause J3.6. Note: this does not apply to openings, grilles and the like required for smoke hazard management.

9.0 Windows and doors

A seal to restrict air infiltration is to be fitted to each edge of the proposed door and openable external window or the like that form part of the envelope of the 'Conditioned Space' of the building (ie the external envelope of the Main Entry, Office, Club Gymnasium, Kitchen, Members Training, Main Hall and Sanitary Facilities and the internal wall separating the gymnasium from the adjacent ATV/IRB Garage) in accordance with the provision of BCA Clause J3.4 with the following being necessary:

- Main entry doorway to building is to be provided with a self-closing door.
- These requirements do not apply to a window complying with AS 2047-1999, and
- External swing doors, the bottom edge seal must be a draft protection device, and
- For other edges of an external door or the edges of an openable window or other opening, may be a foam or rubber compressible strip, fibrous seal or the like.

Requirement (Sealing of windows and doors to Conditioned Space): The main entry doorway to the building is to be provided with a self-closing door. The proposed door / window to the conditioned space (ie the external envelope of the Main Entry, Office, Club Gymnasium, Kitchen, Members Training, Main Hall and Sanitary Facilities and the internal wall separating the gymnasium from the adjacent ATV/IRB Garage) must be certified to comply with AS 2047-1999 or the provisions of BCA Clause J3.4 with the provision of seals to each edge of openable windows/doors.

10.0 Glazing

The glazing to the 'conditioned space' has been assessed using the Glass Calculator issued by the Australian Building Code Board. Based on the design drawings assessed using aluminium frame glazing having U_w and $SHGC_w$ values as detailed by the client and additional shading, the proposed glazing will satisfy the provisions of BCA Clause J2.4.

The printouts detailed at Appendix A shows that the glazing satisfies Clause J2.4 of the BCA and is summarised as follows:

- The external western orientation glazing proposed to the members training area (D2, D3 & D4) and kitchen servery (W2) is aluminium frame low-e glazing that must have an NFRC Uw value not greater than 5.76 and SHGCw value not greater than 0.48.
- The high level external glazing proposed to the main hall (W7) is aluminium frame toned glazing that must have an NFRC Uw value not greater than 6.3 and SHGCw value not greater than 0.69.
- The remainder of the external glazing proposed to the entry door (D10), office (W8), sanitary facilities (W9, W10), club gymnasium (W5), kitchen servery (W1), corridor (W4) and members training area (D1) is aluminium frame clear glazing that must have an NFRC Uw value not greater than 6.2 and SHGCw value not greater than 0.78.
- The proposed internal glazing to the club gymnasium (W3 & D9) that opens to the adjacent ATV/IRB Garage is aluminium frame clear glazing that must have an NFRC Uw value not greater than 6.2 and SHGCw value not less than 0.78, and
- The glazing is also reliant upon external shading as follows:
 - (i) 725mm eave (including gutter) installed directly above the northern glazing (D10, W8, W9 & W10) that extends at least 725mm on both sides of the glazing.
 - (ii) 575mm eave (including gutter) installed directly above the western glazing (W2) that extends at least 575mm on both sides of the glazing.
 - (iii) 3655mm balcony overhang to the western glazing (D2, D3 & D4) as detailed on the design drawings.

The glazing nominated above may be replaced with alternative glazing subject to the NFRC Uw and SHGCw values being detailed and re-assessed. Note: The NFRC values are for the whole window unit including frame and glazing.

Requirement (Windows and Doors to Conditioned Space): That the proposed window to the 'conditioned space' is to be installed and certified to achieve:

- Western orientation glazing proposed to the members training area (D2, D3 & D4) and kitchen servery (W2) is aluminium frame low-e glazing that must have an NFRC Uw value not greater than 5.76 and SHGCw value not greater than 0.48.
- High level external glazing proposed to the main hall (W7) is aluminium frame toned glazing that must have an NFRC Uw value not greater than 6.3 and SHGCw value not greater than 0.69.
- Remainder of the external glazing proposed to the entry door (D10), office (W8), sanitary facilities (W9, W10), club gymnasium (W5), kitchen servery (W1), corridor (W4) and members training area (D1) is aluminium frame clear glass that must have an NFRC Uw value not greater than 6.2 and SHGCw value not greater than 0.78.
- Internal glazing proposed to the club gymnasium (W3 & D9) is aluminium frame clear glazing that must have an NFRC Uw value not greater than 6.2 and SHGCw value not less than 0.78, and

- Eave and balcony shading to glazing extending each side of the glazing for the same distance as the projection from the wall as follows:
 - (i) 725mm eave (including gutter) installed directly above the northern glazing (D10, W8, W9 & W10), and
 - (ii) 575mm eave (including gutter) installed directly above the western glazing (W2), and
 - (iii) 3655mm balcony overhang to the western glazing (D2, D3 & D4).

11.0 Exhaust Fans

Miscellaneous exhaust fans where proposed are to be fitted with a sealing device such as self-closing damper or the like when serving the envelope of the 'conditioned space' of the building.

Requirement (Exhaust Fans if Proposed): That any proposed exhaust fans to the envelope of the 'conditioned space' of the building must be certified as having sealing devices in accordance with the provisions of BCA Clause J3.5.

12.0 Evaporative Cooler

Any evaporative cooler installed to serve the 'conditioned space' of the building must be fitted with a self-closing damper or the like.

Requirement (Evaporative Cooler if Proposed): That any proposed evaporative cooler installed to serve the 'conditioned space' of the building must be certified as being fitted with a self-closing damper or the like in accordance with the provisions of BCA Clause J3.7.

13.0 Interior Artificial Lighting

The proposed new internal artificial lighting for the building areas subject to additions and alterations (ie entry, office, male/female/unisex amenities, gymnasium, associated corridors, ATV/IRB garage, kitchen, servery, adjacent chair store and members training area new ceilings) must satisfy BCA Part J6 and must not exceed an aggregate design illumination power load of 3297W.

. The aggregate design illumination power load is based on:

- The use of each space as detailed on the floor plans provided, and
- The new lighting is proposed to the areas the subject of alterations and additions (ie entry, office, male/female/unisex amenities, gymnasium, associated corridors, ATV/IRB garage, kitchen, servery, adjacent chair store and members training area new ceilings), and
- Room index adjustment for the various spaces based on the layout details provided, and
- Ceiling heights being raked as advised and detailed in Sectional Elevation, except for areas with level ceilings, eg Gymnasium and Kitchen / Servery
- The total amount of power that will be consumed by the lighting systems for the space including the effects of lamps, ballasts, current regulators and control devices within the fittings.

- Lighting control devices must be provided in accordance with Section 15 below to satisfy BCA Specification J6.

These requirements do not apply to;

- Signage and display lighting within cabinets and display cases that are fixed in place; or
- Emergency lighting required by the BCA; or
- A heater where the heater also emits light.

The above aggregate design illumination power density may be adjusted when the type of motion sensors, timer switches and the like proposed to be installed are known. Such systems must satisfy Section 15 below and a further calculation would be necessary to confirm the increased aggregate design illumination power density.

Interior window display lighting (where provided) must be controlled separately from other display lighting.

Requirement (Interior Lighting): The interior artificial lighting to serve the building areas subject to additions and alterations (ie entry, office, male/female/unisex amenities, gymnasium, associated corridors, ATV/IRB garage, kitchen, servery, adjacent chair store and members training area new ceilings), must be certified as not exceeding design illumination power load of 3297W. This is to include the total amount of power that will be consumed by the lighting systems for the space including the effects of lamps, ballasts, current regulators and control devices within the fittings and BCA Specification J6 as detailed in Section 15 below.

14.0 Artificial lighting around the perimeter of the building

Artificial lighting around the perimeter of the building including lighting for the proposed sign must:

- (a) Be controlled by a daylight sensor, or have a separate time switch in accordance with Section 15 below, and
- (b) When the total perimeter (external) lighting load exceeds 100 W;
 - (A) have an average light source efficacy of not less than 60 Lumens/W, or
 - (B) be controlled by a motion detector in accordance with Section 15 below, and
- (c) When used for decorative purposes such as façade lighting or signage have a separate time switch in accordance with in accordance with Sections 15.2 below, and

Requirement (External Lighting): The proposed exterior artificial lighting installed around the perimeter of the building must be certified as being provided with a time switch and / or daylight sensor as outlined above and in accordance with Section 15 below. The total lighting is not to exceed 100W unless satisfying BCA Clause J6.5 and Specification J6 as set out above.

15.0 Lighting and Power Control Devices

This Section contains the requirements for lighting and power control devices including where light control devices such as motion detectors, dimmers, time switches are referenced by Sections 13 and 14 above.

15.1 General

- (a) Artificial lighting of a room or space must be individually operated by a switch or other control device.
- (b) An artificial lighting switch or other control device in (a) must if an artificial lighting switch, be located in a visible position—
 - i. in the room or space being switched; or
 - ii. in an adjacent room or space from where the lighting being switched is visible.
- (c) 95% of the new light fittings must be controlled by—
 - i. a time switch in accordance with in accordance with Section 15.2 below, or
 - ii. an occupant sensing device such as—
 - (A) a security key card reader that registers a person entering and leaving the building, or
 - (B) a motion detector in accordance with Section 15.3 below.
- (d) Interior decorative and display lighting, such as for a foyer mural or art display, must be controlled
 - i. separately from the other artificial lighting, and
 - ii. by a manual switch for each area other than when the operating times of the displays are the same in a number of areas, in which case they may be combined, and
 - iii. by a time switch in accordance with Section 15.2 below where the display exceeds 1kW
- (e) Window display lighting must be controlled separately from other display lighting.

15.2 Time switch.

A time switch must be capable of—

- (a) A time switch must be capable of switching on and off electric power at variable pre-programmed times and on variable pre-programmed days.
- (b) A time switch for external lighting must be capable of—
 - (i) limiting the period the system is switched on to between 30 minutes before sunset and 30 minutes after sunrise is determined or detected including any pre-programmed period between these times ; and

- (ii) being overridden by a manual switch or a security access system for a period of up to 30 minutes, after which the time switch must resume control.

15.3 Motion detectors

A motion detector must—

- (i) be capable of sensing movement such as by infra-red, ultrasonic or microwave detection or by a combination of these means; and
- (ii) be capable of detecting—
 - (A) a person before they have entered 1 m into the space; and
 - (B) movement of 500 mm within the useable part of the space; and
- (iii) not control more than 75% of the lights in spaces using high intensity discharge; and
- (iv) be capable of maintaining the artificial lighting when activated—
 - (A) for a maximum of 30 minutes unless it is reset; and
 - (B) without interruption if the motion detector is reset by movement; and
- (v) not be overridden by a manual switch to permanently leave the lights on.

When outside a building, a motion detector must—

- (i) be capable of sensing movement such as by infra-red, ultrasonic or microwave detection or by a combination of these means; and
- (ii) be capable of detecting a person within a distance from the light equal to—
 - (A) twice the mounting height; or
 - (B) 80% of the ground area covered by the light's beam, and
- (iii) not control more than 5 lights, and
- (iv) be operated in series with a photoelectric cell or astronomical time switch so that the light will not operate in daylight hours, and
- (v) be capable of maintaining the artificial lighting when the switch is on for a maximum of 10 minutes unless it is reset, and
- (vi) have a manual override switch is rest after a maximum period of 4 hours.

15.4 Daylight Sensor

- (a) A daylight sensor and dynamic control device for artificial lighting must—
 - (i) for switching on and off—
 - (A) be capable of having the switching level set point adjusted between 50 and 1000 Lux; and

- (B) have—
 - (aa) a delay of more than 2 minutes; and
 - (bb) a differential of more than 100 Lux for a sensor controlling high pressure discharge lighting, and 50 Lux for a sensor controlling other than high pressure discharge lighting; and
- (ii) for dimmed or stepped switching, be capable of reducing the power consumed by the controlled lighting in proportion to the incident daylight on the working plane either
 - (A) continuously down to a power consumption that is less than 50% of full power, or
 - (B) in not less than 4 steps down to a power consumption that is less than 50% of full power.
- (b) Where a daylight sensor and dynamic control device has a manual override switch, this switch must not be able to switch the lights permanently on or bypass the lighting controls.

Requirement (Lighting Controls): That certification for the lighting control equipment confirm that the artificial lighting for the building is individually operated by a switch, other control device and the proposed lighting around the perimeter of the building must be controlled by a timer / motion sensor / daylight sensor in accordance with the provisions of BCA Part J6 and BCA Specification J6 as outlined above.

16.0 Air conditioning and Ventilation Systems

It is understood no air conditioning or ventilation systems are proposed. If any mechanical air conditioning and ventilation systems are proposed as part of the works they are to be incorporated in the design by the mechanical engineer. Full details are to be certified separately at design / installation stages in accordance with the provision of BCA Part J5 and BCA Specifications J5.2 & J5.4.

Where control devices are required or are proposed to satisfy the requirements of BCA Specification J6, full details are to be incorporated in the design.

Requirement (Air Conditioning and Ventilation if Proposed): Where mechanical air conditioning and ventilation systems are proposed as part of the works this is to be incorporated in the design by the mechanical engineer. Mechanical air conditioning and ventilation systems details, including control devices that satisfy the requirements of BCA Specification J6, are to be provided that are certified separately at design / installation stages in accordance with the provision of BCA Part J5 and BCA Specifications J5.2 & J5.4.

17.0 Hot Water System

The hot water system (if proposed to be replaced), any new supply piping and provision of a heat trap is to be designed and installed in accordance with Section 8 of AS/NZS 3500.4 – 2003 for the Climate Zone from this Standard.

Requirement (Hot Water System): That certification be obtained that any new hot water piping, hot water system or provision of a heat trap has been installed in accordance with BCA (Volume 1) Clause J7.2, BCA (Volume 3) Clause B2.2a and Section 8 of AS/NZS 3500.4 – 2003.

Appendix A – Glazing Calculation

NCC VOLUME ONE GLAZING CALCULATOR (first issued with NCC 2014)
HELP

Building name/description: Application: Climate zone:

Storey:

		Facade areas								
		N	NE	E	SE	S	SW	W	NW	internal
Option A		42m ²		21.3m ²		22.5m ²		49.8m ²		24m ²
Option B										n/a
Glazing area (A)		9.03m ²		2.25m ²		8.43m ²		25.6m ²		9.5m ²

Number of rows preferred in table below: (as currently displayed)

GLAZING ELEMENTS, ORIENTATION SECTOR, SIZE and PERFORMANCE CHARACTERISTICS								SHADING		CALCULATED OUTCOMES OK (if inputs are valid)							
Glazing element		Facing sector		Size			Performance		P&H or device		Shading		Multipliers		Size	Outcomes	
ID	Description (optional)	Option A facades	Option B facades	Height (m)	Width (m)	Area (m ²)	Total System U-Value (AFRC)	Total System SHGC (AFRC)	P (m)	H (m)	P/H	G (m)	Heating (S _e)	Cooling (S _c)	Area used (m ²)	Element share of % of allowance used	
1	W1	S		1.20	1.81		6.2	0.78				0.00	1.00	1.00	2.17	26% of 83%	
2	W5	S		0.70	2.02		6.2	0.78				0.00	1.00	1.00	1.41	17% of 83%	
3	D1	S		2.40	2.02		6.2	0.78				0.00	1.00	1.00	4.85	57% of 83%	
4	D2	W		2.40	3.63		5.8	0.48	3.655	2.400	1.52	0.00	0.10	0.32	8.70	28% of 99%	
5	D3	W		2.40	3.63		5.8	0.48	3.655	2.400	1.52	0.00	0.10	0.32	8.70	28% of 99%	
6	D4	W		2.40	0.90		5.8	0.48	3.655	2.400	1.52	0.00	0.10	0.32	2.16	7% of 99%	
7	W2	W		1.20	1.81		5.8	0.48	0.575	1.200	0.48	0.00	0.74	0.67	2.17	10% of 99%	
8	D10	N		2.10	0.90		6.2	0.78	0.725	2.100	0.35	0.00	0.89	0.66	1.89	15% of 100%	
9	W8	N		0.90	2.10		6.2	0.78	0.725	2.100	0.35	1.20	0.99	0.92	1.89	23% of 100%	
10	W9	N		0.57	2.10		6.2	0.78	0.725	2.100	0.35	1.53	1.00	0.95	1.20	15% of 100%	
11	W10	N		0.90	2.10		6.2	0.78	0.725	2.100	0.35	1.20	0.99	0.92	1.89	23% of 100%	
12	W4	E		1.50	1.50		6.2	0.78				1.00	1.00	1.00	2.25	100% of 54%	
13	Captain Door (exist)	W		2.10	1.00		6.2	0.78	0.575	2.100	0.27	0.00	0.88	0.81	2.10	16% of 99%	
14	Captain Window (exist)	W		1.20	1.50		6.2	0.78	0.575	1.200	0.48	0.00	0.74	0.67	1.80	12% of 99%	
15	D9	internal		2.40	3.60		6.2	0.78				2.00	0.00	0.64	0.54	8.64	91% of 86%
16	W3	internal		0.60	1.50		6.2	0.78				2.00	0.00	0.64	0.54	0.90	9% of 86%
17	W17	N		0.90	2.40		6.3	0.69				0.00	1.00	1.00	2.16	25% of 100%	

IMPORTANT NOTICE AND DISCLAIMER IN RESPECT OF THE GLAZING CALCULATOR
 The Glazing Calculator has been developed by the ABCB to assist in developing a better understanding of glazing energy efficiency parameters. While the ABCB believes that the Glazing Calculator, if used correctly, will produce accurate results, it is provided "as is" and without any representation.

if inputs are valid