

**FRATER**

**Lot 50, Prinsep Street, Norseman**

**22-10-2018**

**Section J DTS Report**

## Section J Report – Deemed-To-Satisfy (DTS) Proposed Community Centre redevelopment

### Table of Contents

Project Details & Documentation.....	3
Introduction .....	3
Section J – NCC 2016 .....	4
Compliance Summary .....	5
Part J1 – Building Fabric .....	6
Part J2 - Glazing.....	7
Part J3 – Building Sealing .....	8
Appendix A – Envelope Diagram .....	10
Appendix B – DTS Glazing Calculator.....	11

#### **DOCUMENT VERSION**

**Version 0:** Draft issued on 19/10/2018 for Client review

**Version 1:** Updated as per client’s comments on 22/10/2018



# PROJECT DETAILS & DOCUMENTATION

## PROJECT DETAILS

**Project Name** Proposed community centre redevelopment  
**Project Address** Lot 50, Prinsep Street, Norseman WA  
**Building Class** 9b  
**Climate Zone** 4

## ASSESSORS DETAILS

**Contact Name** Denis Mallet  
**Company Name** Frater Consulting Services  
**Postal Address** 281 Lygon Street, East Brunswick  
**Telephone Number** 03 8691 6928  
**Email Address** denis@fraterconsultingservices.com.au  
**Web Address** [www.fraterconsultingservices.com.au](http://www.fraterconsultingservices.com.au)

## DOCUMENTATION REVIEWED

The section J assessment is based on the following documents and drawings:

**Architectural Drawings and Plans by:** Cartman Designs

<i>Drawing Number</i>	<i>Title</i>	<i>Issue</i>	<i>Date of Issues</i>
A011	Site Plan	D	10-10-2018
A040	Roof Plan	D	10-10-2018
A041	Ceiling Plan	D	10-10-2018
A050	Window Schedule	D	10-10-2018
A102	Floor Plan	D	10-10-2018
A120	Elevations	D	10-10-2018

# INTRODUCTION

This report presents the outcomes of the NCC 2016 Section J DTS assessment for the proposed community centre redevelopment in Norseman. Outlined within this document are relevant energy efficient design features of the building, and how compliance is achieved with applicable Section J provisions.

## NCC 2016 SECTION J COMPLIANCE

Section J of the NCC 2016 sets regulations for energy efficiencies for all types of buildings with respect to the building's construction, design and activity. The NCC 2016 offers two compliance methods that differ in complexity and flexibility. The two compliance methods are:

- DTS – Deem to satisfy
- JV3 – Verification using a reference building

This report represents the findings of assessment and recommendations according to DTS provisions.



## **BUILDING CLASS & CLIMATE ZONE**

The Community Centre is classified as Class 9b under the NCC 2016.

The development is located in Norseman which falls under the NCC 2016 climate zone 4.

## **BUILDING “ENVELOPE”**

The envelope is defined by the NCC 2016 as parts of a building’s fabric that separates a conditioned space or habitable room from the exterior of the building or a non-conditioned space. See Appendix A for details of the envelope for the proposed development.

NCC 2016 Part J1 Building Fabric, Part J2 Glazing, and Part J3 Building Sealing are only applicable to elements which form part of the envelope, subject to certain exceptions.

## **SECTION J – NCC 2016**

### **OBJECTIVE**

The objective of this section is to reduce greenhouse gas emissions.

### **FUNCTIONAL STATEMENT**

To reduce greenhouse gas emissions, to the degree necessary –

- A building, including its services, is to be capable of efficient using energy; and
- A building services for heating are to obtain their energy from –
  - a) A low greenhouse gas intensity source; or
  - b) An on site renewable energy source; or
  - c) Another process as reclaimed energy

### **PERFORMANCE REQUIREMENTS: JP1**

A building, including its services, must have, to the degree necessary, features that facilitate the efficient use of energy appropriate to –

- a) The function and use of the building and services; and
- b) The internal environment; and
- c) The geographic location of the building; and
- d) The effects of nearby permanent features such as topography, structures, and buildings; and
- e) Solar radiation being –
  - Utilised for heating; and
  - Controlled to minimise energy for cooling; and
- f) The sealing of the building envelope against air leakage; and
- g) The utilisation of air movement to assist heating and cooling; and
- h) The energy source of the services.

### **PERFORMANCE REQUIREMENTS: JP2**

A building, including its services, must have, to the degree necessary, features that facilitate the maintenance of system and components appropriate to the function and use of the building.



**Limitation:**

JP2 does not apply to services serving only one sole- occupancy unit in a Class 2 building or serving a Class 4 part of a building.

**PERFORMANCE REQUIREMENTS: JP3**

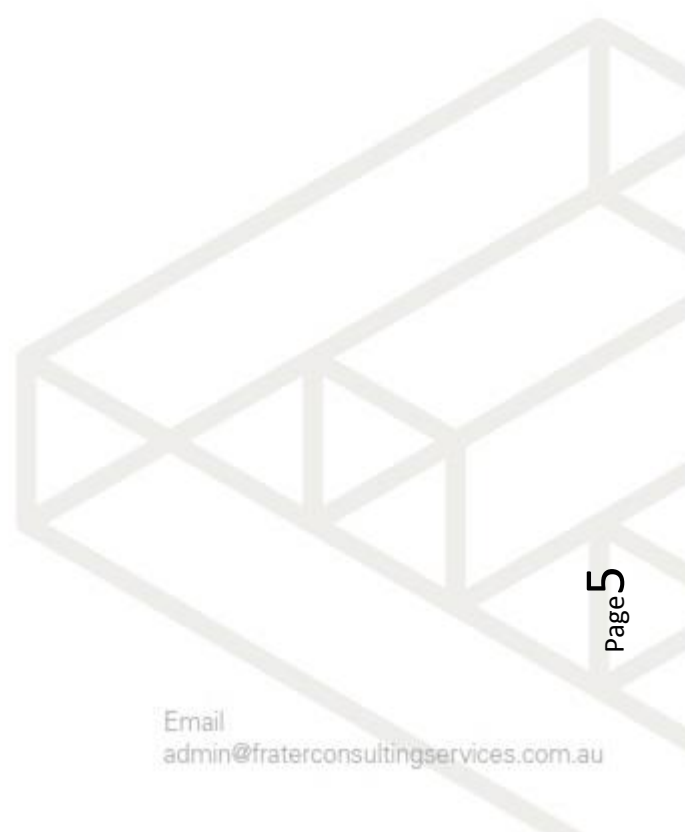
Heating such as for a conditioned space unit must, to the degree necessary, obtain energy from –

- a) A source has a greenhouse gas intensity that does not exceed 100g CO2-e/MJ of thermal energy load; or
- b) An on site renewable energy source; or
- c) Another process as reclaimed energy.

**COMPLIANCE SUMMARY**

<i>Reference</i>	<i>Title</i>	<i>Compliance Achieved</i>
Part J1	Building Fabric	Yes
Part J2	Glazing	Yes
Part J3	Building Sealing	Yes

**Please note that the following section J assessment applies for the proposed redevelopment however dispensation will be sought for retained areas (e.g. retained existing walls).**





## PART J1 – BUILDING FABRIC

### J1.1 Application of Part

J1.1 Application of Part COMPLIANCE DATA / PERMIT CONDITION	COMPLIANCE STATUS
All areas within the community centre (information area, office etc.) will be deemed as conditioned space except for the toilets and storage room which will be unconditioned. All fabrics elements which enclose the conditioned areas from outside spaces or other non-conditioned spaces (Toilets, store) form part of the thermal envelope. See Appendix A for a diagram showing the perimeter of the thermal envelope.	APPLICABLE

### J1.2 Thermal construction – general

J1.2 Thermal construction – general COMPLIANCE DATA / PERMIT CONDITION	COMPLIANCE STATUS
All insulation must comply with AS/NZ 4859.1 and installed in accordance with J1.2 (a), (b) and (c).	PASS

### J1.3 Roof and ceiling construction

J1.3 Roof and ceiling construction COMPLIANCE DATA / PERMIT CONDITION	COMPLIANCE STATUS																		
Installation of R0.2 insulation (Aircell Insulbreak 80) to all roof areas of the development and minimum R3.5 to all ceilings forming part of the thermal envelope makes the total systems value of more than R4.2. This is required to achieve compliance for Climate Zone 4. The roof and ceiling constructions have properties as listed below:	PASS																		
<table border="1"> <thead> <tr> <th>Roof/Ceiling</th> <th>R-Value</th> </tr> </thead> <tbody> <tr> <td>Outdoor air film (7m/s)</td> <td>0.04</td> </tr> <tr> <td>Metal Cladding</td> <td>0.00</td> </tr> <tr> <td><b>Aircell Insulbreak 80</b></td> <td><b>0.20</b></td> </tr> <tr> <td>Roof airspace</td> <td>0.28</td> </tr> <tr> <td><b>Additional insulation (R3)</b></td> <td><b>3.50</b></td> </tr> <tr> <td>Plasterboard</td> <td>0.06</td> </tr> <tr> <td>Indoor air film (still air)</td> <td>0.16</td> </tr> <tr> <td>Total R-Value</td> <td>4.24</td> </tr> </tbody> </table>		Roof/Ceiling	R-Value	Outdoor air film (7m/s)	0.04	Metal Cladding	0.00	<b>Aircell Insulbreak 80</b>	<b>0.20</b>	Roof airspace	0.28	<b>Additional insulation (R3)</b>	<b>3.50</b>	Plasterboard	0.06	Indoor air film (still air)	0.16	Total R-Value	4.24
Roof/Ceiling		R-Value																	
Outdoor air film (7m/s)		0.04																	
Metal Cladding		0.00																	
<b>Aircell Insulbreak 80</b>		<b>0.20</b>																	
Roof airspace		0.28																	
<b>Additional insulation (R3)</b>		<b>3.50</b>																	
Plasterboard		0.06																	
Indoor air film (still air)		0.16																	
Total R-Value	4.24																		

### J1.4 Roof lights

J1.4 Roof lights COMPLIANCE DATA / PERMIT CONDITION	COMPLIANCE STATUS
See Appendix B for the roof light calculator. The skylights will have the following minimum thermal performance: <b>U-Value – 8.5 or below and SHGC - 0.83 or below</b>	PASS



**J1.5 Walls**

J1.5 Walls COMPLIANCE DATA / PERMIT CONDITION	COMPLIANCE STATUS														
<p>All new external walls forming part of the thermal envelope are required to achieve a minimum total R-value of R2.8 (Table J1.5a Option (a) for climate zone 4). Installation of R2.5 insulation in all new external wall will achieve the required total R-Value for Climate zone 4.</p> <p>All internal walls which form part of the thermal envelope (separating conditioned and unconditioned spaces) are required to achieve a minimum total R-value of R1.8 (Table J1.5b Option (b) for climate zone 4). For all new internal walls which form part of the thermal envelope, installation of minimum R1.5 insulation makes the total systems R-Value more than the minimum requirement of R1.8 to satisfy option (b) from Table J1.5b for Climate Zone 4.</p> <p>Internal wall construction with additional insulation has the thermal properties as listed below:</p> <table border="1"> <thead> <tr> <th>Internal Wall</th> <th>R-Value</th> </tr> </thead> <tbody> <tr> <td>Indoor air film (still air)</td> <td>0.12</td> </tr> <tr> <td>Plasterboard</td> <td>0.06</td> </tr> <tr> <td><b>Additional Insulation (R1.5)</b></td> <td><b>1.50</b></td> </tr> <tr> <td>Plasterboard</td> <td>0.06</td> </tr> <tr> <td>Indoor air film (still air)</td> <td>0.12</td> </tr> <tr> <td>Total R-Value</td> <td>1.86</td> </tr> </tbody> </table>	Internal Wall	R-Value	Indoor air film (still air)	0.12	Plasterboard	0.06	<b>Additional Insulation (R1.5)</b>	<b>1.50</b>	Plasterboard	0.06	Indoor air film (still air)	0.12	Total R-Value	1.86	<p>PASS – Dispensation sought for all retained external walls</p> <p>PASS</p>
Internal Wall	R-Value														
Indoor air film (still air)	0.12														
Plasterboard	0.06														
<b>Additional Insulation (R1.5)</b>	<b>1.50</b>														
Plasterboard	0.06														
Indoor air film (still air)	0.12														
Total R-Value	1.86														

**J1.6 Floors**

J1.6 Floors COMPLIANCE DATA / PERMIT CONDITION	COMPLIANCE STATUS
No insulation is required for concrete slab on ground without in-slab heating and cooling system for climate zone 6 in accordance with Table J1.6 Option (a)(i) for Climate Zone 6.	PASS

**PART J2 - GLAZING**

**J2.1 Application of Part**

J2.1 Application of Part COMPLIANCE DATA / PERMIT CONDITION	COMPLIANCE STATUS
All external glazing units which form part of the thermal envelope are subject to the requirements of Part J2.4.	APPLICABLE



**J2.4 Glazing**

J2.4 Glazing COMPLIANCE DATA / PERMIT CONDITION	COMPLIANCE STATUS						
<p>Proposed external glazing design has complied with the thermal performance requirements of Glazing Index Option A. All new external glazing units which form part of the thermal envelope must meet the U-Value and SHGC values listed by the Glazing Calculator in Appendix B and in the table below. The values below are required for the windows:</p> <table border="1"> <thead> <tr> <th><i>Windows &amp; Glazed Doors</i></th> <th><i>Required U-Value</i></th> <th><i>Required SHGC</i></th> </tr> </thead> <tbody> <tr> <td>All External Glazing</td> <td>5.5</td> <td>0.55</td> </tr> </tbody> </table> <p>The values could be achieved using single glazed low E clear but should be confirmed by the engaged glazier.</p>	<i>Windows &amp; Glazed Doors</i>	<i>Required U-Value</i>	<i>Required SHGC</i>	All External Glazing	5.5	0.55	PASS
<i>Windows &amp; Glazed Doors</i>	<i>Required U-Value</i>	<i>Required SHGC</i>					
All External Glazing	5.5	0.55					

**J2.5 Shading**

J2.5 Shading COMPLIANCE DATA / PERMIT CONDITION	COMPLIANCE STATUS
All applicable overhangs and eaves are used as permanent shading device input for the glazing calculator assessment.	PASS

**PART J3 – BUILDING SEALING**

**J3.1 Application of Part**

J3.1 Application of Part COMPLIANCE DATA / PERMIT CONDITION	COMPLIANCE STATUS
All external fabric elements that form the building’s thermal envelope are subject to building sealing requirements.	APPLICABLE

**J3.2 Chimneys and flues**

J3.2 Chimneys and flues COMPLIANCE DATA / PERMIT CONDITION	COMPLIANCE STATUS
The Provisions is Not Applicable – no open solid fuel-burning appliance proposed for the development.	N/A

**J3.3 Roof Lights**

J3.3 Roof lights COMPLIANCE DATA / PERMIT CONDITION	COMPLIANCE STATUS
The proposed skylights will be sealed or capable of being sealed using a weatherproof seal or a shutter system readily operated manually, mechanically or electronically by the occupant.	PASS





### **J3.4 Windows and doors**

J3.4 Windows and doors COMPLIANCE DATA / PERMIT CONDITION	COMPLIANCE STATUS
A seal to restrict air infiltration must be fitted to each edge of a door, operable window or the like forming part of the thermal envelope, as required by clause (c). Entry doors lead to a conditioned space should have self-closing door or similar.	PASS

### **J3.5 Exhaust fans**

J3.5 Exhaust fans COMPLIANCE DATA / PERMIT CONDITION	COMPLIANCE STATUS
All new exhaust fans in conditioned area will be fitted with self-closing dampers which seal or shut when not in use.	PASS

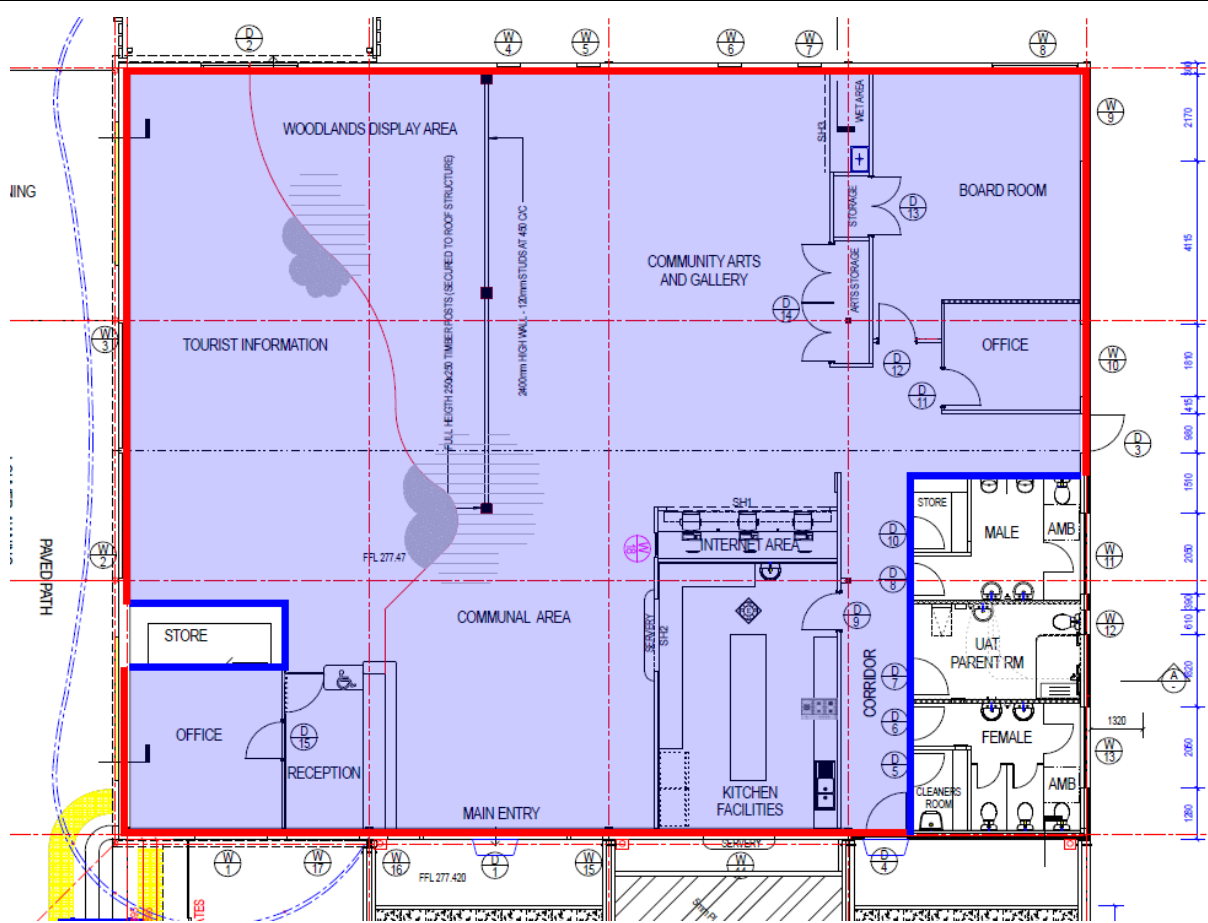
### **J3.6 Construction of roofs, walls and floors**

J3.6 Construction of roofs, walls and floors COMPLIANCE DATA / PERMIT CONDITION	COMPLIANCE STATUS
All roof, ceilings, walls, floors and any openings such as doors and windows must be constructed to minimise air-leakage.	PASS

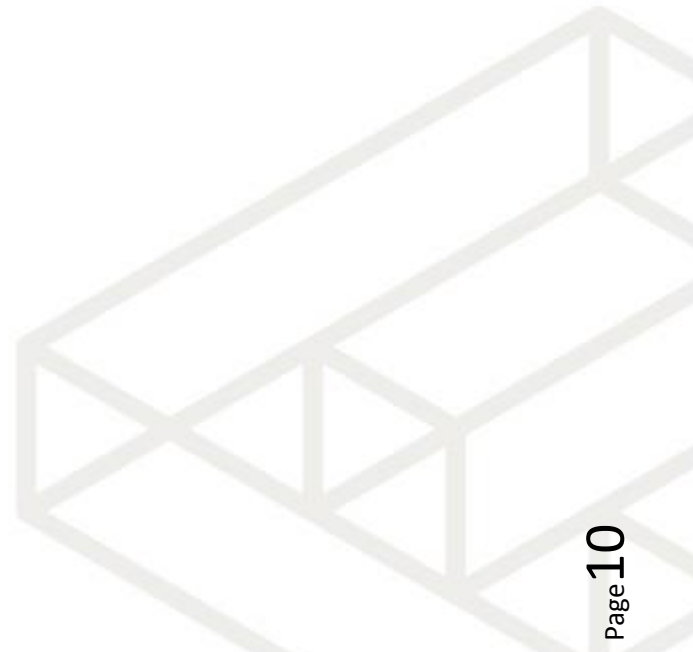
### **J3.7 Evaporative coolers**

J3.7 Evaporative coolers COMPLIANCE DATA / PERMIT CONDITION	COMPLIANCE STATUS
This provision is Not Applicable – no evaporative cooling will be proposed for the development.	N/A

# APPENDIX A – ENVELOPE DIAGRAM



The coloured rooms are the conditioned spaces within the development. External walls forming part of the envelope are highlighted in red whilst internal walls forming part of the envelope are highlighted in blue. **Please note that all existing and retained external walls will seek dispensation.**





# APPENDIX B – DTS GLAZING CALCULATOR

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

Building name/description: **Proposed Community Centre - Lot 50 Prinsep Street, Norseman WA** Application: **other** Climate zone: **4**

Storey: <b>GF</b>	Facade areas								
	N	NE	E	SE	S	SW	W	NW	Internal
Option A	80.4m <sup>2</sup>		34.2m <sup>2</sup>		59.8m <sup>2</sup>		64.5m <sup>2</sup>		
Option B									nil
Glazing area (A)	15.8m <sup>2</sup>	4.78m <sup>2</sup>	18.1m <sup>2</sup>	13.9m <sup>2</sup>					

Number of rows preferred in table below: **16** (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 <sup>2</sup> )	Total System U-Value (AFRC)	Total System SHGC (AFRC)	P (m)	H (m)	PI/H	G (m)	Heating (S <sub>a</sub> )	Cooling (S <sub>c</sub> )	Area used (m <sup>2</sup> )	Element share of % of allowance used
1	D2	N		2.20	2.41		5.5	0.55				0.00	1.00	1.00	5.30	34% of 84%
2	W4	N		3.30	0.60		5.5	0.55				0.00	1.00	1.00	1.98	13% of 84%
3	W5	N		3.30	0.60		5.5	0.55				0.00	1.00	1.00	1.98	13% of 84%
4	W6	N		3.30	0.60		5.5	0.55				0.00	1.00	1.00	1.98	13% of 84%
5	W7	N		3.30	0.60		5.5	0.55				0.00	1.00	1.00	1.98	13% of 84%
6	W8	N		1.20	2.17		5.5	0.55				0.00	1.00	1.00	2.60	16% of 84%
7	W9	E		1.20	2.17		5.5	0.55				0.00	1.00	1.00	2.60	55% of 64%
8	W10	E		1.20	1.81		5.5	0.55				0.00	1.00	1.00	2.17	45% of 64%
9	W1	S		1.20	1.81		5.5	0.55	3.950	1.900	2.08	0.70	0.77	0.68	2.17	12% of 94%
10	W17	S		1.20	1.81		5.5	0.55	3.950	1.900	2.08	0.70	0.77	0.68	2.17	12% of 94%
11	W16	S		2.40	0.60		5.5	0.55				0.00	1.00	1.00	1.44	8% of 94%
12	D1	S		2.40	3.61		5.5	0.55				0.00	1.00	1.00	8.66	48% of 94%
13	W15	S		2.40	0.60		5.5	0.55				0.00	1.00	1.00	1.44	8% of 94%
14	W14	S		1.20	1.81		5.5	0.55				0.00	1.00	1.00	2.17	12% of 94%
15	W2	W		2.20	3.15		5.5	0.55	3.950	2.900	1.36	0.70	0.72	0.61	6.93	50% of 60%
16	W3	W		2.20	3.15		5.5	0.55	3.950	2.900	1.36	0.70	0.72	0.61	6.93	50% of 60%

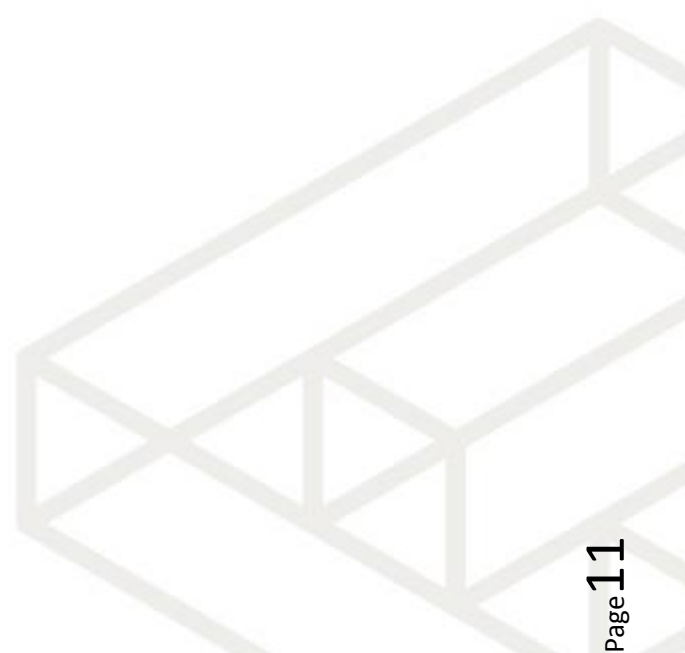
**IMPORTANT NOTICE AND DISCLAIMER IN RESPECT OF THE GLAZING CALCULATOR**

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 or warranty of any kind, including that it is fit for any purpose or of merchantable quality, or functions as intended or at all. Your use of the Glazing Calculator is entirely at your own risk and the ABCB accepts no liability of any kind.

if inputs are valid



Copyright © 2014 – Australian Government, State and Territory Governments of Australia. All Rights Reserved





**BCA 2014 Provision J1.4 Roof Light Thermal Performance Calculator**

<b>DESCRIPTION</b>	Skylights x 10 Serving Main Areas
<b>STEP 1 Roof Light - Zone Ratio</b>	
Area of space being served by Roof Lights (m <sup>2</sup> )	311.30
Total combined area of Roof Lights (m <sup>2</sup> )	3.60
Percentage of Roof Lights to Space	1.156%
<b>Action required</b>	Proceed to STEP 2

<b>STEP 2 Roof Light Shaft Index</b>	
Centre to Centre shaft distance between roof and ceiling (m)	1.30
Average internal dimension/diameter of roof light (m)	0.60
Roof Light Shaft Index	2.16666666666670
<b>Action required</b>	See Table Below

**STEP 3 Thermal Performance of Transparent and Translucent Elements of the Roof Light**

Roof light shaft index	Constant	Total area of roof lights serving the room or space as a percentage of the floor area of the room or space			
		Up to 2%	More than 2% to and up to 3%	More than 3% and up to 4%	More than 4% and up to 5%
Less than 0.5	SHGC	Not more than 0.83	Not more than 0.57	Not more than 0.43	Not more than 0.34
	Total U-value	Not more than 8.5	Not more than 5.7	Not more than 4.3	Not more than 3.4
0.5 to less than 1.0	SHGC	Not more than 0.83	Not more than 0.72	Not more than 0.54	Not more than 0.43
	Total U-value	Not more than 8.5	Not more than 5.7	Not more than 4.3	Not more than 3.4
1.0 to less than 2.5	SHGC	Not more than 0.83	Not more than 0.83	Not more than 0.69	Not more than 0.55
	Total U-value	Not more than 8.5	Not more than 5.7	Not more than 4.3	Not more than 3.4
2.5 and above	SHGC	Not more than 0.83	Not more than 0.83	Not more than 0.83	Not more than 0.83
	Total U-value	Not more than 8.5	Not more than 5.7	Not more than 4.3	Not more than 3.4