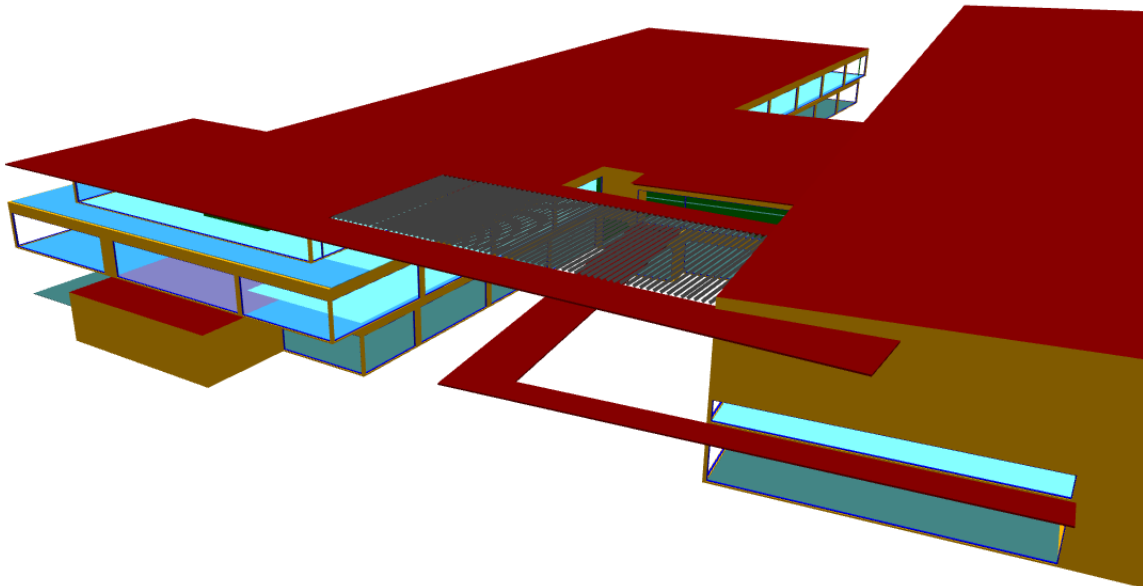


DICKER DATA

# SECTION J REPORT

## DICKER DATA PROPOSED OFFICE AND SERVICE AREA

FEBRUARY 2018



Question today  
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Section J Report  
Dicker Data Proposed Office and Service Area

Dicker Data

WSP  
Level 27, 680 George Street  
Sydney NSW 2000  
GPO Box 5394  
Sydney NSW 2001

Tel: +61 2 9272 5100  
Fax: +61 2 9272 5101  
wsp.com

REV	DATE	DETAILS
00	07/01/2018	Draft issue for comment
01	22/02/2018	Draft issue for comment

	NAME	DATE	SIGNATURE
Prepared by:	Bayley Larkin	22/02/2018	
Reviewed by:	Sophie Beard	22/02/2018	
Approved by:	Katie Fallowfield	22/02/2018	

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Appendix A Wall, Floor and Roof Insulation Locations

Appendix B Compliant NCC Glazing Calculators and Markups

# 1 EXECUTIVE SUMMARY

WSP has been engaged by Dicker Data to carry out a Performance Solution assessment under Section J Energy Efficiency Verification Method JV3, National Construction Code (NCC) 2016 for the office and service area portion of the proposed Dicker Data warehouse and office development in Kurnell, NSW.

Verification Method JV3 requires a comparison between a Reference Building – constructed in accordance the deemed-to-satisfy (DTS) provisions detailed in the Parts of Section J – and the Proposed Building – constructed in accordance with the design intent.

The following simulations have been carried out:

- Reference Building + Reference Services – modelling of the building with the building envelope and services meeting the DTS provisions
- Proposed Building + Reference Services – modelling of the building with the building envelope meeting the design intent and the services meeting the DTS provisions

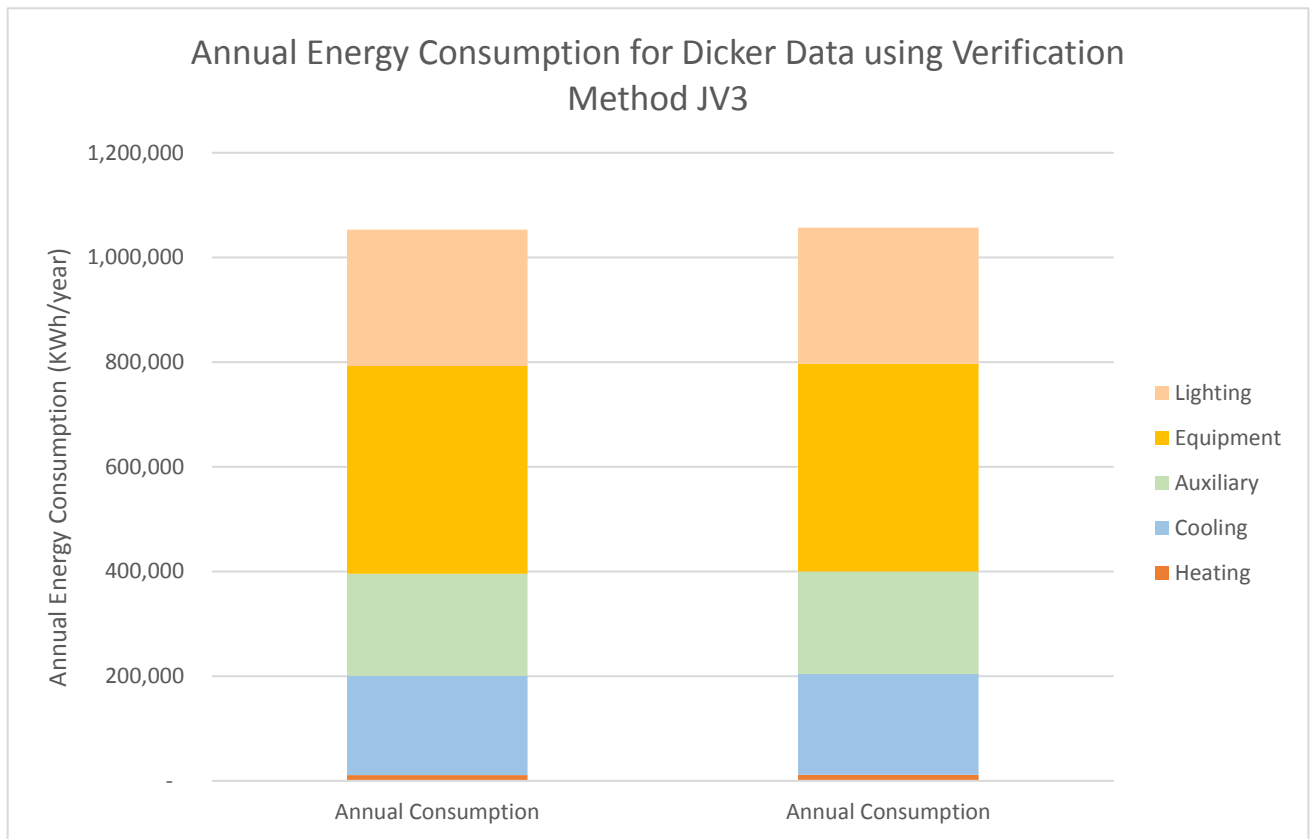
Table 1.1 and Figure 1.1 demonstrate the predicted annual energy consumption for the simulations performed.

Based on the modelling performed, the proposed building envelope achieves an energy consumption which is within 0.38% of the energy consumption of the reference building. This is deemed compliant under the Section J Energy Efficiency Verification Method JV3, National Construction Code (NCC) 2016.

Table 1.1 Simulation Results

BUILDING	ANNUAL ENERGY CONSUMPTION (KWH/YEAR)					
	Heating	Cooling	Auxiliary	Equipment	Lighting	Total
Reference Building + Reference Services	11,009	189,535	195,339	397,076	259,983	1,052,941
Proposed Building + Reference Services	11,595	192,927	195,412	397,076	259,983	1,056,991

Figure 1.1 Simulation Results



## 2 INTRODUCTION

---

### 2.1 PURPOSE OF REPORT

WSP has been engaged by Dicker Data to carry out a Section J assessment using Verification Method JV3 for the office and service area portion of the proposed Dicker Data warehouse and office development in Kurnell, NSW. Verification Method JV3 requires a comparison between a Reference Building—constructed in accordance the Deemed-to-Satisfy (DTS) provisions detailed in Section J Energy Efficiency, Volume One of the National Construction Code (NCC) Series 2016—and the Proposed Building.

The following simulations have been carried out:

- Reference Building + Reference Services—modelling of the building with the building envelope and services meeting the DTS provisions
- Proposed Building + Reference Services—modelling of the building with the building envelope meeting the design intent and the services meeting the DTS provisions

This report presents the methodology used for the JV3 modelling and the results of the simulations undertaken.

---

### 2.2 PERFORMANCE REQUIREMENTS

#### **Volume One of the NCC Series 2016 Clause A0.7 Requirements**

The relevant DTS Provisions considered in the Reference Building and the Proposed Building is as follows:

- Section J Part J0 Energy Efficiency
- Section J Part J1 Building Fabric
- Section J Part J2 Glazing
- Section J Part J3 Building Sealing
- Section J Part J5 Air Conditioning and Ventilation System
- Section J Part J6 Artificial Lighting and Power

There are no performance requirements from other Sections or Parts of Volume One of the NCC Series 2016 that are relevant to any aspects of the Reference Building and the Proposed Building or that are affected by the application of the DTS provisions that are the subject of the Reference Building and the Proposed Building.

#### **Volume One of the NCC Series 2016 JP1 Requirements**

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

- The function and use of the building and its services
- The internal environment
- The geographic location of the building
- The effects of nearby permanent features such as topography, structures and buildings
- Solar radiation being utilised for heating and controlled to minimise energy for cooling

- The sealing of the building envelope against air leakage
- The utilisation of air movement to assist heating and cooling
- The energy source of the services

# 3 METHODOLOGY

---

## 3.1 ASSESSMENT METHOD AND BUILDING CLASSIFICATION

Clause A0.5 of Volume One of the NCC Series 2016 stipulates that the following assessment methods, or any combination of them, can be used to determine that a building solution complies with the performance requirements:

- Evidence to support that the use of a material, form of construction or design meets a Performance Requirement or a Deemed-to-Satisfy provision as described in A2.2
- Verification Methods such as the Verification Methods in the NCC; or such other Verification Methods as the appropriate authority accepts for determining compliance with the Performance Requirements
- Expert judgement
- Comparison with the Deemed-to-Satisfy provisions

The development seeks to demonstrate compliance with JP1 by using:

- Evidence to support that the use of a material, form of construction or design meets a Performance Requirement or a Deemed-to-Satisfy provision as described in A2.2
- Verification Method JV3; determining that the annual energy consumption of the Proposed Building is not more than the annual energy consumption of the Reference Building for the leisure centre.

In accordance with Part A3.2 of NCC Volume 1, the proposed building comprises spaces with the following classifications:

- Class 5 Office
- Class 7b Warehouse

The site is located within Climate Zone 5.

---

## 3.2 MODEL INFORMATION

### 3.2.1 SOFTWARE

The computer package used for the thermal simulation was Tas version 9.4.1 by Environmental Design Solutions Limited. It is an EN ISO 13791 validated dynamic simulation modelling (DSM) software tool and is approved under the *ABCB Protocol for Building Energy Analysis Software, Version 2006.1*.

### 3.2.2 SOURCES OF INFORMATION

The following sources of information were used to generate the thermal model:

- Parts J1 – J3, Section J, Volume One of the NCC Series 2016
- Australian Building Codes Board (ABCB) glazing calculator 2014 (current version)



- Glazing candidates: certified products listed on the Window Energy Rating Scheme (WERS) website
- Architectural drawings: WMK Architecture preliminary DA architectural drawings issued 22/12/17 drawing sheets DA000 – DA600
- Modern Building Certifiers BCA Design Compliance Report – Revision 01, issued 02/11/17
- WSP DTS Prescriptive Solution Compliance Report – Revision 01, issued 22/12/17

### **3.2.3 EQUIPMENT LOADS**

The simulations apply the following air conditioning parameters, per Volume One of the NCC Series 2016, including:

- Specification JV Table 2b for the appliances and equipment schedule
- Specification JV Table 2h for equipment loads

### **3.2.4 MECHANICAL SERVICES**

The simulations apply the following air conditioning parameters, as per Volume One of the NCC Series 2016, including:

- Specification JV Table 2b for the air conditioning operational schedule
- Clause JV3 (d), sub clause (i) (D) for the air conditioning temperature range
- Maximum fan motor power, as per Specification J5.2, Table J5.2
- Minimum EER for heat pump, as per Table 2b in Specification J5.2e

### **3.2.5 OCCUPANCY LOADS**

The simulations apply the following air conditioning parameters, as per Volume One of the NCC Series 2016, including:

- Specification JV Table 2b for the occupancy schedule
- Specification JV, Table 2j, other applications (a) for sensible and latent occupancy heat gain
- Table D1.13 for occupant density

### **3.2.6 LIGHTING LOADS**

The simulations apply the following air conditioning parameters, as per Volume One of the NCC Series 2016, including:

- Specification JV Table 2b for artificial lighting schedule
- Table J6.2a for maximum illumination power density

# 4 BUILDING FABRIC PERFORMANCE PARAMETERS

This section summarises the building fabric as modelled for the JV3 analysis. It details changes to the building elements currently specified to achieve compliance. Table 4.1 lists the building fabric performance parameters used in the reference and the proposed building. See Appendix A for drawings showing where the total construction values need to be applied.

The BCA Section J1 Building Fabric and J2 Glazing assesses the building envelope only. Therefore, the following values are only applicable between typical conditioned spaces that adjoin an unconditioned space or the outside.

Table 4.1: Building Fabric Performance Parameters

BUILDING FABRIC ELEMENT	REFERENCE BUILDING	PROPOSED BUILDING
Slab on ground	None	Per the reference building
Suspended Floor	R 1.0 m <sup>2</sup> .K/W – to an enclosed non-conditioned spaces R 2.0 m <sup>2</sup> .K/W – to the outside or enclosed space with more than 1.5 air changes per hour	R 0.5 m <sup>2</sup> .K/W – to an enclosed non-conditioned spaces R 0.5 m <sup>2</sup> .K/W – to the outside or enclosed space with more than 1.5 air changes per hour
External walls	R 2.8 m <sup>2</sup> .K/W	Per the reference building
Envelope walls other than external walls	R 1.0 m <sup>2</sup> .K/W – the non-conditioned space has ventilation of not more than 1.5 air changes per hour of outside air per hour R 1.8 m <sup>2</sup> .K/W – the non-conditioned space has ventilation of more than 1.5 air changes per hour of outside air during occupied hours	Per the reference building
Roof	R 3.2 m <sup>2</sup> .K/W Downwards	R 3.0 m <sup>2</sup> .K/W Downwards
Sunshading Roof with Solar Blades	Blade angle set at 140° from horizontal and width 200mm as per Figure 2 below	Blade angle set at 140° from horizontal and width 200mm as per Figure 2 below

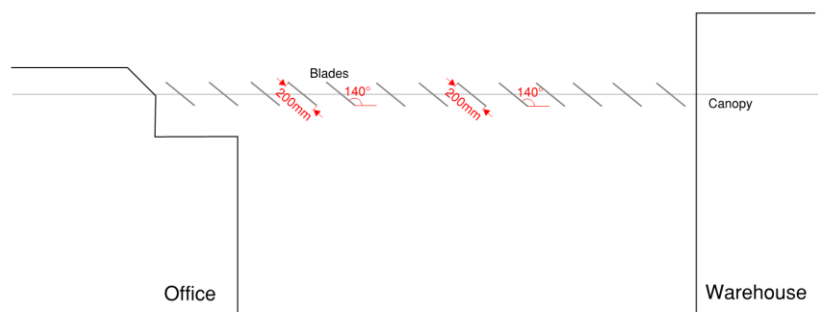


Figure 2: Indicative blade angle and width. Not to scale

# 5 BUILDING GLAZING PERFORMANCE PARAMETERS

The reference building glazing is developed in compliance with the National Construction Code Glazing Calculators (Volume One) using available glazing products. Refer to Appendix B for the completed Glazing Calculators and Table 5.1 which summarises the glazing parameters used for the proposed building in the JV3 analysis.

Table 5.1 Proposed Building Glazing Parameters

ORIENTATION	LEVEL	REFERENCE BUILDING (Whole of System Values)	PROPOSED BUILDING (Whole of System Values)
All	All	Per the glazing calculators in Appendix B Aluminum Frame	Viridian Comfort Plus Neutral DGU U-Value 2.9, SHGC 0.39 Aluminium Frame

# 6 RESULTS

The following simulations have been carried out:

- Reference Building + Reference Services—modelling of the building with the building envelope and services meeting the DTS provisions.
- Proposed Building + Reference Services—modelling of the building with the building envelope meeting the design intent and the services meeting the DTS provisions.

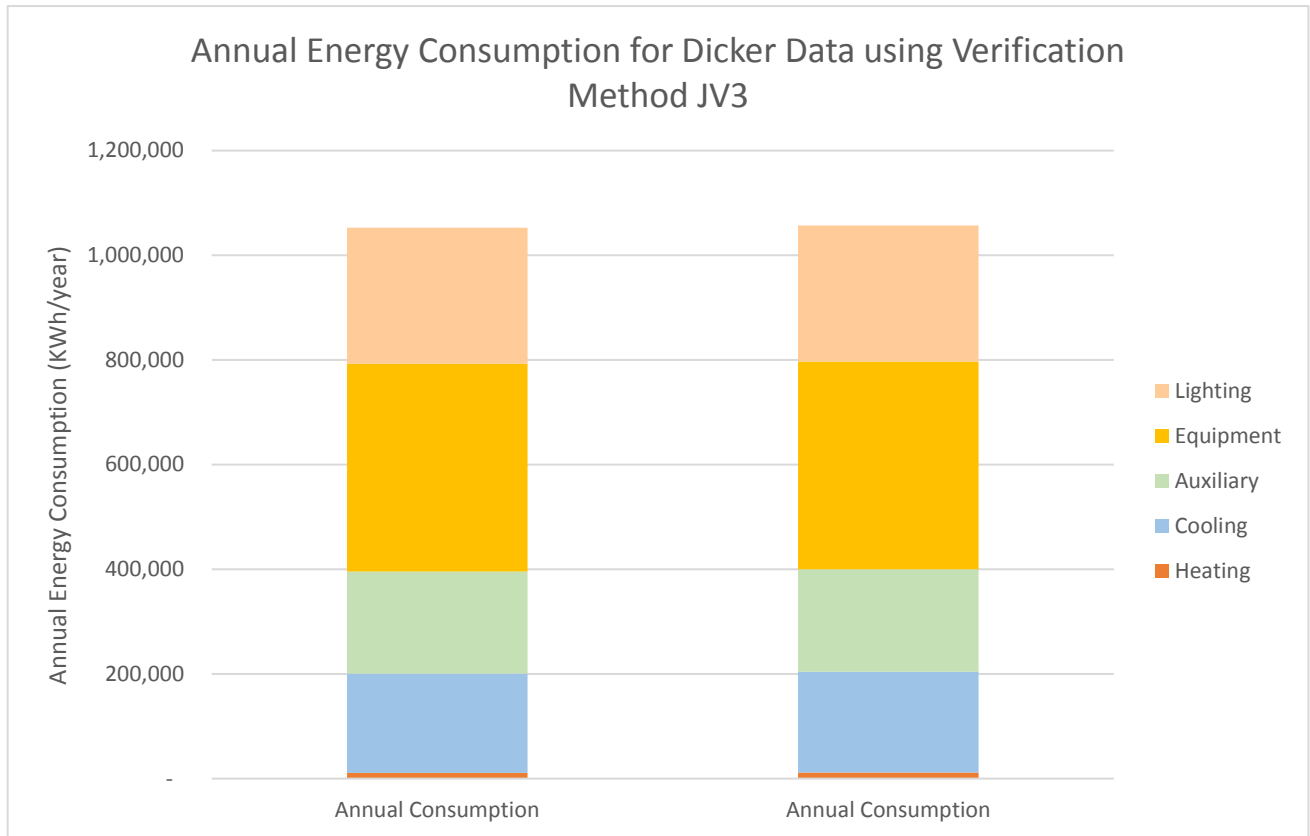
Table 6.1 and Figure 6.1 demonstrate the predicted annual energy consumption for the simulations performed.

Based on the modelling performed, the proposed building envelope achieves an energy consumption which is within 0.38% of the energy consumption of the reference building. This is deemed compliant under the Section J Energy Efficiency Verification Method JV3, National Construction Code (NCC) 2016.

Table 6.1: Simulation Results

BUILDING	ANNUAL ENERGY CONSUMPTION (KWH/YEAR)					
	Heating	Cooling	Auxiliary	Equipment	Lighting	Total
Reference Building + Reference Services	11,009	189,535	195,339	397,076	259,983	1,052,941
Proposed Building + Reference Services	11,595	192,927	195,412	397,076	259,983	1,056,991

Figure 6.1: Simulation Results



# APPENDIX A

## WALL, FLOOR AND ROOF INSULATION LOCATIONS

Figure A.1 Dicker Data Ground Floor Markup

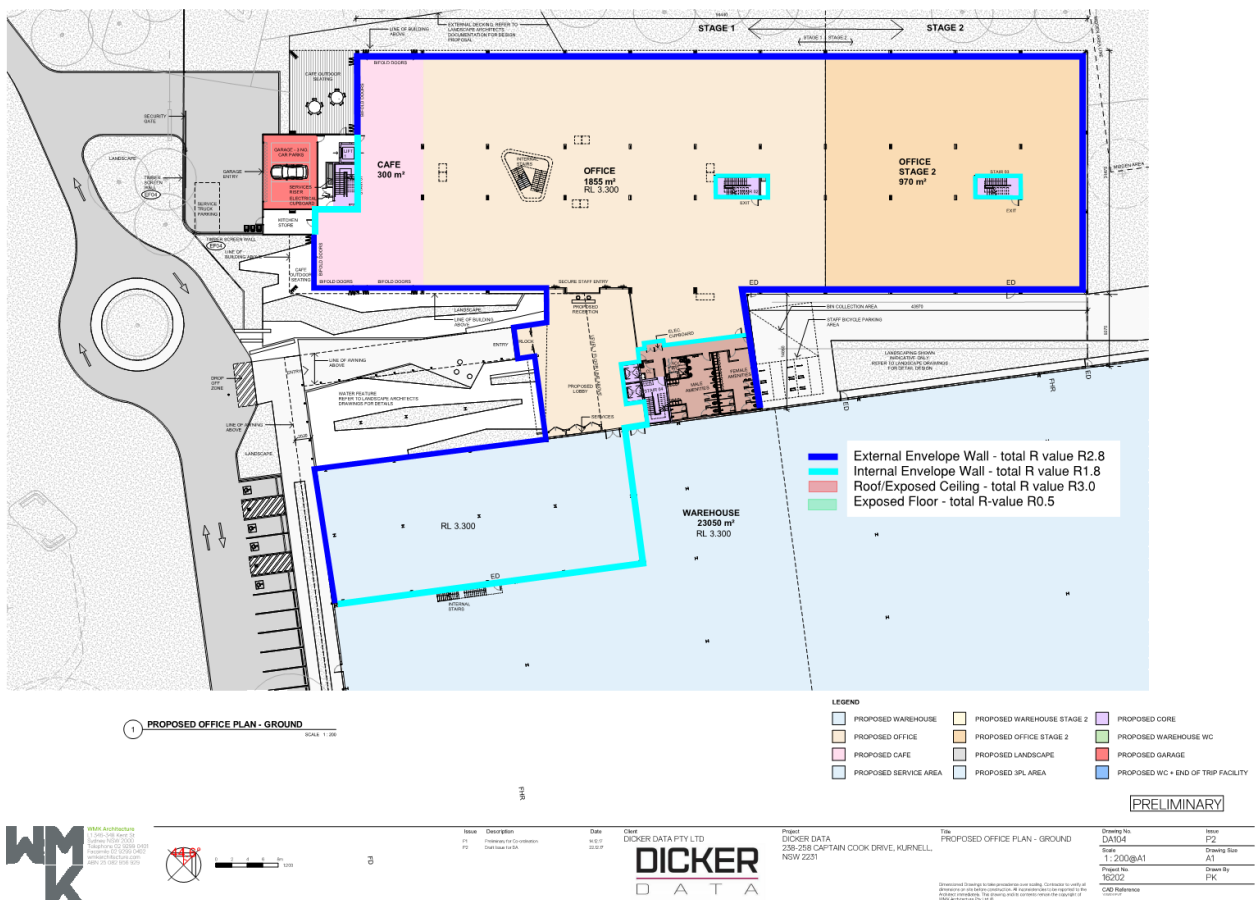


Figure A.2 Dicker Data Level One Markup

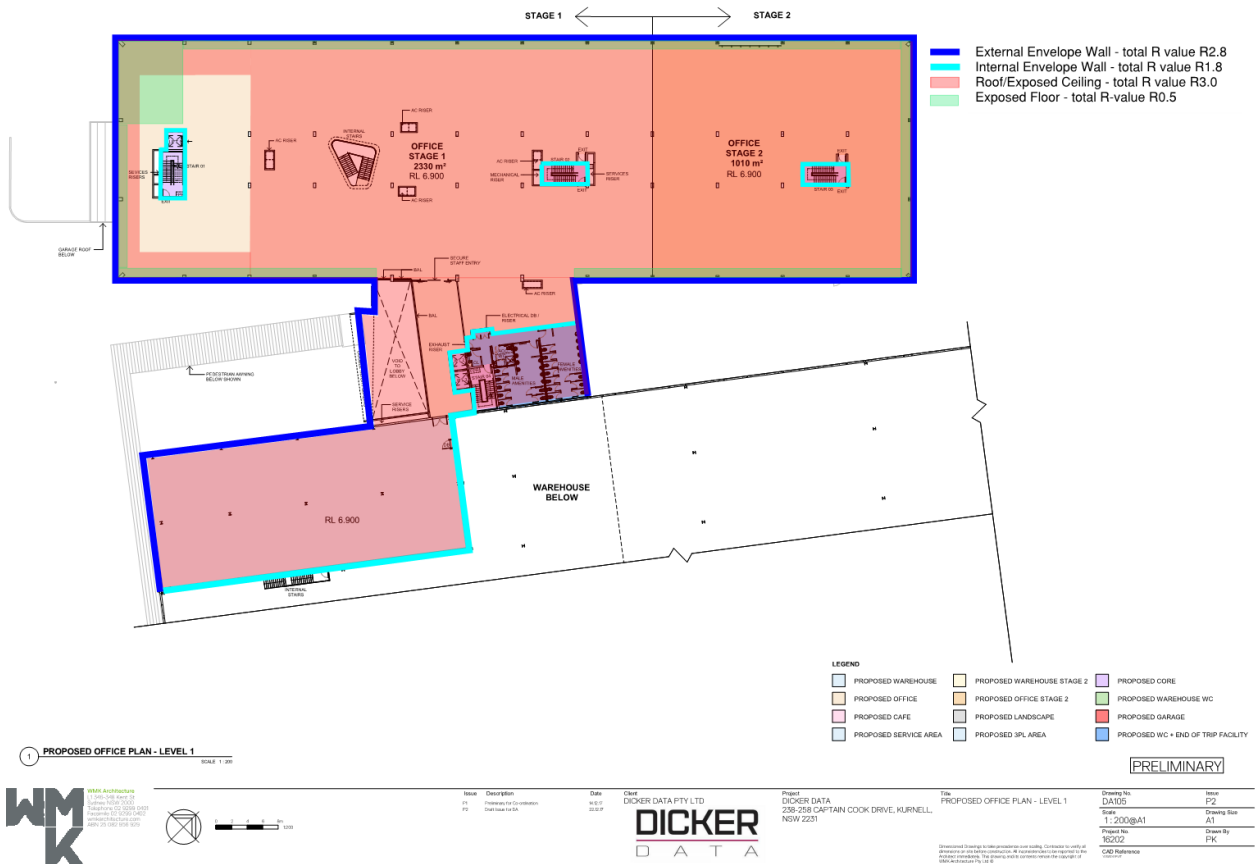
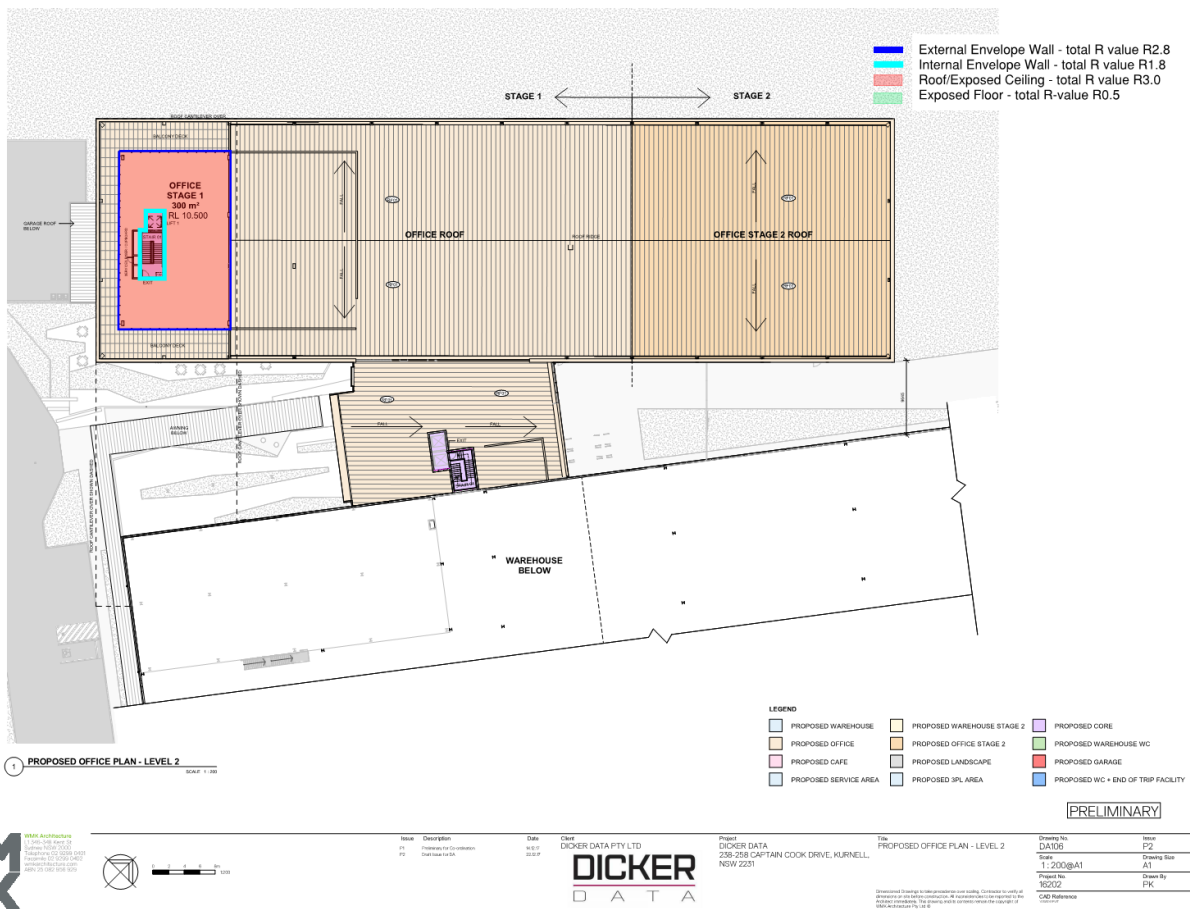


Figure A.3 Dicker Data Level Two Markup





# APPENDIX B

## COMPLIANT NCC GLAZING CALCULATORS AND MARKUPS

Figure B.1 Dicker Data Ground Floor Office Calculator Output

Report from PS106553.BAL.180130 CalculatorGlazingVolOne2014\_Ground\_office.xlsx

printed 1/02/2018

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

Building name/description: **Dicker Data Office** Application: **other** Climate zone: **5**

Storey: **Ground**

Facade areas		N	NE	E	SE	S	SW	W	NW	Internal
Option A			121m <sup>2</sup>		250m <sup>2</sup>		120m <sup>2</sup>		316m <sup>2</sup>	
Option B										n/s
Glazing area (A)		77.5m <sup>2</sup>		184m <sup>2</sup>		91.5m <sup>2</sup>		240m <sup>2</sup>		

Number of rows preferred in table below: **33** (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)	P/H	G (m)	Heating (S <sub>h</sub> )	Cooling (S <sub>c</sub> )	Area used (m <sup>2</sup> )	Element share of % of allowance used
1	NE															
2		NE		2.70	9.50		3.8	0.22	0.800	3.400	0.24	0.70	1.00	0.97	25.65	33% of 100%
3		NE		2.70	9.70		3.8	0.22	0.800	3.400	0.24	0.70	1.00	0.97	26.19	34% of 100%
4		NE		2.70	9.50		3.8	0.22	0.800	3.400	0.24	0.70	1.00	0.97	25.65	33% of 100%
5	SE															
6	Bifold doors	SE		2.70	5.30		2.8	0.30	0.800	3.400	0.24	0.70	0.99	0.97	14.31	8% of 100%
7	Bifold doors	SE		2.70	8.00		2.8	0.30	0.800	3.400	0.24	0.70	0.99	0.97	21.60	12% of 100%
8		SE		2.70	8.00		2.8	0.30	0.800	3.400	0.24	0.70	0.99	0.97	21.60	12% of 100%
9		SE		2.70	7.40		2.8	0.30	0.800	3.400	0.24	0.70	0.99	0.97	19.98	11% of 100%
10		SE		2.70	8.00		2.8	0.30	0.800	3.400	0.24	0.70	0.99	0.97	21.60	12% of 100%
11		SE		2.70	8.00		2.8	0.30	0.800	3.400	0.24	0.70	0.99	0.97	21.60	12% of 100%
12		SE		2.70	8.00		2.8	0.30	0.800	3.400	0.24	0.70	0.99	0.97	21.60	12% of 100%
13		SE		2.70	8.00		2.8	0.30	0.800	3.400	0.24	0.70	0.99	0.97	21.60	12% of 100%
14		SE		2.70	7.35		2.8	0.30	0.800	3.400	0.24	0.70	0.99	0.97	19.85	11% of 100%
15	SW															
16	Bifold doors	SW		2.70	9.80		3.2	0.30	2.000	3.400	0.59	0.70	0.93	0.88	26.46	28% of 100%
17	Bifold doors	SW		2.70	6.80		3.2	0.30	1.500	3.400	0.44	0.70	0.95	0.93	18.36	20% of 100%
18		SW		2.70	3.70		3.2	0.30				0.00	1.00	1.00	9.99	11% of 100%
19	Entry door	SW		2.70	3.80		3.2	0.30				0.00	1.00	1.00	10.26	12% of 100%
20		SW		2.70	9.80		3.2	0.30				0.00	1.00	1.00	26.46	30% of 100%
21	NW															

page 1 of 2

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)	P/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
22		NW		2.70	7.30		3.0	0.21	0.800	3.400	0.24	0.70	0.99	0.97	19.71	9% of 97%
23		NW		2.70	8.00		3.0	0.21	0.800	3.400	0.24	0.70	0.99	0.97	21.60	9% of 97%
24		NW		2.70	8.00		3.0	0.21	0.800	3.400	0.24	0.70	0.99	0.97	21.60	9% of 97%
25		NW		2.70	8.00		3.0	0.21	0.800	3.400	0.24	0.70	0.99	0.97	21.60	9% of 97%
26		NW		2.70	8.00		3.0	0.21	0.800	3.400	0.24	0.70	0.99	0.97	21.60	9% of 97%
27		NW		2.70	8.00		3.0	0.21	0.800	3.400	0.24	0.70	0.99	0.97	21.60	9% of 97%
28		NW		2.70	8.00		3.0	0.21	0.800	3.400	0.24	0.70	0.99	0.97	21.60	9% of 97%
29		NW		2.70	8.00		3.0	0.21	0.800	3.400	0.24	0.70	0.99	0.97	21.60	9% of 97%
30		NW		2.70	9.60		3.0	0.21	0.800	3.400	0.24	0.70	0.99	0.97	25.92	11% of 97%
31		NW		2.70	8.00		3.0	0.21	0.800	3.400	0.24	0.70	0.99	0.97	21.60	9% of 97%
32	Bifold doors	NW		2.70	8.00		3.0	0.21	0.800	3.400	0.24	0.70	0.99	0.97	21.60	9% of 97%

**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



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Figure B.2 Dicker Data Level One Office Calculator

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

Building name/description

Dicker Data Office

Application

other

Climate zone

5

Storey

1

Facade areas

	N	NE	E	SE	S	SW	W	NW	Internal
Option A		121m <sup>2</sup>		276m <sup>2</sup>		167m <sup>2</sup>		348m <sup>2</sup>	
Option B									n/a
Glazing area (A)		79.9m <sup>2</sup>		197m <sup>2</sup>		80.5m <sup>2</sup>		263m <sup>2</sup>	

Number of rows preferred in table below

33 (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)	P/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	NE															
2		NE		2.70	9.80		2.7	0.20				0.00	1.00	1.00	26.46	33% of 100%
3		NE		2.70	9.80		2.7	0.20				0.00	1.00	1.00	26.46	33% of 100%
4		NE		2.70	10.00		2.7	0.20				0.00	1.00	1.00	27.00	34% of 100%
5	SE															
6		SE		2.70	8.10		3.6	0.19				0.00	1.00	1.00	21.87	11% of 100%
7		SE		2.70	8.00		3.6	0.19				0.00	1.00	1.00	21.60	11% of 100%
8		SE		2.70	8.00		3.6	0.19				0.00	1.00	1.00	21.60	11% of 100%
9		SE		2.70	7.40		3.6	0.19				0.00	1.00	1.00	19.98	10% of 100%
10		SE		2.70	1.50		3.6	0.19				0.00	1.00	1.00	4.05	2% of 100%
11		SE		2.70	8.00		3.6	0.19				0.00	1.00	1.00	21.60	11% of 100%
12		SE		2.70	8.00		3.6	0.19				0.00	1.00	1.00	21.60	11% of 100%
13		SE		2.70	8.00		3.6	0.19				0.00	1.00	1.00	21.60	11% of 100%
14		SE		2.70	8.00		3.6	0.19				0.00	1.00	1.00	21.60	11% of 100%
15		SE		2.70	7.80		3.6	0.19				0.00	1.00	1.00	21.06	11% of 100%
16	SW															
17		SW		2.70	10.00		4.8	0.48				0.00	1.00	1.00	27.00	34% of 100%
18		SW		2.70	9.80		4.8	0.48				0.00	1.00	1.00	26.46	33% of 100%
19		SW		2.70	10.00		4.8	0.48				0.00	1.00	1.00	27.00	34% of 100%
20	NW															
21		NW		2.70	8.30		3.0	0.21				0.00	1.00	1.00	22.41	9% of 100%

○



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)	P/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
22		NW		2.70	8.00		3.0	0.21				0.00	1.00	1.00	21.60	8% of 100%
23		NW		2.70	8.00		3.0	0.21				0.00	1.00	1.00	21.60	8% of 100%
24		NW		2.70	9.60		3.0	0.21				0.00	1.00	1.00	25.92	10% of 100%
25		NW		2.70	8.00		3.0	0.21				0.00	1.00	1.00	21.60	8% of 100%
26		NW		2.70	8.00		3.0	0.21				0.00	1.00	1.00	21.60	8% of 100%
27		NW		2.70	8.00		3.0	0.21				0.00	1.00	1.00	21.60	8% of 100%
28		NW		2.70	8.00		3.0	0.21				0.00	1.00	1.00	21.60	8% of 100%
29		NW		2.70	8.00		3.0	0.21				0.00	1.00	1.00	21.60	8% of 100%
30		NW		2.70	8.00		3.0	0.21				0.00	1.00	1.00	21.60	8% of 100%
31		NW		2.70	8.00		3.0	0.21				0.00	1.00	1.00	21.60	8% of 100%
32		NW		2.70	7.40		3.0	0.21				0.00	1.00	1.00	19.98	8% of 100%

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Figure B.3 Dicker Data Level Two Office Calculator Output

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

Building name/description

Dicker Data Office

Application

other

Climate zone

5

Storey

2

Facade areas

	N	NE	E	SE	S	SW	W	NW	internal
Option A				38.3m <sup>2</sup>		62.1m <sup>2</sup>		38.3m <sup>2</sup>	
Option B									n/a
Glazing area (A)				38.3m <sup>2</sup>			62.1m <sup>2</sup>		

Number of rows preferred in table below

7 (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)	P/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	SE															
2		SE		2.70	14.20		2.4	0.20	0.650	2.700	0.24	0.00	0.88	0.83	38.34	100% of 99%
3	SW															
4		SW		2.70	23.00		3.0	0.25	3.600	2.700	1.33	0.00	0.51	0.43	62.10	100% of 97%
5	NW															
6		NW		2.70	14.20		6.2	0.68	4.100	2.700	1.52	0.00	0.00	0.25	38.34	100% of 98%
7																

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Figure B.4 Dicker Data Ground Floor Service Calculator Output

Report from PS106553.BAL.180130 CalculatorGlazingVolOne2014\_Ground\_service.xlsx

printed 2/02/2018

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

Building name/description: **Dicker Data Service Area** Application: **other** Climate zone: **5**

Storey: **Ground**

Facade areas		N	NE	E	SE	S	SW	W	NW	internal	
Option A							59.5m <sup>2</sup>		102m <sup>2</sup>		
Option B										n/a	
Glazing area (A)							47.3m <sup>2</sup>	77.5m <sup>2</sup>			

Number of rows preferred in table below: **8** (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)	P/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	SW	SW		2.70	8.75		3.6	0.36	2.100	2.700			ROW SKIPPED (OK if intentional)			
2		SW		2.70	8.75		3.6	0.36	2.100	2.700	0.78	0.00	0.67	0.58	23.63	50% of 99%
3		SW		2.70	8.75		3.6	0.36	2.100	2.700	0.78	0.00	0.67	0.58	23.63	50% of 99%
4													ROW SKIPPED (OK if intentional)			
5	NW	NW		2.70	9.50		3.8	0.21				0.00	1.00	1.00	25.65	33% of 97%
6		NW		2.70	9.50		3.8	0.21				0.00	1.00	1.00	25.65	33% of 97%
7		NW		2.70	8.60		3.8	0.21				0.00	1.00	1.00	23.22	30% of 97%
8		NW		2.70	1.10		3.8	0.21				0.00	1.00	1.00	2.97	4% of 97%

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Figure B.5 Dicker Data Level One Service Calculator Output

Report from PS106553.BAL.180130 CalculatorGlazingVolOne2014\_Level 1\_service.xlsx

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

Building name/description: **Dicker Data Service** Application: **other** Climate zone: **5**

Storey: **1**

Facade areas		N	NE	E	SE	S	SW	W	NW	internal	
Option A							59.5m <sup>2</sup>		102m <sup>2</sup>		
Option B										n/a	
Glazing area (A)							20.7m <sup>2</sup>	28.1m <sup>2</sup>			

Number of rows preferred in table below: **10** (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)	P/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	SW	SW		1.30	5.40		6.5	0.70					ROW SKIPPED (OK if intentional)			
2		SW		1.30	5.40		6.5	0.70				0.00	1.00	1.00	7.02	34% of 100%
3		SW		1.30	5.10		6.5	0.70				0.00	1.00	1.00	6.63	32% of 100%
4		SW		1.30	5.40		6.5	0.70				0.00	1.00	1.00	7.02	34% of 100%
5													ROW SKIPPED (OK if intentional)			
6	NW	NW		1.30	5.30		5.0	0.55				0.00	1.00	1.00	6.89	25% of 100%
7		NW		1.30	5.30		5.0	0.55				0.00	1.00	1.00	6.89	25% of 100%
8		NW		1.30	5.30		5.0	0.55				0.00	1.00	1.00	6.89	25% of 100%
9		NW		1.30	5.70		5.0	0.55				0.00	1.00	1.00	7.41	26% of 100%
10													ROW SKIPPED (OK if intentional)			

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