DTS SECTION J REPORT

4 INNESDALE ROAD, WOLLI CREEK

WC702-02F02(REV1)- DTS SECTION J REPORT

17 OCTOBER 2016

Prepared for:

Marchese Partners

Level 1, 53 Walker St

North Sydney NSW

WINDTECH Consultants Pty Ltd ABN 72 050 574 037
Head Office: 19 Willis Street Wolli Creek NSW 2205 Australia
P +61 2 9567 0722 **E** reception@windtech.com.au **W** www.windtechconsult.com

Sydney (Head Office) | Abu Dhabi | London | Melbourne | Mumbai | New York | Shanghai | Singapore

DOCUMENT CONTROL

Date	Revision History	Issued Revision	Prepared By (initials)	Instructed By (initials)	Reviewed & Authorised by (initials)
June 2, 2016	Initial.	0	TH	TR	TH
October 17, 2016	Updated.	1	TH	TR	TH

The work presented in this document was carried out in accordance with the Windtech Consultants Quality Assurance System, which is based on International Standard ISO 9001.

This document is issued subject to review and authorisation by the Team Leader noted by the initials printed in the last column above. If no initials appear, this document shall be considered as preliminary or draft only and no reliance shall be placed upon it other than for information to be verified later.

This document is prepared for our Client's particular requirements which are based on a specific brief with limitations as agreed to with the Client. It is not intended for and should not be relied upon by a third party and no responsibility is undertaken to any third party without prior consent provided by Windtech Consultants Pty Ltd. This report should not be reproduced, presented or reviewed except in full. Prior to passing on to a third party, the Client is to fully inform the third party of the specific brief and limitations associated with the commission.

CONTENTS

1 INTRODUCTION

This report is in relation to the National Construction Code (NCC) 2016 Section J compliance assessment of the proposed new works and alterations to the boarding rooms of the subject development located at 4 Innesdale Road, Wolli Creek. The report is based on the Deemed to Satisfy (DTS) method of verification and based on the architectural drawings prepared by the project architect Marchese Partners, received May 2016.

2 BUILDING CLASSIFICATION AND CLIMATE ZONE

The building application for the non-residential component of the subject development site is described as follows in Table 1 below:

Table 1 Building Classification

Building Area	Building Classification	Conditioned Space
Boarding Rooms	Class 3	Yes

The subject development is located in Wolli Creek, and as such falls under Climate Zone 5 as per Rockdale City Council area boundary indicated in Figure 1 below:

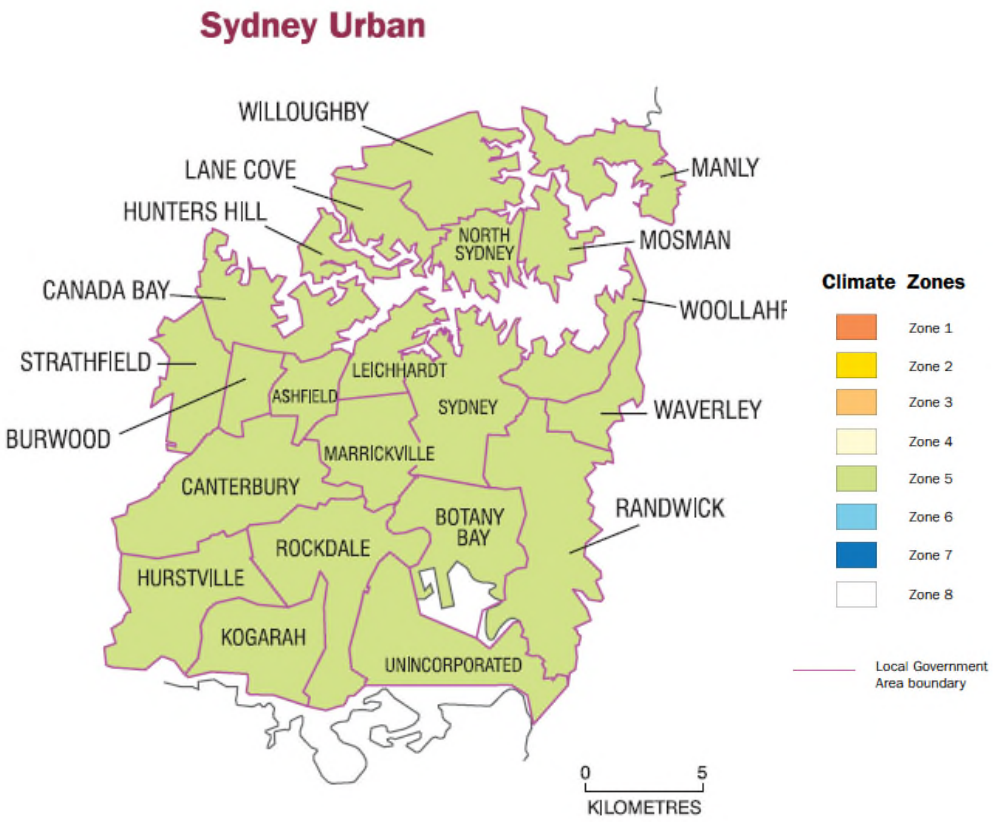


Figure 1: Sydney Surrounds Climate Zone

3 SECTION J PROVISIONS FOR ENERGY EFFICIENCY IN NSW

The objective of the NCC Section J is to reduce the greenhouse gas emissions through the efficient use of energy. Section J states that a building; including its services, must have features to the degree necessary to facilitate this efficient use of energy. Section J comprises of eight parts, J1 to J8, which focus on separate aspects of energy efficiency that are described as follows:

- Part J1 - Building Fabric
- Part J2 - External Glazing
- Part J3 - Building Sealing
- Part J4 – Blank
- Part J5 - Air-Conditioning and Ventilation Systems
- Part J6 - Artificial Lighting and Power
- Part J7 - Hot Water Supply
- Part J8 - Access For Maintenance

The New South Wales Section J consists of two Subsections J(A) and J(B). Subsection J(A) is relevant for Class 2 Buildings and Class 4 parts of buildings and Subsection J(B) is relevant for Class 3 and Class 5 to 9 Buildings. They are both described as follows:

NSW Subsection J(A) Energy Efficiency - Class 2 buildings and Class 4 parts

This Subsection contains energy efficiency requirements for Class 2 buildings and Class 4 parts of buildings.

The need for separating these requirements from the requirements for Class 3 buildings arises because, in NSW, Class 2 buildings and Class 4 parts of buildings are subject to BASIX (the Building Sustainability Index), however Class 3 buildings are not.

BASIX is the web-based planning tool designed to assess the potential performance of certain residential buildings against a range of sustainability indices including thermal comfort and energy. Commitments made under BASIX become a condition of the relevant development consent or complying development certificate.

BASIX applies in NSW to all new Class 1 and 2 buildings, and Class 4 parts of buildings; and to alterations and additions to buildings of those classes where the work is subject to BASIX and also where an applicant elects to comply with BASIX.

The provisions of NSW Subsection J(A) are therefore designed to complement requirements that arise under BASIX and which are implemented via the development consent. Where BASIX is not applied to alterations and additions to Class 1 and 2 buildings, and Class 4 parts of buildings, these provisions will also complement council development controls that require energy efficiency measures to be incorporated as part of the alterations and additions.

NSW Subsection J(B) Energy Efficiency - Class 3 and Class 5 to 9 buildings

This subsection contains energy efficiency requirements for Class 3 and Class 5 to 9 buildings.

As Class 3 and Class 5 to 9 buildings are not subject to BASIX, NSW Subsection J(B) applies the provisions of the national Section J relevant to Class 3 and Class 5 to 9 buildings, with minor variations.

Note 2.

All definitions in Part A1 that are applicable to the national Section J are also applicable to NSW Section J.

Hence any residential component of the proposed development would be assessed under NSW Subsection J(A) in the separate BASIX report prepared for the development. Furthermore, the following NSW Variations of Section J(A) will apply to the Class 2 building:

- NSW J(A)1.0 – Building Fabric
- NSW J(A)2.0 – Building Sealing
- NSW J(A)3.0 – Air Conditioning and ventilating systems
- NSW J(A)4.0 – Heated Water Supply
- NSW J(A)5.0 – Facilities for energy monitoring

The non-residential areas fall under Subsection J(B). that states Class 3 and Class 5 to 9 buildings must comply with all of the provisions of the national Section J that are applicable to the relevant classifications, except as varied by NSW J3.1 Application of Part described as follows:

Add NSW J3.1(d) as follows:

NSW J3.1 Application of Part

d) parts of buildings that cannot be fully enclosed

4 BOARDING ROOMS COMPONENT

The following Section J assessment covers the NSW Variations of Section J(B) for non-residential component of the subject development where applicable as described in Section 2.0 of this report.

4.1 Part J0: Energy Efficiency

4.2 Part J1: Building Fabric

4.2.1 Part J1.1: Application of Part

Applicable to building elements forming the envelope of a Class 2 to 9 building.

4.2.2 Part J1.2: Thermal Construction - General

- All insulation products are required to comply with AS/NZ 4859.1
- The Builder is to ensure that the installation of insulation products complies in accordance with the requirements of Clause J1.2

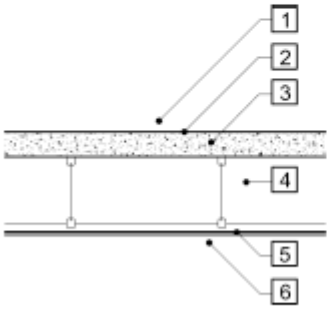
4.2.3 Part J1.3: Roof and Ceiling Construction

- A roof or ceiling that is part of the envelope , must achieve the Total R-Value specified in Table J1.3a for the direction of heat flow below:

Table J1.3a ROOFS AND CEILINGS - MINIMUM TOTAL R-VALUE FOR EACH CLIMATE ZONE

Climate zone	1, 2, 3, 4 and 5	6	7	8
Direction of heat flow	Downwards		Upwards	
Minimum *Total R-Value* for a roof or ceiling with a roof upper surface solar absorptance value of not more than 0.4	3.2	3.2	3.7	4.8
Minimum *Total R-Value* for a roof or ceiling with a roof upper surface solar absorptance value of more than 0.4 but not more than 0.6	3.7	3.2	3.7	4.8
Minimum *Total R-Value* for a roof or ceiling with a roof upper surface solar absorptance value of more than 0.6	4.2	3.2	3.7	4.8

- The proposed development is located in Climate Zone 5 hence the first column is applicable. For the ceiling/roof areas of the Boarding Rooms exposed to outdoor air above, the minimum Total R-value to be achieved is R3.2 for a roof with a roof upper surface solar absorptance value of not more than 0.4. Note the minimum Total R-value can vary up to R4.2 depending on the roof upper surface solar absorptance value as per the table above.
- For example, a typical unventilated solid concrete roof construction as indicated in Specification J1.3(g) below has a Total R-value of approximately R0.58.

Roof construction description	Item	Item description	*R-Value* Unventilated	
			Up	Down
(g) 100 mm solid concrete roof to 5° – 10 mm plaster, suspended ceiling – Applied external waterproof membrane 	1.	Outdoor air film (7 m/s)	0.04	0.04
	2.	Waterproof membrane, rubber synthetic (4 mm, 961 kg/m^3)	0.03	0.03
	3.	Solid concrete, (100 mm, 2400 kg/m^3)	0.07	0.07
	4.	Ceiling airspace (100 mm to 300 mm, non-reflective)	0.15	0.22
	5.	Plasterboard, gypsum (10 mm, 880 kg/m^3)	0.06	0.06
	6.	Indoor air film (still air)	0.11	0.16
		Total R-Value	0.46	0.58

- Hence for a roof with a solar absorptance of less than 0.4, an additional R2.62insulation is required to comply with the NCC requirements provided a roof airspace is still maintained (R2.84 if there is not a roof airspace available).
- If a different roof/ceiling construction is to be implemented, then the required additional roof/ceiling insulation would vary depending on the roof/ceiling constructions effectiveness in reducing heat transfer.
- Note there is an adjustment for loss of insulation due to penetrations within the ceiling associated with exhaust fans, flues, recessed down lights etc. are tabulated in Table J1.3b below:

Table J1.3b ADJUSTMENT OF MINIMUM R-VALUE FOR LOSS OF CEILING INSULATION

Percentage of ceiling area uninsulated	Minimum *R-Value* of ceiling insulation *required* to satisfy J1.3(a)										
	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0
	Adjusted minimum *R-Value* of ceiling insulation *required* to compensate for loss of ceiling insulation area										
0.5% to less than 1.0%	1.0	1.6	2.2	2.8	3.4	4.0	4.7	5.4	6.2	6.9	
1.0% to less than 1.5%	1.1	1.7	2.3	2.9	3.6	4.4	5.2	6.1	7.0		
1.5% to less than 2.0%	1.1	1.7	2.4	3.1	3.9	4.8	5.8	6.8			
2.0% to less than 2.5%	1.1	1.8	2.5	3.3	4.2	5.3	6.5				
2.5% to less than 3.0%	1.2	1.9	2.6	3.6	4.6	5.9					
3.0% to less than 4.0%	1.2	2.0	3.0	4.2	5.7						
4.0% to less than 5.0%	1.3	2.2	3.4	5.0							
5.0% or more	Not Permitted										

Note: Where the minimum *R-Value* of ceiling insulation *required* to satisfy J1.3(a) is between the values stated, interpolation may be used to determine the adjusted minimum *R-Value*.

- For example, for a loss of ceiling insulation due to penetration between 0.5% to 1.0% with minimum R3.5 insulation, the adjusted minimum R-value ceiling insulation is R4.0.
- For a roof that has metal sheet roofing fixed to metal purlins, metal rafters or metal battens, and does not have a ceiling lining or has a ceiling lining fixed directly to the above, it must have a thermal break consisting of a material with a minimum R-value of 0.2 installed between the metal sheet roofing and its supporting metal purlins, metal rafters or metal battens.

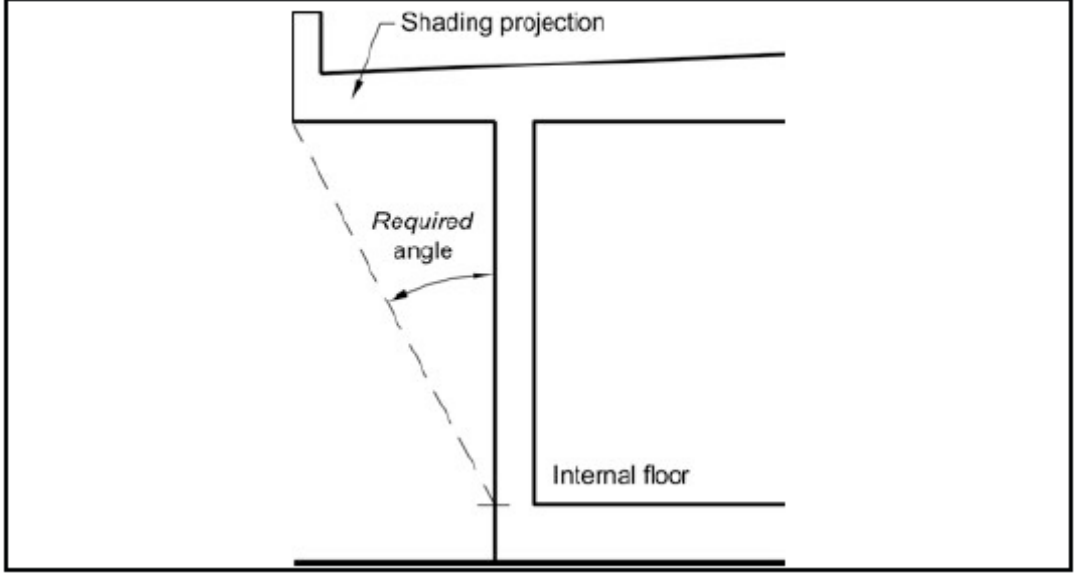
4.2.4 Part J1.4: Roof Lights

- Not applicable as there are no proposed new roof lights in this development.

4.2.5 Part J1.5: Walls

- The external wall construction is to achieve a minimum Total R-value of R2.8.
- This minimum Total R-value may be reduced to R2.3 if the wall has a surface density of more than 220 kg/m2, or facing a south orientation, or if it is shaded with a projection shade angle of between 30 degrees to 60 degrees as per the figure below. Note for a projection shade angle of more than 60 degrees, the minimum Total R-value may be reduced further to R1.8.
- For spaces where the insulation can only be provided by a furring channel, top hat section, batten or the like, it is to achieve a minimum Total R-value of R1.4 and must satisfy the glazing energy index Option B of Table J2.4a.

Figure J1.5
MEASUREMENT OF PROJECTION FOR WALL SHADING



- For any wall, other than an external wall that is part of the envelope must achieve the Total R-Value in Table J1.5b below:

Location		Climate zone							
		1	2	3	4	5	6	7	8
(a)	Where the adjacent enclosed non-*conditioned space* has— (i) ventilation of not more than 1.5 air changes per hour of outside air during occupied hours; and (ii) glazing in the external *fabric* as *required* by **Part J2**; and (iii) *roof lights* in the external *fabric* as *required* by **J1.4**.	1.0	1.0	Nil	Nil	1.0	1.0	1.5	2.5
(b)	For other than (a)	2.3	2.3	2.3	1.8	1.8	1.8	2.8	3.8
Note:	When assessing the glazing and *roof lights* as *required* by **Part J2** and **J1.4**, assess the glazing and *roof lights* as if the non-*conditioned space* is the same separate *conditioned space*.								

- For any walls that is required to achieve a minimum Total R-Value and has lightweight external cladding such as weatherboards, and does not have a wall lining or lining that is fixed directly to the same metal frame, it must have a thermal break consisting of a material with a minimum R-Value of R0.2 installed between the external cladding and metal frame.
- Hence the minimum total R-Value for the envelope wall is dependent upon a number of factors and are summarised in Table 2 below:

Table 2 Envelope wall Type & Minimum Total R-Value Requirements

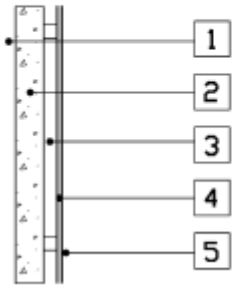
Envelope Wall Type	Minimum Total R-Value
Envelope wall to Outdoor Environment	R2.8
Envelope wall to Outdoor Environment – If it has a surface density of greater than 220kg/m2	R2.3
Envelope wall to Outdoor Environment – If is facing a south orientation (within a 45 degree sector)	R2.3
Envelope wall to Outdoor Environment – If it has a projection shade angle of between 30 to 60 degrees	R2.3*
Envelope wall to Outdoor Environment – If it has a projection shade angle of over 60 degrees	R1.8*
Envelope wall to Outdoor Environment – Where the only space for insulation is provided by a furring channel, top hat section, batten or the like (i.e. limited space)	R1.4**
Envelope wall to a non-conditioned space – and satisfies a ventilation requirement of no more than 1.5 air changes per hour of outside air during occupied hours	R1.0
Envelope wall to a non-conditioned space – for all other cases	R1.8

** See shading figure above*

*** Note the glazing on these walls will be subjected to a more conservative glazing energy index (Option B).*

- For example, a typical north-facing 125mm Concrete wall construction with an airspace as indicated below has a Total R-value of approximately R0.48 as shown below.

(d) 125 mm solid reinforced concrete (dense weight) – 10 mm internal plaster on battens or furring channels



1.	Outdoor air film (7 m/s)	0.04
2.	125 mm minimum solid reinforced concrete (See Note 3)	0.09
3.	Airspace (20 mm to 40 mm non-reflective and unventilated)	0.17
4.	Plasterboard, gypsum (10 mm, 880 kg/m^3)	0.06
5.	Indoor air film (still air)	0.12
	Total R-Value	0.48

- Hence an additional minimum R2.32 wall insulation is required to comply with the NCC requirements (provided the airspace is maintained) of a total R-value of 2.8. If an airspace is not available, the minimum wall insulation required is increased to R2.49.
- The specifier is to ensure the minimum total R-value is satisfied, and if a different wall construction is to be implemented, the required additional wall insulation would vary depending on the wall constructions effectiveness in reducing heat transfer.

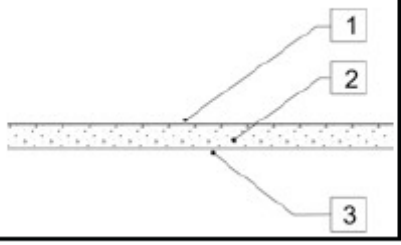
4.2.6 Part J1.6: Floors

- The floor of several of the boarding rooms is located above an open car-park. Hence the floor is to achieve is R2.0 as per Table J1.6(d) below. For the remaining boarding rooms above a conditioned space, no floor insulation is required.
- The minimum Total R-value required may be reduced by R0.5 provided R075 is added to the Total R-value required for the roof and ceiling construction.

Table J1.6 FLOORS — MINIMUM TOTAL R-VALUE

Location	*Climate zone*							
	1	2	3	4	5	6	7	8
Direction of heat flow	**Upwards**	**Downwards and upwards**		**Downwards**				
(a) A slab on ground:								
(i) Without an in-slab or in-screed heating or cooling system	Nil	Nil	Nil	Nil	Nil	Nil	1.0	2.0
(ii) With an in-slab or in-screed heating or cooling system	1.25	1.25	1.25	1.25	1.25	1.25	1.25	2.25
(b) A suspended floor without an in-slab or in-screed heating or cooling system where the non-*conditioned space* is— (i) enclosed; and (ii) where mechanically ventilated by not more than 1.5 air changes per hour.	1.0	1.0	Nil	Nil	1.0	1.0	1.5	2.5
Location	*Climate zone*							
	1	2	3	4	5	6	7	8
Direction of heat flow	**Upwards**	**Downwards and upwards**		**Downwards**				
(c) A suspended floor with an in-slab or in-screed heating or cooling system where the non-*conditioned space* is— (i) enclosed; and (ii) where mechanically ventilated by not more than 1.5 air changes per hour	1.25	1.25	1.25	1.25	1.25	1.25	1.75	2.75
(d) For other than (a), (b) or (c)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	3.5
Note: A sub-floor space with not more than 150% of the *required* sub-floor ventilation is considered enclosed.								

- For example, a typical 150mm suspended Concrete slab construction as indicated below has a Total R-value of approximately R0.30 as shown below.

(c) Solid concrete suspended slab 	1.	Indoor air film (still air)	0.11	0.16
	2.	Solid concrete (150 mm, 2400 kg/m^3)	0.10	0.10
	3.	Outdoor air film (7 m/s)	0.04	0.04
		Total R-Value	0.25	0.30

- Hence an additional minimum R1.7 floor insulation is required to comply with the NCC requirements.

4.3 Part J2: Glazing

4.3.1 Part J2.1: Application of Part

Applicable to building elements forming the envelope of a building other than a sole-occupancy unit of a Class 2 building or a Class 4 part of a building.

4.3.2 Part J2.2: Blank

4.3.3 Part J2.3: Blank

4.3.4 Part J2.4: Glazing

- The NCC Glazing DTS Calculator spread sheet has been used to assess the glazing and shading compliance of the various boarding and managers rooms within the subject development.
- The NCC Glazing DTS Calculation spreadsheets can be found in Appendix A.
- The glazing energy index A has been assumed for all glazed systems as per Table J1.5a. If the façade has limited space for insulation (such as spaces where the insulation can only be provided by a furring channel, top hat section, batten or the like), then compliance with glazing energy index Option B of Table J1.5a is required and a reassessment to be undertaken.
- The glazing required by the Glazing DTS Calculator are summarised in Tables 3a and 3b below:

Table 3a Glazing Specification – Level 0

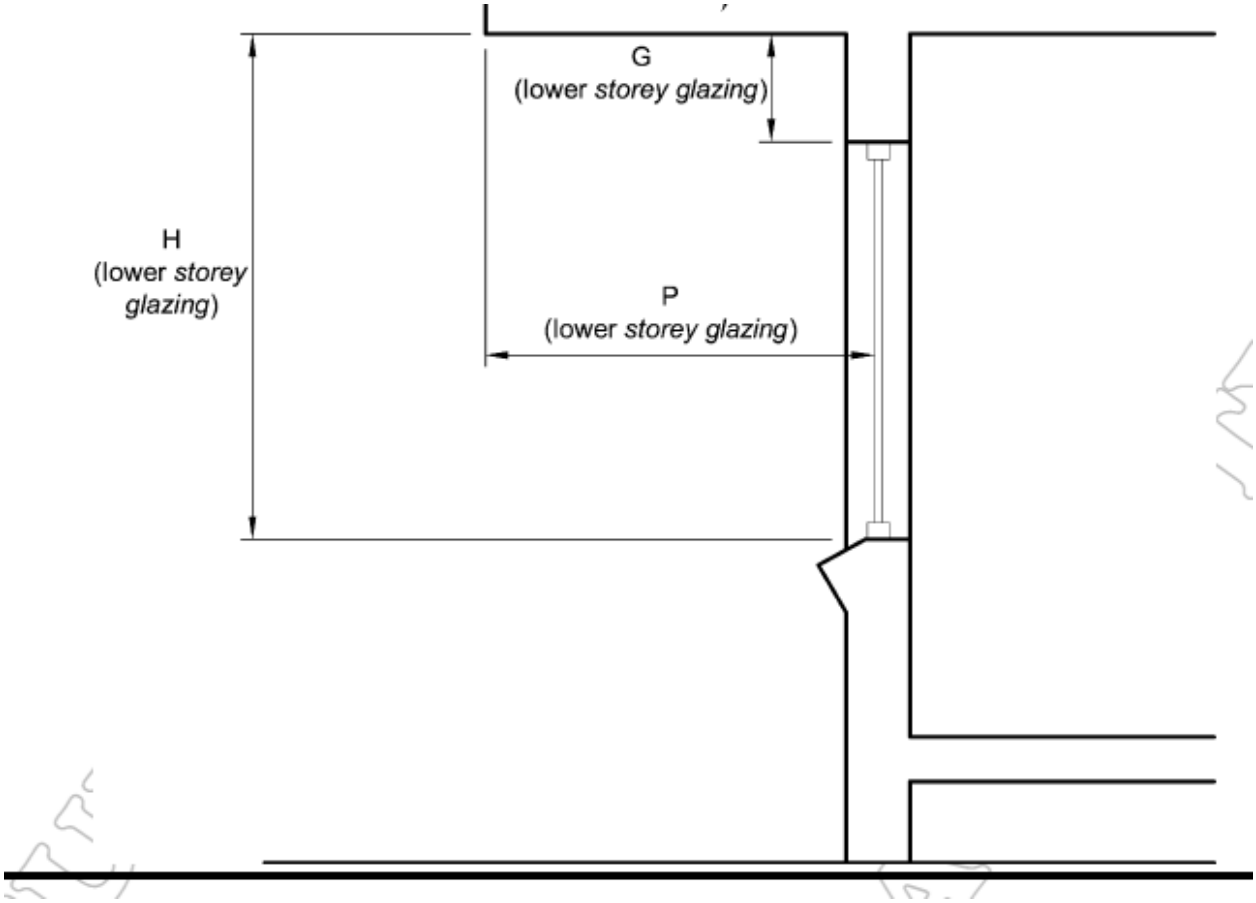
Window	U-Value	SHGC
Northern Aspect Glazing Systems	6.7	0.70
Southern Aspect Glazing Systems	6.7	0.70
Western Aspect Glazing Systems	6.7	0.70

Table 3b Glazing Specification – Levels 1 to 5

Window	U-Value	SHGC
Northern Aspect Glazing Systems	6.7	0.22
Southern Aspect Glazing Systems	1.9	0.35

- The specified U-value and SHGC are for the whole system (glazing and framing) and must be in accordance to the Australian Fenestration Rating Council (AFRC) Protocol & Procedures.
- The performance can be enhanced by reducing the glazing area improving the P/H value of any horizontal shading device as defined and illustrated in the NCC as per the figure below:

- Note alternative assessment is available known as the JV3 Verification method to determine the glazing specifications using software that utilises the DTS specification above and takes further into account other design parameters such as HVAC, construction materials and build form.



4.3.5 Part J2.5: Shading

- Where shading is required to comply with J2.4, it must be provided by an external permanent project, such as a verandah, balcony, fixed canopy, eaves or shading hood which extends horizontally on both sides of the glazing for the same projection distance P above or;
- Be provided by an external shading device, such as a shutter, blind, vertical or horizontal building screen with blades, battens or slats which is capable of restricting at least 80% of summer solar radiation and if adjustable, is operated automatically in response to the level of solar radiation.

4.4 Part J3: Building Sealing

4.4.1 Part J3.1: Application of Part

Applicable to elements forming the envelope of a Class 2 to 9 building other than a permanent building opening, in a space where a gas appliance is located that is necessary for the safe operation of a gas appliance, or parts of a building that cannot be fully enclosed.

4.4.2 Part J3.2: Chimneys and Flues

- Not applicable as there are no chimneys/flues within the boarding rooms.

4.4.3 Part J3.3: Roof lights

- Not applicable as there are no roof lights within the boarding rooms.

4.4.4 Part J3.4: Windows and Doors

- A seal to restrict air infiltration must be fitted to each edge of a door, operable window or the like forming part of the envelope of a conditioned space or external fabric of a habitable room.
- The abovementioned requirement does not apply if the window or glazed door system complies with AS2047 and is a fire/smoke door or a roller shutter door/grille/security door installed for out of hours security.
- The seal for the bottom edge of an external swing door, must be a draft protection device.
- The seal for the other edges of an external door or the edges of an openable window or other such opening may be a foam or rubber compression strip, fibrous seal or the like.
- An entrance to a building, if leading to a *conditioned space* must have an airlock, *self-closing* door, revolving door or the like, other than where the conditioned space has a floor area of less than $50m^2$. Or where a café, restaurant, open front shop or the like has a 3m deep un-conditioned zone between the main entrance; including an open front, and the conditioned space and at all other entrances to the café, restaurant, open front shop or the like, self-closing doors.

4.4.5 Part J3.5: Exhaust Fans

- A miscellaneous exhaust fan, such as a bathroom or domestic kitchen exhaust fan must be fitted with a sealing device such as a self-closing damper or the like when serving a conditioned space or habitable room.

4.4.6 Part J3.6: Construction of roofs, walls and floors

- Roofs, ceilings, walls, floors and any opening such as a window frame, door frame, roof light frame or the like must be constructed to minimise air leakage in accordance with Clause J3.6(b) when forming part of an envelope or external fabric of a habitable room.
- Clause J3.6(b): the construction must be 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.
- The abovementioned requirements do not apply to openings, grilles or the like required for smoke hazard management.

4.4.7 Part J3.7: Evaporative Coolers

- If evaporative coolers are installed, they must be fitted with a self-closing damper or the like when serving a heated space or a habitable room or public area of the building.

4.5 Part J4:

This part has deliberately been left blank

4.6 Part J5: Air Conditioning and Ventilating Systems

4.6.1 Part 5.1:

Is not applicable to a Class 8 electricity network substation.

4.6.2 Part J5.2: Air Conditioning Systems

- Not applicable as there are no air-conditioning systems proposed in the subject development.

4.6.3 Part J5.3: Mechanical Ventilation Systems

- The mechanical consultant is to ensure the mechanical ventilation systems are to comply with the national NCC provisions of Clause J5.3 and the fans comply with Specification J5.2a.
- The mechanical consultant is to ensure the time switches complying with Specification J6 must be provided with an airflow of more than 1000L/s unless it is applied to a building where the mechanical ventilation system is needed for 24 hour occupancy.

4.6.4 Part J5.4: Miscellaneous Exhaust Systems

- The mechanical consultant is to ensure any miscellaneous exhaust system with an air flow rate of more than 1000L/s that is associated with equipment having a variable demand; must be capable of stopping the motor when the system is not needed and have a variable speed fan or the like.
- The abovementioned is not applicable where additional exhaust ventilation is needed to balance the required outside air for ventilation.

4.7 Part J6: Artificial Lighting and Power

4.7.1 Part 6.1:

J6.2, 6.3 and 6.5(a)(ii) do not apply to a class 8 electricity network substation.

4.7.2 Part J6.2: Artificial Lighting

- The NCC Lighting DTS Calculator spread sheet has been used to assess the total allowable aggregate design illumination power load for the subject development is included in Appendix B.

- The allowable aggregate design illumination power load is calculated by multiplying the area by the maximum illumination power density of the space. This has been summarised in the Table 4 below:

Table 4 Lighting Illumination

Space	Area (m²)	Maximum illumination power density (W/m²)	Maximum Allowable Aggregate Illumination Power Load (W)
Garbage room ground	13.0	5	65
Lifts	9.8	9	88
Laundry ground	10.0	5	50
Lobby ground	18.0	10	180
Corridor ground	26.0	8	208
Staircase ground	4.2	8	34
Meter & comms ground	2.0	9	18
Room 1.1	19.5	9	176
Room 1.2	20.5	9	185
Room 1.3	20.5	9	185
Room 1.4	17.5	9	158
Room 1.5	17.5	9	158
Room 1.6 (Manager's room)	20.5	9	185
Room 1.7	20.5	9	185
Room 1.8	19.5	9	176
WC 1.1	5.5	6	33
WC 1.2	4.5	6	27
WC 1.3	4.5	6	27
WC 1.4	7.5	6	45
WC 1.5	7.5	6	45
WC 1.6	4.5	6	27
WC 1.7	4.5	6	27
WC 1.8	5.5	6	33
Corridor 1	35.0	8	280
Stairs 1	10.0	8	80
Room 2.1	19.5	9	176
Room 2.2	20.5	9	185
Room 2.3	20.5	9	185
Room 2.4	18.5	9	167
Room 2.5	18.5	9	167
Room 2.6	20.5	9	185
Room 2.7	20.5	9	185
Room 2.8	19.5	9	176
WC 2.1	5.5	6	33
WC 2.2	4.5	6	27

Space	Area (m²)	Maximum illumination power density (W/m²)	Maximum Allowable Aggregate Illumination Power Load (W)
WC 2.3	4.5	6	27
WC 2.4	6.5	6	39
WC 2.5	6.5	6	39
WC 2.6	4.5	6	27
WC 2.7	4.5	6	27
WC 2.8	5.5	6	33
Corridor 2	35.0	8	280
Stairs 2	10.0	8	80
Room 3.1	19.5	9	176
Room 3.2	20.5	9	185
Room 3.3	20.5	9	185
Room 3.4	18.5	9	167
Room 3.5	18.5	9	167
Room 3.6	20.5	9	185
Room 3.7	20.5	9	185
Room 3.8	19.5	9	176
WC 3.1	5.5	6	33
WC 3.2	4.5	6	27
WC 3.3	4.5	6	27
WC 3.4	6.5	6	39
WC 3.5	6.5	6	39
WC 3.6	4.5	6	27
WC 3.7	4.5	6	27
WC 3.8	5.5	6	33
Corridor 3	35.0	8	280
Stairs 3	10.0	8	80
Room 4.1	19.5	9	176
Room 4.2	15.0	9	135
Room 4.3	15.0	9	135
Room 4.4	18.5	9	167
Room 4.5	18.5	9	167
Room 4.6	20.5	9	185
Room 4.7	20.5	9	185
Room 4.8	19.5	9	176
WC 4.1	5.5	6	33
WC 4.2	4.0	6	24
WC 4.3	4.0	6	24
WC 4.4	6.5	6	39
WC 4.5	6.5	6	39
WC 4.6	4.5	6	27

Space	Area (m²)	Maximum illumination power density (W/m²)	Maximum Allowable Aggregate Illumination Power Load (W)
WC 4.7	4.5	6	27
WC 4.8	5.5	6	33
Corridor 4	35.0	8	280
Stairs 4	10.0	8	80
Room 5.1	19.5	9	176
Room 5.2	15.0	9	135
Room 5.3	15.0	9	135
Room 5.4	18.5	9	167
Room 5.5	18.5	9	167
Room 5.6	19.5	9	176
WC 5.1	5.5	6	33
WC 5.2	4.0	6	24
WC 5.3	4.0	6	24
WC 5.4	6.5	6	39
WC 5.5	6.5	6	39
WC 5.6	5.5	6	33
Communal living room 5	44.5	10	445
Communal WC 5	5.5	6	33
Corridor 5	35.0	8	280
Stairs 5	10.0	8	80
Stairs and hallway Roof	18.0	8	144
Accessible toilet Roof	6.0	6	36
Storage Roof	6.0	10	60

- The lighting consultant is to ensure the lighting system to be implemented will not exceed the allowable aggregate design illumination power load.
- Note that no adjustment factors such as motion detectors etc. have been incorporated into the above mention assessment. The inclusion of such factors will further increase the Maximum Allowable Illumination Power Load.
- Furthermore, the abovementioned points do not apply to Emergency Lighting in accordance with Part E4, signage/display lighting within cabinets and display cases that are fixed in place, lighting of a specialist process nature or lighting of performances such as theatrical or sporting.

4.7.3 Part J6.3: Interior Artificial Lighting and Power Control

- The lighting consultant is to ensure the artificial lighting of a room or space must be individually operated by a switch or other control device.

- An artificial lighting switch or other control device must be located in a visible position in the room or space being switched, or in an adjacent room or space from where the lighting being switched is visible.
- Note the abovementioned points do not apply to Emergency Lighting in accordance with Part E4, or where artificial lighting is needed for 24 hour occupancy, or where the sudden loss of artificial lighting would cause an unsafe situation.
- For Office, Commercial and Factory spaces of more than 250m^2, 95% of the light fittings in a building or storey of a building must be controlled by a time switch in according with Specification J6 or an occupant sensing device such as a security key card reader or a motion detector in according with Specification J6.
- For Office, Commercial and Factory spaces of more than 250m^2, artificial lighting in a natural lighting zone adjacent to windows must be separately controlled from artificial lighting not in a natural lighting zone in the same storey except where-
    - The room containing the natural lighting zone is less than 20m^2; or
    - The room's natural lighting zone contains less than 4 luminaires; or
    - 70% or more of the luminaires in the room are in the natural lighting zone.

4.7.4 Part J6.4: Interior Decorative and Display Lighting

- The electrical consultant is to ensure the interior decorative and display lighting, such as for a foyer mural or art display, must be controlled separately from other artificial lighting and 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.
- If the display lighting exceeds 1kW, it must be controlled by a time switch in accordance with Specification J6.
- Window display lighting must be controlled separately from other display lighting.

4.7.5 Part J6.5: Artificial Lighting around the perimeter of a Building

- The lighting consultant is to ensure the artificial lighting around the perimeter of the building must be controlled by a daylight sensor or a time switch capable of switching on and off electrical power to the system at a pre-programmed time and on variable pre-programmed days.
- When the artificial lighting around the perimeter is used for decorative purposes, such as façade lighting or signage lighting, it must have a separate time switch in accordance with Specification J6.
- If the total perimeter lighting load exceeds 100W, it must have an average light source efficacy of not less than 60 Lumens/W or controlled by a motion detector in accordance with Specification J6.

- Note the abovementioned does not apply to emergency lighting in accordance with Part E4.

4.7.6 Part J6.6: Boiling Water and Chilled Water Storage Units

- The power supply to boiling water or chilled water storage unit must be controlled by a time switch in accordance with Specification J6.

4.8 Part J7: Heated Water Supply and Swimming Pool and Spa Pool Plant

4.8.1 Part J7.1: Application of Part

This clause has deliberately been left blank

4.8.2 Part J7.2: Heated Water Supply

- The hydraulic engineer is to ensure the heated water supply for food preparation and sanitary purposes must be designed and installed in accordance with Part B2 of NCC Volume Three – Plumbing Code of Australia.

4.8.3 Part J7.3: Swimming Pool Heating and Pumping

- Not applicable as there are no swimming pools within the development.

4.8.4 Part J7.4: Spa Pool Heating and Pumping

- Not applicable as there are no spas within the development.

4.9 Part J8: Facilities for Energy Monitoring

4.9.1 Part J8.1: Application of Part

Applies to a Class 3, 5 to 7 and 9 buildings.

4.9.2 Part J8.2

This clause has deliberately been left blank

4.9.3 Part J8.3: Facilities for Energy Monitoring

- (a) A building or sole-occupancy unit with a floor area of more than 500m^2 must have the facility to record the consumption of gas and electricity.
- (b) A building with a floor area of more than 2,500 m must have the facility to record individually the energy consumption of—
- (i) air-conditioning plant including, where appropriate, heating plant, cooling plant and air handling fans; and
- (ii) artificial lighting; and
- (iii) appliance power; and
- (iv) central hot water supply; and

- (v) internal transport devices including lifts, escalators and travelators where there is more than one serving the building; and
- (vi) other ancillary plant.
- (c) The provisions of (b) do not apply to a Class 2 building with a floor area of more than 2,500m^2 where the total area of the common areas is less than 200m^2

5 CONCLUSION

A Section J assessment of the proposed new works and alterations to the boarding rooms of the subject development located at 4 Innesdale Road, Wolli Creek has been completed. The report is based on the Deemed to Satisfy (DTS) method of verification for the glazing and lighting requirements, and based on the architectural drawings prepared by the project architect Marchese Partners, received May 2016.

Recommendations have been made within the report to achieve compliance with the NCC Section J requirements for glazing, lighting based on the DTS provisions and calculation spreadsheets found in the appendices. Note that there is an alternative assessment available to that can further refine the recommendations, known as the JV3 Verification method.

APPENDIX A - GLAZING DTS CALCULATOR

APPENDIX B - LIGHTING DTS CALCULATOR