

NCC 2022 Section J DTS Compliance

The Timber Yards by RTLCo

December 2024



Contents

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Executive Summary

Atelier Ten have been engaged by RTLCo to provide advice for the building envelope of The Timberyards. The Timberyards by RTLCo is a residential located at Marrickville, NSW 2204. The intent of the assessment is to verify the minimum performance requirements to satisfy Section J, Part J4 – Building Fabric of NCC 2022. Specifically, this report provides advice for Section J4D4 (Roofs and Ceilings), J4D5 (Roof Lights), J4D6 (Walls and Windows), and J4D7 (Floors).

This report assesses the 8-storey co-living residential building. This document assesses the building fabric classified as building class 3 (i.e, all units that are co-living). The assessment confirms that the building fabric complies with NCC 2022 Section J requirements, using the *Deemed-to-Satisfy (DTS) Provisions* for compliance with Part J1 – Energy Efficiency. Evidence has been presented to demonstrate that the building fabric complies with Section J DTS requirements.

NOTE: This memo addresses only the Deemed-to-Satisfy (DTS) requirements for Section J, which is the level of advice appropriate at the concept stage of the project. We understand there may be deviations from the required performance values, which will need to be assessed using the Section J JV3 methodology through energy modelling during the detailed design phase. Self-shading has not been accounted for this DTS calculation and will be included at detailed design stages to improve window performance selections.

The key façade performance requirements to demonstrate compliance are outlined in the table below:

Table 1 MINIMUM GLAZING PERFORMANCE REQUIREMENTS

Orientation	Building Class	Window to Wall Ratio	Performance	
			U-Value	SHGC
All	3	50%	U2.99	0.20
All	3	60%	U2.66	0.16

Table 2 MINIMUM FABRIC PERFORMANCE REQUIREMENTS

Building Element	Performance
Envelope Walls	R1.0
Roof and Ceiling	R3.7
Floor	R2.0

Project Description

Marrickville Timberyards is located at Marrickville, NSW. Marrickville Timberyards consists of a 8-storey co-living residential building. The minimum Section J DTS requirements are listed below:

Table 3 Section J DTS MINIMUM REQUIREMENTS

Building Element	Component
Climate Zone	5
NCC 2022 Building Classification	3
Maximum Total System U-value (Section J4D6(1))	Refer Table 1
Maximum Solar Admittance (Section J4D6(5))	Refer Table 1

Introduction

Report Scope

RTL have commissioned Atelier Ten to assess the building fabric required to meet the 2022 National Construction Code (NCC) Section J requirements through the *Deemed-to-Satisfy Provisions* for compliance with Part J1.

The report outlines the Section J requirements for Part J4 to determine the minimum building fabric requirements for Timberyards. The report also includes the steps undertaken to demonstrate compliance, document results and highlights the required performance for the 'The Timberyards by RTLCo'.

Document References

Issued by	Document	Issue	Date
Turner Studio Architects	100% Drawing Set	Concept Design	16.12.2024

Project Address and NCC Climate Zone

The proposal consists of a 8-storey co-living residential building, located at Marrickville, NSW – within NCC

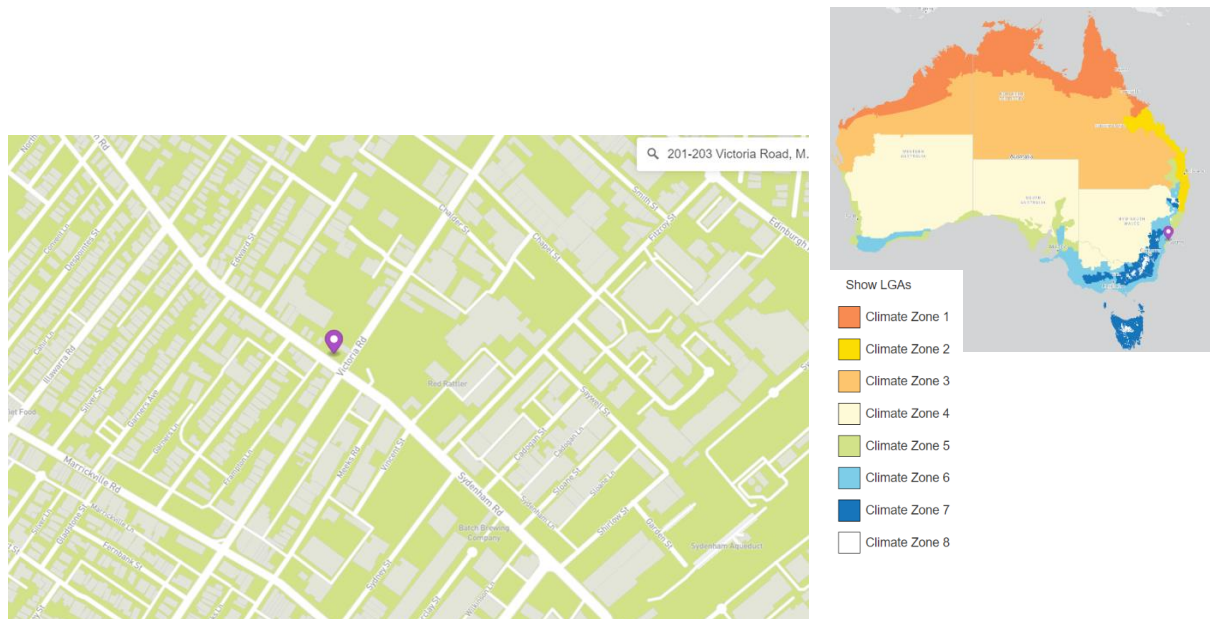


Figure 1 NCC 2022 Climate Zone

Climate Zone 5.

Building Class

As per NCC Part A6 Building Classification, the assessed areas are classified as Class 3 – Co-Living Residential Buildings.

Section J DTS Requirement: Part J4 Breakdown

The building envelope, for the purposes of Section J, is defined as the parts of the building's fabric that separates a conditioned space (or habitable room) from:

- the exterior of the building; or
- a non-conditioned space including:
 - o the floor of a rooftop plant room, lift-machine room, or the like; and
 - o the floor above a carpark or warehouse; and
 - o the common wall with a carpark, warehouse, or the like; or
- parts of the building's fabric that separates artificially heated or cooled spaces from:
 - o the exterior of the building; or
 - o other spaces that are not artificially heated or cooled.

J4D4 – Roof and Ceiling Construction

The below table indicates the required total system R-value for the insulated areas for the ceiling construction. Note that the insulation levels should be the greater of the value given below and the value specified in the thermal assessment of the apartments, assessed elsewhere:

Building Element	Required Total System R-value	Additional Requirements
Roof and Ceiling	R3.70	Solar absorptance must not be more than 0.45 wherever there are roof/ceiling insulations (i.e., balcony areas from levels above).

J4D5 – Roof Lights

This project includes some clearstory windows. According to Section J4D5 of the NCC 2022 volume one guide roof lights must have:

- a total area of not more than 5% of the floor area of the room or space served; and
- transparent or translucent elements, including any imperforate ceiling diffuser, with a combined performance of –

Rooflight index	shaft	Total system U value	Total area of rooflights up to 3.5% of the floor area of the room or space	Total area of roof lights more than 3.5% and upto 5% of the floor area of the room or space
<1.0		≤3.9	≤0.45	≤0.29
≥1.0 to < 2.5		≤3.9	≤0.51	≤0.33
≥2.5		≤3.9	≤0.76	≤0.49

J4D6 – Walls and Glazing

The window-wall construction of the building is assessed according to (1) the thermal requirements and (2) the solar requirements.

Table 4 is a summary of the minimum building fabric requirements for the walls and glazing construction of the building envelope.

Table 4 BUILDING FABRIC MINIMUM REQUIREMENTS

Building Element	Class 3 Performance	Class 3 Performance
Overall Window-Wall Ratio	Average ~ 65%	Average ~ 80%
Wall R-Value	R1.0	R1.0
Window U-Value	U2.53	U2.24
Window SHGC	0.195	0.16

Wall Requirements

As per Section J4D6((4)(a)), the wall components of a *wall-glazing construction* must achieve a minimum Total R-Value of R1.0 for walls with a window-to-wall ratio of less than 80%. The window-wall ratio of the assessed area is described below.

Table 5 WALL-GLAZING CONSTRUCTION

Class 3	
Wall Area	Approx. 65%/80%

The wall components of the thermal envelope must achieve a minimum of R1.0.

Glazing Requirements

The main concerns for the glazing requirements are (1) the thermal performance and (2) the solar admittance requirements. The following sections will cover the two main concerns to determine the maximum allowable glazing U-Value and compliance with Section J NCC 2022.

Thermal Requirements

As per Section J4D6(1(a)), the total system U-value of the wall-glazing construction must be less than U2.0. As the walls are specified to achieve R1.0 with a window-wall ratio as described above, the thermal requirements for the window are as follows:

Table 6 THERMAL REQUIREMENTS

Class 3			Class 3	
	Wall Elements	Glazing Elements	Wall Elements	Glazing Elements
R-Value	R1.0	-	R1.0	-
U-Value	U0.7	U2.53	U0.7	U2.24
%	Approx. 65%	Approx. 65%	Approx. 80%	Approx. 80%

Solar Requirements

The maximum allowable solar admittance for the wall-glazing construction is being assessed according to Section S37C6 – Method 2 (Multiples Aspects), which calculates the Reference and Proposed *air-conditioning* energy value for the construction.

Table 7 MAXIMUM ALLOWABLE SHGC REQUIREMENT

	Class 3	Class 3
WWR	~65%	~80%
SHGC	0.195	0.16

J4D7 – Floors

Insulation should be applied to conditioned areas, to meet the total system R-value requirements for the floors as listed below:

Building Element	Required Total System R-value	Notes
Floors	R2.0	As per Section J4D7(2), a slab-on-ground that does not have an in-slab heating or cooling system is considered to achieve a Total R-Value of R2.0.