



NCC SECTION J DTS REPORT

## Laundry Tavern – Jordan Springs

LOT 3989 Lakeside Parade & Jubilee Drive, Jordan Springs, NSW 2747

**PREPARED FOR**

FDC  
22-24 Junction Street  
Forest Lodge NSW 2037  
Tel: 02 8117 5000

Ref: SY200413-SER01  
Rev: 3  
Date: 15.07.2020

# NCC Section J DTS Report

## Revision Schedule

Date	Revision	Issue	Prepared By	Approved By
26.05.2020	1	For Review	B. Park	E. Tan
30.06.2020	2	DA Issue	B. Park	E. Tan
15.07.2020	3	Revised Issue for DA	B. Park	E. Tan

### Northrop Consulting Engineers Pty Ltd

ACN 064 775 088 | ABN 81 094 433 100

Level 11, 345 George Street, Sydney NSW 2000

02 9241 4188 | [sydney@northrop.com.au](mailto:sydney@northrop.com.au) | [www.northrop.com.au](http://www.northrop.com.au)

© 2020 Northrop Consulting Engineers Pty Ltd. All rights reserved.

This document has been prepared on behalf of and for the exclusive use of FDC and is subject to and issued in accordance with the agreement between FDC and Northrop Consulting Engineers. Northrop Consulting Engineers accepts no liability or responsibility whatsoever for it in respect of any use of or reliance upon this document by any third party. Copying this document without the permission of FDC or Northrop Consulting Engineers is not permitted.

## Table of Contents

1. Summary.....	4
2. Report Limitations .....	5
3. DTS Assessment .....	6
3.1 Referenced Drawings.....	6
3.2 Building Description .....	6
3.3 J1 Building Fabric.....	7
Appendix A – Glazing Calculator .....	8
Appendix B – Building Thermal Boundary Markup .....	9
Ground Floor .....	9
Appendix C – Total System R-Value Calculation for Solid Ground Floors .....	10

# 1. Summary

Northrop Consulting Engineers have been engaged to conduct a Deemed-to-Satisfy (DTS) assessment of the building fabric in accordance with Section J of the National Construction Code (NCC) 2019. This summary report provides minimum compliance requirements for the building fabric as outlined in Part J1 of the code.

The table below outlines compliance requirements for J1.0 to J1.6:

**Table 1: Insulation and Glazing System requirements for the building fabric**

Building Fabrics	Required Minimum Thermal Performance
Roof	R3.2; Solar Absorptance (SA) ≤ 0.45
External Walls	R1.0
Partition Walls to Non-Conditioned Space	R1.0
Floors (Slab-on-ground, exposed & semi-exposed)	R2.0
All Windows	U-value: 5.2 SHGC: 0.31

The proposed compliant fabric solution must take the impacts of thermal bridging into account. Should the requirements listed above be deemed unfeasible, it is recommended that the project team should proceed with a JV3 performance-based solution. This approach is more flexible as it offers a holistic assessment of the building performance, rather than individual components.

## 2. Report Limitations

Due care and skill have been exercised in the preparation of this report.

This report is intended as a guide to illustrate the potential NCC section J compliance methods to be considered in the development. It should be read in conjunction with the other design documentation and specific applications may vary during the development of the project.

No responsibility or liability to any third party is accepted for any loss or damage arising out of the use of this report by any third party. Any third party wishing to act upon any material contained in this report should first contact Northrop for detailed advice, which will take into account that party's particular requirements.

### 3. DTS Assessment

#### 3.1 Referenced Drawings

Drawing No.	Rev	Date	Title
DA000	1	15/07/2020	Cover Sheet
DA010	1	15/07/2020	Site Plan
DA050	1	15/07/2020	Roof Plan
DA100	1	15/07/2020	Ground Floor Plan
DA200	1	15/07/2020	Elevations
DA300	1	15/07/2020	Sections

#### 3.2 Building Description

The Laundry Tavern Jordan Springs is classified as Class 6 and 9b – retail and assembly building. For the purposes of Section J – Part J1 Class 6 and 9b was considered for the assessment of the building fabric encapsulating conditioned spaces throughout the development. This proposed development is located in LOT 3989, Lakeside Parade & Jubilee Drive, Jordan Springs, NSW 2747, which belongs to climate zone 6 as shown in Figure 1 below.

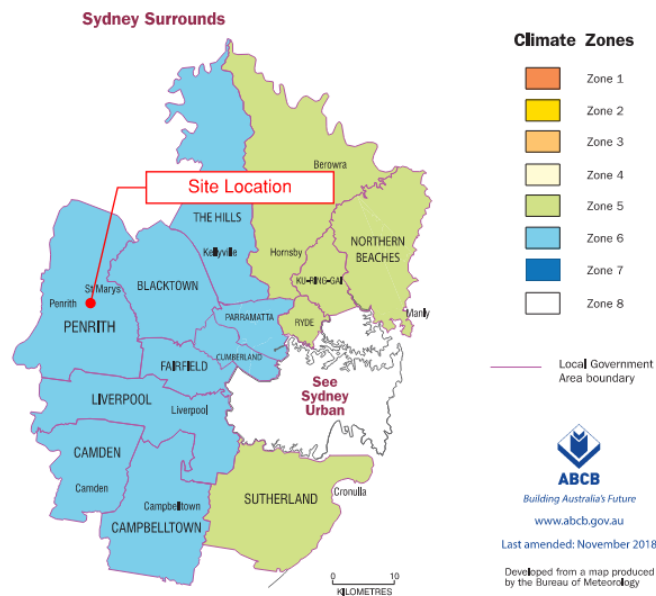


Figure 1 - Climate Zone Map of Jordan Springs Site

### 3.3 J1 Building Fabric

Building fabric thermal insulation requirements apply to the building fabric enclosing habitable and conditioned spaces forming part of the thermal boundary of the site (building envelope). This is demonstrated in the thermal boundary markup attached in Appendix B of this report.

Below entails the thermal performance requirements of each components of the building fabric applicable to Laundry Tavern Jordan Springs development, which are assessed against Parts J1.3 to J1.6.

#### J1.3 Roof and Ceiling Construction

Roof or ceiling construction must achieve a total system R-Value of R3.2 with solar absorptance value of no more than 0.45.

#### J1.5 Walls and Glazing

The total system U-Value the wall-glazing construction of Laundry Tavern Jordan Springs must not be greater than U2.0 as per J1.5 clause (a)(i).

The table below outlines the thermal performance requirements of the external walls, partition walls and the glazing system required to achieve the specified maximum of U2.0.

**Table 1 - Required Code Compliant Thermal Performance of the Wall-Glazing System**

Wall-Glazing Component	Required Thermal Performance
External Wall	R1.0 (See Note Below)
Partition Wall	R1.0 (See Note Below)
All Windows	U-Value: 5.2 SHGC: 0.31

**Note:** The total system R-Value of the external and partition walls reflect thermal performances inclusive of the thermal bridging effect caused by building support structures. As such the build-up must achieve the stipulated R-Values with the effects of thermal bridging taken into account. External walls should include a non-combustible thermal break within metal elements and ensure that the noted performance can be achievable.

#### J1.6 Floors

All floors, including slab-on-ground and floors to non-conditioned spaces must achieve a total system R-Value of 2.0. For Laundry Tavern Jordan Springs development, no additional ground floor insulation is required as sufficient thermal performance is achieved by the solid ground floor and the soil. (See Appendix C – Total System R-Value Calculation for Solid Ground Floors)

# Appendix A – Glazing Calculator

NCC 2019 Wall-Glazing Calculator v3.0										Building Check-Values						
Wall and glazing energy efficiency in Class 2-9 buildings - Method 2 of Specification J1.5a, NCC 2019										Area (m <sup>2</sup> )						
Building name and description				Classification		Climate Zone				Walls	Glazing	Sub-total	Display	Glazing Percentage (non display)		
Laundry Tavern - Jordan Springs				Other		6				North	86.2	88.5	174.7	0.0	51%	
Calculated Area-Weighted U-Value				Calculated Representative Air-Conditioning Energy Value		Calculated Representative Air-Conditioning Energy Value				East	76.0	10.3	86.3	0.0	13%	
1.99				55.1		55.1				South	78.0	2.3	80.3	0.0	0%	
Allowable Area-Weighted U-Value				Allowable Representative Air-Conditioning Energy Value		Allowable Representative Air-Conditioning Energy Value				West	115.7	28.2	143.9	0.0	15%	
2.00				53.5		53.5				Internal Partition	85.0	0.0	85.0	0.0	0%	
Building total U-Value allowance met				Building total SHGC allowance met		Building total SHGC allowance met				Total	452.1	138.0	590.1	0.0	23%	
100%				100%		100%				Element Limits						
Check Values				Wall Element Requirements		Display Glazing Element Requirements				Wall U-Value*						
1.99				Met		0				1.00						
										Display Glazing U-Value*						
										2.0						
										Display Glazing Solar Admittance						
										0.01						
										The wall u-value limit will update based on building class and climate %						
Element Description										Element Check-Values						
ID	Description (optional)	Element Type	Facing Sector	Area (m <sup>2</sup> )	U-Value	U-Value Element share of Allowance used	SHGC	Glazing Height (m)	Shading Height (m)	Shading Projection (m)	SHGC Element share of Allowance used	Bounded G/H	Bounded P/H	Shading Factor	Solar Admittance	AC Energy Use
1	North External	Wall	North	94.10	1.00	0%	0.25	3.2	3.2	0.97	30%	0	0	0.72	0.2232	15.7544653
2	East External	Wall	East	74.20	1.00	0%	0.25	3	3	1.01	18%	0	0	0.72	0.2232	9.76462503
3	South External	Wall	South	78.43	1.00	0%	0.25	3	3	1.01	18%	0	0	0.72	0.2232	9.76462503
4	West External	Wall	West	118.74	1.00	0%	0.25	3	3	1.01	18%	0	0	0.72	0.2232	9.76462503
5	Internal Partition	Wall	Internal	86.55	1.00	0%	0.25	3	3	1.01	18%	0	0	0.72	0.2232	9.76462503
6												0	0	1	0	0
7	North Shading 1	Glazing	North	33.30	5.20	15%	0.21	3.2	3.2	0.97	30%	0	0.3	0.72	0.2232	15.7544653
8	North Shading 2	Glazing	North	20.64	5.20	9%	0.21	3	3	1.01	18%	0	0.3	0.72	0.2232	9.76462503
9	North Shading 3	Glazing	North	12.90	5.20	4%	0.21	3.85	3.85	1.01	18%	0	0.2	0.8	0.248	6.7809894
10	North No Shading	Glazing	North	31.63	5.20	14%	0.21				30%	0	0	1	0.21	20.78339
11												0	0	1	0	0
12	East Shading 1	Glazing	East	3.48	5.20	2%	0.21	3.5	3.5	3	0%	0	0.8	0.41	0.1271	0
13	East Shading 2	Glazing	East	7.20	5.20	3%	0.21	3.5	3.5	10.2	0%	0	2.9	0.35	0.1085	0
14												0	0	1	0	0
15	South Shading	Glazing	South	2.70	5.20	1%	0.21	0.9	0.9	0.3	0%	0	0.3	0.82	0.2562	0
16												0	0	1	0	0
17	West Shading	Glazing	West	7.02	5.20	3%	0.21	2.7	2.7	0.3	0%	0	0.1	0.9	0.279	0
18	West No Shading	Glazing	West	99.70	5.20	9%	0.21				0%	0	0	1	0.31	0
19												0	0	1	0	0
20												0	0	1	0	0
21												0	0	1	0	0
22												0	0	1	0	0
23												0	0	1	0	0
24												0	0	1	0	0
25												0	0	1	0	0
26												0	0	1	0	0
27												0	0	1	0	0
28												0	0	1	0	0
29												0	0	1	0	0
30												0	0	1	0	0
31												0	0	1	0	0
32												0	0	1	0	0
33												0	0	1	0	0
34												0	0	1	0	0
35												0	0	1	0	0
36												0	0	1	0	0
37												0	0	1	0	0
38												0	0	1	0	0
39												0	0	1	0	0
40												0	0	1	0	0
41												0	0	1	0	0
42												0	0	1	0	0
43												0	0	1	0	0
44												0	0	1	0	0
45												0	0	1	0	0
46												0	0	1	0	0
47												0	0	1	0	0
48												0	0	1	0	0
49												0	0	1	0	0
50												0	0	1	0	0

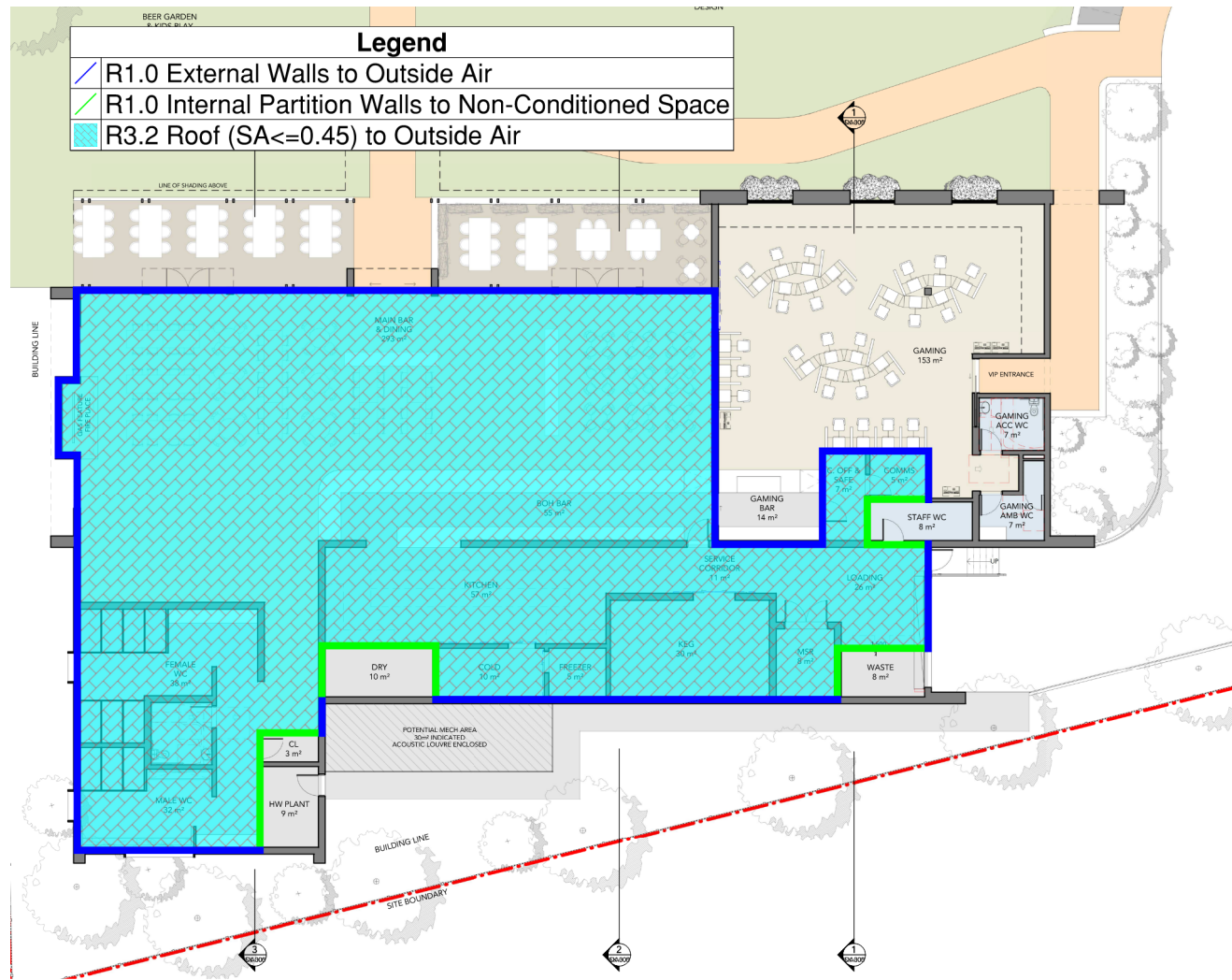
Disclaimer:  
 This calculator has been developed to assist in developing a better understanding of the glazing energy efficiency parameters of NCC 2019. While the author believes that this calculator, if used correctly, is likely to produce accurate results, it is provided "as is" and without any representation or warranty of any kind, including that it is fit for any purpose or of merchantable quality, or fit for any intended or at all. Your use of the calculator is entirely at your own risk and the author accepts no liability of any kind.

Made by Alex Zeller  
[alex.zeller@northrop.com](mailto:alex.zeller@northrop.com) | [www.northrop.com](http://www.northrop.com)



# Appendix B – Building Thermal Boundary Markup

## Ground Floor



## Appendix C – Total System R-Value Calculation for Solid Ground Floors

Parameter	Value
Conditioned Floor Perimeter 'P <sub>f</sub> '	107.71m
Conditioned Floor Area 'A <sub>f</sub> '	608.38m <sup>2</sup>
Wall Thickness 'd <sub>w</sub> '	0.3m
Soil Type in Contact with Floor	Silt
Soil Thermal Conductivity	1.5W/m.K
Floor Insulation (R <sub>f</sub> = 0 if none) 'R <sub>f</sub> '	No Additional Insulation Assumed
Perimeter to Area Ratio 'P <sub>f</sub> /A <sub>f</sub> '	0.18
Total Equivalent Thickness 'd <sub>ef</sub> '	0.6m
Characteristic Dimension 'B''	11.3
<b>Total System R-Value of Ground Floor</b>	<b>R2.84</b>

**Note:** The total system R-Value calculation of the solid ground floor was carried out in line with the equations and methodologies outlined in Section 3.5 of CIBSE Guide A. Where a referenced document was unclear or ambiguous, the calculation took a conservative approach as not to overstate the result.