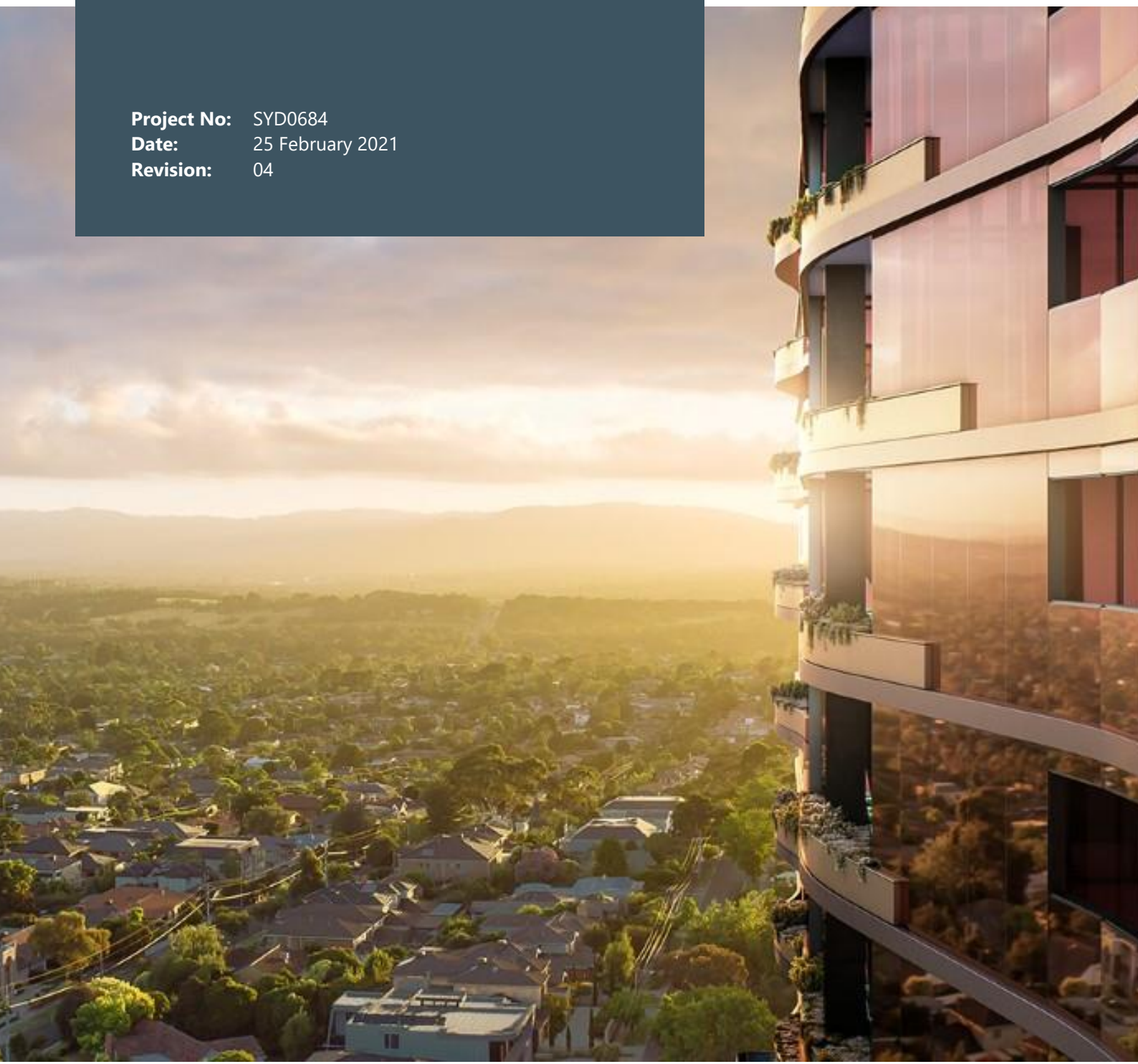
# Eden Gardens

## NCC 2019 Section J Report

Prepared for Development Application

ADP Consulting : Engineering

**Project No:** SYD0684
**Date:** 25 February 2021
**Revision:** 04



| | |
|---|---|
| **Project:** | Eden Gardens |
| **Location:** | 307 Lane Cove Road,<br>Macquarie Park, NSW<br>2113 |
| **Prepared by:** | ADP Consulting Pty Ltd<br>Level 3, 8 Spring Street<br>Sydney NSW 2000 |
| **Project No:** | SYD0684 |
| **Revision:** | 04 |
| **Date:** | 25 February 2021 |

| Rev | Date | Comment | Author | Technical Review | Authorization |
|---|---|---|---|---|---|
| 01 | 12/11/2020 | Draft Issue | KS | ZN | RR |
| 02 | 17/02/2021 | DA issue | KS | ZN | RR |
| 03 | 24/02/2021 | DA Issue – updated to comments | KS | ZN | RR |
| 04 | 25/02/2021 | DA Issue – minor updates | KS | ZN | RR |
| | | | | | |
| | | | | | |
| | | | | | |

| **Project Team** | |
|---|---|
| **Client / Principal** | Thunderbirds Are Go Pty Ltd atf the Gardeners Trust |
| **Project manager** | Pier Property Corporation |
| **Architect** | DKO Architects |

# Contents

# Executive Summary

ADP Consulting has been engaged by Thunderbirds Are Go Pty Ltd to undertake the following Section J assessment for the proposed buildings to be located 307 Lane Cove Road, Macquarie Park, NSW 2113.

This report has been prepared to support the DA submission as a legislative requirement in accordance with NCC Section J 2019 provisions and has been provided to advise on the minimum Part J1 & J3 (Building Fabric) requirements for the proposed new and existing buildings within the Eden Gardens proposed site boundary.

This includes the development of a new commercial office tower, restaurant, and garden centre with additional extensions proposed to the two existing buildings on site, creating new spaces for a neighbourhood shops and function centre.

## Assessment Outcomes

### Building Fabric Systems

Based on a review of the proposed Architectural drawings and the calculations carried out as part of this assessment the following minimum Part J1 performance requirements have been identified.

The following minimum Part J1.5 performance requirements for external walls, roofs and ceilings have been identified for the Restaurant, Neighbourhood Shops, and Function Centre (Building B, C, and D respectively).

Total system insulation is to be provided as follows:

| **Envelope Construction** | **Total System R-Value ($m^2K/W$)** | | |
|---|---|---|---|
| Building Type | Building B Restaurant | Building C Neighbourhood Shops | Building D Function Centre |
| **J1.5 (i)** Total System external wall construction (wall area <80%) | ≥ 1.0 | ≥ 1.0 | ≥ 1.0 |
| **J1.5 (ii)** Total System external wall construction (wall area >80%) | NA | NA | ≥ 1.4 |
| **J1.5 (iii)** Internal Wall insulation – wall separating conditioned and unconditioned spaces | ≥ 1.4 | ≥ 1.4 | ≥ 1.4 |

| **Envelope Construction** | **Total System R-Value ($m^2K/W$)** |
|---|---|
| **J1.6** All Floor constructions<br>concrete slab on ground and floors above an unconditioned zone | ≥ 2.00 (downwards heat flow) |

### Glazing Systems

The following minimum Part J1.5 performance requirements for external glazing has been identified for the following orientations of the Restaurant, Neighbourhood Shops, and Function Centre (Building B, C, and D respectively).

#### Building B – Restaurant

| Glazing – Frame Construction (Uniform solution) | Façade orientation | Total System U-Value ($W/m^2K$) | Total System SHGC |
|---|---|---|---|
| Ground floor | North | ≤ 2.4 | ≤ 0.34 |
| Ground floor | East | ≤ 2.4 | ≤ 0.34 |
| Ground floor | South | ≤ 2.4 | ≤ 0.34 |
| Ground floor | West | ≤ 2.4 | ≤ 0.34 |

#### Building C - Neighbourhood Shops

| Glazing – Frame Construction (Uniform solution) | Façade orientation | Total System U-Value ($W/m^2K$) | Total System SHGC |
|---|---|---|---|
| Ground floor | North | ≤ 2.20 | ≤ 0.18 |
| Ground floor | East | ≤ 2.20 | ≤ 0.18 |
| Ground floor | South | ≤ 2.20 | ≤ 0.18 |
| Ground floor | West | ≤ 2.20 | ≤ 0.18 |

#### Building D - Function Centre

| Glazing – Frame Construction (Non-uniform solution) | Façade orientation | Total System U-Value ($W/m^2K$) | Total System SHGC |
|---|---|---|---|
| Lower Ground floor | North | N/A | N/A |
| Lower Ground floor | East | ≤ 2.14 | ≤ 0.19 |
| Lower Ground floor | South | ≤ 5.80 | ≤ 0.81 |
| Lower Ground floor | West | ≤ 3.25 | ≤ 0.36 |
| Ground floor | North | ≤ 2.95 | ≤ 0.37 |
| Ground floor | East | ≤ 2.18 | ≤ 0.16 |
| Ground floor | South | ≤ 5.80 | ≤ 0.81 |
| Ground floor | West | N/A | N/A |

***Note**: the above window frame construction values are AFRC total system values and include both the glazing and frame*

**Please note the following**:

- It is anticipated that will be no air conditioning provided for Building E: Garden Centre and as such this building is not required to meet the minimum Section J provisions for energy efficiency. This Building is not included within the scope of this assessment.
- Building A: Commercial Office Tower will demonstrate compliance with Section J though the alternative JV3 Verification Methodology. A separate energy modelling assessment and report has been provided. Please refer to the **ADP SYD0684_Eden Gardens JV3 Modelling Report_Rev04** Report for compliance.
- It assumed that all other NCC Section J requirements (J5 to J8) will be designed to meet the minimum Deem-to-Satisfy (DTS) requirements. Compliance is subject to confirmation from the D&C contractor that all as-installed details pertaining to the thermal performance are within the performance requirements as detailed in this report. It is the responsibility of the D&C contractor, architect and building surveyor to ensure all final construction selections are compliant
- Any changes to the architecture plans may result in a change to the wall-glazing performance specifications detailed in this report

# 1. Introduction

## 1.1 Project Background

ADP Consulting has been engaged by Thunderbirds Are Go Pty Ltd to undertake the following Section J compliance assessment detailing the minimum building fabric requirements for the proposed buildings to be located at 307 Lane Cove Road, Macquarie Park, NSW 2113

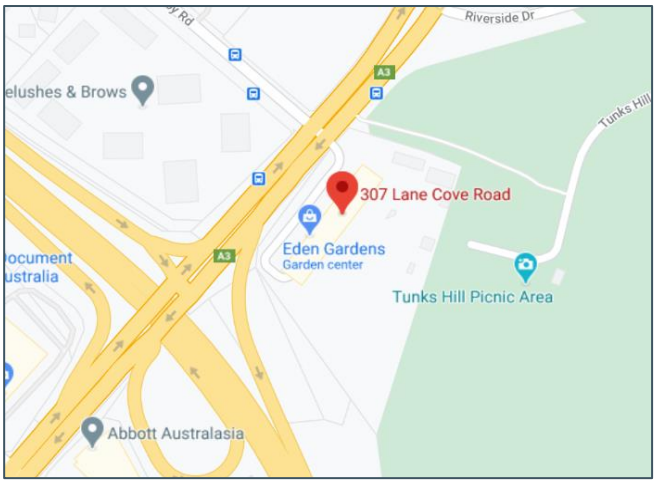
The purpose of this report is to demonstrate that all building fabric construction proposed for new buildings on site (including any alterations and additions to the existing buildings) meet the minimum Section compliance requirements outlined in the NCC 2019 for Parts J1 (Building Fabric) & J3 (Building Sealing) provisions.

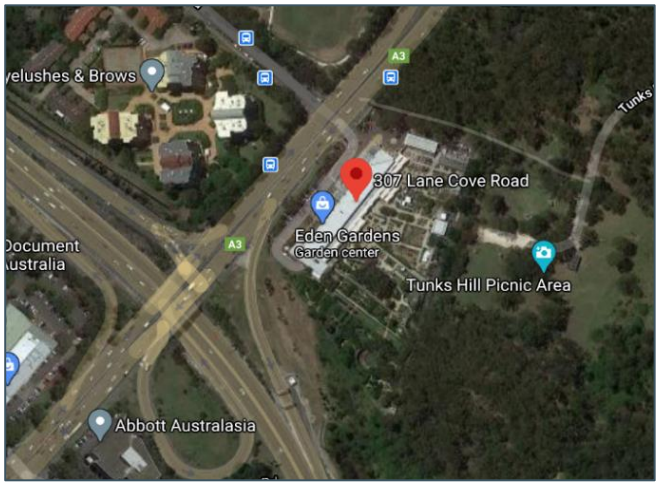
## 1.2 Site Context

The Eden Garden development will comprise of 5 proposed building consisting of a new commercial office tower, restaurant, and garden centre with additional extensions proposed to the two existing buildings, creating new spaces for a neighbourhood Shops and function centre.

The site is located close to Macquarie Park within the City of Ryde Council boundaries and is located between the Lane Cove Road to the northwest and the Lane Cove National Park stretching out to the southeast.

Figure 1 Proposed Development Site Plan



## 1.3 Assessment Assumptions and References

This Section J report has been prepared based on a review of the following reference documents and standards:

- Section J provisions of the NCC 2019 Building (BCA) Code of Australia
- 3D IFC Model issued on 05/02/2021
- DA Drawings provided by DKO Architects issued 13/02/2021
- Amended Drawings for Function Centre provided by DKO Architects issued 16/02/2021

## 1.4 Scope of Assessment

The following new and existing buildings are to be located within the Eden Garden site boundary have been included in the scope of this Section J compliance assessment:

Table 1 BUILDINGS UNDER ASSESSMENT

| Building Type | Development Type | Building Space Classification | Assessment Methodology |
|---|---|---|---|
| Building A: Commercial Office Tower | New Building | Class 5 (Office) | JV3 Alternative Verification |
| Building B: Restaurant | New Building | Class 6 (Retail) | DTS Calculator |
| Building C: Neighbourhood Shops | Existing Building Additions & Alterations | Class 6 (Retail) | DTS Calculator |
| Building D: Function Centre | Existing Building Additions & Alterations | Class 9b (Assembly building | DTS Calculator |
| *Building E: Eden Gardens/Carpark & BOH services, Horticulture, Retail, and Garden centre* | *New Building* | *Class 6 (Retail), Class 7b (loading dock and storage), Class 7a (Carpark), Class 9b (assembly area)* | *No Section J Requirement* |

**Please Note:**

- It is anticipated that will be no air conditioning provided for Building E: Eden Gardens/Garden Centre and as such this building is not required to meet the minimum Section J provisions for energy efficiency. This Building is not included within the scope of this assessment.
- Building A: Commercial Office Tower will demonstrate compliance with Section J though the alternative JV3 Verification Methodology. A separate energy modelling assessment and report has been provided. Please refer to the **ADP SYD0684_Eden Gardens JV3 Modelling Report_Rev04** for compliance.

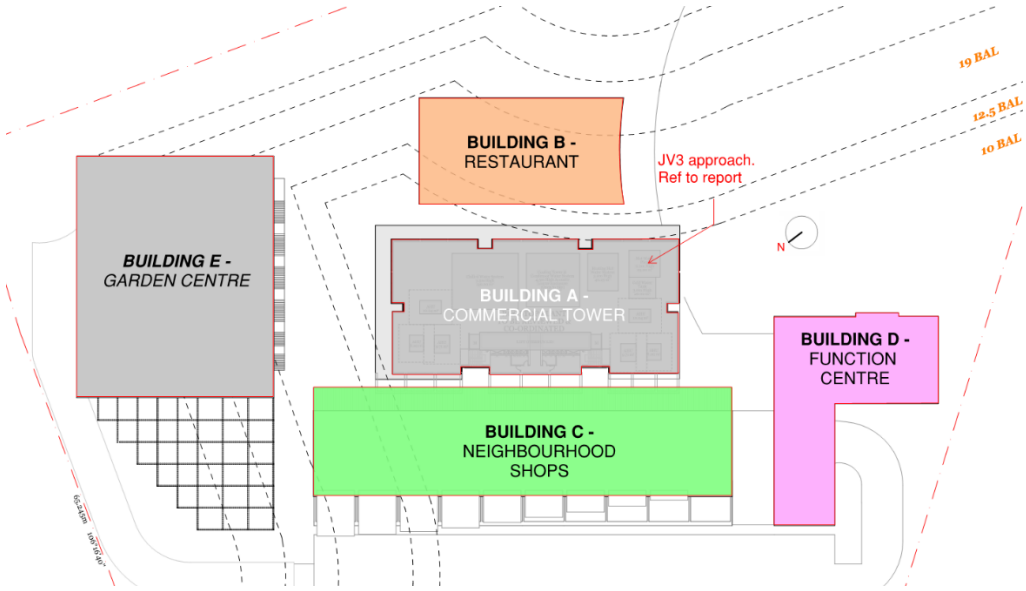



Figure 1 SITE PLAN MARK-UP

# 2. Section J DTS Compliance

## 2.1 Overview

Section J of the NCC was introduced to set minimum energy efficiency measures for the various classifications of building types while still maintaining acceptable internal environmental conditions for occupants. The measures were designed to reduce the use of artificial heating and cooling, improve the energy performance of lighting, conditioning, and ventilation, and reduce energy loss through air leakage. These reductions are achieved by setting specific prescriptive design criteria for the building fabric (section J1 & J3) and the building services (section J5 to J8). Compliance is achieved when these minimum prescriptive requirements are met.

Where the minimum performance requirements cannot be met through the projects design intent an alternative JV3 Verification methodology can used, demonstrating that the estimated energy consumption of the proposed design is less than that of a DTS solution.

## 2.2 Terminology

### 2.2.1 Thermal Performance of a Wall-Glazing Construction

When determining an appropriate wall-glazing construction for a building project, the building's thermal envelope will be required to comply with certain performance values for energy efficiency and occupant thermal comfort. The two heat transfer mechanisms that determine the performance of a wall-glazing construction include conduction and solar heat gain. In order to comply with the Section J provisions, the wall-glazing system must achieve a specified U-value and Solar Heat Gain coefficient (SHGC). It is important to note, that these values are to be read as "total system values" and are inclusive of both the frame and glazing1.

[1] Thermal Performance values are available for all aluminium window and door products as part of their WERS rating (http://www.wers.net/wers-home).

### 2.2.2 U-Value

U-value is the measure of a wall-glazing constructions ability to conduct heat. The lower the U-value, the greater the insulation properties of the construction. In all cases regardless of climate zone, a façade construction with high performance insulation properties will assist with improving a building's occupant thermal comfort and energy efficiency. It is also to be noted that the conductive U-value is equal to the inverse of insulative R-value (U = 1/R).

### 2.2.3 R-Value

R-value is the measure of a wall-glazing constructions resistance to heat flow. The higher the R-value, the higher the level of insulation and thermal performance. It is also to be noted that the insulative R-value is equal to the inverse of the conductive U-value (R = 1/U).

### 2.2.4 Solar Heat Gain Coefficient (SHGC)

> Solar Heat Gain Coefficient (SHGC) is the fraction of incident solar radiation admitted through a window. In a warm climate, windows which have a low SHGC allow less solar radiation to pass through. This reduces the buildings heat load and need for active cooling[2].

[2] Further information on glazing performance can be found at (https://www.yourhome.gov.au/passive-design/glazing

# 3. Part J1 Building Fabric

## 3.1 Responsible Designer

For the purposes of Part J1 – Building Fabric Compliance, the responsible designers are identified as the project Architect and Façade Engineer (where applicable). The minimum insulation and glazing recommendations outlined in this report must be addressed for construction.

It assumed that all other NCC Section J requirements (J5 to J8) will be designed to meet the minimum Deem-to-Satisfy (DTS) requirements and will be the responsibility of the D&C contractor, services sub-contractors and building surveyor to ensure the final construction incorporates a compliant solution.

## 3.2 Summary of Requirements

Part J1 establishes minimum construction and performance provisions required for the projects specific climate zone and building classification. This will apply to the following Part J1 criteria:

- J1.2 Thermal construction installations
- J1.3 Roof and ceiling construction
- J1.4 Roof lights
- J1.5 Combined wall & glazing system
- J1.6 Floor constructions

Insulation and glazing performance requirements have been provided to meet the minimum compliance measures for the above areas.

## 3.3 J1.1 Application of Part

Section J 2019, Part J1 is applicable to the scope of the design and construction works identified for the project. For the purposes of this project the proposed works consist of the design and development of the following proposed buildings:

- Building B Restaurant (New Building)
- Building C Neighbourhood Shops (Alterations & Additions)
- Building D Function Centre (Alterations & Additions)

Please note:

- Building E: Garden Centre has no minimum Section J requirements and as such does not form part of the scope of assessment.
- Building A: Commercial Office Tower has been assessed using the JV3 Alternative Verification Modelling Methodology. Please refer to the **ADP SYD0684_Eden Gardens JV3 Modelling_Rev04 Report**
- The following section of this report is intended to provide an analysis of the building elements forming the envelope of the development as required under Part J1 and intends to demonstrate compliance using the NCC 2019 Wall-Glazing calculator shown in (Figure 2).

## 3.4 J1.2 Thermal Construction Installations

All insulation for all buildings installed for the project must comply with section J1.2 of the BCA. All Installed insulation must adhere to the following requirements:

> Form a continuous barrier with ceilings, walls bulkheads, floors or similar that inherently contribute to the building's thermal envelope

> Abut or overlaps all adjoining insulation other than insulation located at supporting members such as studs, noggings, furring channels or similar

> It is important that the insulation provided must not hinder the safe or effective operation of any service or fittings

> All insulation must comply with AS4859.1.

> Specific installation requirements further referring to bulk or reflective insulation are outlined in Part J1.2 of the NCC 2019 Section J provisions.

## 3.5 J1.3 Roof & Ceiling Constructions

Roofs or ceiling constructions for all buildings must achieve a minimum total R-value greater than or equal to R3.7 for a downward direction of heat flow. The solar absorptance of the upper surface of the roof must not be more than 0.45.

## 3.6 J1.4 Roof lights

No roof lights serving a conditioned space have been identified on the architectural drawings provided.

## 3.7 J1.5 Wall-Glazing Construction System

Part J1.5 establishes the minimum external wall and window construction performance required for the proposed building. This is assessed against the projects location and climate as per the Australian Building Codes Board (ABCB) Climate Zone Map (Figure 3).

> The development is situated in climate zone 5 – warm temperate.

> Compliance for each wall orientation is identified as the Total System U-Value of the wall-glazing construction and is determined through the use of the NCC Section J 2019 Wall-Glazing Calculator (Figure 2).

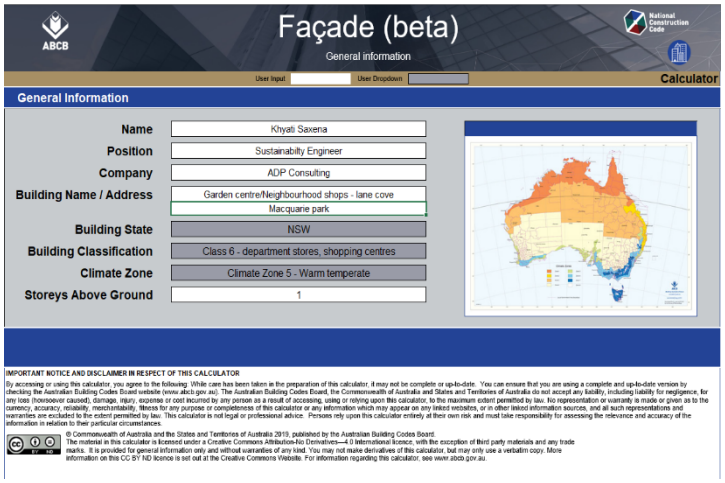



Figure 2 NCC 2019 Wall-Glazing Calculator

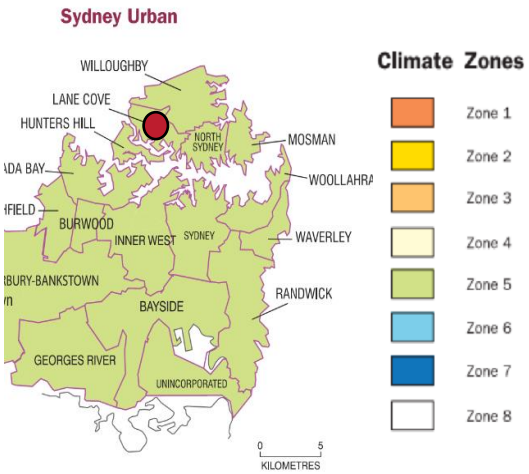



Figure 3 ABCB Climate Zone

### 3.7.1 Part J1.5- Wall Systems

> Wall Insulation performance has been assessed as per the Section J wall-glazing calculator. The following minimum Part J1.5 performance requirements for external walls have been identified for the Restaurant, Neighbourhood Shops, and Function Centre (Building B, C, and D respectively).

Please refer to Appendix B for the external Façade insulation mark up,

Total system insulation is to be provided as follows:

| **Envelope Construction** | **Total System R-Value ($m^2K/W$)** | | |
|---|---|---|---|
| Building Type | Building B Restaurant | Building C Neighbourhood Shops | Building D Function Centre |
| **J1.5 (i)** Total System external wall construction (wall area <80%) | ≥ 1.0 | ≥ 1.0 | ≥ 1.0 |
| **J1.5 (ii)** Total System external wall construction (wall area >80%) | NA | NA | ≥ 1.4 |
| **J1.5 (iii)** Internal Wall insulation – wall separating conditioned and unconditioned spaces | ≥ 1.4 | ≥ 1.4 | ≥ 1.4 |

***Note**: The insulation value above are performance values for the total wall system, inclusive of any concrete slabs, air cavities, wall studs or cladding proposed.*

### 3.7.2 Part J1.5- Glazing Systems

> Glazing performance has been assessed as per the Section J wall-glazing calculator. The following minimum Part J1.5 performance requirements for external glazing has been identified for the following orientations of the Restaurant, Neighbourhood Shops, and Function Centre (Building B, C, and D respectively).

Please refer to Appendix A for the completed NCC 2019 Section J Wall-Glazing Calculators

#### Building B – Restaurant

| **Glazing – Frame Construction (Uniform solution)** | **Façade orientation** | **Total System U-Value ($W/m^2K$)** | **Total System SHGC** |
|---|---|---|---|
| Ground floor | North | ≤ 2.4 | ≤ 0.34 |
| Ground floor | East | ≤ 2.4 | ≤ 0.34 |
| Ground floor | South | ≤ 2.4 | ≤ 0.34 |
| Ground floor | West | ≤ 2.4 | ≤ 0.34 |

### Building C - Neighbourhood Shops

| Glazing – Frame Construction (Uniform solution) | Façade orientation | Total System U-Value ($W/m^2K$) | Total System SHGC |
|---|---|---|---|
| Ground floor | North | ≤ 2.20 | ≤ 0.18 |
| Ground floor | East | ≤ 2.20 | ≤ 0.18 |
| Ground floor | South | ≤ 2.20 | ≤ 0.18 |
| Ground floor | West | ≤ 2.20 | ≤ 0.18 |

### Building D - Function Centre

| Glazing – Frame Construction (Non-uniform solution) | Façade orientation | Total System U-Value ($W/m^2K$) | Total System SHGC |
|---|---|---|---|
| Lower Ground floor | North | N/A | N/A |
| Lower Ground floor | East | ≤ 2.14 | ≤ 0.19 |
| Lower Ground floor | South | ≤ 5.80 | ≤ 0.81 |
| Lower Ground floor | West | ≤ 3.25 | ≤ 0.36 |
| Ground floor | North | ≤ 2.95 | ≤ 0.37 |
| Ground floor | East | ≤ 2.18 | ≤ 0.16 |
| Ground floor | South | ≤ 5.80 | ≤ 0.81 |
| Ground floor | West | N/A | N/A |

***Note**: the above window frame construction values provided for Buildings C, D, & E are AFRC total system values and include both the glazing and frame*

### Solar Admittance

The maximum solar admittance for the above solution for each building has been calculated as a percentage of the incident solar irradiance allowed for the wall-glazing construction of each orientation. Part J1.5b stipulates that the solar admittance for each façade aspect must not exceed a maximum value of 0.13 for a Class 5 and Class 6 building and 0.10 for Class 9b buildings.

## 3.8 J1.6 Floors

Part J1.6 establishes the minimum floor construction performances required for a concrete slab on ground and floor spaces above an unconditioned zone.

> The following minimum Part J1.6 performance requirements for floor constructions have been identified for the Restaurant, Neighbourhood Shops, and Function Centre (Building B, C, and D respectively).

Please refer to Appendix B for the floor construction insulation mark up.

Total system insulation is to be provided as follows:

| Envelope Construction | Total System R-Value ($m^2K/W$) |
|---|---|
| **J1.6** All Floor constructions<br>concrete slab on ground and floors above an unconditioned zone | ≥ 2.00 (downwards heat flow) |

Please note where insulation is to be provide to concrete slab on ground, the following requirements are to be met. Insulation provided must be:

> Water resistant

> Form a continuous barrier from the adjacent finished ground level to a depth of no less then 300mm or be installed for the full length of the concrete slab on ground's vertical edge.

# 4. Part J3 Building Sealing

## 4.1 Building Fabric Sealing

> The minimum building sealing requirements for all proposed works for each building must adhere to the following requirements:

> Seals must be fitted to each edge of a door, operable window, 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.

> 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 when forming part of the building envelope
- enclosed by internal lining systems that are close fitting at ceiling, wall, and floor junctions; or:
- sealed at junctions and penetrations with close fitting architrave, skirting or cornice; or expanding foam, rubber compressible strip, caulking or the like.

# 5. Conclusions & Recommendations

This assessment has been carried out to demonstrate that where relevant to Section J the proposed buildings comply with the energy efficiency requirements specified within Section J of the NCC 2019.

It is evident from the above assessment that the proposed façade can meet the minimum provisions for Parts J1 & J3 for all levels.

Should the project wish to consider a different glazing system, a JV3 energy modelling solution can be undertaken to maintain compliance.

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# Appendix A
# DTS Façade-Glazing Calculators

# Eden Gardens Lane Cove - Building B - Restaurant
# Uniform Solution

ABCB

## Façade
Report

National Construction Code

Calculator

### Project Summary

**Date**
28/10/2020

**Name**
Khyati Saxena

**Company**
ADP Consulting

**Position**
Sustainabilty Engineer

**Building Name / Address**
Restaurant - lane cove
Macquarie park

**Building State**
NSW

**Climate Zone**
Climate Zone 5 - Warm temperate

**Building Classification**
Class 6 - restaurants, cafes, bars

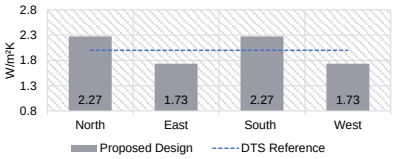
**Storeys Above Ground**
1

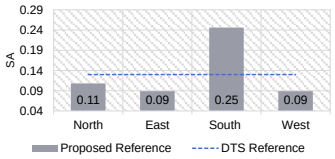
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

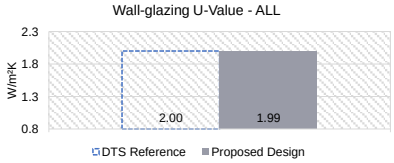
| | Method 1 | | | | Method 2 |
|---|---|---|---|---|---|
| | North | East | South | West | All |
| Wall-glazing U-Value (W/m².K | 2.27 | 1.73 | 2.27 | 1.73 | 1.99 |
| Solar Admittance | 0.11 | 0.09 | 0.25 | 0.09 | |
| AC Energy | | | | | 69 |

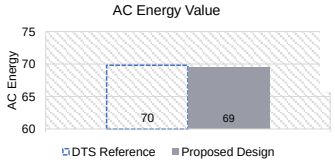
**Method 1**




**Method 2**




Compliance Pathway

### Project Details

| | North | East | South | West |
|---|---|---|---|---|
| Glazing Area (m²) | 37 | 48 | 114.84 | 48 |
| Glazing to Façade Ratio | 91% | 52% | 91% | 52% |
| Glazing References | North - SH + | East + East - SH + | South + South - SH + | West + West - SH + |
| Glazing System Types | 0 + | 0 + | 0 + | 0 + |
| Glass Types | 0 + | 0 + | 0 + | 0 + |
| Frame Types | 0 + | 0 + | 0 + | 0 + |
| Methodology | AFRC (True module size) | | | |
| Average Glazing U-Value (W/m².K) | 2.40 | 2.40 | 2.40 | 2.40 |
| Average Glazing SHGC | 0.34 | 0.34 | 0.34 | 0.34 |
| Shading Systems | Horizontal | Horizontal | Horizontal | Horizontal |
| Wall Area (m²) | 3.7 | 43.6 | 11.5 | 43.6 |
| Wall Types | Wall + | Wall + | Wall + | Wall + |
| Methodology | NCC Specification J1.5b | | | |
| Wall Construction | Wall <80% + | Wall <80% + | Wall <80% + | Wall <80% + |
| Wall Thickness | 0 + | 0 + | 0 + | 0 |
| Average Wall R-value (m²K/W) | 1.00 | 1.00 | 1.00 | 1.00 |
| Solar Absorptance | 0.6 | 0.6 | 0.6 | 0.6 |

DTS Construction Values

# Eden Gardens Lane Cove - Building C -Neighbourhood Shops
# Uniform Solution

ABCB

Façade

Report

National Construction Code

Calculator

## Project Summary

**Date**
15/02/2021

**Name**
Khyati Saxena

**Company**
ADP Consulting

**Position**
Sustainabilty Engineer

**Building Name / Address**
Garden centre/Neighbourhood shops - lane cove Macquarie park

**Building State**
NSW

**Climate Zone**
Climate Zone 5 - Warm temperate

**Building Classification**
Class 6 - department stores, shopping centres

**Storeys Above Ground**
1

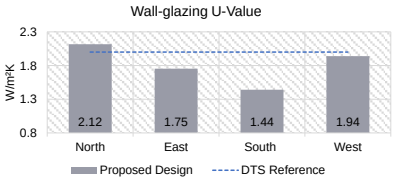
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

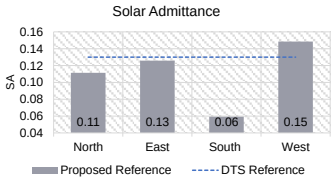
Compliant Solution =
Non-Compliant Solution =

| | Method 1 | | | | Method 2 |
|---|---|---|---|---|---|
| | North | East | South | West | All |
| Wall-glazing U-Value (W/m².K) | 2.12 | 1.75 | 1.44 | 1.94 | 1.87 |
| Solar Admittance | 0.11 | 0.13 | 0.06 | 0.15 | |
| AC Energy | | | | | 125 |

Compliance Pathway

**Method 1**

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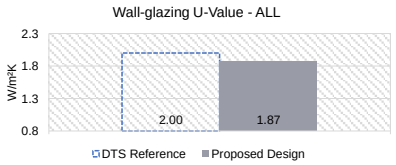
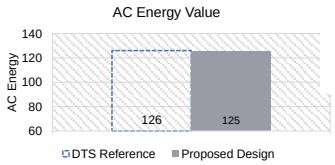



## Project Details

| | North | East | South | West |
|---|---|---|---|---|
| Glazing Area (m²) | 85 | 167.94 | 11.15 | 154.7 |
| Glazing to Façade Ratio | 94% | 70% | 49% | 83% |
| Glazing References | North + | East + | South + South - SH + | West + |
| Glazing System Types | 0 + | 0 + | 0 + | 0 + |
| Glass Types | 0 + | 0 + | 0 + | 0 + |
| Frame Types | 0 + | 0 + | 0 + | 0 + |
| Methodology | AFRC (True module size) | | | |
| Average Glazing U-Value (W/m².K) | 2.20 | 2.20 | 2.20 | 2.20 |
| Average Glazing SHGC | 0.18 | 0.18 | 0.18 | 0.18 |
| Shading Systems | Horizontal | Horizontal | Horizontal | Horizontal |
| Wall Area (m²) | 5.1 | 72.2 | 11.65 | 32.8 |
| Wall Types | Wall + | Wall + | Wall + | Wall + |
| Methodology | NCC Specification J1.5b | | | |
| Wall Construction | Wall >80% + | Wall >80% + | Wall >80% + | Wall >80% + |
| Wall Thickness | 0 + | 0 + | 0 + | 0 |
| Average Wall R-value (m²K/W) | 1.40 | 1.40 | 1.40 | 1.40 |
| Solar Absorptance | 0.6 | 0.6 | 0.6 | 0.6 |

DTS Construction Values

# Eden Gardens Lane Cove - Building D - Function Centre
# Lower Ground Floor - Non-Uniform Solution

ABCB

Façade

Report

National Construction Code

Calculator

## Project Summary

**Date**
12/11/2020

**Name**
Bianca Bulsara

**Company**
ADP Consulting

**Position**
Sustainabilty Engineer

**Building Name / Address**
Function Centre - lane cove Macquarie park

**Building State**

NSW

**Climate Zone**
Climate Zone 5 - Warm temperate

**Building Classification**
Class 9b - public halls, function rooms or the like

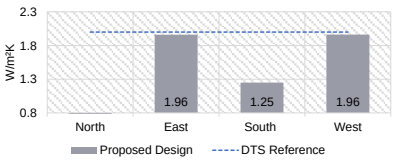
**Storeys Above Ground**
0

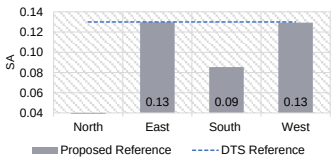
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

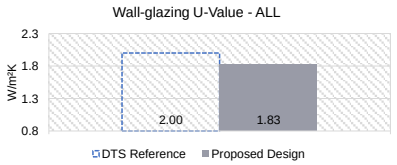
| | Method 1 | | | | Method 2 |
|---|---|---|---|---|---|
| | North | East | South | West | All |
| Wall-glazing U-Value (W/m².K) | | 1.96 | 1.25 | 1.96 | 1.83 |
| Solar Admittance | | 0.13 | 0.09 | 0.13 | |
| AC Energy | | | | | 37 |

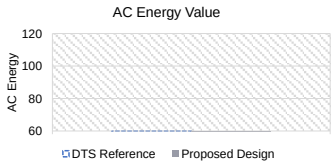
**Method 1**




**Method 2**




## Project Details

| | North | East | South | West |
|---|---|---|---|---|
| Glazing Area (m²) | | 89 | 4.004 | 53.3064 |
| Glazing to Façade Ratio | | 85% | 11% | 90% |
| Glazing References | North + | East + EastDoor + | South + | West + WestDoor + |
| Glazing System Types | | | 0 + | 0 + |
| Glass Types | | 0 + | 0 + | 0 + |
| Frame Types | | 0 + | 0 + | 0 + |
| Methodology | AFRC (True module size) | | | |
| Average Glazing U-Value (W/m².K) | | 2.13 | 5.80 | 2.07 |
| Average Glazing SHGC | | 0.16 | 0.81 | 0.16 |
| Shading Systems | Horizontal | Horizontal | Horizontal | Horizontal |
| Wall Area (m²) | | 15.7065 | 33.956 | 5.7 |
| Wall Types | Wall + | Wall + | Wall + | Wall + |
| Methodology | NCC Specification J1.5b | | | |
| Wall Construction | Wall <80% + | Wall <80% + | Wall >80% + | Wall >80% + |
| Wall Thickness | 0 + | 0 + | 0 + | 0 |
| Average Wall R-value (m²K/W) | | 1.00 | 1.40 | 1.00 |
| Solar Absorptance | | | | |

DTS Construction Values

# Eden Gardens Lane Cove - Building D - Function Centre Ground Floor - Non-Uniform Solution

ABCB

Façade

Report

National Construction Code

Calculator

## Project Summary

**Date**
12/11/2020

**Name**
Bianca Bulsara

**Company**
ADP Consulting

**Position**
Sustainabilty Engineer

**Building Name / Address**
Function Centre - lane cove
0

**Building State**

NSW

**Climate Zone**
Climate Zone 5 - Warm temperate

**Building Classification**
Class 9b - public halls, function rooms or the like

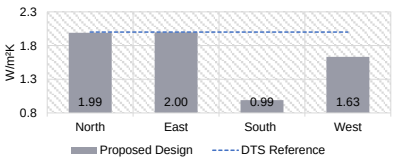
**Storeys Above Ground**
0

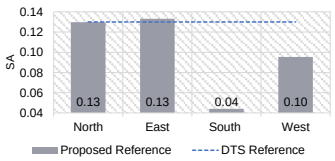
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

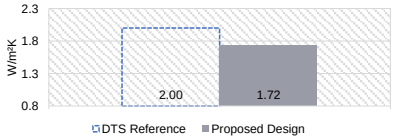
| | Method 1 | | | | Method 2 |
|---|---|---|---|---|---|
| | North | East | South | West | All |
| Wall-glazing U-Value (W/m².K | 1.99 | 2.00 | 0.99 | 1.63 | 1.72 |
| Solar Admittance | 0.13 | 0.13 | 0.04 | 0.10 | |
| AC Energy | | | | | 76 |

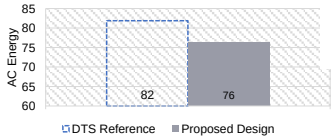
**Method 1**




**Method 2**




Compliance Pathway

## Project Details

| | North | East | South | West |
|---|---|---|---|---|
| Glazing Area (m²) | 16.092 | 143 | 3.978 | 62.5868 |
| Glazing to Façade Ratio | 22% | 88% | 5% | 60% |
| Glazing References | North + | East1 + East2 + East3 + | South + | West1 + West2 + West3 + |
| Glazing System Types | 0 + | 0 + | 0 + | 0 + |
| Glass Types | 0 + | 0 + | 0 + | 0 + |
| Frame Types | 0 + | 0 + | 0 + | 0 + |
| Methodology | AFRC (True module size) | | | |
| Average Glazing U-Value (W/m².K) | 5.50 | 2.13 | 5.80 | 2.06 |
| Average Glazing SHGC | 0.59 | 0.16 | 0.81 | 0.16 |
| Shading Systems | Horizontal | Horizontal | Horizontal | Horizontal |
| Wall Area (m²) | 57.071 | 19.33 | 69.185 | 42.4032 |
| Wall Types | Wall + | Wall + | Wall + | Wall + |
| Methodology | NCC Specification J1.5b | | | |
| Wall Construction | Wall <80% + | Wall <80% + | Wall >80% + | Wall >80% + |
| Wall Thickness | 0 + | 0 + | 0 + | 0 |
| Average Wall R-value (m²K/W) | 1.00 | 1.00 | 1.40 | 1.00 |
| Solar Absorptance | | | | |

DTS Construction Values

ADP
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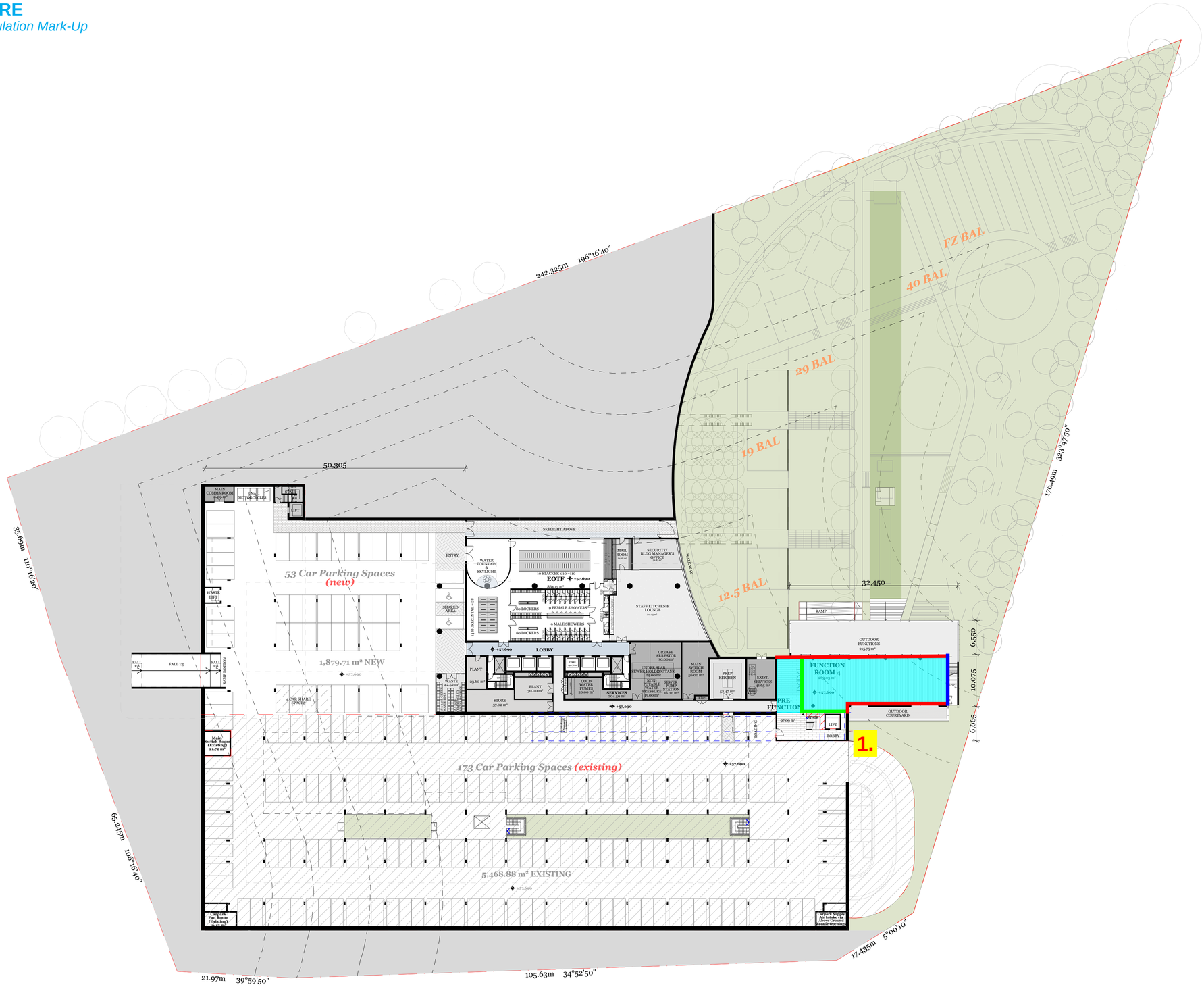
# Appendix B
# Insulation Mark-up

# 1. BUILDING D - FUNCTION CENTRE

*LOWER GROUND FLOOR - Floor and Wall Insulation Mark-Up*

**Insulation Legend for New Additions**

- Internal Wall Insulation Total R1.4
- External Wall/Spandrel Insulation Total >R1.0
- External Wall Insulation Total >R1.4
- Roof Insulation Total >R3.7 & Solar Absorptance <0.45
- Floor Insulation Total R2.0




0 4 8 12 16 20m

| Rev. | Date | By | Ckd | Description |
|---|---|---|---|---|
| | 14/10/2020 | RR & LS | JL | PRE DA DRAFT |
| | 04/11/2020 | RR, LS, JM | JL | PRE DA DRAFT |
| | 13/02/2021 | RR, LS | | DA APPLICATION |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info@DKO.com.au
www.DKO.com.au
ABN: 61413783636




DKO

| | | | |
|---|---|---|---|
| Project Name | Lane Cove | Project Number | 12010 |
| Project Address | 307 Lane Cove Road, Macquarie Park, NSW 2113 | Drawing Name | Lower Ground |
| | | Scale | 1:400, 1:1@A1 |
| | | Date | 13/02/2021 |
| Client | Eden Gardens | Drawing Number | DA104 |
| | | Revision | |

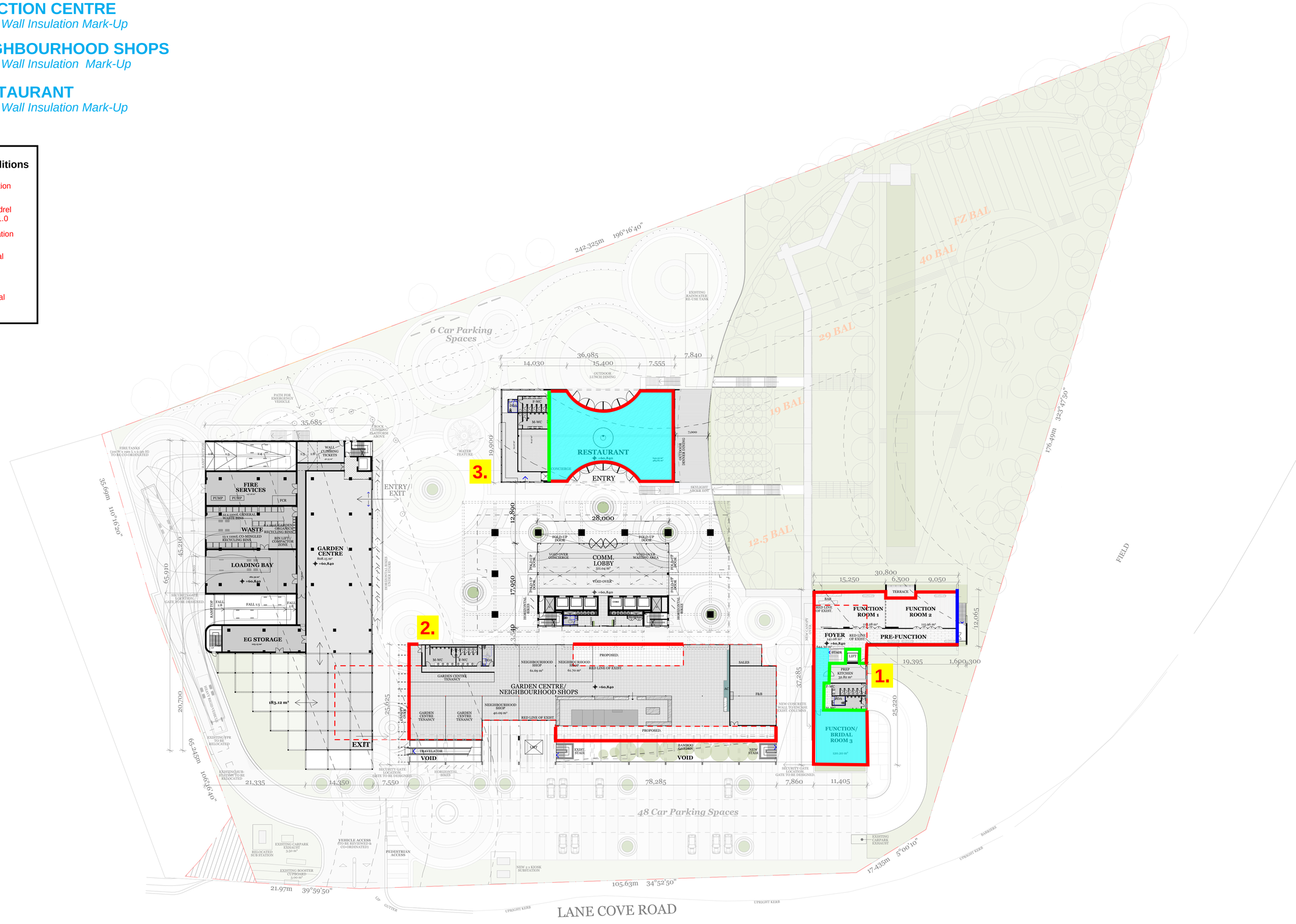
## 1. BUILDING D - FUNCTION CENTRE
*GROUND FLOOR - Floor and Wall Insulation Mark-Up*

## 2. BUILDING C - NEIGHBOURHOOD SHOPS
*GROUND FLOOR - Floor and Wall Insulation  Mark-Up*

## 3. BUILDING B - RESTAURANT
*GROUND FLOOR - Floor and Wall Insulation Mark-Up*

**Insulation Legend for New Additions**

- Internal Wall Insulation Total R1.4
- External Wall/Spandrel Insulation Total >R1.0
- External Wall Insulation Total >R1.4
- Roof Insulation Total >R3.7 & Solar Absorptance <0.45
- Floor Insulation Total R2.0




0 4 8 12 16 20m

| Rev. | Date | By | Ckd | Description |
|---|---|---|---|---|
| | 14/10/2020 | RR & LS | JL | PRE DA DRAFT |
| | 04/11/2020 | RR, LS, JM | JL | PRE DA DRAFT |
| | 13/02/2021 | RR, LS | | DA APPLICATION |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ABN: 61413783636




| | | | |
|---|---|---|---|
| Project Name | Lane Cove | Project Number | 12010 |
| Project Address | 307 Lane Cove Road, Macquarie Park, NSW 2113 | Drawing Name | Ground Level |
| | | Scale | 1:400 @A1 |
| | | Date | 16/02/2021 |
| Client | Eden Gardens | Drawing Number | **DA105** |
| | | Revision | |

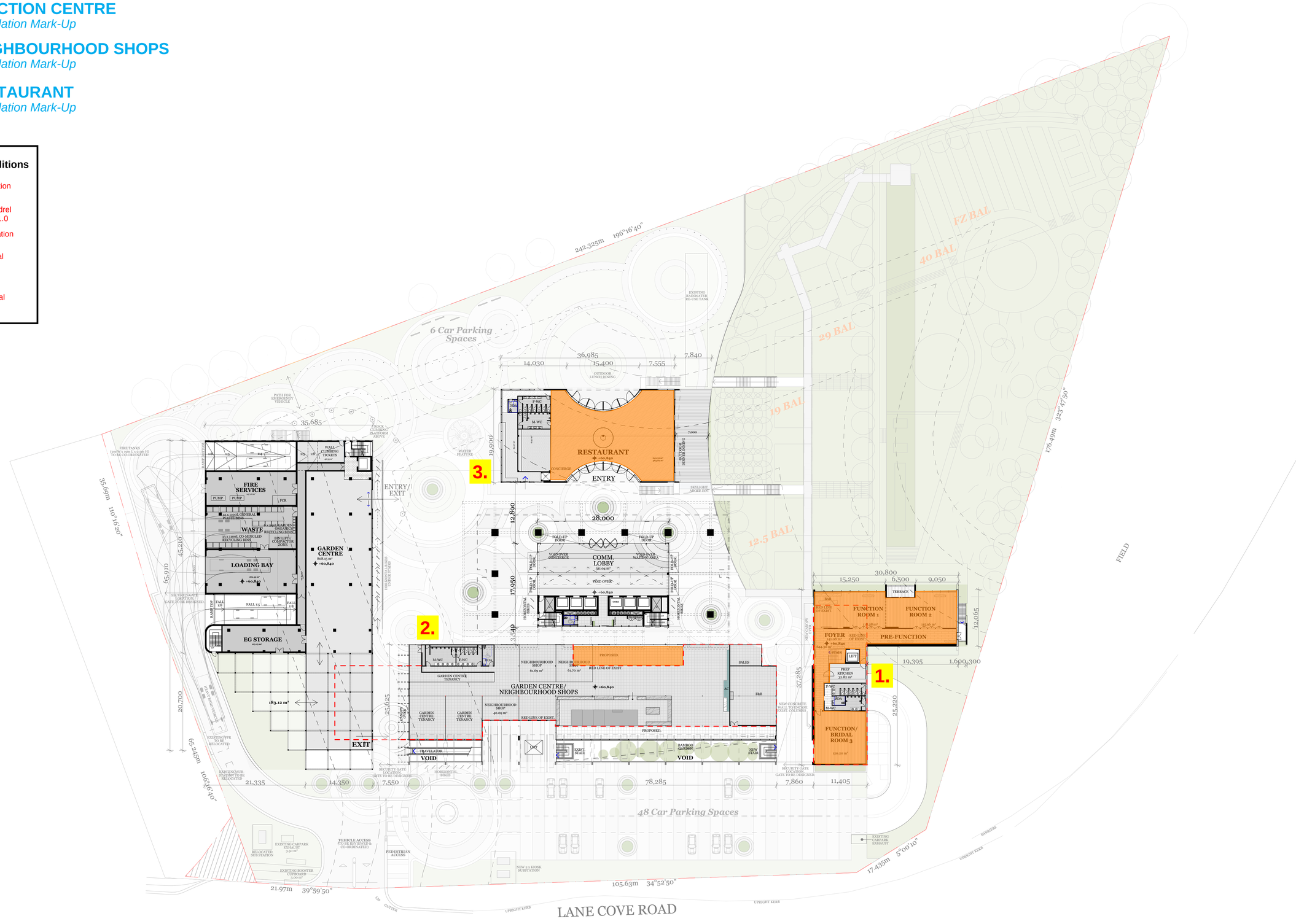
## 1. BUILDING D - FUNCTION CENTRE
*GROUND FLOOR - Roof Insulation Mark-Up*

## 2. BUILDING C - NEIGHBOURHOOD SHOPS
*GROUND FLOOR - Roof Insulation Mark-Up*

## 3. BUILDING B - RESTAURANT
*GROUND FLOOR - Roof Insulation Mark-Up*

**Insulation Legend for New Additions**

- Internal Wall Insulation Total R1.4
- External Wall/Spandrel Insulation Total >R1.0
- External Wall Insulation Total >R1.4
- Roof Insulation Total >R3.7 & Solar Absorptance <0.45
- Floor Insulation Total R2.0




0 4 8 12 16 20m

| Rev. | Date | By | Ckd | Description |
|---|---|---|---|---|
| | 14/10/2020 | RR & LS | JL | PRE DA DRAFT |
| | 04/11/2020 | RR, LS, JM | JL | PRE DA DRAFT |
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| Project Name | Lane Cove | Project Number | 12010 |
| Project Address | 307 Lane Cove Road, Macquarie Park, NSW 2113 | Drawing Name | Ground Level |
| | | Scale | 1:400 @A1 |
| | | Date | 16/02/2021 |
| Client | Eden Gardens | Drawing Number | **DA105** |
| | | Revision | |

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