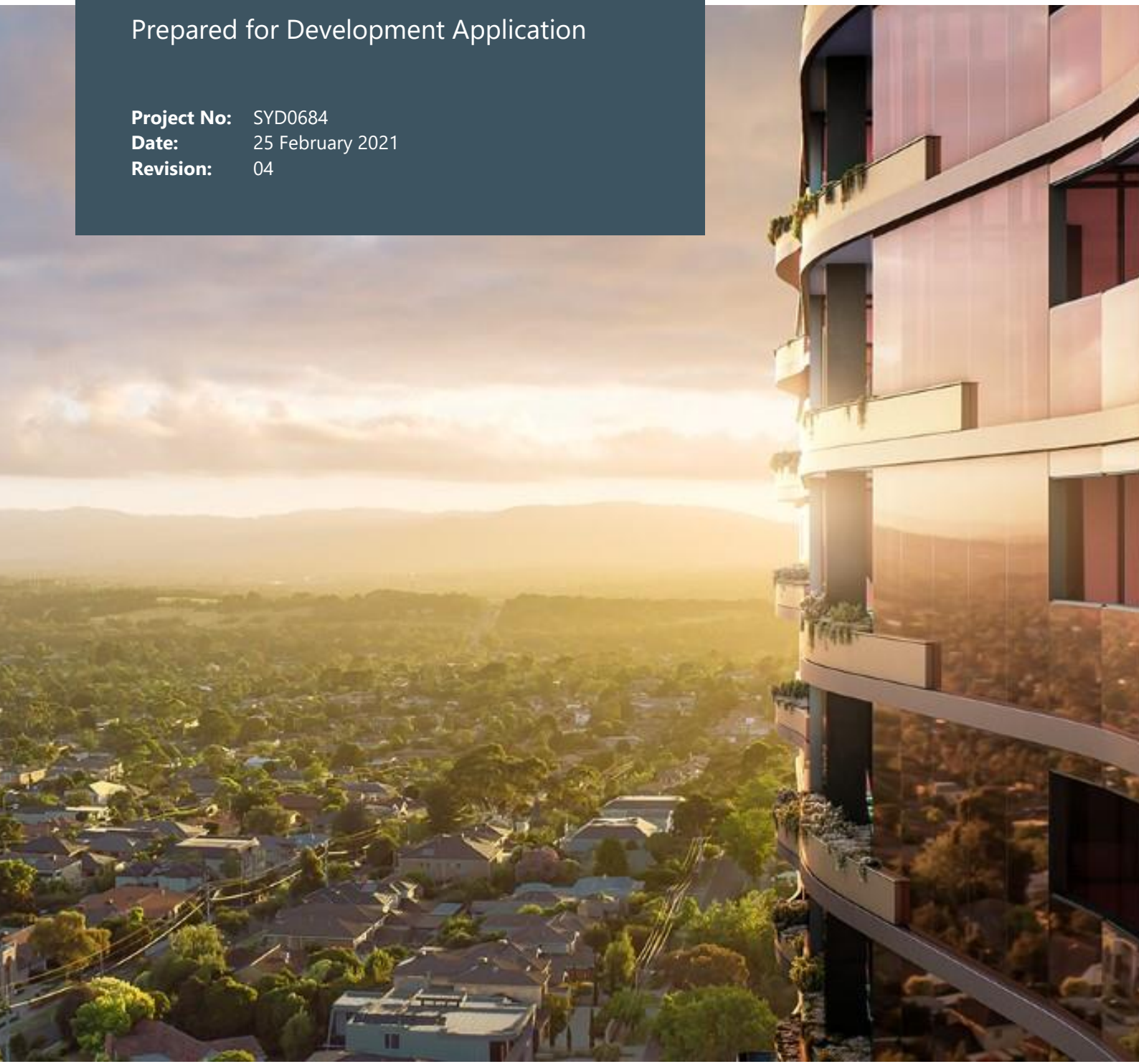


# Eden Gardens

NCC 2019 Section J Report  
JV3 Verification Assessment

Prepared for Development Application

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



**Project:** Eden Gardens

**Location:** 307 Lane Cove Road,  
Macquarie Park, NSW  
2113

**Prepared by:** ADP Consulting Pty Ltd  
Level 3, 8 Spring Street  
Sydney, NSW, 2000

**Project No:** SYD0684

**Revision:** 04

**Date:** 25 February 2021

Rev	Date	Comment	Author	Technical Review	Authorisation & QA
01	28/10/20	Draft Issue for Comment	BBO	RR	RR
02	17/02/21	Issue for DA	BBO	ZN	RR
03	23/02/21	Updated DA Issue	BBO	ZN	RR
04	25/02/21	Minor Amendments for DA Issue	BBO	ZN	RR

### Project team

**Client / Principal** Thunderbirds Are Go Pty Ltd atf the Gardeners Trust

**Project Manager** Pier Property Corporation

**Architect** DKO Architects



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# Executive Summary

The purpose of this report is to assess Section J Compliance of the proposed building envelope for the Eden Gardens Commercial Office Tower to be located at 307 Lane Cove Road, Macquarie Park NSW.

Compliance has been addressed in line with the National Construction Code (NCC) 2019 Section J requirements, for J1 (building fabric). This has been confirmed using the JV3 alternative verification methodology and addresses the minimum provisions for the projects proposed glazing and insulation requirements.

The following building envelope design elements have been assessed for compliance in line with the JV3 methodology:

- > Uniform glazing solutions to be provided to:
  - Lobby and podium facades (level 1-4)
  - Tower office facades (level 6, 7, 10, 11, 13, 14 ,17)
  - Tower office and winter garden facades (level 8, 9, 15, 16)
  - Tower office facades (level 5 and 12)
- > Fixed vertical shades (fins) to be provided to the building’s north, west, and south facades
- > Fixed horizontal shades to be provided to the building’s east façade

All other aspects of NCC Section J compliance (J5 to J8) are assumed to meet the minimum Deem-to-Satisfy (DTS) requirements and are the responsibility of the architect, building services consultants and associated contractors.

## Results

Compliant building fabric solutions have been determined for the project through a detailed energy modelling approach. The simulation results show that the energy consumption associated with the proposed building fabric uses less operational energy than that of a reference building with Deem-To-Satisfy (DTS) building fabric provision.

The following proposed building fabric requirements must be met by the project team in order to demonstrate compliance with NCC 2019 Section J through the JV3 approach:

Proposed Building Fabric Requirements:

Envelope Constructions	Total System R-Value (m <sup>2</sup> K/W)
Roofs/Ceilings exposed to outside air (solar absorptance ≥ 0.45)	R4.0
External wall construction (all facades) (wall<80%)	R2.8
External wall construction (all facades) (wall>80%)	R2.8
Internal wall construction (between conditioned & unconditioned areas)	R2.8
Floor construction (above an unconditioned zone)	R2.2
Floor construction (concrete slab on ground)	R2.2



Proposed Glazing Requirements:

Uniform Glazing Solution	Orientation	Total System U-Value (W/m <sup>2</sup> K)	Total System SHGC
Lobby and podium (L1-L4)	All facades	1.8	0.23
Tower tenancy (L5)	East	1.8	0.23
Tower typical office (level 6, 7, 10, 11, 13, 14, 17)	All facades	1.8	0.23
Tower office and winter gardens (level 8, 9, 15, 16)	All facades	1.8	0.23
Tower tenancy (L12)	All facades	1.8	0.23

The following table shows a comparison of results demonstrating that the building envelope design for the proposed solution consumes approximately 1.58% less energy than that of the DTS reference solution.

Model	Heating (MWh)	Cooling (MWh)	Fans & Pumps (MWh)	DHW Energy (MWh)	Lighting (MWh)	Equipment (MWh)	Total Energy (MWh)	% Improvement	Thermal Comfort Achieved	Compliance
Ref Model (DTS)	158.6	517.8	440.7	108.4	371.0	882.3	2478.8	-	-	-
Proposed Model	113.9	523.4	440.7	108.4	371.0	882.3	2439.8	1.58%	✓	✓

In addition to this the proposed solution ensures that the minimum Section J 2019 Thermal Comfort requirements are met as follows:

- > Thermal comfort levels, measured as a predicted mean vote (PMV) of -1 to +1 has been achieved for the building for 99.08% of the projects total floor area, for all occupied zones. This has been determined compliant for 99.6% of the annual hours of operation of the building.

The conditioned areas of the Eden Gardens Commercial Tower development successfully meet these criteria and are deemed to be thermally comfortable spaces.

# 1. Introduction

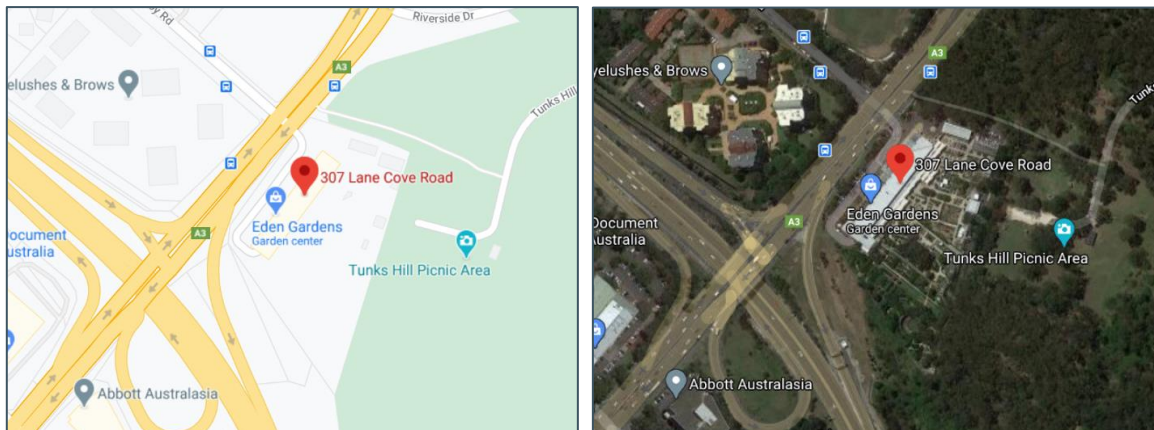
ADP have been engaged by Thunderbirds Are Go Pty Ltd to provide a National Construction Code (NCC) 2019 Section J, JV3 alternative verification modelling assessment for the proposed commercial office tower to be located at 307 Lane Cove Road, Macquarie Park NSW.

## 1.1 Project Background

The Eden Garden development is to be comprised of five proposed buildings 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



## 1.2 Scope

### 1.1.1 Scope of Modelling

The scope of this report includes a review of the proposed building envelope design with regards to Section J1 (building fabric) only. All other aspects of NCC Section J compliance (J5-J8) are assumed to be designed in line with the minimum DTS requirements and are noted as the responsibility of the architect, building services consultants and associated contractors.

To achieve the proposed architectural intent for the building the alternative JV3 Verification Methodology has been undertaken to demonstrate compliance with the Section J. The JV3 Verification Methodology requires an energy modelling assessment to be conducted in line with the modelling assumptions and parameters defined in Specification JV of the NCC 2019.

The energy model must demonstrate that the estimated energy consumed by the proposed building design is less than that of the DTS (reference) building solution.

This report should be used as a reference for documenting the projects specifications and to assess whether the new development has been constructed in accordance with the marked-up plans and specifications contained within this report for the purposes of Section J compliance.

### 1.1.2 Scope of Assessment

The Eden Garden site boundary comprises of five proposed buildings, four of which are required to demonstrate compliance with the minimum Section J provisions.

Please note that for the purposes of this assessment only Building A: Commercial Office Tower has been included within the JV3 modelling scope of this report. Building B, C and D are intended to demonstrate compliance through the Deem-To-Satisfy (DTS) calculation approach.

Please refer to the **ADP\_SYD0684\_Eden Gardens\_Section J Compliance Report\_Rev04** for additional compliance measures for Buildings, B, C, and D.

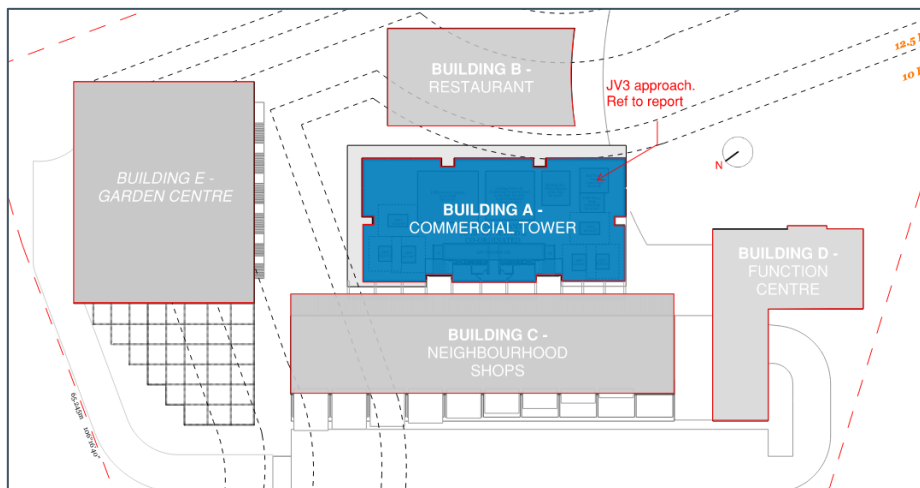
Table 1 Developments within the Eden Gardens site boundary

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 Alterations & Additions	Class 6 (Retail)	DTS Calculator
Building D: Function Centre	Existing Building Alterations & Additions	Class 9b (Assembly Building)	DTS Calculator
<i>Building E: Eden Gardens/Carpark &amp; BOH services, Horticulture, Shops, and Garden centre</i>	<i>New Building</i>	<i>Class 6 (Retail), Class 7b (loading dock and storage), Class 7a (Carpark), Class 9b (assembly area)</i>	<i>No Section J Requirement</i>

**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.

Figure 2 Proposed site plan layout



### 1.3 Document References

The building has been modelled as per the following NCC 2019 resources, plans, elevations, façade mark-ups and correspondence provided by DKO Architects:

- > NCC 2019, Volume One, Class 2 to 9
- > Section J 2019 wall-glazing DTS Calculator
- > DA Drawings provided by DKO Architects issued 16/02/2021

### 1.4 Limitations

The JV3 Verification Methodology is for NCC Section J compliance purposes only and compares the proposed building design to a DTS reference building with the same geometry using defined occupancy and operational control schedules.

The annual energy output calculated in the approved software is used only to demonstrate whether the proposed building envelope (JP1) has a higher (fail) or lower (pass) value than the DTS reference building. As such any modelling results provided in this report is an estimation and does not calculate the actual energy consumption of the building and the outputs must not be used for this purpose. Detailed energy modelling, including more accurate simulation of the building services systems and using schedules that reflect the actual operational parameters of the proposed building, will be required for this purpose.

## 2. Methodology

### 2.1 Building Geometry

The proposed commercial office tower has been assessed using the approved energy modelling software, IES VE (Please see Section 2.3.1 for more details).

The modelled geometry has been developed and based on a review of the DKO Architecture, DA Architectural drawings set issued on 16/02/2021.

The building masses of surrounding buildings have been included in the model due to their potential impact on the thermal performance and energy efficiency of the proposed building façade.

Figure 3 Building model developed for JV3 energy analysis: southeast elevation

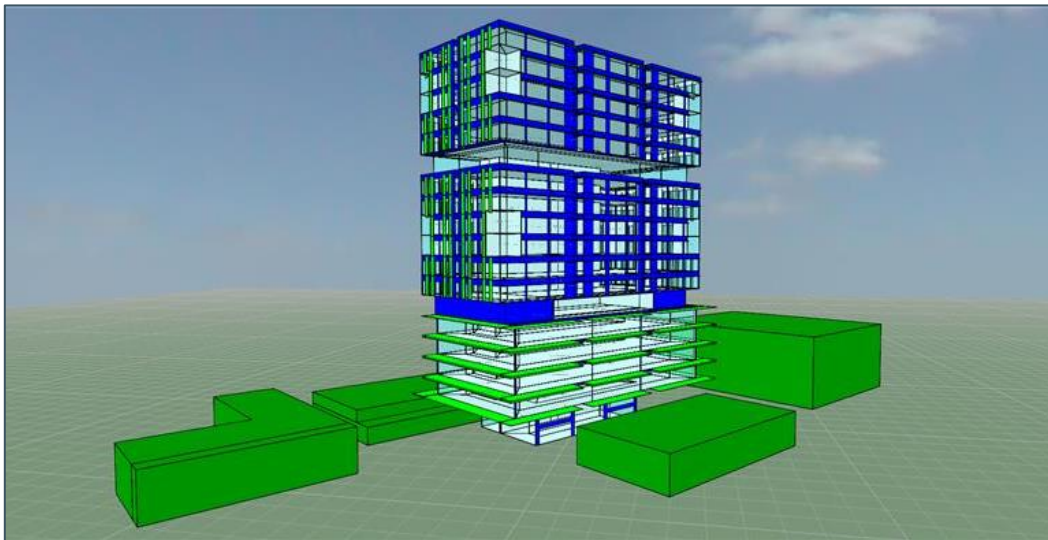


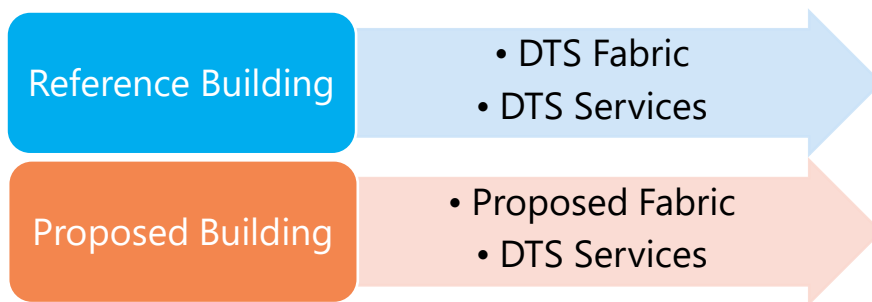
Figure 4 Building model developed for JV3 energy analysis: northwest elevation



## 2.2 Modelling Approach and Compliance

The NCC Section J, JV3 methodology offers an alternative verification pathway for compliance. To achieve compliance the following criteria must be met:

- > The annual energy consumption and associated greenhouse gas emissions of a proposed building, modelled with DTS services must not exceed the annual energy consumption and greenhouse gas emissions of a DTS building, modelled with DTS services (Reference building), as assessed under defined NCC operating conditions.



## 2.3 Modelling Assumptions and Parameters

### 2.3.1 Energy Modelling Software

The JV3 simulation has been conducted using the IES Virtual Environment (VE) 2019 energy modelling software. IES is a thermal and energy modelling estimation tool with the capability to dynamically model complex heat flows within a building and its individual zones. The purpose of the simulation is to assess how the building's specific thermal loads will impact the proposed HVAC systems, building envelope design, occupant thermal comfort and overall base building energy consumption.

IES is a commercially recognised and industry lead software that is proven to comply with the ABCB 'Protocol for Building Energy Analysis for BCA Class 3, 5, 6, 7, 8 and 9 Buildings' and is commonly used in JV3 modelling assessments.

### 2.3.2 Site & Location

The site has been modelled with location coordinates specific to that of the Sydney CBD region.

The weather file used in the simulation is a Test Reference Year (TRY) deemed the most appropriate for the model. A TRY file contains a statistical 12 months' worth of weather data. This statistical file is calculated based on an average of 10 years' worth of actual weather data.

Eden Gardens is located in Macquarie Park NSW. For this location, the annual weather data used is from a Sydney IWEC-Weather file nearest to the project's location. In this case it is Sydney (*Sydney.IWEC*).

### 2.3.3 Climate Zone

The project is located within the suburb of Macquarie Park, NSW. This region has been categorised as Climate Zone 5, as identified by the NCC's Climate Zones for Thermal Design map.



### 2.3.4 Building Classification

The following class types has been identified as part of the proposed building and has been modelled accordingly. The building classification has been determined in line with the NCC 2019 Section A3.2 Classifications.

- > Ground floor lobby - L17: Class 5 (Office)

The lobby, tenancy and office spaces have been modelled as conditioned spaces. The building core spaces are modelled as unconditioned spaces and include lifts, staircases, toilets and bin rooms.

## 2.4 Reference Building Model (DTS)

The DTS reference building model has been developed and simulated with the following DTS fabric and glazing performance.

### 2.4.1 Fabric requirements

DTS materials have been used in the DTS reference building model as outlined below:

Envelope Construction	Total System R-Value (m <sup>2</sup> K/W)
Roofs/Ceilings exposed to outside air (solar absorptance ≥ 0.45)	R3.7
External wall construction (all facades) (wall<80%)	R1.0
External wall construction (all facades) (wall>80%)	R1.4
Internal wall construction (between conditioned & unconditioned areas)	R1.4
Floor construction (above an unconditioned zone)	R2.0
Floor construction (concrete slab on ground)	R2.0

## 2.4.2 Glazing requirements

Minimum DTS glazing performance has been established for all orientations of the proposed building. The values presented below are based on the maximum allowable performance values as determined by the NCC 2019 DTS wall-glazing calculator.

Please refer to Appendix A - DTS Façade-Glazing Report: Uniform Solution for further details on minimum DTS wall-glazing performance values.

Glazing – Frame Construction (Uniform solution)	Orientation	Total System U-Value (W/m <sup>2</sup> K)	Total System SHGC
Lobby and podium lobby (L1-L4)	All facades	3.0	0.35
Tower tenancy (L5)	East	2.0	0.19
Tower typical office (level 6, 7, 10, 11, 13, 14 ,17)	All facades	2.8	0.25
Tower office and winter gardens (level 8, 9, 15, 16)	All facades	2.0	0.19
Tower tenancy (L12)	All facades	2.0	0.19

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

## 2.4.3 Services and Operational Profiles.

Deemed-to-Satisfy services have been assumed for both models as follows:

- > Central air conditioning plant serving the development with:
  - Water cooled chillers servicing the air conditioning system a nominal COP of 3.13 and seasonal EER of 2.5
  - Base building air conditioning
  - Gas boiler for heating with a minimal efficiency of 89%
  - Heat pump for Domestic Hot Water (DHW) heating
  - Internal loads and daily operational profiles for people, lighting, domestic hot water, equipment and HVAC for both models have been kept the same as outlined in the NCC 2019 JV specification

Infiltration rates have been included at the perimeter zones and have been kept the same for both models as specified in the JV specification.

## 2.5 Proposed Model

### 2.5.1 Fabric requirements

The proposed fabric constructions have the following design departures from that of the DTS performance requirements outlined in Section 2.4.1

Envelope Construction	Total System R-Value (m <sup>2</sup> K/W)
Roofs/Ceilings exposed to outside air (solar absorptance $\geq 0.45$ )	R4.0
External wall construction (all facades) (wall<80%)	R2.8
External wall construction (all facades) (wall>80%)	R2.8
Internal wall construction (between conditioned & unconditioned areas)	R2.8
Floor construction (above an unconditioned zone)	R2.2
Floor construction (concrete slab on ground)	R2.2

### 2.5.2 Glazing requirements

The proposed glazing performance solution have the following design departures from that of the DTS performance requirements outlined in Section 0

Uniform Glazing Solution	Orientation	Total System U-Value (W/m <sup>2</sup> K)	Total System SHGC
Lobby and podium lobby (L1-L4)	All facades	1.8	0.23
Tower tenancy (L5)	East	1.8	0.23
Tower typical office (level 6, 7, 10, 11, 13, 14 ,17)	All facades	1.8	0.23
Tower office and winter gardens (level 8, 9, 15, 16)	All facades	1.8	0.23
Tower tenancy (L12)	All facades	1.8	0.23

Note: The above window frame construction values are total system values and include both the glazing and frame.

### 2.5.3 Services and Operational Profiles.

The proposed building services have been modelled as per minimum DTS requirements outlined in section 2.4.3 of this report.

### 3. Results

The proposed glazing and insulation provisions outlined in section 2.5 of this report have been assessed and compared against the DTS solution.

The following table shows a comparison of results demonstrating that the building envelope design for the proposed solution consumes approximately 1.58% less energy than that of the DTS reference solution.

Model	Heating (MWh)	Cooling (MWh)	Fans & Pumps (MWh)	DHW Energy (MWh)	Lighting (MWh)	Equipment (MWh)	Total Energy (MWh)	% Improvement	Thermal Comfort Achieved	Compliance
<b>Ref Model (DTS)</b>	158.6	517.8	440.7	108.4	371.0	882.3	2478.8	-	-	-
<b>Proposed Model</b>	113.9	523.4	440.7	108.4	371.0	882.3	2439.8	1.58%	✓	✓

In addition to this, the proposed solution ensures that the minimum Section J 2019 Thermal Comfort requirements are met as follows:

- > Thermal comfort levels, measured as a predicted mean vote (PMV) of -1 to +1 has been achieved for the building for 100% of the project’s total floor area, for all occupied zones. This has been determined compliant for 100% of the annual hours of operation of the building.

The conditioned areas of the Eden Gardens Commercial Tower development successfully meet these criteria and are deemed to be thermally comfortable spaces.

## 4. Conclusion

This assessment has been carried out to demonstrate that the proposed Eden Gardens Commercial Office Tower complies with the energy efficiency requirements specified within Section J of the NCC 2019 using the alternative JV3 Verification Methodology.

It is evident from the current modelling results that the proposed development is expected to consume 1.65% less energy than that of the reference DTS model, provided the following requirements are met:

- > All façade lobby, podium, tenancy, and office glazing to meet a minimum U-value of  $1.8 \text{ W/m}^2\text{K}$ , and SHGC of 0.23.
- > Building fabric performance must be provided in line with the minimum performance requirements outlined in Section 2.5.1 of this report.
- > All shading extents must correspond with the proposed building shading scheme outlined in the DKO Architects DA drawing set issued on 16/02/2021

Based on this, the current proposed design meets the NCC 2019 Section J – Part J1 requirements for energy efficiency and thermal comfort.

# **Appendix A**

## **DTS Facade-Glazing Report Uniform Solution**



# Eden Gardens - Building A - Commercial Tower Lobby & Podium Uniform Solution (GF - L4)

## Façade

Report



Calculator

### Project Summary

**Date**  
17/02/2021

**Name**  
Zak Nicholson

**Company**  
ADP Consulting

**Position**  
Sustainability Engineer

**Building Name / Address**  
0  
0

**Building State**  
NSW

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

**Building Classification**  
Class 5 - office building

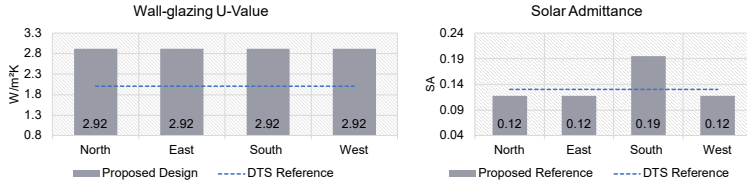
**Storeys Above Ground**  
0

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 Aspects).

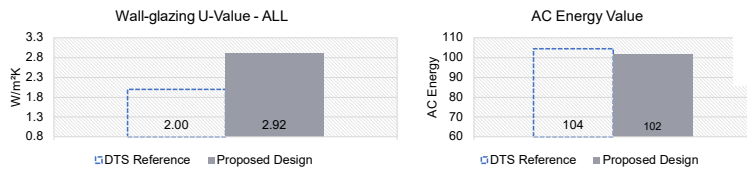
Compliant Solution =    
Non-Compliant Solution =  

	North	East	South	West	Method 2 All
<b>Wall-glazing U-Value (W/m².K)</b>	2.92	2.92	2.92	2.92	1.95
<b>Solar Admittance</b>	0.12	0.12	0.19	0.12	
<b>AC Energy Value</b>					102

#### Method 1



#### Method 2



Compliance Pathway

### Project Details

	North	East	South	West
<b>Glazing Area (m²)</b>	90	182.5	90	93
<b>Glazing to Façade Ratio</b>	96%	96%	96%	96%
<b>Glazing References</b>	North +	East +	South +	West +
<b>Glazing System Types</b>	0 +	0 +	0 +	0 +
<b>Glass Types</b>	0 +	0 +	0 +	0 +
<b>Frame Types</b>	0 +	0 +	0 +	0 +
<b>Methodology</b>	AFRC (True module size)			
<b>Average Glazing U-Value (W/m².K)</b>	3.00	3.00	3.00	3.00
<b>Average Glazing SHGC</b>	0.35	0.35	0.35	0.35
<b>Shading Systems</b>	Horizontal	Horizontal	Horizontal	Horizontal
<b>Wall Area (m²)</b>	3.7	7.5	3.7	3.8
<b>Wall Types</b>	Wall +	Wall +	Wall +	Wall +
<b>Methodology</b>	NCC Specification J1.5b			
<b>Wall Construction</b>	Wall <80% +	Wall <80% +	Wall <80% +	Wall <80% +
<b>Wall Thickness</b>	0 +	0 +	0 +	0
<b>Average Wall R-value (m²K/W)</b>	1.00	1.00	1.00	1.00
<b>Solar Absorptance</b>				

DTS Construction Values

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# Eden Gardens - Building A - Commercial Tower Tower Office Uniform Solution (Level 5 & 12)

## Façade

Report



Calculator

### Project Summary

**Date**  
17/02/2021

**Name**  
Zak Nicholson

**Company**  
ADP Consulting

**Position**  
Sustainability Engineer

**Building Name / Address**  
0  
0

**Building State**  
NSW

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

**Building Classification**  
Class 5 - office building

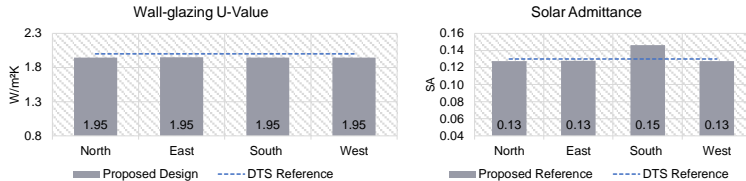
**Storeys Above Ground**  
0

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 Aspects).

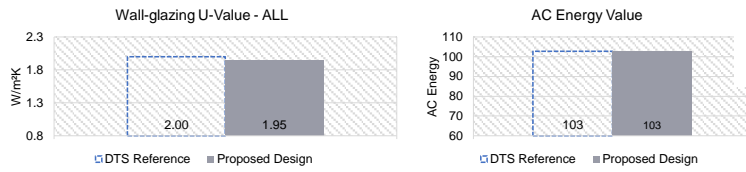
Compliant Solution =    
Non-Compliant Solution =  

	North	East	South	West	Method 2 All
<b>Wall-glazing U-Value (W/m².K)</b>	1.95	1.95	1.95	1.95	1.95
<b>Solar Admittance</b>	0.13	0.13	0.15	0.13	103
<b>AC Energy Value</b>					103

#### Method 1



#### Method 2



Compliance Pathway

### Project Details

	North	East	South	West
<b>Glazing Area (m²)</b>	83.4	188	83.5	87.4
<b>Glazing to Façade Ratio</b>	95%	95%	95%	95%
<b>Glazing References</b>	North +	East +	South +	West +
<b>Glazing System Types</b>	0 +	0 +	0 +	0 +
<b>Glass Types</b>	0 +	0 +	0 +	0 +
<b>Frame Types</b>	0 +	0 +	0 +	0 +
<b>Methodology</b>	AFRC (True module size)			
<b>Average Glazing U-Value (W/m².K)</b>	2.00	2.00	2.00	2.00
<b>Average Glazing SHGC</b>	0.19	0.19	0.19	0.19
<b>Shading Systems</b>	Horizontal	Horizontal	Horizontal	Horizontal
<b>Wall Area (m²)</b>	4.6	9.7	4.63	4.9
<b>Wall Types</b>	Wall +	Wall +	Wall +	Wall +
<b>Methodology</b>	NCC Specification J1.5b			
<b>Wall Construction</b>	Wall <80% +	Wall <80% +	Wall <80% +	Wall <80% +
<b>Wall Thickness</b>	0 +	0 +	0 +	0
<b>Average Wall R-value (m²K/W)</b>	1.00	1.00	1.00	1.00
<b>Solar Absorptance</b>				

DTS Construction Values

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# Eden Gardens - Building A - Commercial Tower

## Tower Office Uniform Solution (Level 6, 7, 10, 11, 13, 14, 17)

### Project Summary

**Date**  
17/02/2021

**Name**  
Zak Nicholson

**Company**  
ADP Consulting

**Position**  
Sustainability Engineer

**Building Name / Address**  
0  
0

**Building State**  
NSW

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

**Building Classification**  
Class 5 - office building

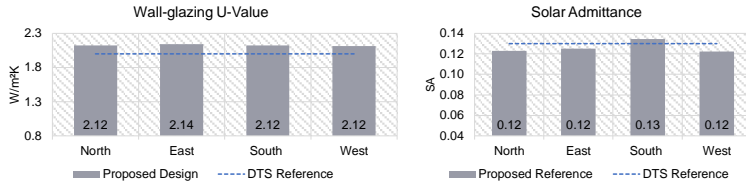
**Storeys Above Ground**  
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The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Aspects).

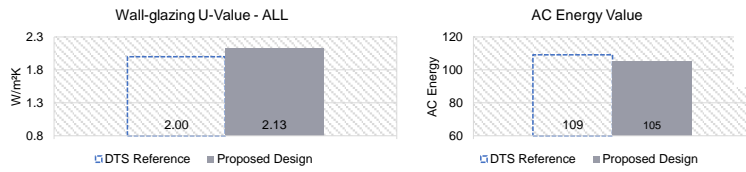
Compliant Solution =    
 Non-Compliant Solution =  

	North	East	South	West	Method 2 All
<b>Wall-glazing U-Value (W/m².K)</b>	2.12	2.14	2.12	2.12	1.95
<b>Solar Admittance</b>	0.12	0.12	0.13	0.12	
<b>AC Energy Value</b>					105

#### Method 1



#### Method 2



Compliance Pathway

### Project Details

	North	East	South	West
<b>Glazing Area (m²)</b>	59.25	132.5	59.25	60
<b>Glazing to Façade Ratio</b>	62%	63%	62%	62%
<b>Glazing References</b>	North +	East +	South +	West +
<b>Glazing System Types</b>	0 +	0 +	0 +	0 +
<b>Glass Types</b>	0 +	0 +	0 +	0 +
<b>Frame Types</b>	0 +	0 +	0 +	0 +
<b>Methodology</b>	AFRC (True module size)			
<b>Average Glazing U-Value (W/m².K)</b>	2.80	2.80	2.80	2.80
<b>Average Glazing SHGC</b>	0.25	0.25	0.25	0.25
<b>Shading Systems</b>	Horizontal	Horizontal	Horizontal	Horizontal
<b>Wall Area (m²)</b>	35.75	76.5	35.75	36.75
<b>Wall Types</b>	Wall +	Wall +	Wall +	Wall +
<b>Methodology</b>	NCC Specification J1.5b			
<b>Wall Construction</b>	Wall <80% +	Wall <80% +	Wall <80% +	Wall <80% +
<b>Wall Thickness</b>	0 +	0 +	0 +	0
<b>Average Wall R-value (m²K/W)</b>	1.00	1.00	1.00	1.00
<b>Solar Absorptance</b>				

DTS Construction Values

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# Eden Gardens - Building A - Commercial Tower Tower Office Uniform Solution (Level 8, 9, 15, 16)



Façade  
Report



Calculator

## Project Summary

**Date**  
17/02/2021

**Name**  
Zak Nicholson

**Company**  
ADP Consulting

**Position**  
Sustainability Engineer

**Building Name / Address**  
0  
0

**Building State**  
NSW

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

**Building Classification**  
Class 5 - office building

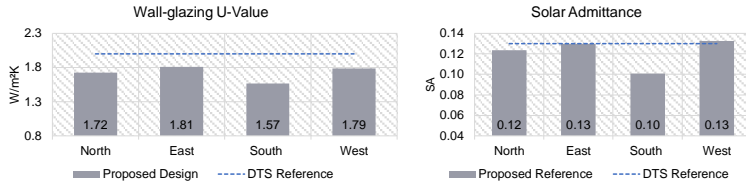
**Storeys Above Ground**  
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The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Aspects).

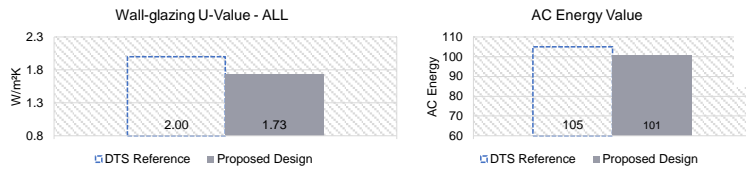
Compliant Solution =    
Non-Compliant Solution =  

	North	East	South	West	Method 2 All
<b>Wall-glazing U-Value (W/m².K)</b>	1.72	1.81	1.57	1.79	1.73
<b>Solar Admittance</b>	0.12	0.13	0.10	0.13	101
<b>AC Energy Value</b>					101

### Method 1



### Method 2



Compliance Pathway

## Project Details

	North	East	South	West
<b>Glazing Area (m²)</b>	68.8	142	68.75	76
<b>Glazing to Façade Ratio</b>	72%	81%	57%	79%
<b>Glazing References</b>	North + North_WG +	East + East_WG +	South + South_WG +	West + West_WG +
<b>Glazing System Types</b>	0 +	0 +	0 +	0 +
<b>Glass Types</b>	0 +	0 +	0 +	0 +
<b>Frame Types</b>	0 +	0 +	0 +	0 +
<b>Methodology</b>	AFRC (True module size)			
<b>Average Glazing U-Value (W/m².K)</b>	2.00	2.00	2.00	2.00
<b>Average Glazing SHGC</b>	0.19	0.19	0.19	0.19
<b>Shading Systems</b>	Horizontal	Horizontal	Horizontal	Horizontal
<b>Wall Area (m²)</b>	26.25	33	52.5	20.75
<b>Wall Types</b>	Wall +	Wall +	Wall +	Wall +
<b>Methodology</b>	NCC Specification J1.5b			
<b>Wall Construction</b>	Wall <80% +	Wall <80% +	Wall <80% +	Wall <80% +
<b>Wall Thickness</b>	0 +	0 +	0 +	0
<b>Average Wall R-value (m²K/W)</b>	1.00	1.00	1.00	1.00
<b>Solar Absorptance</b>				

DTS Construction Values

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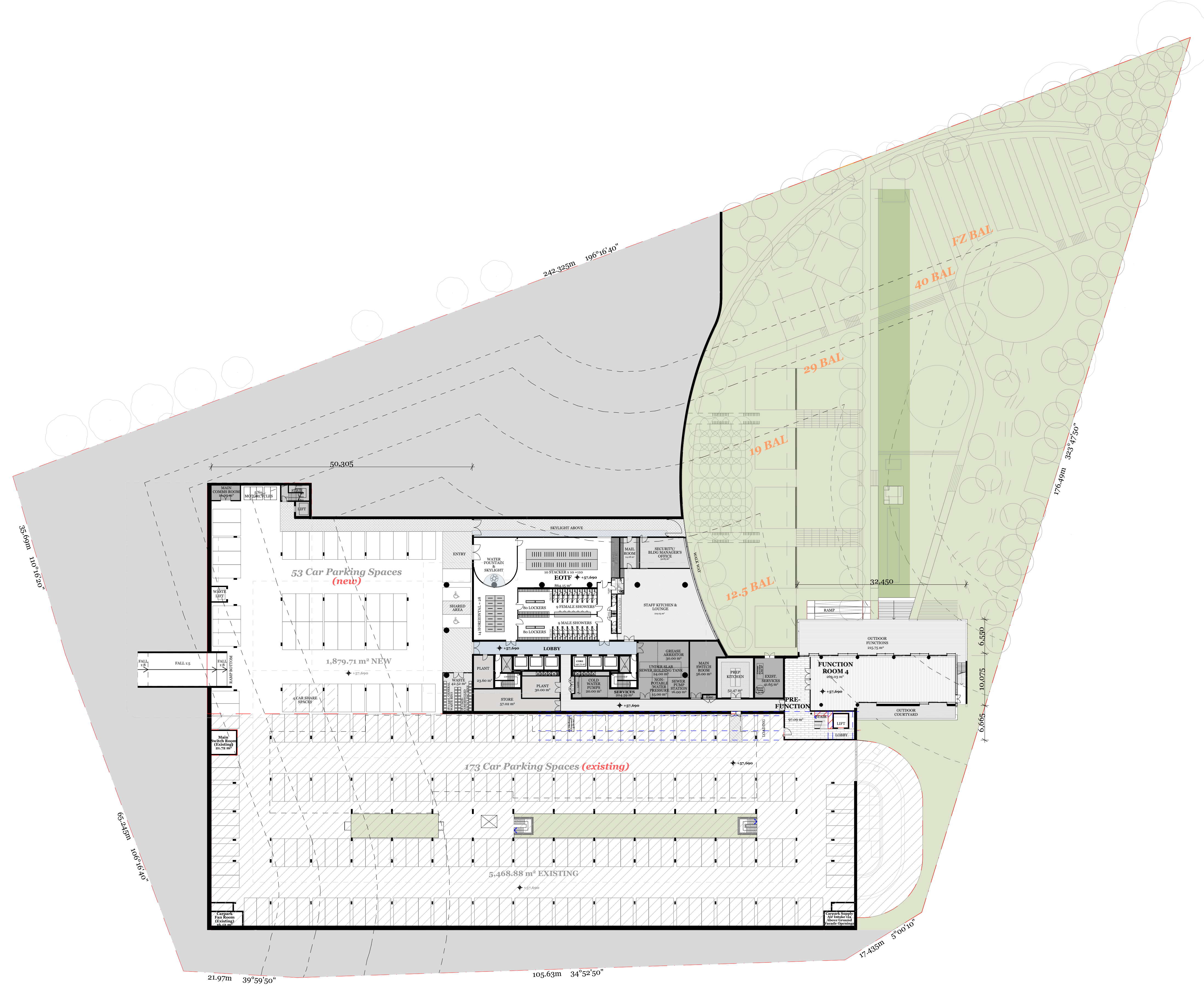
# **Appendix B**

# **Proposed Insulation Mark-up**

**Insulation Legend**

- Internal Wall Insulation  
Total >R2.8
- External Wall/spandrel  
Insulation Total >R2.8
- Roof Insulation Total >R4.0  
& Solar Absorptance <0.45
- Floor Insulation Total  
>R2.2

**BUILDING A - COMMERCIAL TOWER**  
TOWER LOWER GROUND FLOOR



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	JL	DA APPLICATION

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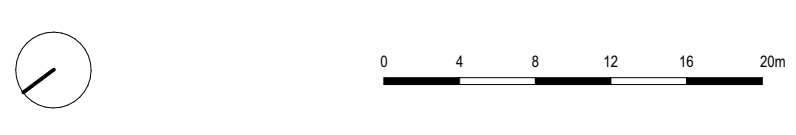
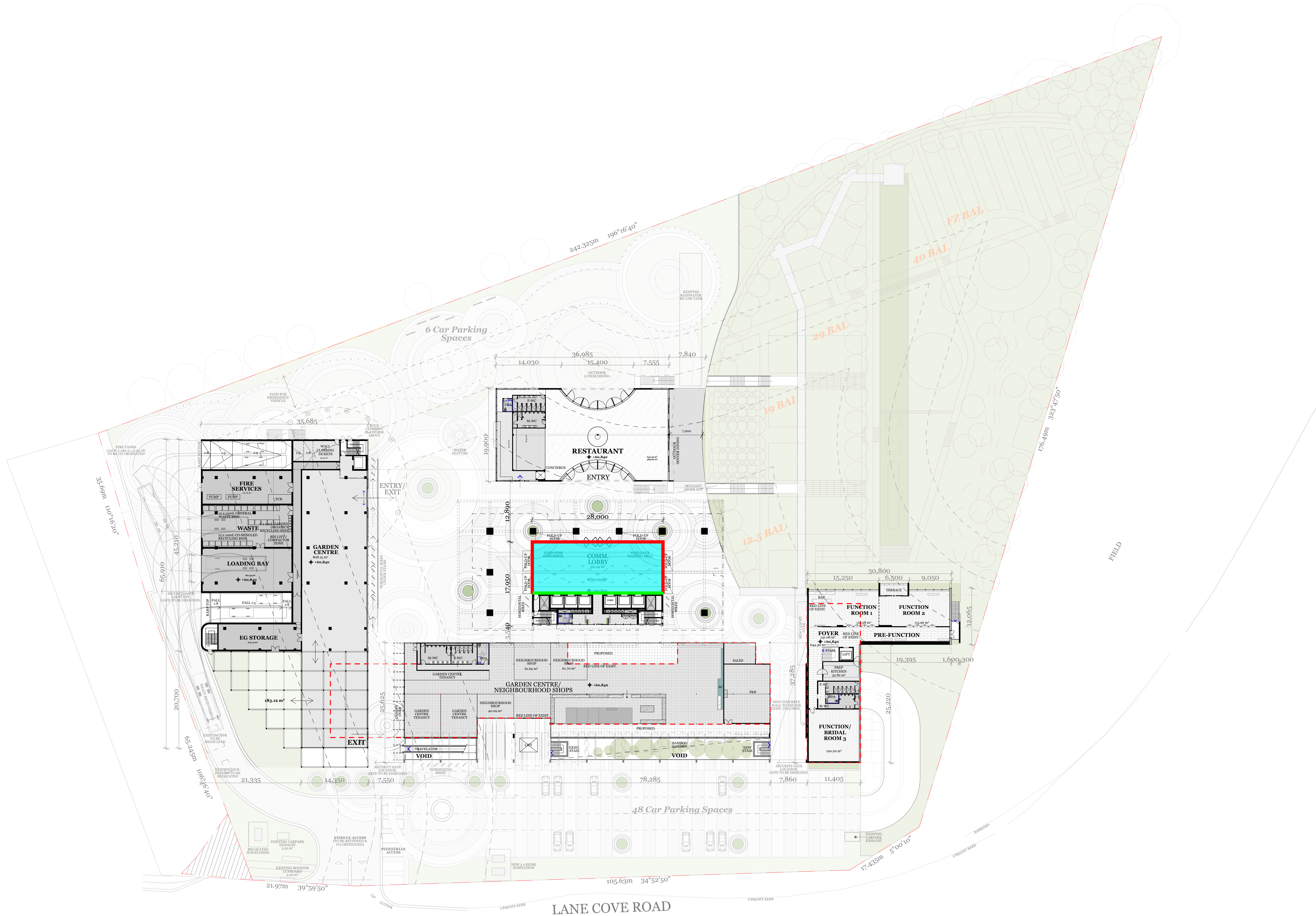
Project Name	Lane Cove	Project Number	12010
Project Address	307 Lane Cove Road, Macquarie Park, NSW 2113	Drawing Name	Lower Ground
		Scale	1:400, 1:160A1
		Date	13/02/2021
Client	Eden Gardens	Drawing Number	DA104
		Revision	



**Insulation Legend**

- Internal Wall Insulation  
Total >R2.8
- External Wall/spandrel  
Insulation Total >R2.8
- Roof Insulation Total >R4.0  
& Solar Absorptance <0.45
- Floor Insulation  
Total >R2.2

**BUILDING A - COMMERCIAL TOWER**  
GROUND LOBBY



Rev. Date	By	Ckd	Description
14/10/2020	RR & LS	JL	PRE-DA DRAFT
04/11/2020	RR, LS, JM	JL	PRE-DA DRAFT
13/09/2021	RR, LS		DA APPLICATION

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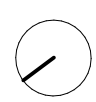
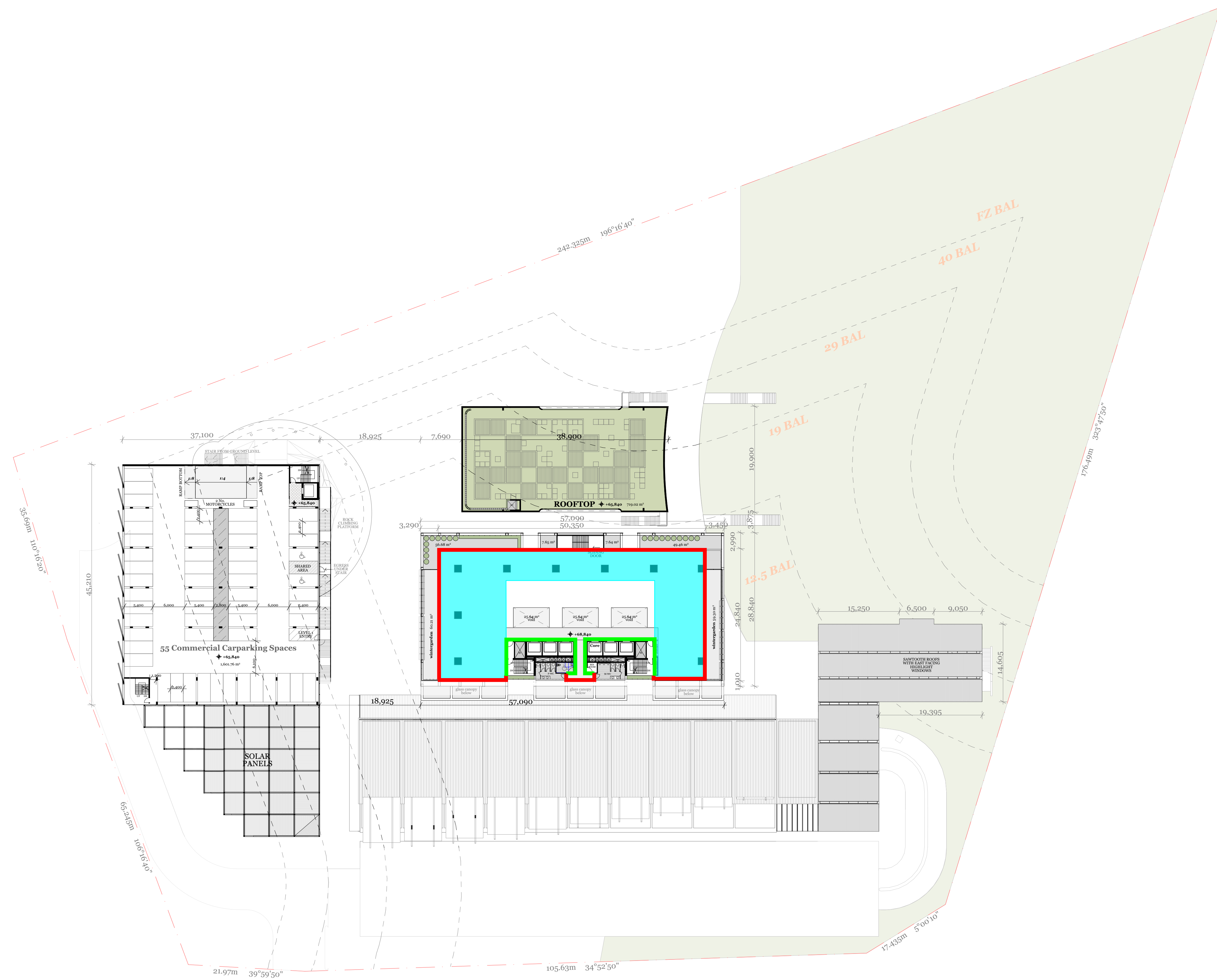
Project Name	Lane Cove	Project Address	307 Lane Cove Road, Macquarie Park, NSW 2113	Project Number	12010
Client	Eden Gardens	Drawing Name	Ground Level	Scale	1:400 @A1
		Date	13/02/2021	Drawing Number	DA105
		Revision			



**Insulation Legend**

- Internal Wall Insulation  
Total >R2.8
- External Wall/spandrel  
Insulation Total >R2.8
- Roof Insulation Total >R4.0  
& Solar Absorptance <0.45
- Floor Insulation Total  
>R2.2

**BUILDING A - COMMERCIAL TOWER**  
**TOWER PODIUM L1**  
**Floor Insulation and Wall Insulation**



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	JL		DA APPLICATION

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Project Name  
 Project Address

Lane Cove  
 307 Lane Cove Road,  
 Macquarie Park, NSW  
 2113

Project Number  
 Drawing Name  
 Scale  
 Date

12010  
 Level 1 - Tower Podium (Lower)  
 1:400 @A1  
 13/02/2021

Client

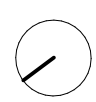
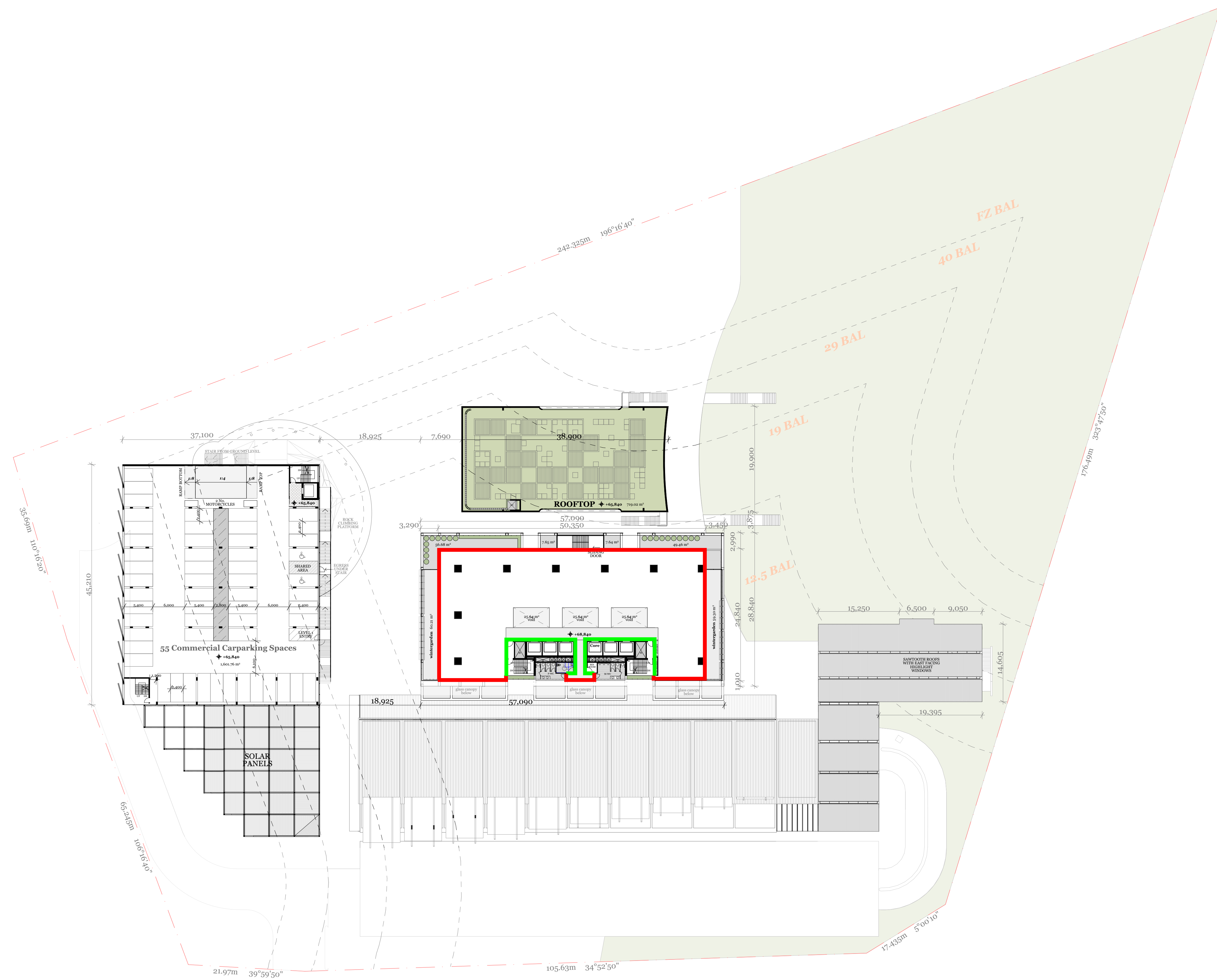
Eden Gardens

Drawing Number **DA106**  
 Revision

**Insulation Legend**

- Internal Wall Insulation  
Total >R2.8
- External Wall/spandrel  
Insulation Total >R2.8
- Roof Insulation Total >R4.0  
& Solar Absorptance <0.45
- Floor Insulation Total  
>R2.2

**BUILDING A - COMMERCIAL TOWER**  
TOWER PODIUM L2  
*Wall Insulation*



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	JL		DA APPLICATION

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Project Name  
Project Address

Lane Cove  
307 Lane Cove Road,  
Macquarie Park, NSW  
2113

Project Number  
Drawing Name  
Scale  
Date

12010  
Level 1 - Tower Podium (Lower)  
1:400 @A1  
13/02/2021

Client

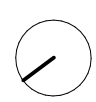
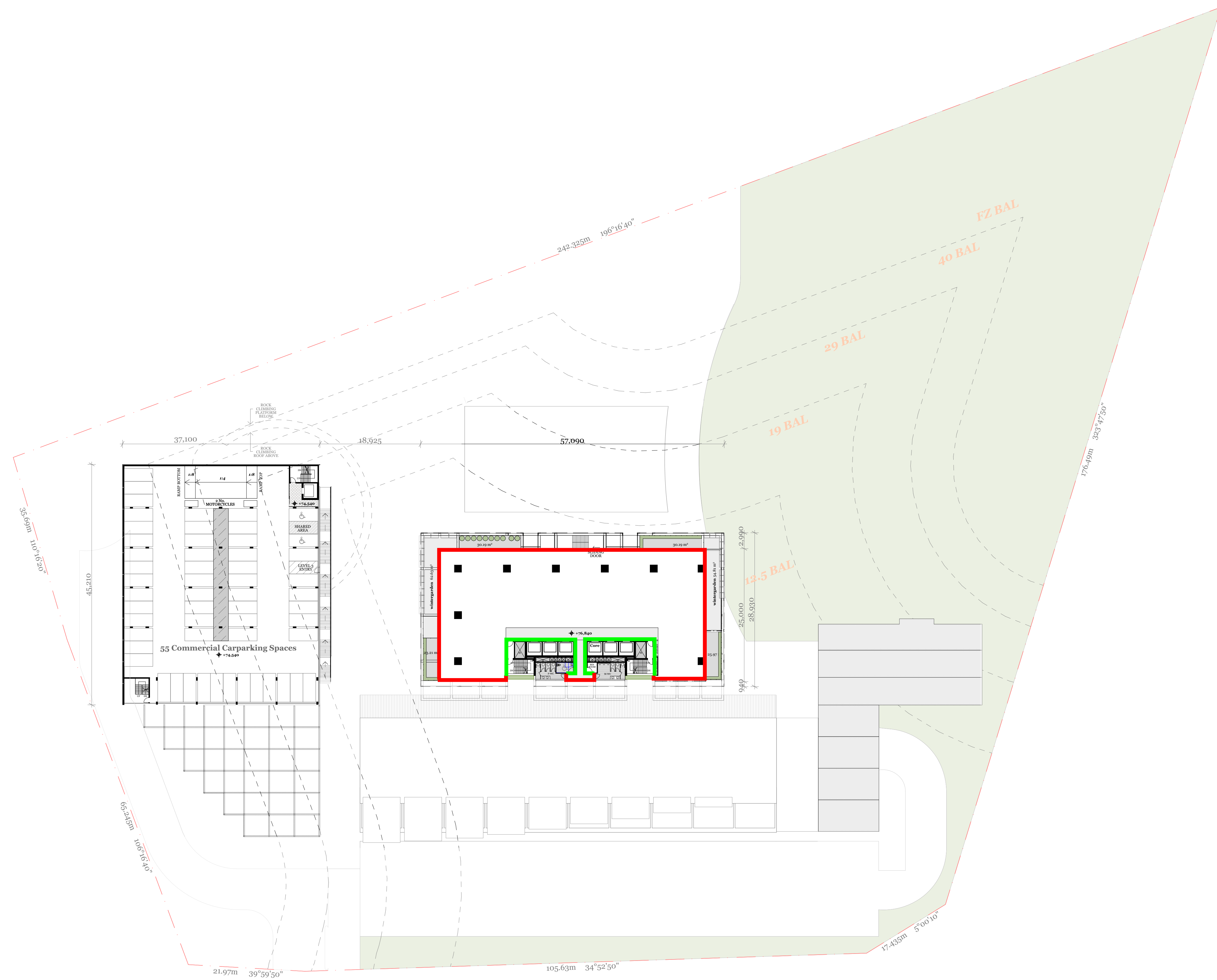
Eden Gardens

Drawing Number **DA106**  
Revision

**Insulation Legend**

- Internal Wall Insulation  
Total >R2.8
- External Wall/spandrel  
Insulation Total >R2.8
- Roof Insulation Total >R4.0  
& Solar Absorptance <0.45
- Floor Insulation Total  
>R2.2

**BUILDING A - COMMERCIAL TOWER**  
TOWER PODIUM L3  
*Wall Insulation*



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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Project Name  
Project Address

Client

Project Number  
Drawing Name  
Scale  
Date

Client  
Eden Gardens  
Drawing Number  
Revision

12010  
Level 3 - Tower Podium (Upper)  
1:400 @A1  
13/02/2021

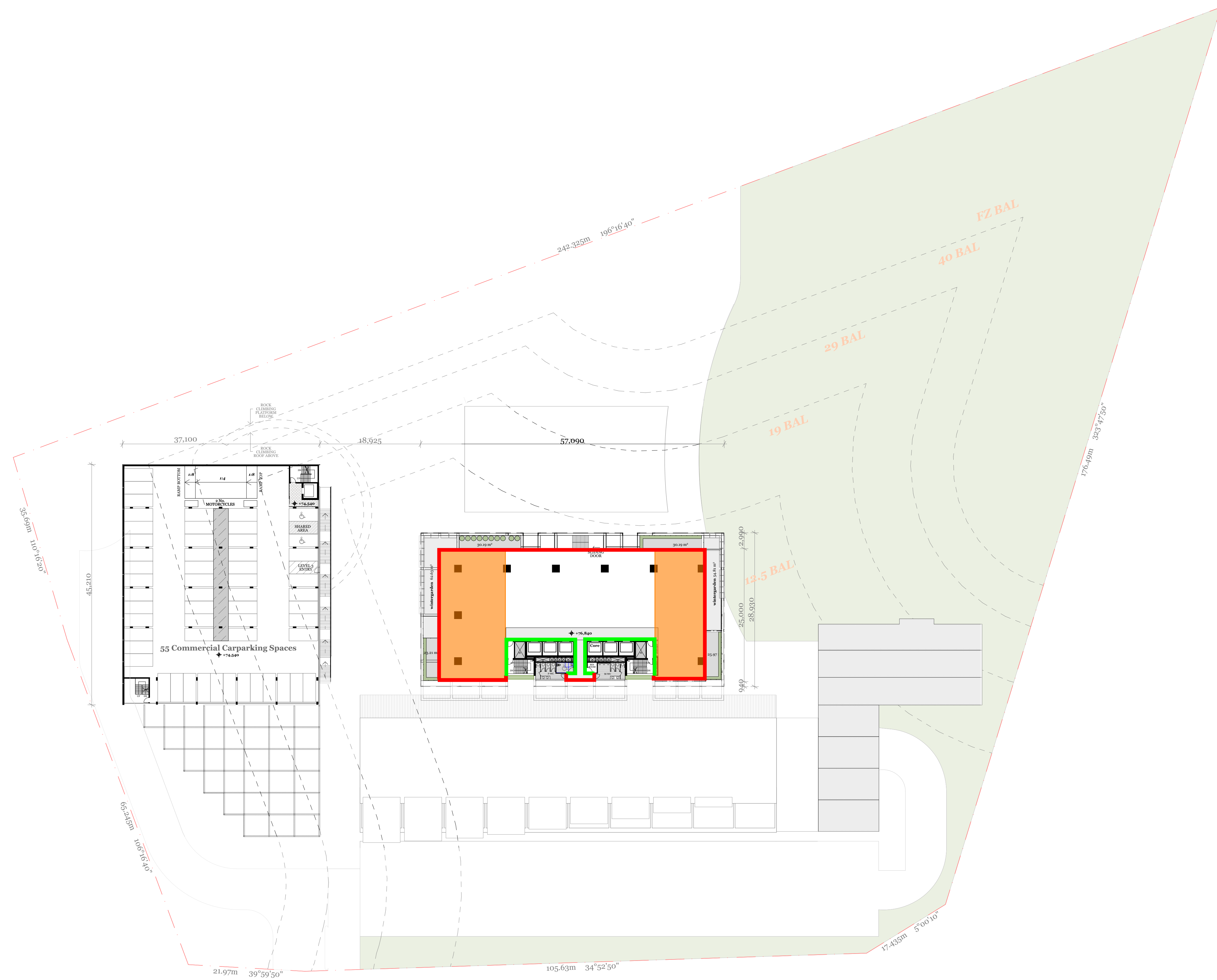
**DA107**



**Insulation Legend**

- Internal Wall Insulation  
Total >R2.8
- External Wall/spandrel  
Insulation Total >R2.8
- Roof Insulation Total >R4.0  
& Solar Absorptance <0.45
- Floor Insulation Total  
>R2.2

**BUILDING A - COMMERCIAL TOWER**  
TOWER PODIUM L4  
*Wall Insulation and Roof Insulation*



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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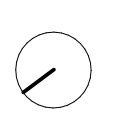
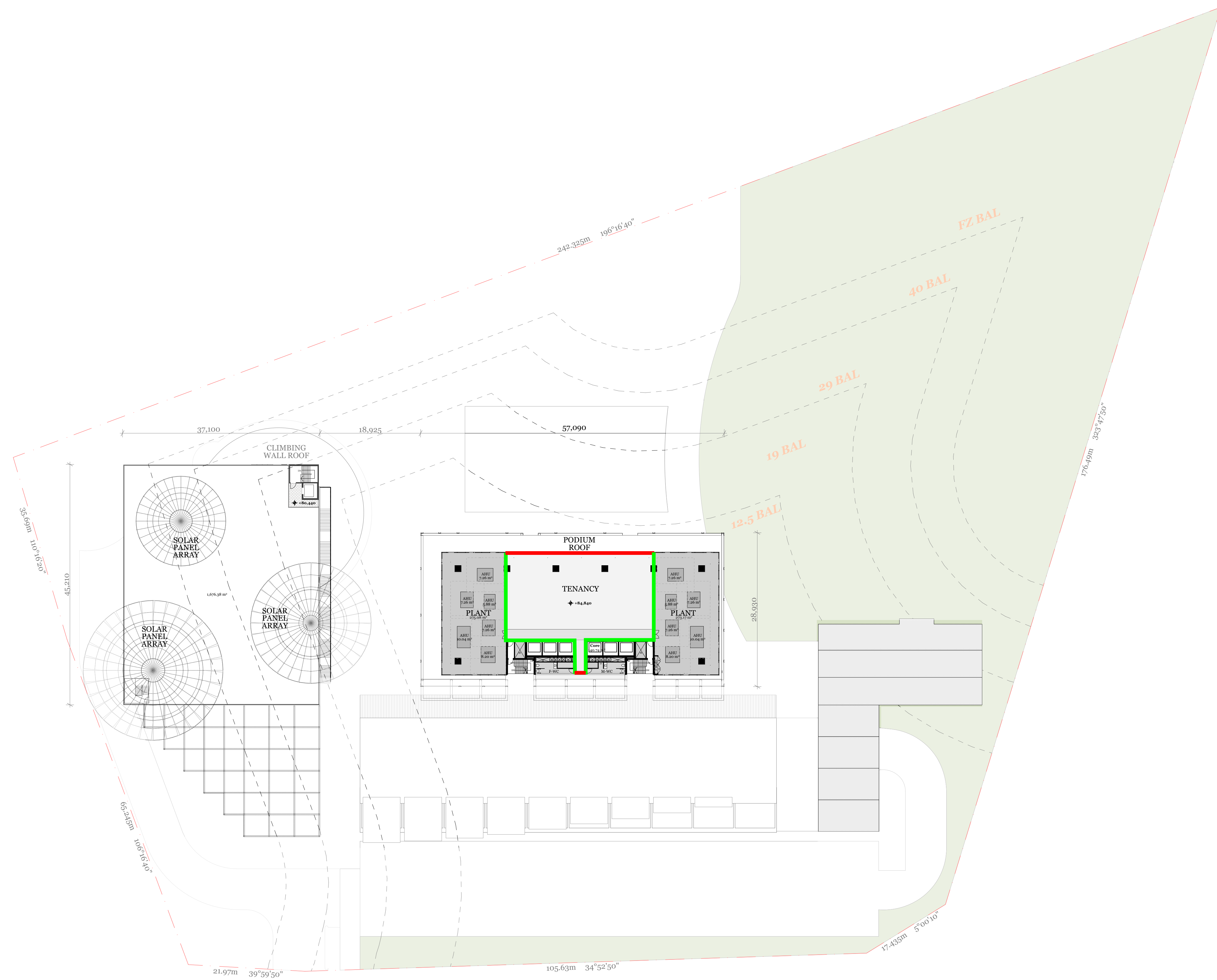


Project Name	Lane Cove	Project Address	307 Lane Cove Road, Macquarie Park, NSW 2113	Project Number	12010	Drawing Name	Level 3 - Tower Podium (Upper)	Scale	1:400 @A1	Date	13/02/2021
Client	Eden Gardens	Drawing Number	DA107	Revision							

**Insulation Legend**

- Internal Wall Insulation  
Total >R2.8
- External Wall/spandrel  
Insulation Total >R2.8
- Roof Insulation Total >R4.0  
& Solar Absorptance <0.45
- Floor Insulation Total  
>R2.2

**BUILDING A - COMMERCIAL TOWER**  
TOWER PODIUM L5  
*Wall Insulation*



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: 61413783665



Project Name	Lane Cove	Project Address	307 Lane Cove Road, Macquarie Park, NSW 2113	Project Number	12010
Client	Eden Gardens	Drawing Name	Level 5 - Tower Plant	Scale	1:400, 1:16/A1
		Date	13/02/2021	Drawing Number	<b>DA108</b>
		Revision			

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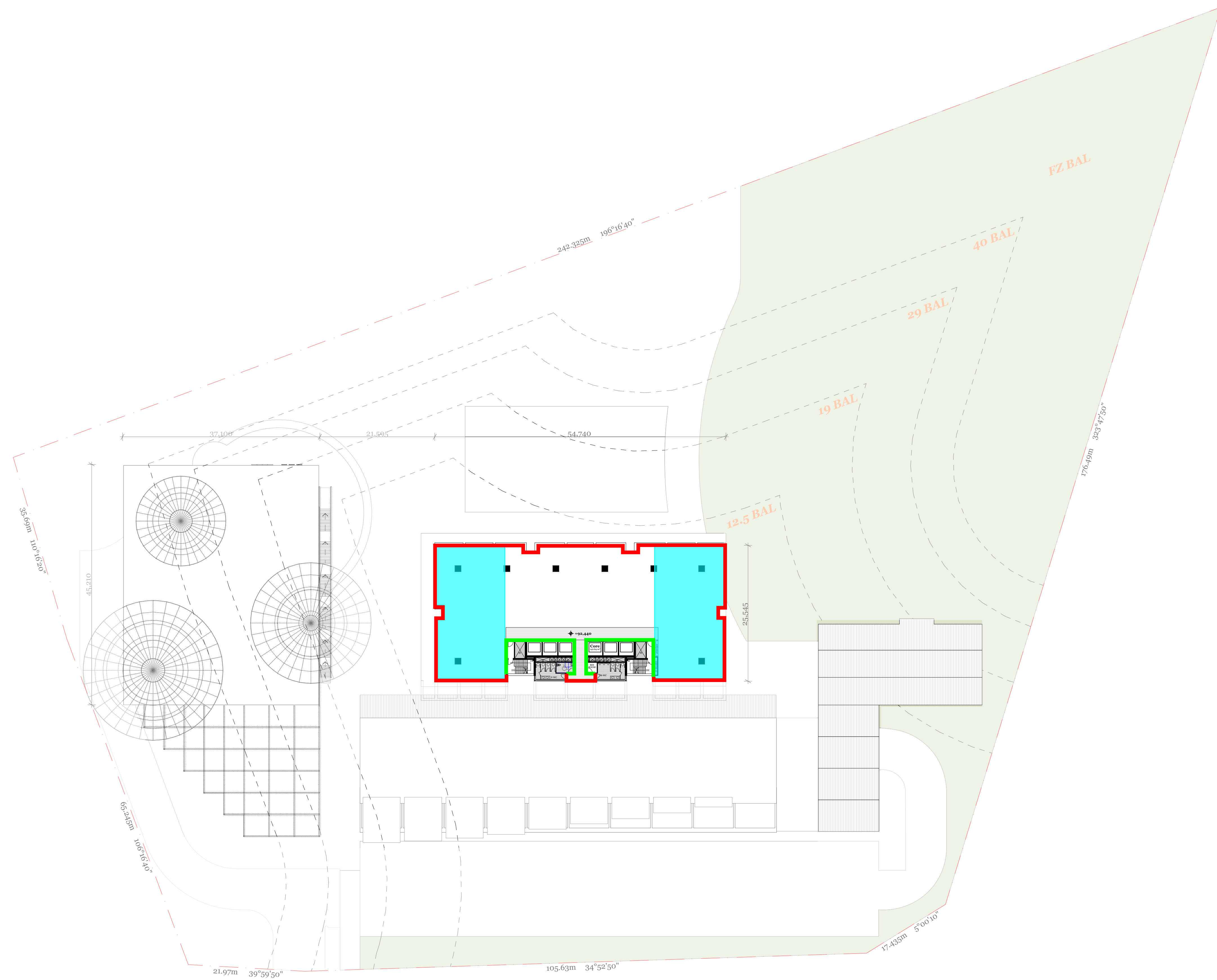
**Insulation Legend**

- Internal Wall Insulation  
Total >R2.8
- External Wall/spandrel  
Insulation Total >R2.8
- Roof Insulation Total >R4.0  
& Solar Absorptance <0.45
- Floor Insulation Total  
>R2.2

**BUILDING A - COMMERCIAL TOWER**

TOWER L06

Wall Insulation and Floor Insulation



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

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Project Name

Lane Cove  
 307 Lane Cove Road,  
 Macquarie Park, NSW  
 2113

Project Number  
 Drawing Name  
 Scale  
 Date

12010  
 Levels 6-7,10-11 13-14,17 - Typical  
 1:400 @A1  
 13/02/2021

Client

Eden Gardens

Drawing Number **DA109**  
 Revision

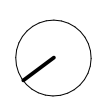
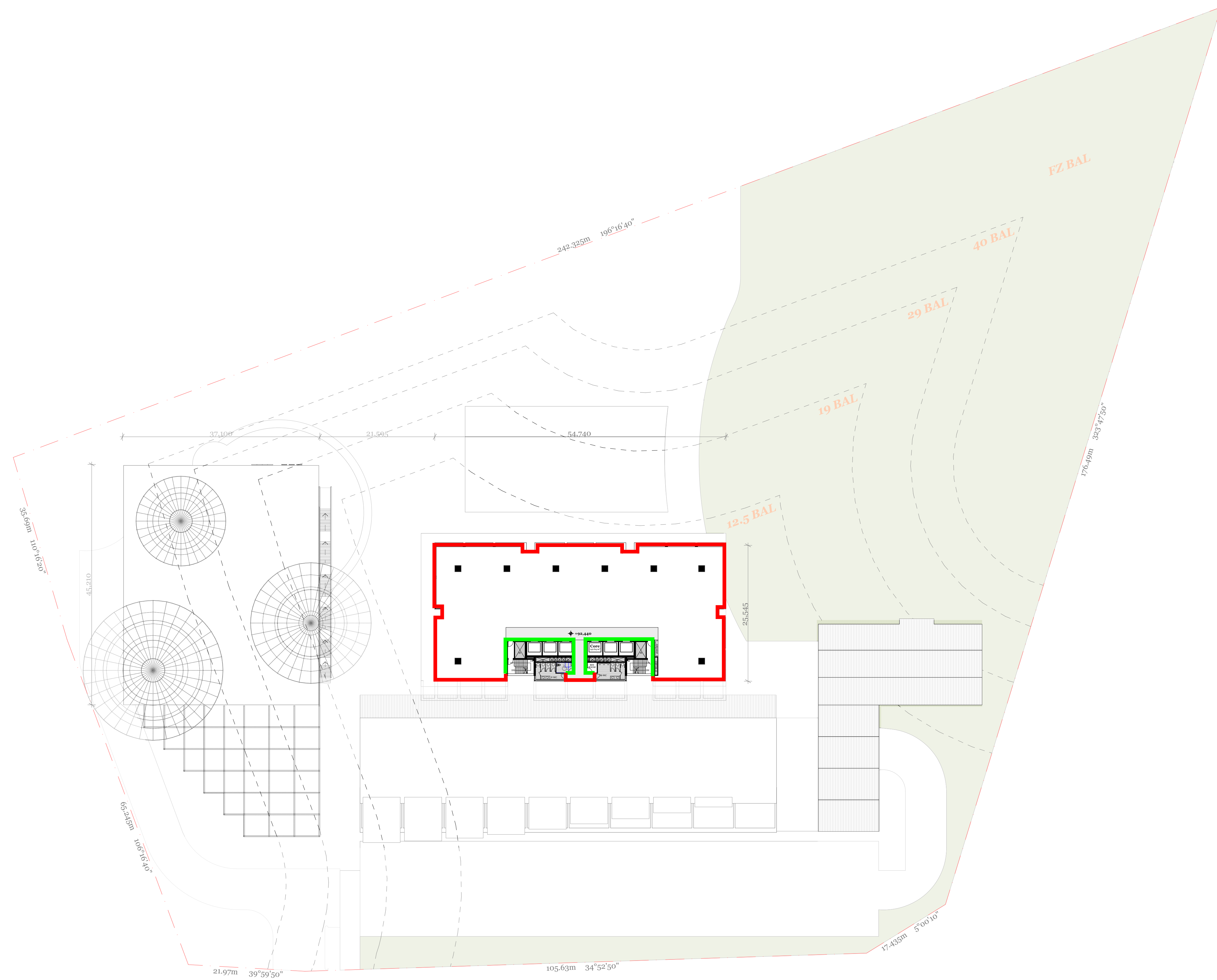
**Insulation Legend**

- Internal Wall Insulation  
Total >R2.8
- External Wall/spandrel  
Insulation Total >R2.8
- Roof Insulation Total >R4.0  
& Solar Absorptance <0.45
- Floor Insulation Total  
>R2.2

**BUILDING A - COMMERCIAL TOWER**

TOWER L07, 10, 14

Wall Insulation



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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Project Name

Lane Cove  
 307 Lane Cove Road,  
 Macquarie Park, NSW  
 2113

Project Number  
 Drawing Name  
 Scale  
 Date

12010  
 Levels 6-7,10-11 13-14,17 - Typical  
 1:400 @A1  
 13/02/2021

Client

Eden Gardens

Drawing Number **DA109**  
 Revision

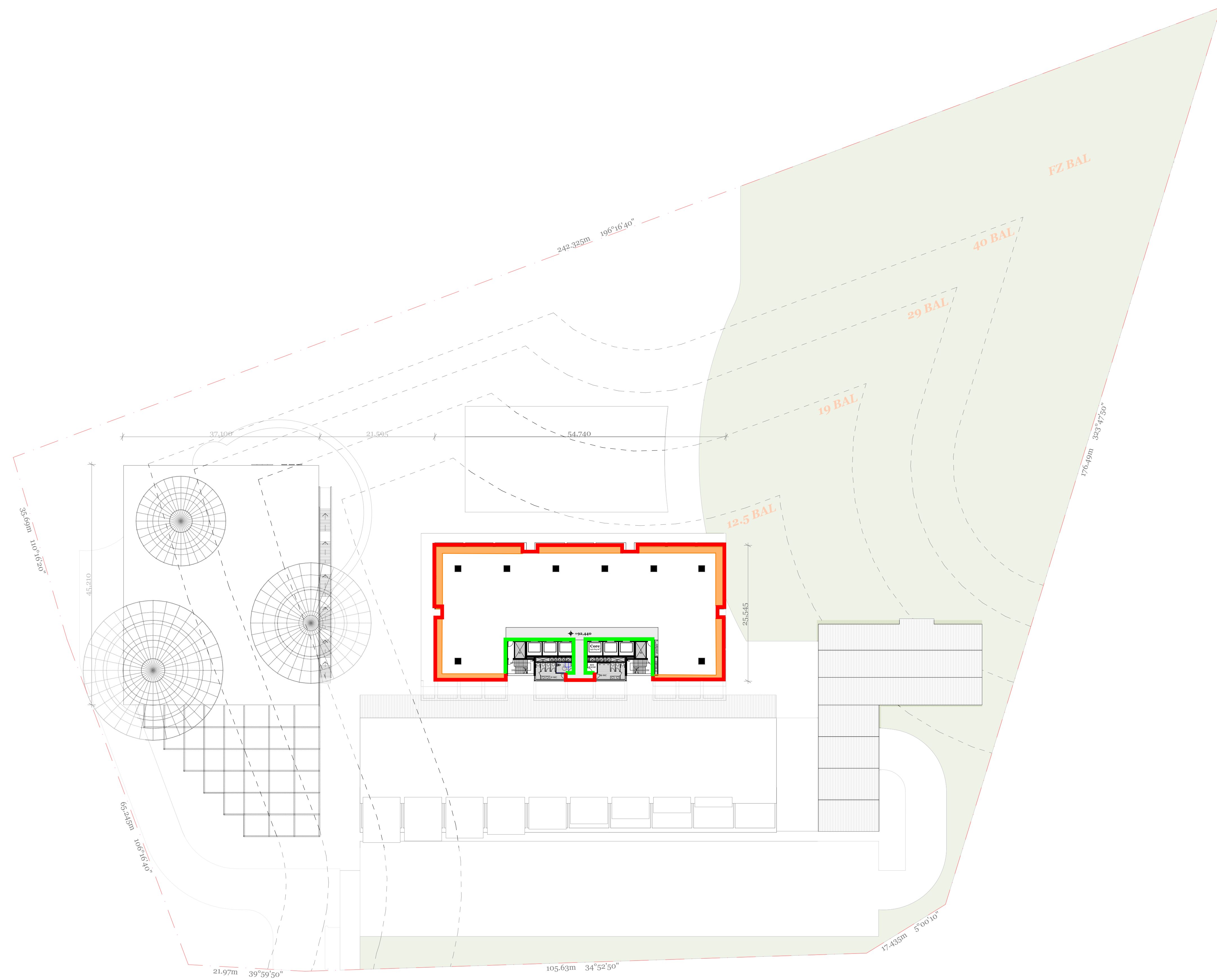
**Insulation Legend**

- Internal Wall Insulation  
Total >R2.8
- External Wall/spandrel  
Insulation Total >R2.8
- Roof Insulation Total >R4.0  
& Solar Absorptance <0.45
- Floor Insulation Total  
>R2.2

**BUILDING A - COMMERCIAL TOWER**

TOWER L11

Wall Insulation and Roof Insulation



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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Project Name

Lane Cove  
 307 Lane Cove Road,  
 Macquarie Park, NSW  
 2113

Project Number

12010  
 Drawing Name  
 Levels 6-7,10-11 13-14,17 - Typical  
 Scale @A1  
 Date 13/02/2021

Client

Eden Gardens

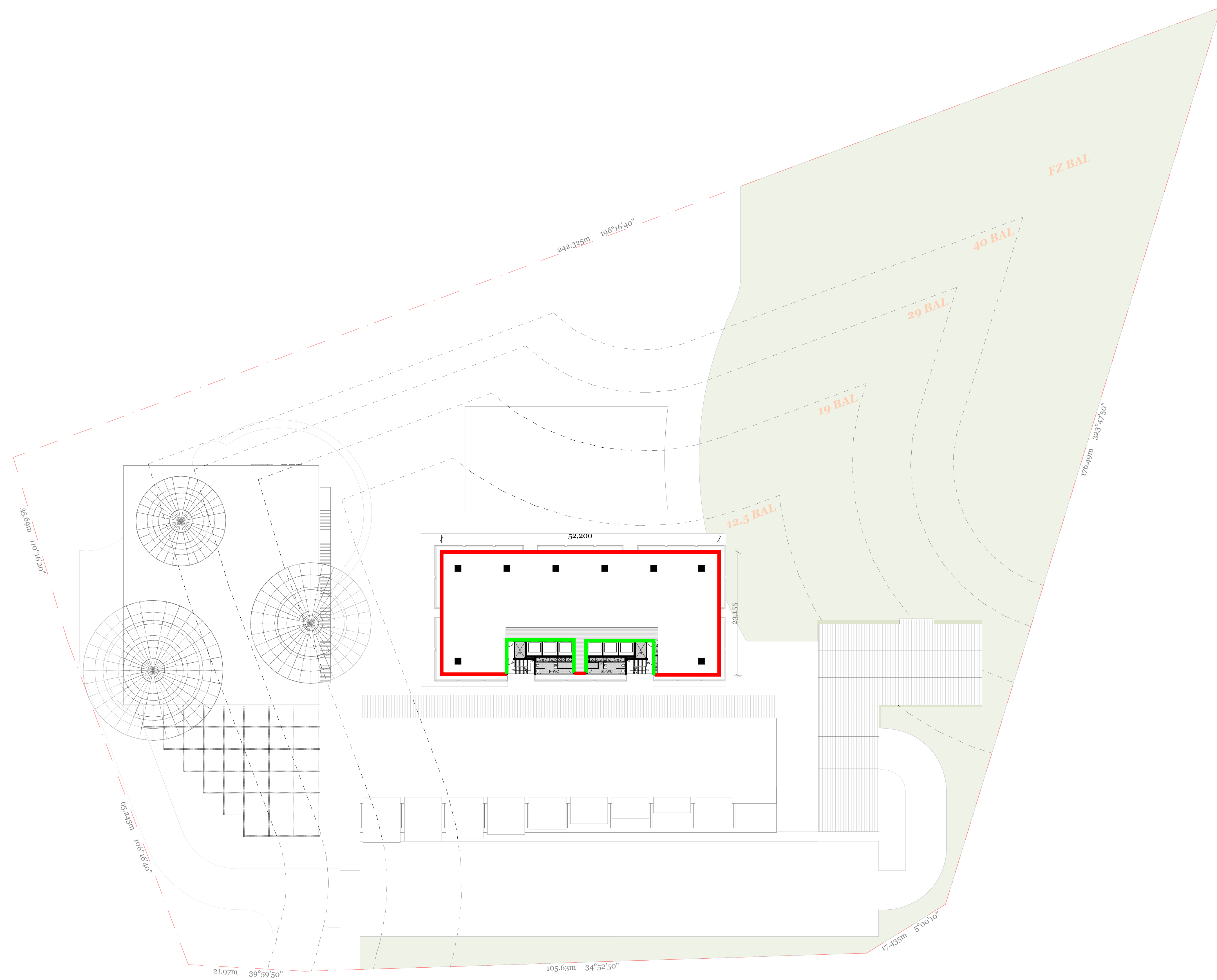
Drawing Number **DA109**  
 Revision



**Insulation Legend**

- Internal Wall Insulation  
Total >R2.8
- External Wall/spandrel  
Insulation Total >R2.8
- Roof Insulation Total >R4.0  
& Solar Absorptance <0.45
- Floor Insulation Total  
>R2.2

**BUILDING A - COMMERCIAL TOWER**  
TOWER L12  
*Wall Insulation*



Rev.	Date	By	Ckd	Description
14/10/2020	RR & LS	JL		PRE-DA DRAFT
04/12/2020	RR, LS, JM	JL		PRE-DA DRAFT
13/02/2021	RR, LS			DA APPLICATION

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Project Name  
Project Address

Client

Project Number  
Drawing Name  
Scale  
Date

Drawing Number  
Revision

12010  
Level 12 - Tower  
1:400, 1:16/A1  
13/02/2021

**DA111**

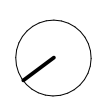
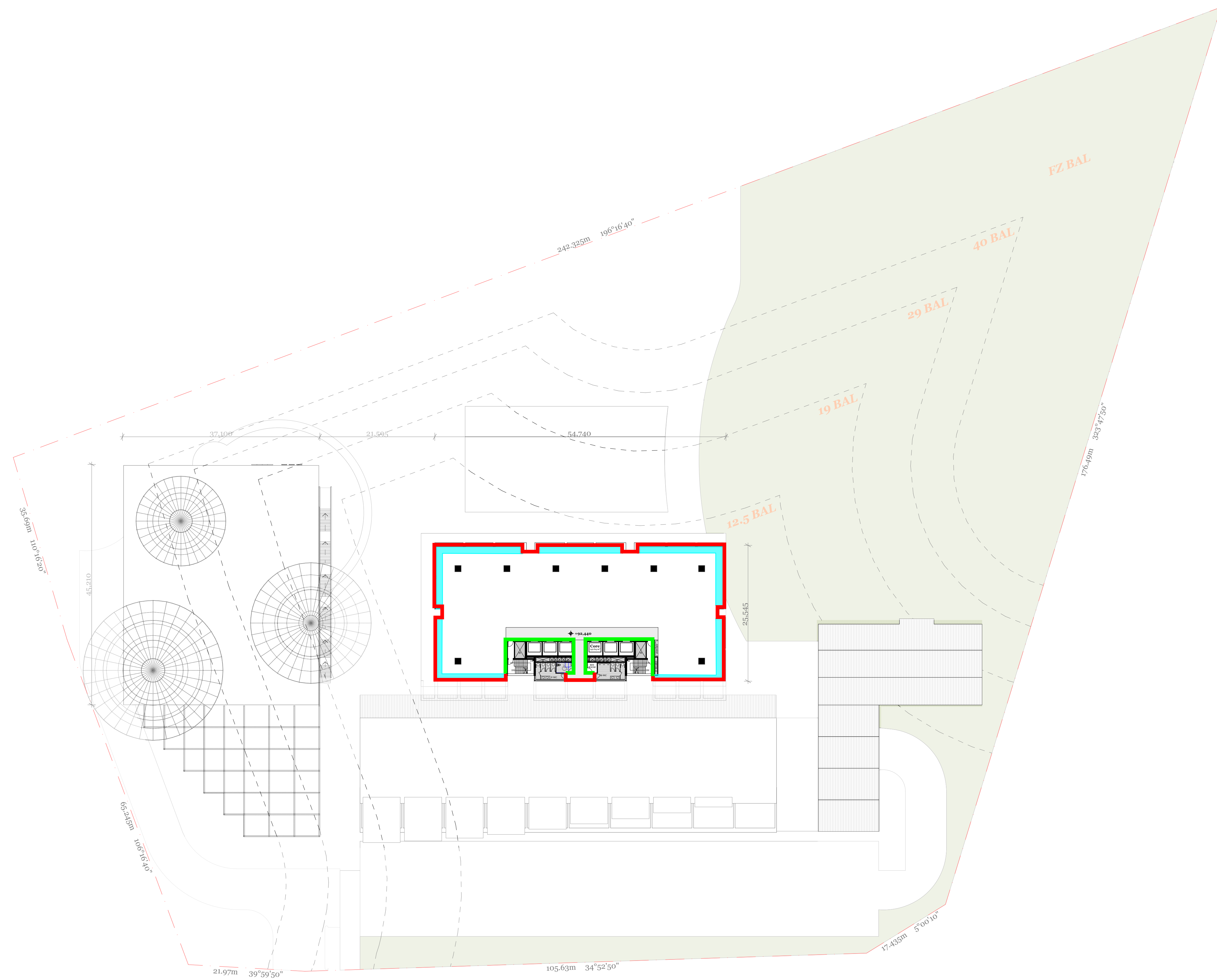
**Insulation Legend**

- Internal Wall Insulation  
Total >R2.8
- External Wall/spandrel  
Insulation Total >R2.8
- Roof Insulation Total >R4.0  
& Solar Absorptance <0.45
- Floor Insulation Total  
>R2.2

**BUILDING A - COMMERCIAL TOWER**

TOWER L13

Wall Insulation and Floor Insulation



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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Project Name: Lane Cove  
 Project Address: 307 Lane Cove Road,  
 Macquarie Park, NSW  
 2113

Client: Eden Gardens

Project Number: 12010  
 Drawing Name: Levels 6-7,10-11 13-14,17 - Typical  
 Scale: 1:400 @A1  
 Date: 13/02/2021

Drawing Number: **DA109**  
 Revision:

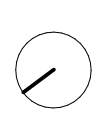
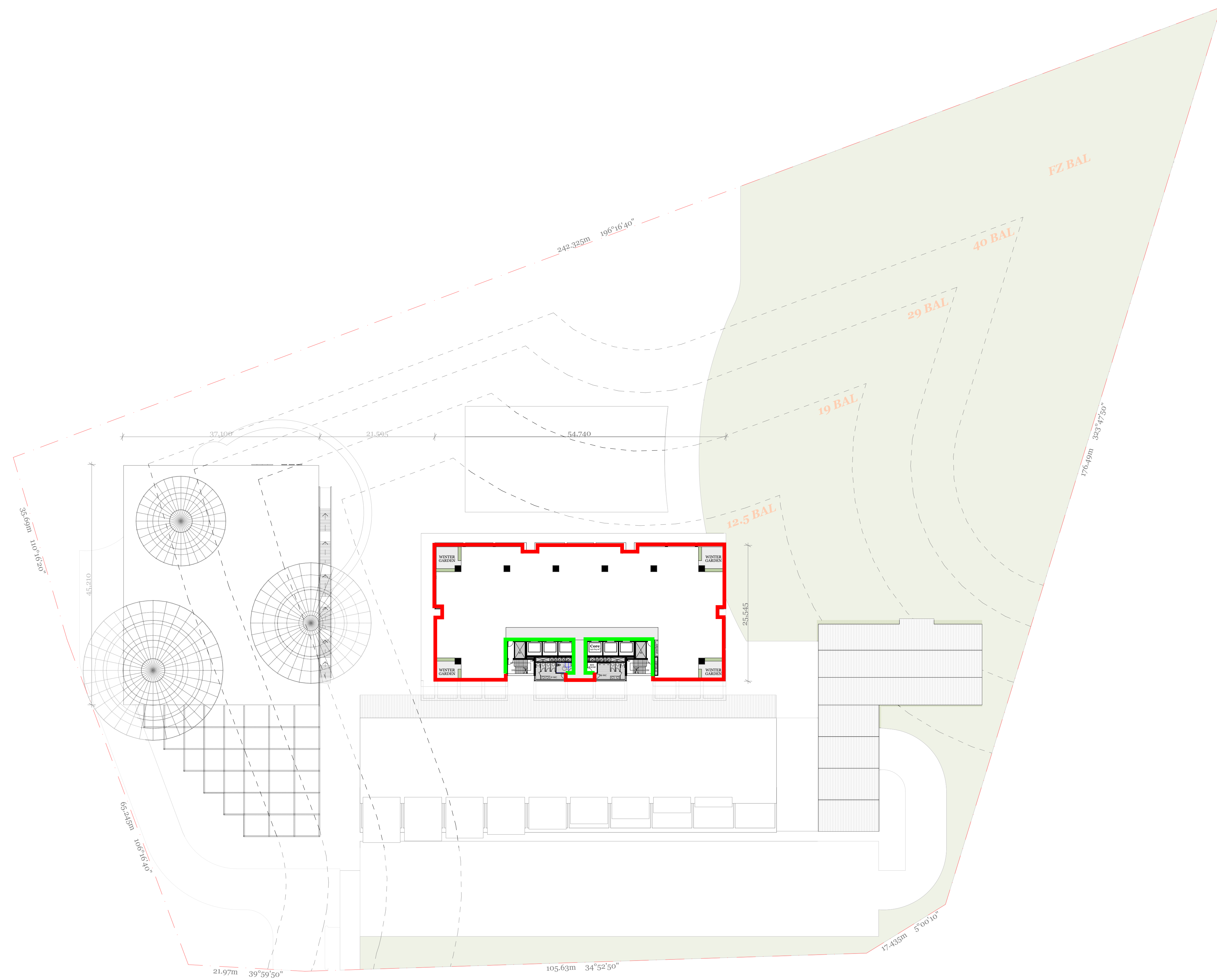
**Insulation Legend**

- Internal Wall Insulation  
Total >R2.8
- External Wall/spandrel  
Insulation Total >R2.8
- Roof Insulation Total >R4.0  
& Solar Absorptance <0.45
- Floor Insulation Total  
>R2.2

**BUILDING A - COMMERCIAL TOWER**

TOWER L08, 09, 15, 16

Wall Insulation



Rev.	Date	By	Ckd	Description
14/10/2020	RR, LS, JL	JL	PRE-DA DRAFT	
04/11/2020	RR, LS, JM, JL	JL	PRE-DA DRAFT	
13/09/2021	RR, LS	JL	DA APPLICATION	

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Project Name	Lane Cove	Project Address	307 Lane Cove Road, Macquarie Park, NSW 2113	Project Number	12010	Drawing Name	Level 8-9,15-16 - Typical
Client	Eden Gardens	Scale	1:400 @A1	Date	13/02/2021	Drawing Number	DA110
		Revision					



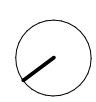
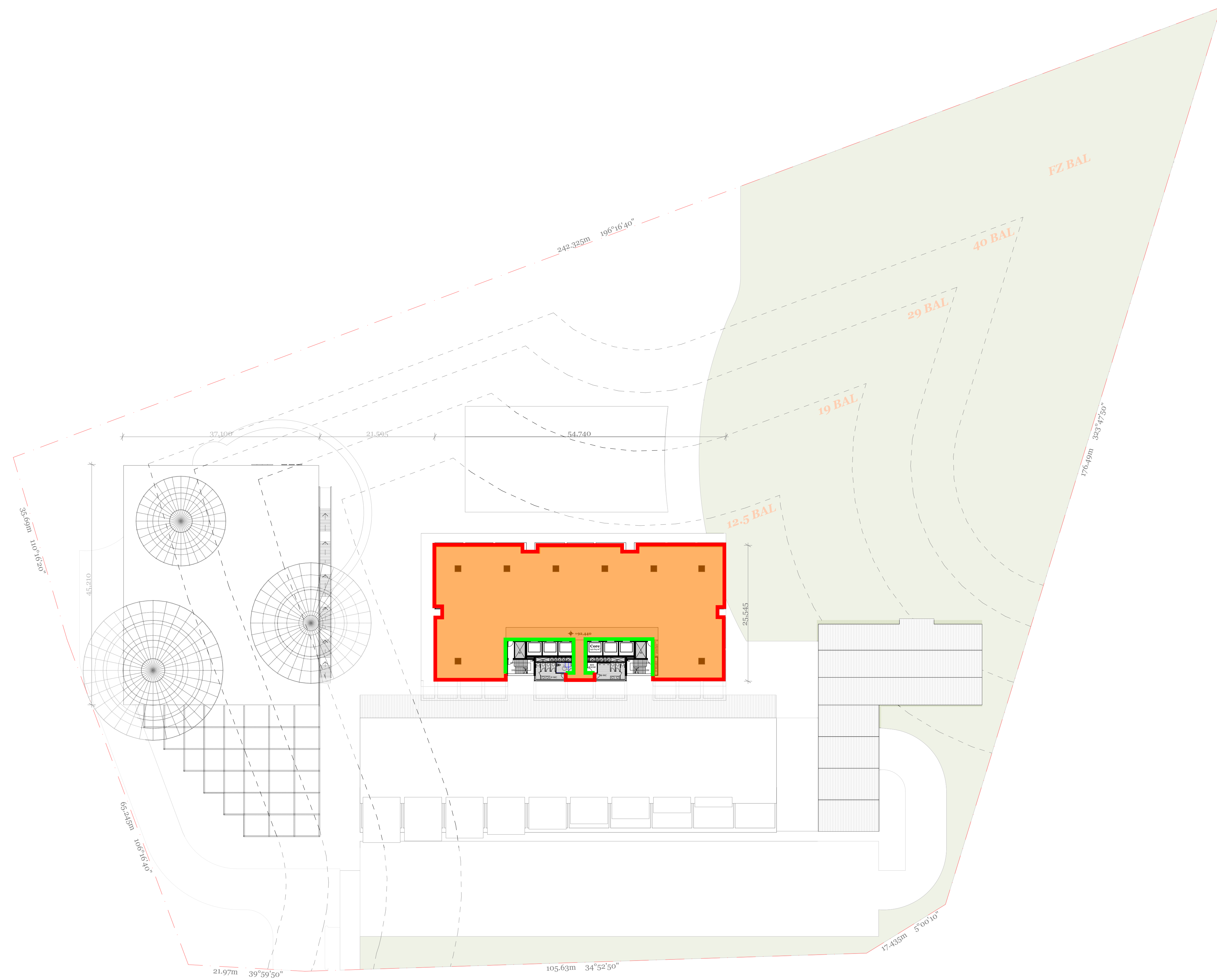
**Insulation Legend**

- Internal Wall Insulation  
Total >R2.8
- External Wall/spandrel  
Insulation Total >R2.8
- Roof Insulation Total >R4.0  
& Solar Absorptance <0.45
- Floor Insulation Total  
>R2.2

**BUILDING A - COMMERCIAL TOWER**

TOWER L17

Wall Insulation and Roof Insulation



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

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Project Name  
 Project Address

Client

Lane Cove  
 307 Lane Cove Road,  
 Macquarie Park, NSW  
 2113

Eden Gardens

Project Number  
 Drawing Name  
 Scale  
 Date

Drawing Number  
 Revision

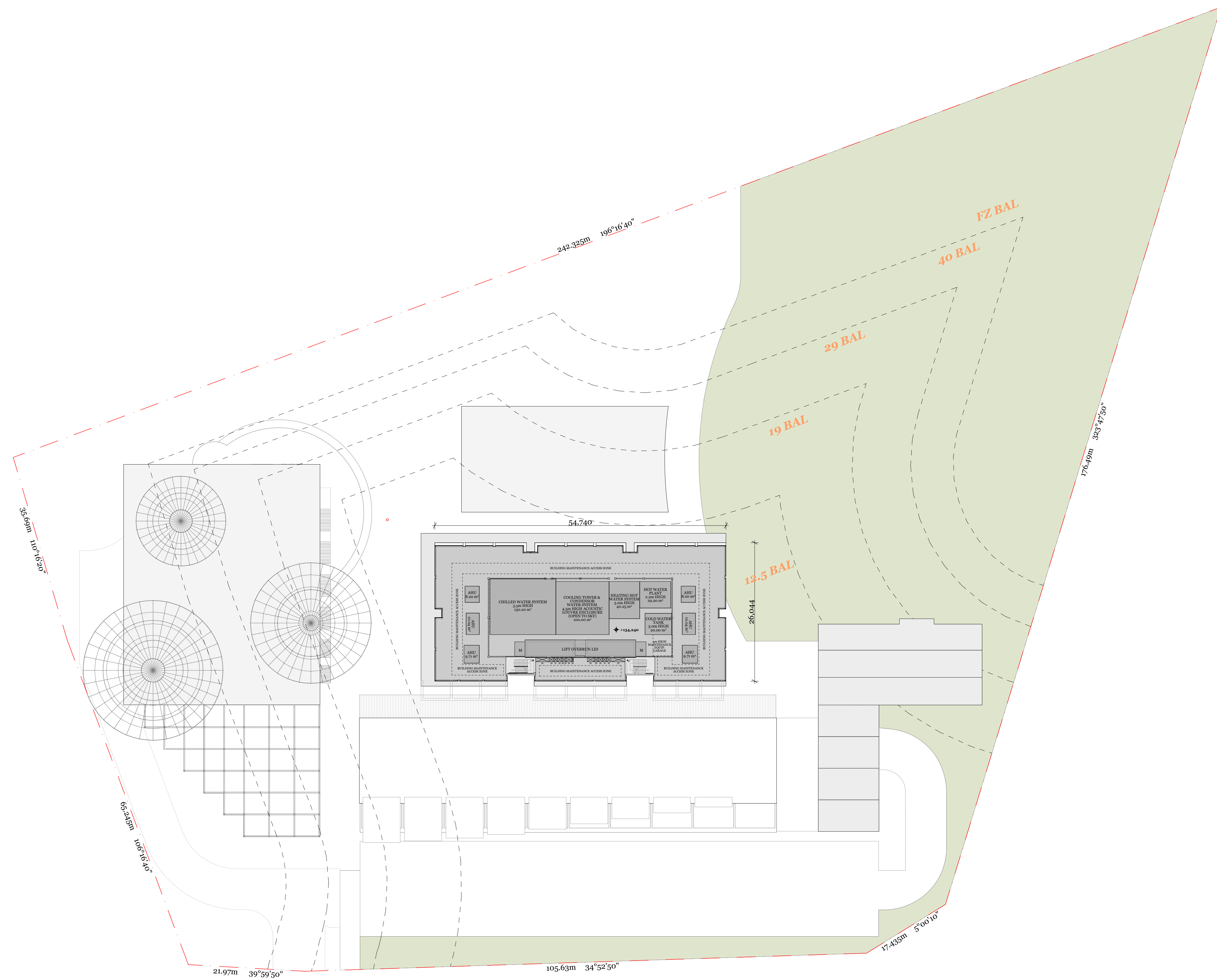
12010  
 Levels 6-7,10-11 13-14,17 - Typical  
 1:400 @A1  
 13/02/2021

**DA109**

**Insulation Legend**

- Internal Wall Insulation  
Total >R2.8
- External Wall/spandrel  
Insulation Total >R2.8
- Roof Insulation Total >R4.0  
& Solar Absorptance <0.45
- Floor Insulation Total  
>R2.2

**BUILDING A - COMMERCIAL TOWER**  
TOWER ROOF LEVEL



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	JL	DA APPLICATION

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Project Name	Lane Cove	Project Address	307 Lane Cove Road, Macquarie Park, NSW 2113	Project Number	12010
Client	Eden Gardens	Drawing Name	Level 18 - Tower Roof Services	Scale	1:400, 1:16/A1
		Date	13/02/2021	Drawing Number	DA112
				Revision	



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