



Bay View Terrace, Claremont – Mixed Use Development

Sustainability Report

Date: 6 June 2023

Prepared by: Nikki Solana

Ref: 301251081

Revision

Revision	Date	Comment	Prepared By	Approved By
001	24/05/2023	DA Issue	NS	PDS
002	06/06/2023	DA Issue - Updated	NS	PDS

Disclaimer

This report provides high level guidance about feasibility of sustainability initiatives to be included in the project at design stage.

No guarantee or warrantee of building performance and operational savings in practice can be based on this preliminary advice.

We recommend that the Quantity Surveyor review the recommendations made throughout this report to confirm that they remain consistent with the budget limitations of the project.

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1. Executive Summary

A preliminary assessment has been conducted on the proposed mixed use project located at Bay View Terrace, Claremont to determine the project's potential to achieve:

- State Planning Policy 7.3 Residential Design Codes – Volume 2 Apartments
 - 4.15 Energy Efficiency
 - 4.16 Water Management and Conservation
- Compliance with NCC 2022 Section J

The project intends to achieve the above-mentioned sustainability objectives.



2. Introduction

This document has been prepared for Hames Sharley to identify the sustainability initiatives that are being considered for inclusion in the proposed residential development.

A preliminary assessment of the project's potential to achieve compliance with NCC 2022 Section J and the Residential Design Codes has been undertaken.

The initiatives will be coordinated with other design team members and further revised as design progresses, additional feedback and details become available.

2.1 Overview of Target

Based on our involvement in the project to date, we understand that the client's sustainability targets for the site are:

- State Planning Policy 7.3 Residential Design Codes – Volume 2 Apartments
 - 4.15 Energy Efficiency
 - 4.16 Water Management and Conservation
- Compliance with NCC 2022 Section J



3. Residential Code Compliance

The following guidelines outline the Environmental Performance requirements applicable for this lot:

- WA Design Guideline SPP 7.3 items 4.15 Energy efficiency & 4.16 Water management and conservation

These guidelines stipulate the following sustainability design objectives beyond minimum requirements of the building codes:

- 4.15 Energy Efficiency
 - Element Objectives:
 - i. Reduce energy consumption and greenhouse gas emissions from the development
 - Acceptable Outcomes:
 - i. Incorporate at least one significant energy efficiency initiative within the development that exceeds minimum practice (refer WA Design Guidance)
- 4.16 Water Efficiency:
 - Element Objectives:
 - i. Minimise potable water consumption throughout the development
 - ii. Stormwater runoff from small rainfall events is managed on-site, wherever practical
 - iii. Reduce the risk of flooding so that the likely impacts of major rainfall events will be minimal
 - Acceptable Outcomes:
 - i. Dwellings are individually metered for water usage
 - ii. Stormwater runoff generated from small rainfall events is managed on-site
 - iii. Provision of an overland flow path for safe conveyance of runoff from major rainfall events to the local stormwater drainage system.

The table outlined below provides commentary on the approach for compliance against each of the strategies and initiatives within the design guidelines.

Preliminary nature of this advice is noted and is reflective of the early stage of design process. Nevertheless, it is confirmed the project is committed to complying with these initiatives as outlined below:

Table 1: Residential Codes Compliance

Sustainability Requirement		Statement of compliance
Energy Efficiency	Use of a photovoltaic array for communal services.	The project intends to maximise the extent of solar PV covering as much viable roof space
	Hot water systems that are more energy efficient than electric storage units	Domestic Hot Water is to move away from electric storage units
	Other	Where relevant - energy efficient white goods are to be utilised



Water Efficiency	Dwellings are individually metered for water usage.	The apartments and hotel suites are to be individually metered for water usage.
	Fittings and appliances should be within one level of the highest level available under the Water Efficiency Labelling and Standards (WELS) system	<p>The project will provide fittings and appliances with the below WELS ratings (minimum):</p> <ul style="list-style-type: none"> • Taps – 5 Star • Urinals – 5 Star • Toilet – 4 Star • Showers – 3 Star • Dishwashers – 5 Star • Washing machines – 4 Star
	Select drought tolerant and low water use plants species	The project is providing drought tolerant and low water use plants species.
	Stormwater runoff generated from small rainfall events is managed on-site.	The project is to incorporate best practice stormwater management.
	Provision of an overland flow path for safe conveyance of runoff from major rainfall events to the local stormwater drainage system.	



5. NCC 2022 Section J Compliance

5.1 Outcome

5.1.1 Non-residential Areas

Based on our design review, the buildings can demonstrate compliance with the Deemed-to-Satisfy provisions of the NCC 2022 Volume 1. For further information, refer to section above regarding building fabric and glazing specification details.

The project architect shall be required to incorporate the following compliance detail into the project Tender Documentation to ensure compliance with the Deemed-to-Satisfy provisions of the NCC 2022 Volume 1.

Conditions and Requirements

- **Performance Requirements - Façade**

The Façade shall comply with the performance requirements outlined within this report;

- Location of insulation and the building fabric thermal performance requirements
- Glazing thermal performance requirements

The thermal performance of all construction materials associated with this specification has been summarised above.

Reference is made to Appendix A for mark-up indicating extent of any added insulation included within the construction specifications.

- **Prescriptive Requirements**

In addition to the performance related compliance requirements outlined above, there are further prescriptive Section J elements which must be complied with. These are outlined below and shall be complied with during the delivery phase of the project.

- Appendix C - Part J4 – Building Fabric
- Appendix D - Part J5 – Building Sealing

5.1.2 Residential Areas

Based on the design review, the project meets NatHERS requirement where each independent dwelling must achieve a minimum of 5-stars. The assessment results of the residential portion of the building are summarised in Table 2 below.

Table 2: Average and minimum energy efficiency ratings

Average Energy Intensity (mj/m ²)	Average Star Rating	Minimum Star Rating
40.9	7.6	5.4

The building fabric assumptions used for the residential portion of this project have been presented above.

Refer to Appendix B for modelling results.



5.2 Building Fabric Requirements

5.2.1 Residential Areas

Overall recommended thermal performance of the building fabric is shown below. Refer to Appendix A for the indicative locations of insulation.

These values will be further reviewed and refined as design progresses.

Table 6: Residential Building Fabric Requirements.

Building Envelope Element	Minimum Total R-value	Solar Absorptance	Insulation Example
Roof	R _T 4.2	0.40 (Light colour)	Minimum 110mm Anticon Glasswool Blanket
External Walls	Residential R _T R2.8	0.6 (average)	Minimum 90mm Glasswool Batt
Internal Walls	Residential R _T 1.8	NA	Minimum 75mm Glasswool Batt
Suspended Slab	R _T 2.0	NA	Minimum 40mm Rigid Board

Notes:

1. Internal walls refers to walls separating conditioned and non-conditioned internal zones.
2. The Total R-value shall be calculated, including allowance for thermal bridging, in accordance with:
 - AS/NZS 4859.2 for a roof or floor;
 - AS/NZS 4859.2 for wall components or Specification J1.5b (NCC 2019 Volume One) for spandrel panels.
3. The Total R-value calculation must consider individual component layers in a composite element including any building material, insulating material, airspace and associated surface resistances.

5.2.2 Non-Residential Areas

Overall recommended thermal performance of the building fabric is shown below. Refer to Appendix A for the indicative locations of insulation.

These values will be further reviewed and refined as design progresses.

Table 6: Non-Residential Building Fabric Requirements.

Building Envelope Element	Minimum Total R-value	Solar Absorptance	Insulation Example
Roof	R _T 3.7	0.40 (Light colour)	50mm Rigid Board
External Walls	Residential R _T R1.0	0.6 (average)	Minimum 50mm Glasswool Batt
Internal Walls	Residential R _T 1.0	NA	Minimum 50mm Glasswool Batt
Suspended Slab	R _T 2.0	NA	Minimum 40mm Rigid Board

Notes:

1. Internal walls refers to walls separating conditioned and non-conditioned internal zones.
2. The Total R-value shall be calculated, including allowance for thermal bridging, in accordance with:
 - AS/NZS 4859.2 for a roof or floor;
 - AS/NZS 4859.2 for wall components or Specification J1.5b (NCC 2019 Volume One) for spandrel panels.



3. The Total R-value calculation must consider individual component layers in a composite element including any building material, insulating material, airspace and associated surface resistances.

5.2.3 Residential and Non-Residential Areas

Table 5: Glazing Thermal Performance Requirements.

Window Type	Location	U-value (W/m ² K)	SHGC
High Performance Double Glazing	All orientations	3.50	0.27 -0.30

Notes:

1. Glazing thermal performance shown is the minimum performance requirements.
2. Performance values states are whole-of-system, inclusive of framing and glass, and in accordance with Australian Fenestration Rating Council (AFRC) requirement.



Appendix A – Insulation Mark Ups



Legend

Residential Insulation Requirements:

- Roof/Ceiling - Min R4.2 Total System (eg R2.8 125mm Anticon Faced Glasswool Blanket)
- Soffit - Min R2.0 Total System (eg R1.9 40mm Rigid Board)
- External Walls - Min R2.8 Total System (eg R2.5 90mm Glasswool Batt)
- Internal Walls - Min R1.8 Total System (eg R1.5 75mm Glasswool Batt)

Non-Residential Insulation Requirements:

- Roof/Ceiling - Min R3.7 Total System (eg 60mm Rigid Board)
- External Walls - Min R1.0 Total System (eg 50mm Glasswool Batt)
- Internal Walls - Min R1.0 Total System (eg 50mm Glasswool Batt)
- Soffit - Min R2.0 Total System (eg 40mm Rigid Board)

Note: Residential thermal insulation calculations do not consider the influence of thermal bridging, Non-residential thermal insulation calculations do account for the influence of thermal bridging.

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AUTHOR : NS
DATE : 06/06/23

NOTE:

GFA AREA CALCULATIONS INCLUDE OVERALL ENVELOPE OF BUILDING WITH BALCONIES.

NLA AREA CALCULATIONS DO NOT INCLUDE BALCONIES FROM ROOMS

LANDSCAPING AREA CALCULATIONS INCLUDE BALCONIES/TERRACES

NET LETTABLE AREA CALCULATIONS FOR HOTEL ROOMS AND APARTMENTS DO NOT INCLUDE BALCONIES OR TERRACE AREAS, RISERS AND PARTY WALLS, ETC.

BALCONY GFA CALCULATIONS ROUNDED TO THE NEAREST 1.



Legend

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PROJECT NUMBER :
SKETCH TITLE:
AUTHOR :
DATE :

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301251081
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NS
06/06/23

GROUND FLOOR PLAN
No. 10-40 BAY VIEW TERRACE, CLAREMONT

Status: PRELIMINARY ISSUE
Path:

Scale: 1:200

North:

Project Number: 44493
Drawing Number: A1.02
Revision: F
Date: 01/05/23

© Hames Sharley:

Hames Sharley

Legend

Residential Insulation Requirements:

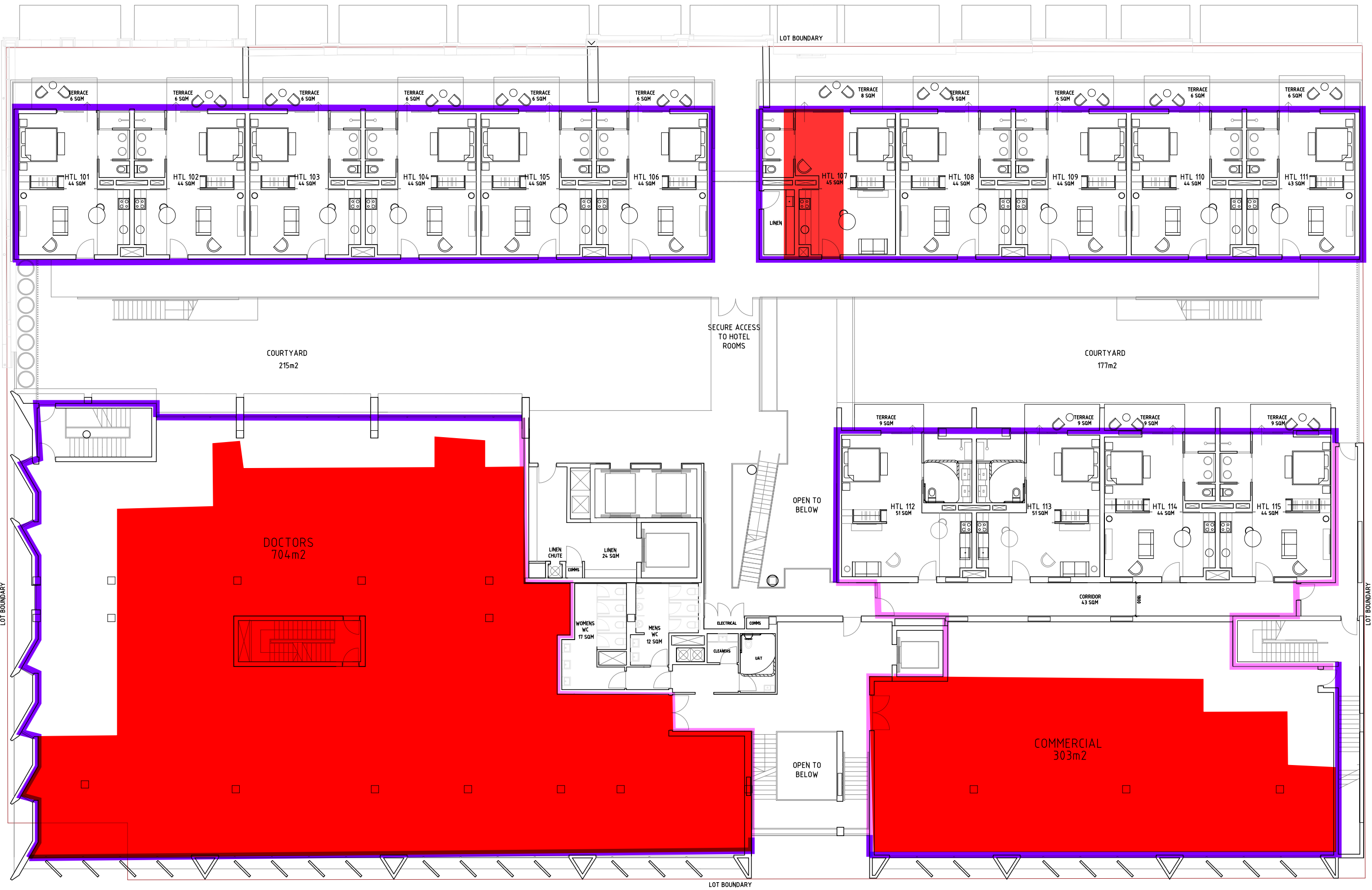
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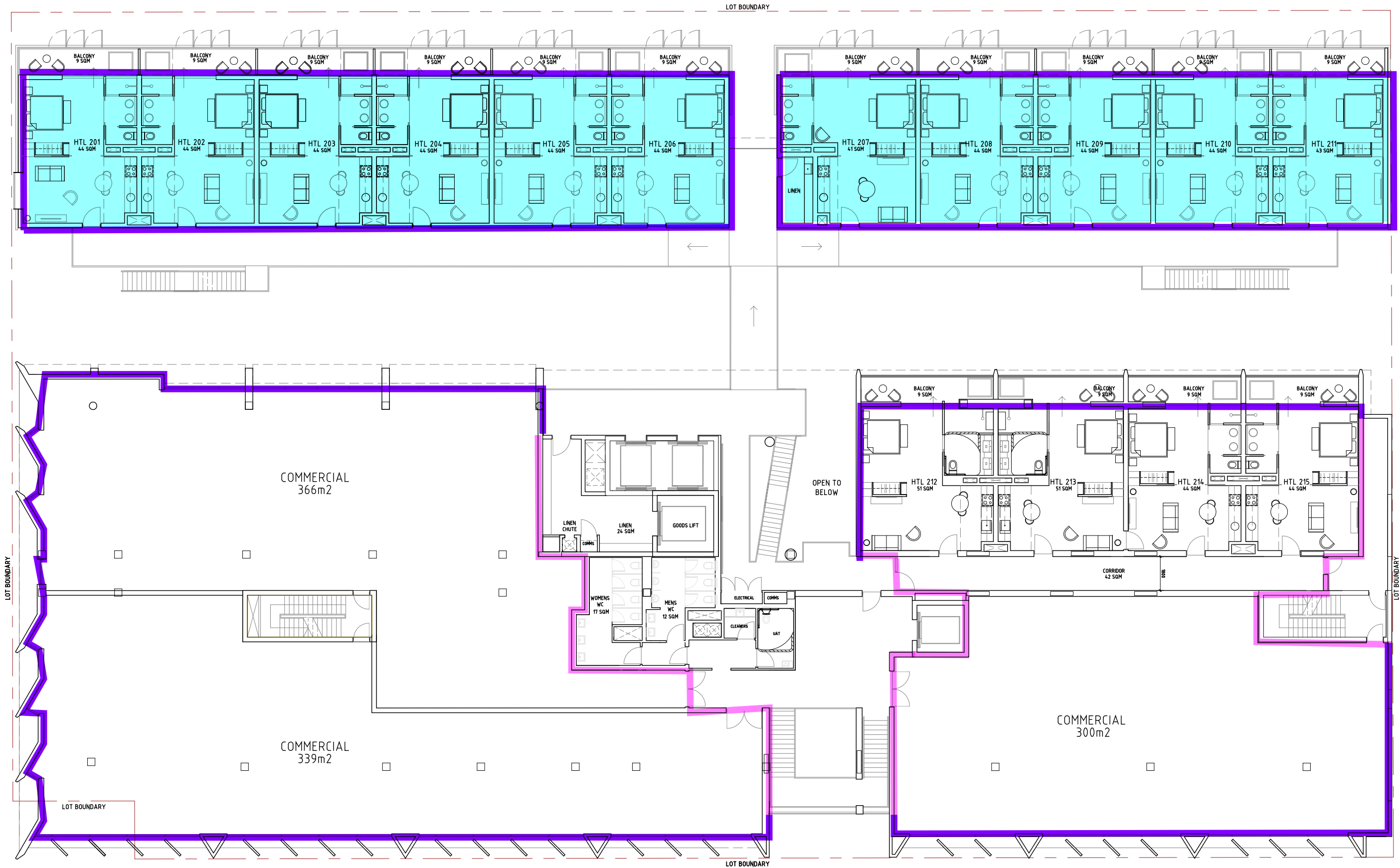
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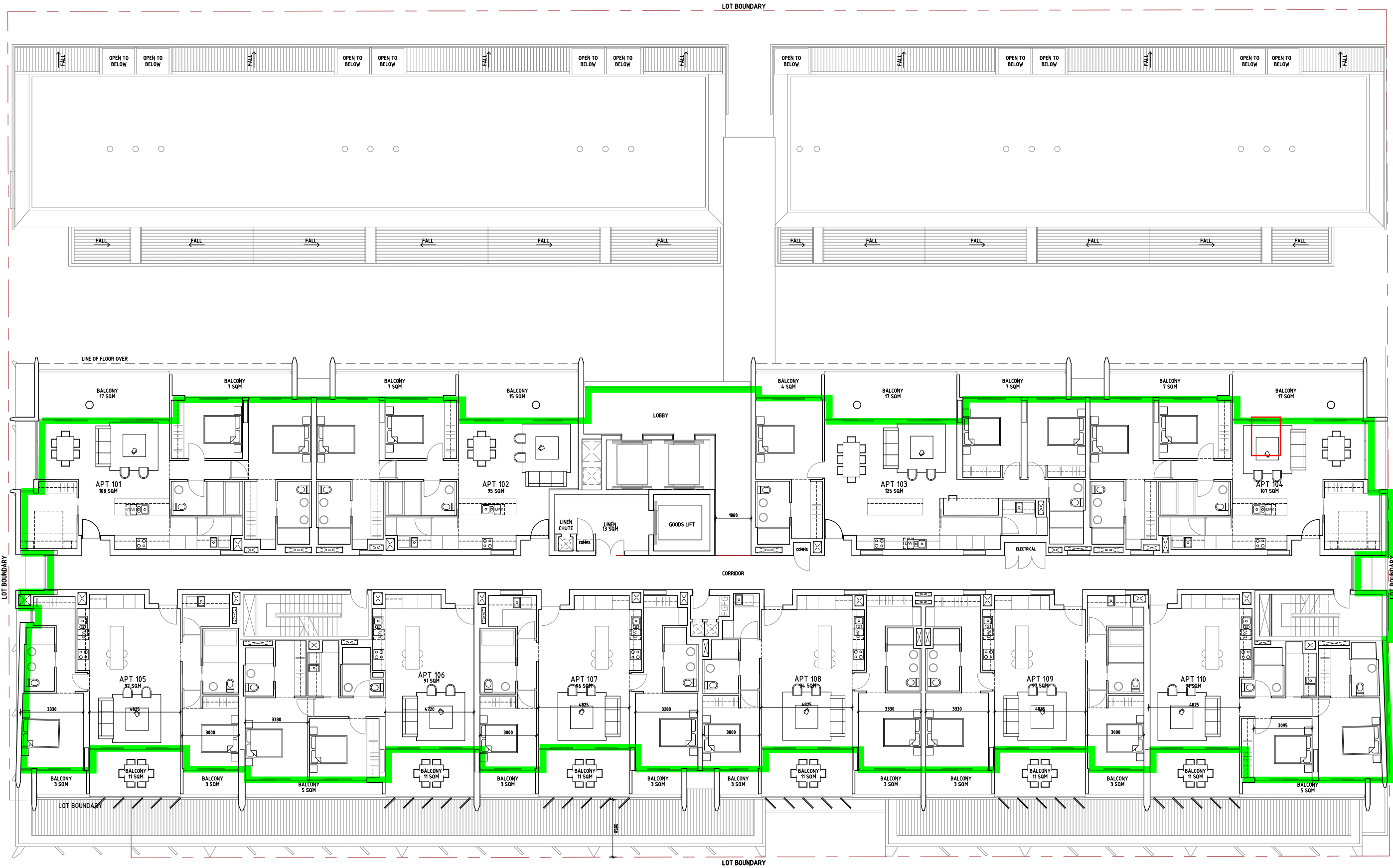
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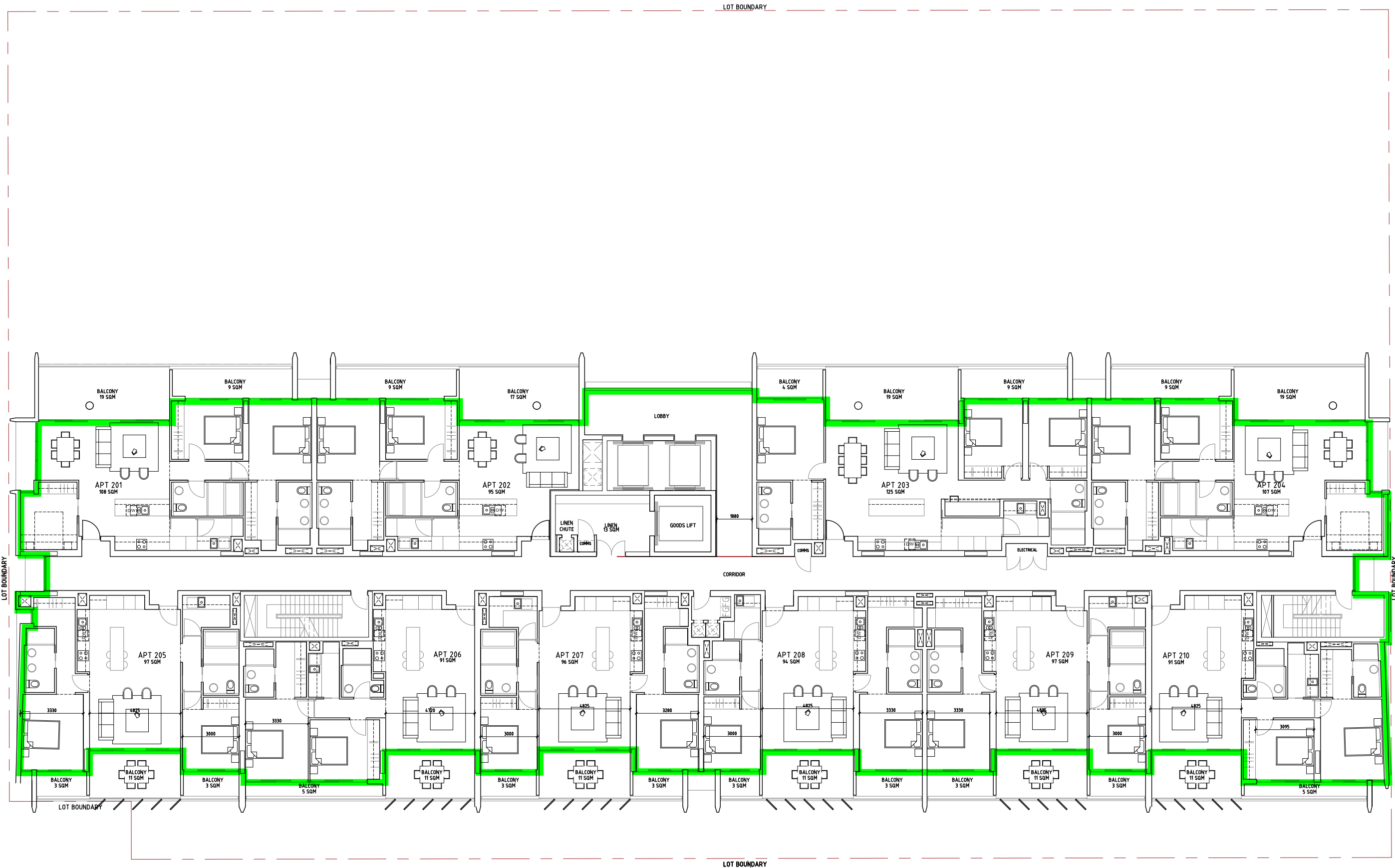
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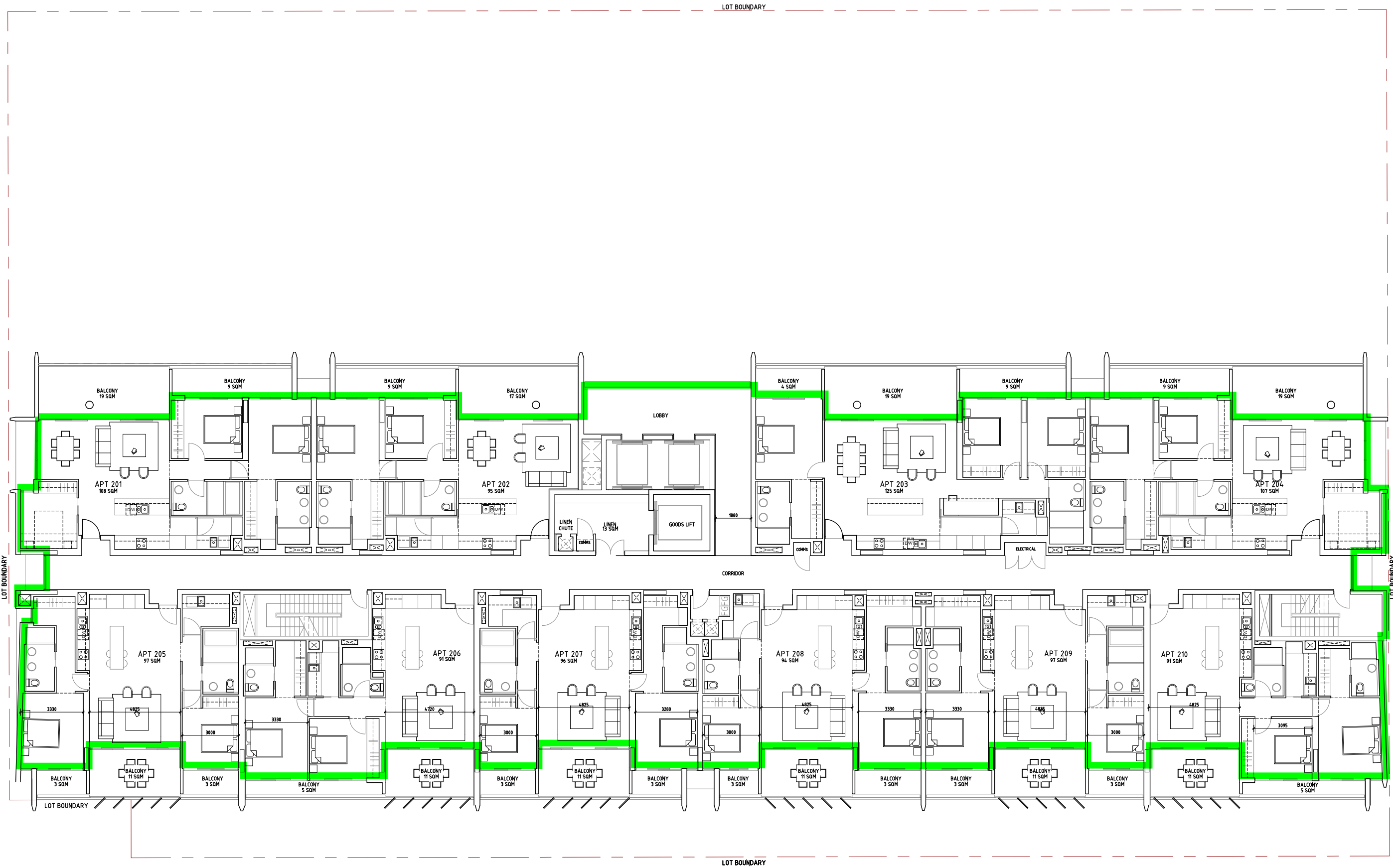
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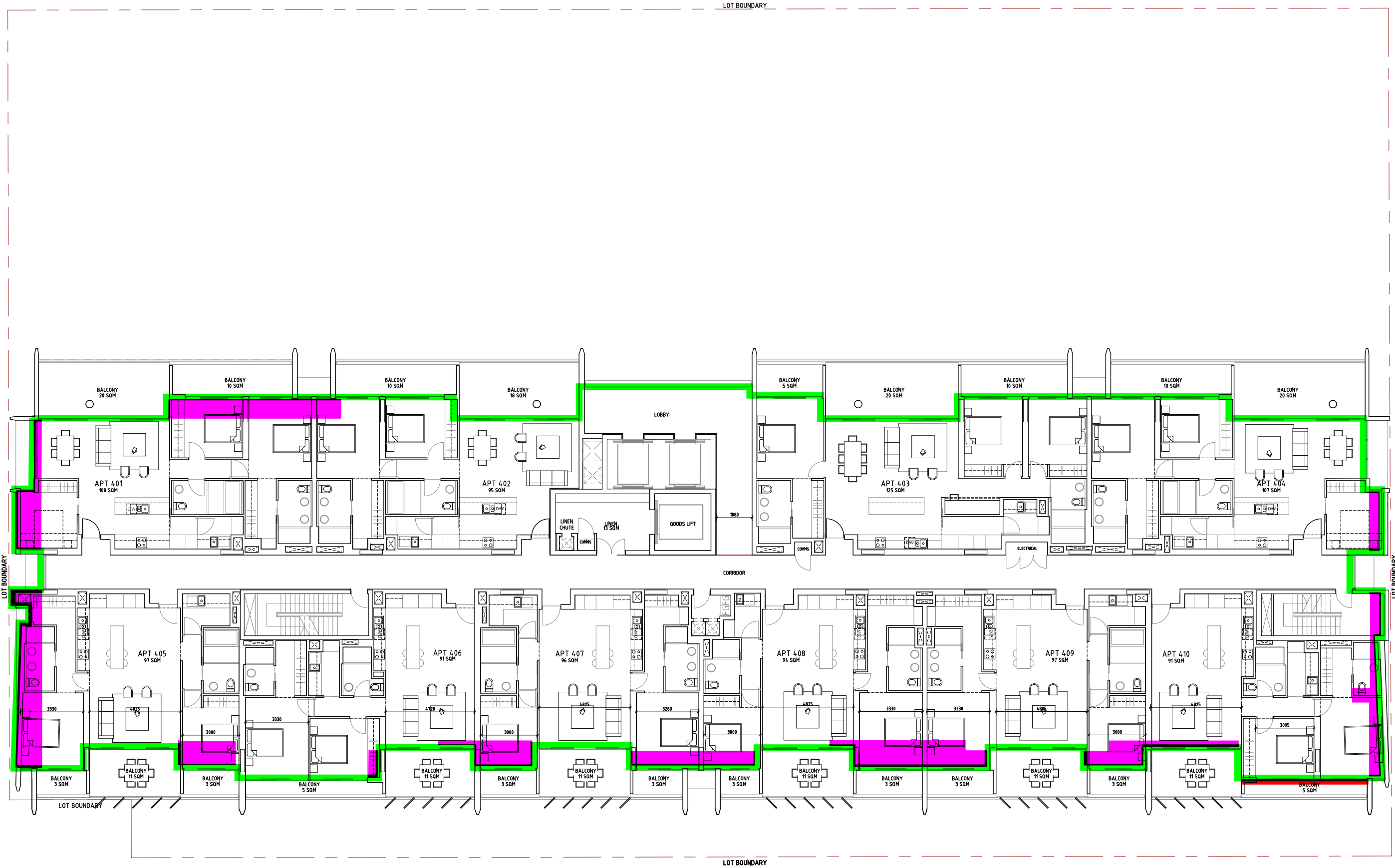
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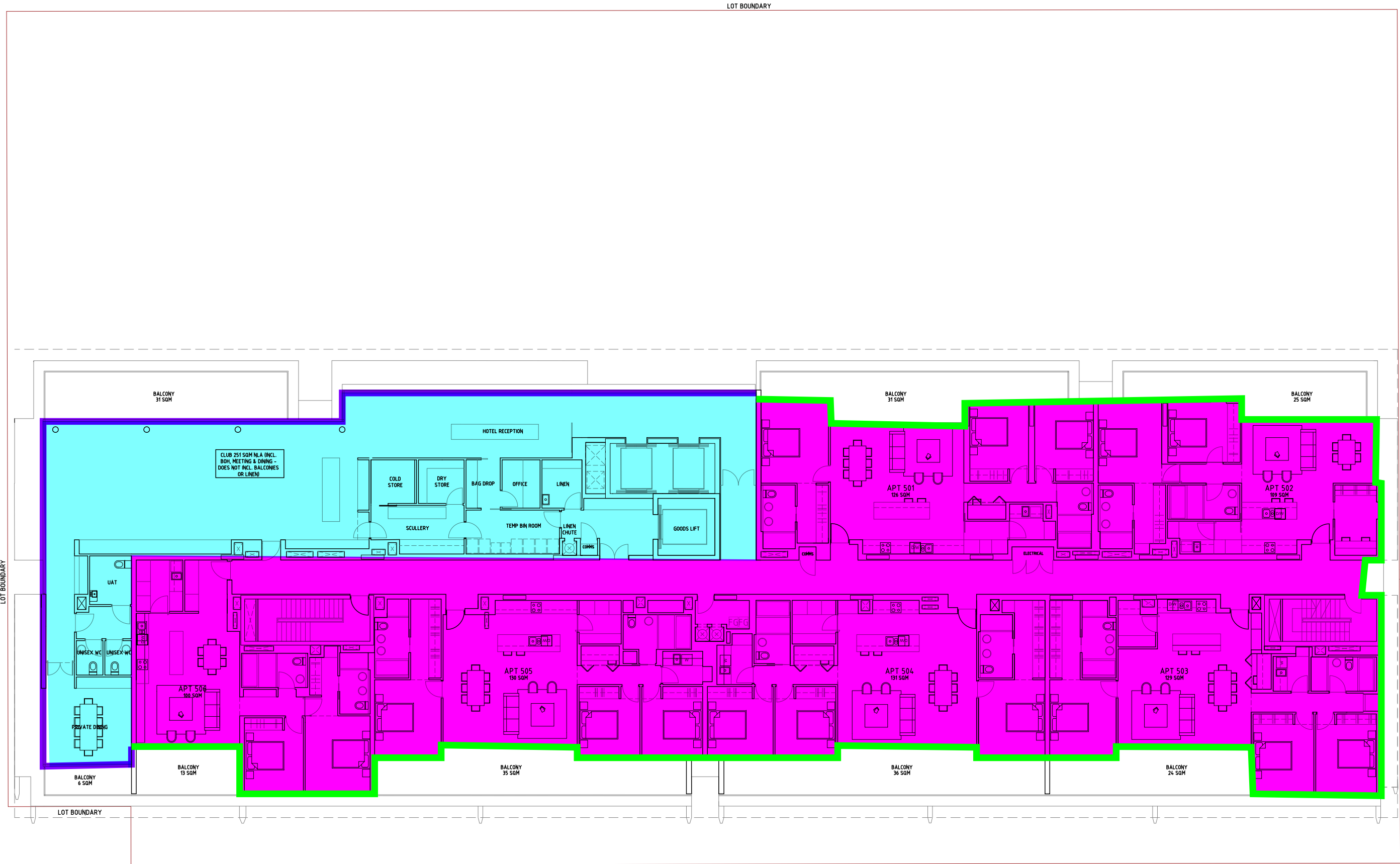
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Appendix B – NATHERs Simulation Results

Average Rating (6 Star required)		7.6
Minimum Rating (5 Star required)		5.4
Average Heating Load (limited to 52MJ/m2)		15.1
Average Cooling Load (limited to 41MJ/m2)		25.8
Average Energy Intensity (MJ/m ²)		40.9
Window Total U-Value (W/m ² K)		3.5
Window Total SHGC		0.43
Apartment Name	Number of Apartments	High performance double glazing
101	1	6.6
102	1	7.2
103	1	7.1
104	1	7.2
105	1	8.1
106	1	8.3
107	1	8.4
108	1	8.5
109	1	8.5
110	1	8.3
201	1	6.6
202	1	7.3
203	1	7.3
204	1	7.2
205	1	8.1
206	1	8.3
207	1	8.4
208	1	8.4
209	1	8.4
210	1	8.3
301	1	6.6
302	1	7.2
303	1	7.3
304	1	7.2
305	1	8.1
306	1	8.3
307	1	8.4
308	1	8.4
309	1	8.4
310	1	8.3
401	1	6.4



402	1	7.1
403	1	7.1
404	1	7.2
405	1	7.9
406	1	8.2
407	1	8.3
408	1	8.3
409	1	8.4
410	1	8.2
501	1	5.4
502	1	6.2
503	1	7.1
504	1	6.7
505	1	6.9
506	1	7.0



Appendix C - Part J4 Building Fabric

Thermal Construction General

Any modification to the parameters outlined in this report shall require that performance of the building fabric, including Total System R-Value and Total System U-value be calculated in accordance with the following:

- Including allowance for thermal bridging
- Calculated in accordance with AS/NZS 4859.2 for a roof or floor.
- Determined in accordance with NCC Specification J4D6 walls and glazing construction.
- Determined in accordance with NCC Specification J4D4 for roof and ceiling construction.
- Determined in accordance with NCC Specification J4D7 for floor construction.

Roof and Ceiling Construction

For compliance with section J4D4, a roof or ceiling that is part of the envelope, must achieve the Total R-Value of R3.7.

See Section 1.4 Building Fabric for design details of Roof and Ceiling Construction.

It has been assumed that insulation will be continuous over the entire roof and ceiling area of the identified building envelope. Any reduction in insulation area must be compensated with an increase in insulation R-Value so that overall performance on an area-weighted average is maintained.

Roof Lights

It is understood that there are no roof lights in conditioned areas of the proposed building. This section is therefore not applicable.

Wall Insulation

For compliance with section J4D6, glazing and wall performance is assessed on a combined basis. Walls and glazing performance have been separated within this report for clarity.

Due to the extent of glazing, envelope walls on an average area-weighted basis must achieve the Total R-Value of R1.0 for all orientations/aspects.

See Section 1.4 Building Fabric for detailed calculations of indicative construction and insulation types.

Insulation supplier to confirm R-Values for relevant wall constructions if differing from nominated.

Floor Insulation

For compliance with section J4D7, the floor that is part of the envelope must achieve the Total R-Value of R2.0.

In Climate Zone 5, a slab-on-ground that does not have an in-slab heating or cooling system is considered to achieve a Total R-Value of R2.0.

It is understood that there are no in-slab or in-screed heating or cooling systems, except where used solely in a bathroom, amenity area or the like. As such, perimeter slab insulation is not required.

External and Internal Glazing

For compliance with J4D6, the proposed glazing configuration can comply with the Deemed to Satisfy provisions for all façade orientations. The proposed screen has not been included in this assessment due to it not complying with the requirements for an external shading device under S37C7.



Appendix D - Part J5 Building Sealing

The building envelope must be appropriately sealed in order to manage the loss of conditioned air. The following elements, where forming the building envelope, must be sealed in accordance with requirements outlined in Appendix F.

- Chimneys and Flues
- Roof Light
- Windows and Doors
- Exhaust Fans
- Ceiling, Walls, Floors
- Evaporative Coolers

To assist with compliance with Section J5D4 of the NCC 2022 Volume 1, general construction notes as contained in Appendix F are to be included in the Architectural Specification or Architectural drawings.



Appendix E - Part J5 Building Sealing continued..

The following prescriptive performance requirements for the façade must be adhered to, as per the NCC:

J5D4 – Roof Lights

For compliance with Section J5D4 of the NCC 2022, we recommend the following general notes to be included in the Architectural Specification or Drawings.

- (a) A roof light must be sealed, or capable of being sealed, when serving—
 - (i) a conditioned space; or
 - (ii) a habitable room in climate zones 4, 5, 6, 7 or 8.
- (b) A roof light required by (a) to be sealed, or capable of being sealed, must be constructed with—
 - (i) an imperforate ceiling diffuser or the like installed at the ceiling or internal lining level; or
 - (ii) a weatherproof seal; or
 - (iii) a shutter system readily operated either manually, mechanically or electronically by the occupant.

J5D5 – External Windows and Doors

For compliance with Section J5D5 of the NCC 2022, we recommend the following general notes to be included in the Architectural Specification or Drawings.

- a) A door, openable window or the like must be sealed—
 - (i) when forming part of the envelope; or
 - (ii) in climate zones 4, 5, 6, 7 or 8.
- (b) The requirements of (a) do not apply to—
 - (i) a window complying with AS 2047; or
 - (ii) a fire door or smoke door; or
 - (iii) a roller shutter door, roller shutter grille or other security door or device installed only for out-of-hours security.
- (c) A seal to restrict air infiltration—
 - (i) for the bottom edge of a door, must be a draft protection device; and
 - (ii) for the other edges of a door or the edges of an openable window or other such opening, may be a foam or rubber compression strip, fibrous seal or the like.
- (d) An entrance to a building, if leading to a conditioned space must have an airlock, self-closing door, rapid roller door, revolving door or the like, other than—
 - (i) where the conditioned space has a floor area of not more than 50 m²; or
 - (ii) where a café, restaurant, open front shop or the like has—
 - (A) a 3 m deep un-conditioned zone between the main entrance, including an open front, and the conditioned space; and
 - (B) at all other entrances to the café, restaurant, open front shop or the like, self-closing doors.



- (e) A loading dock entrance, if leading to a conditioned space, must be fitted with a rapid roller door or the like.

J5D6 – Exhaust Fans

- (a) An exhaust fan must be fitted with a sealing device such as a self-closing damper or the like when serving—
 - (i) a conditioned space; or
 - (ii) a habitable room in climate zones 4, 5, 6, 7 or 8.

This requirement will be documented by the Mechanical Consultant

J5D7 – Construction of roofs, walls and floors

For compliance with Section J5D7 of the NCC 2022, we recommend the following general notes to be included in the Architectural Specification or Drawings.

- (a) 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 (b) when forming part of—
 - (i) the envelope; or
 - (ii) in climate zones 4, 5, 6, 7 or 8.
- (b) Construction required by (a) must be—
 - (i) enclosed by internal lining systems that are close fitting at ceiling, wall and floor junctions; or
 - (ii) sealed at junctions and penetrations with—
 - (A) close fitting architrave, skirting or cornice; or
 - (B) expanding foam, rubber compressible strip, caulking or the like.
- (c) The requirements of (a) do not apply to openings, grilles or the like required for smoke hazard management.



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