



STRUCTURAL DEVELOPMENT APPLICATION REPORT

# 28-32 Somerset Street, Kingswood, NSW 2747

**PREPARED FOR**  
Boston Global  
Level 29 | 259 George Street  
Sydney, NSW, 2000

Ref: SY202701-SR01  
Rev: 1

Date: 11.11.2020

# Structural Development Application Report

## Revision Schedule

Date	Revision	Issue	Prepared By	Approved By
11.10.2020	1	DA Submission	K.Zahedi	J.Low

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# 1. Introduction

This report supports a Development Application for a new hotel accommodation development at 28-32 Somerset Street, Kingswood.

Northrop Consulting Engineers has been engaged to provide structural engineering services for The Proposal.

This report presents the structural design intent for the Proposal.

## 1.1 Description of proposed development

The Development Application will seek approval for:

- A new hotel accommodation consisting of two levels of basement car parking, Ground floor with Front of House facilities, Back of House, Bar, Buffet, lounge area and fitness centre. The development includes 140 guest rooms between Ground floor to level 5 with Rooftop bar & dining on Level 6. These are represented on Rothelowman drawings TP00.01TP01.01-TP01.08, TP03.01, TP03.03 & TP05.01.

## 1.2 The Site

The subject site is located at 28-32 Somerset Street, Kingswood, NSW. The site is bound by Hargrave street and Somerset street.

The site is roughly rectangular in shape and has an area of approximately 1700 square meters. The site is located within the Penrith City Council.



Figure 1 Site Plan



## 2. Structural Engineering

In this section we will outline the anticipated ground conditions, required design life and design parameters, proposed footing solutions and design parameters, proposed superstructure solutions and design parameters.

### 2.1 Geotechnical Conditions

A preliminary geotechnical investigation has been undertaken by Douglas Partners. Refer to report ref: 99851.00 dated November 2020.

The likely anticipated ground conditions are summarised as follows:

- Filling, with some gravel sand at depths between 0.2m to 0.7m.
- Firm clay overlying stiff to very stiff clay at depths between 2.7m to 4.3m.
- Extremely low to very low strength shale at depths between depths of 2.7m to 4.3m.

The report estimates the new building would be founded on Class V-IV along the eastern side and grading to Class III-II on the west. The report also indicate that it is preferable to found all footings onto Class III or better rock.

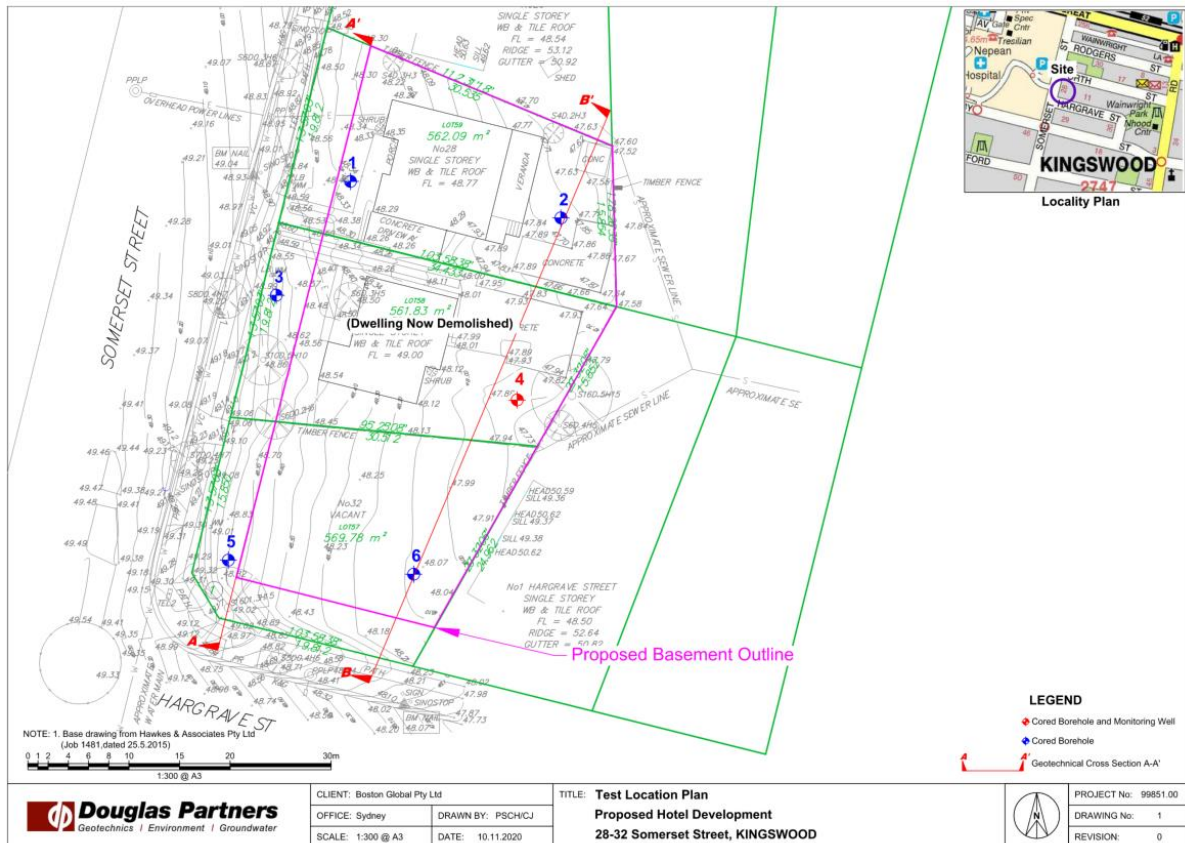


Figure 2 - Borehole map showing extent of geotechnical investigation

## 2.2 Structural Systems

The proposed structural system is described below. Refer to the drawings in Appendix A for further detail:

**Foundations:** Pad footings or Pile footings in Sandstone bedrock.

**Excavation support:** Soldier pile wall with shotcrete infill.

**Basement 2 floor:** Conventionally reinforced concrete slab.

**Basement 1 floor:** Post-tensioned concrete slab.

**Vertical Load-bearing system:** Reinforced concrete columns and reinforced concrete walls.

**Lateral Load-resisting system:** Lateral loads will be resisted by the reinforced concrete lift and stair walls.

**Suspended Floors:** post-tensioned concrete slabs.

**Roof:** post-tensioned concrete slab.

## 2.3 Design Parameters

### 2.3.1 Design Life

The design life is nominated as follows:

- |  |          |
|--|----------|
| • Structural elements including sub-structures | 50 years |
| • Floor structures                             | 50 years |
| • Roof structures                              | 50 years |
| • Internal structural walls                    | 50 years |

### 2.3.2 Design Loads

All buildings and structures will be designed with the loads determined from Australian Standards and the National Construction Code (NCC:2019).

#### Design Parameters

- Importance level 2 to AS1170.0
- Dead and live load to AS1170.1
- Wind loads to AS1170.2
  - o Region A
  - o Terrain category 3
- Earthquake loads to AS1170.4
  - o Probability factor  $k_p = 1.0$
  - o Hazard factor  $Z = 0.08$  (Sydney)
  - o Site sub-soil class  $C_e$  – Shallow soil

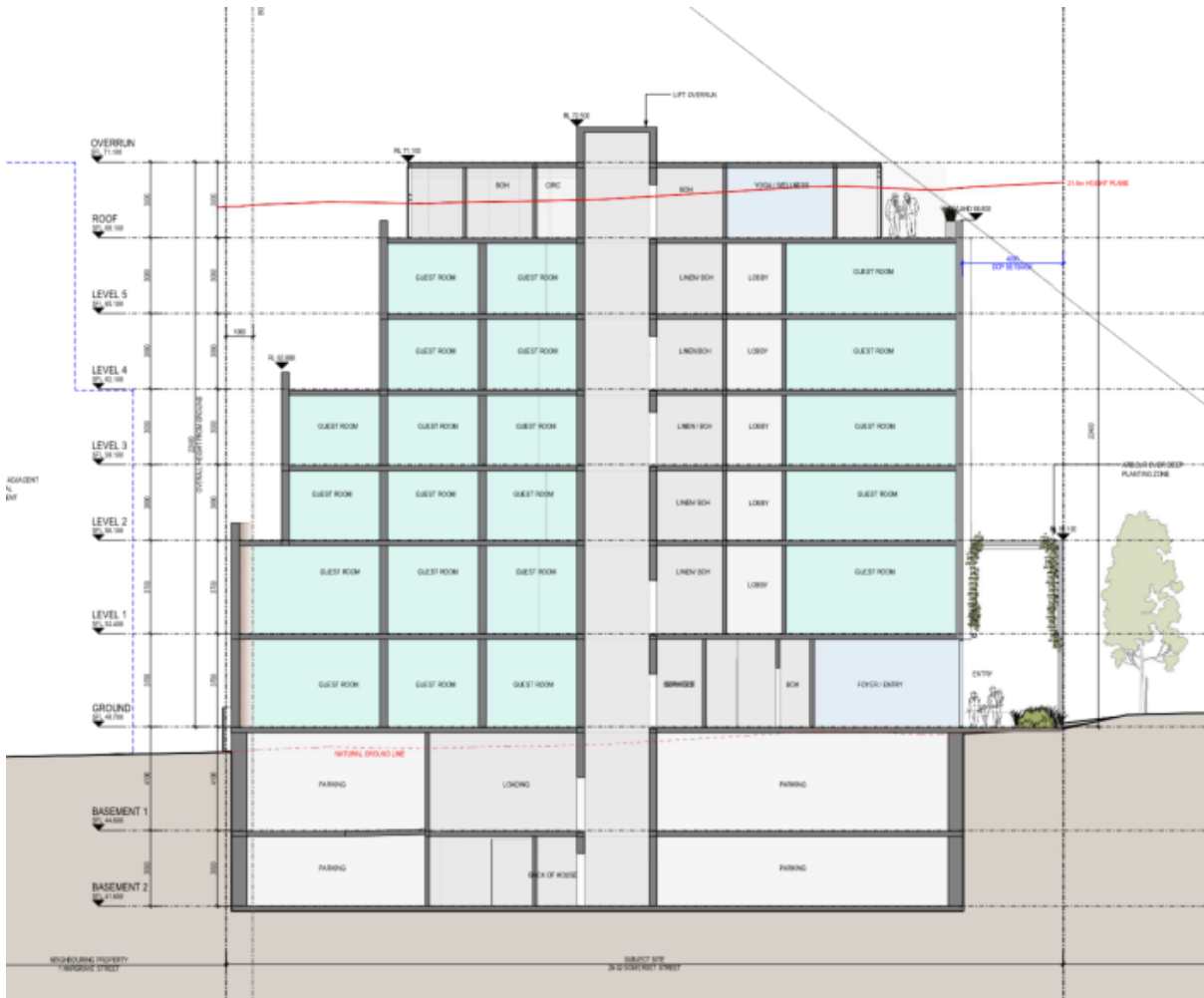


Figure 3 - Typical Section through the building

### 3. Waste Collection Vehicle

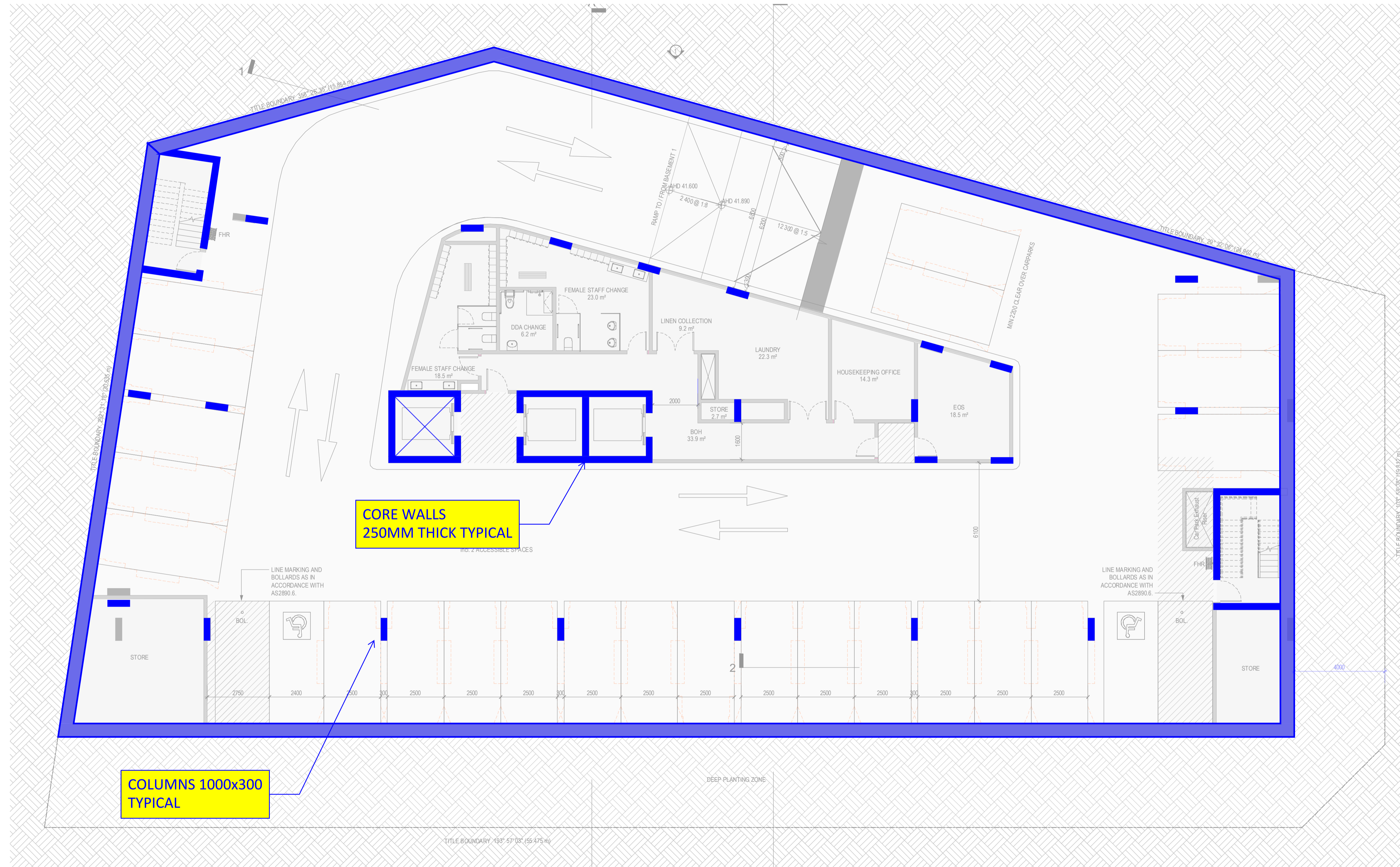
The waste management strategy for this development is for a privately operated waste collection vehicle to remove refuse from Basement 1. Refer to *Waste Management Plan* prepared by Salt3.

In accordance with the *Waste Management Plan*, the ramps and basement structure will be designed to accommodate the loads associated with the 5.5t truck.

## 4. Appendix A: Preliminary Drawings



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DRAWN: KZ



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1	PRELIMINARY ISSUE	JL			04.11.20

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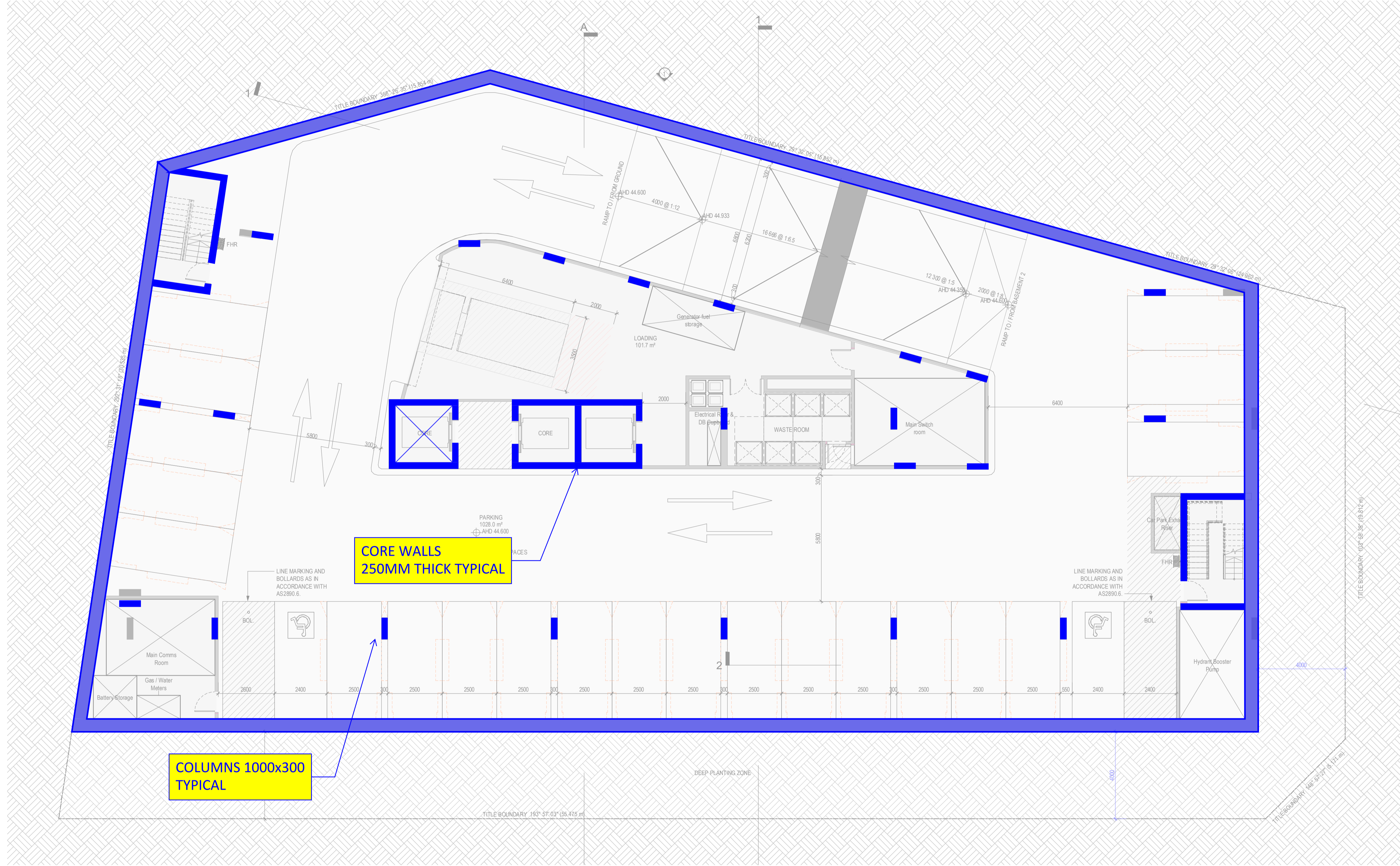
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PROJECT  
**NEPEAN HOTEL**  
28-32 SOMERSET STREET  
KINGSWOOD NSW 2747

DRAWING TITLE  
**BASEMENT 2 - GENERAL ARRANGEMENT PLAN**

JOB NUMBER <b>S202701</b>	
DRAWING NUMBER <b>SK-01</b>	REVISION <b>1</b>
DRAWING SHEET SIZE = A1	





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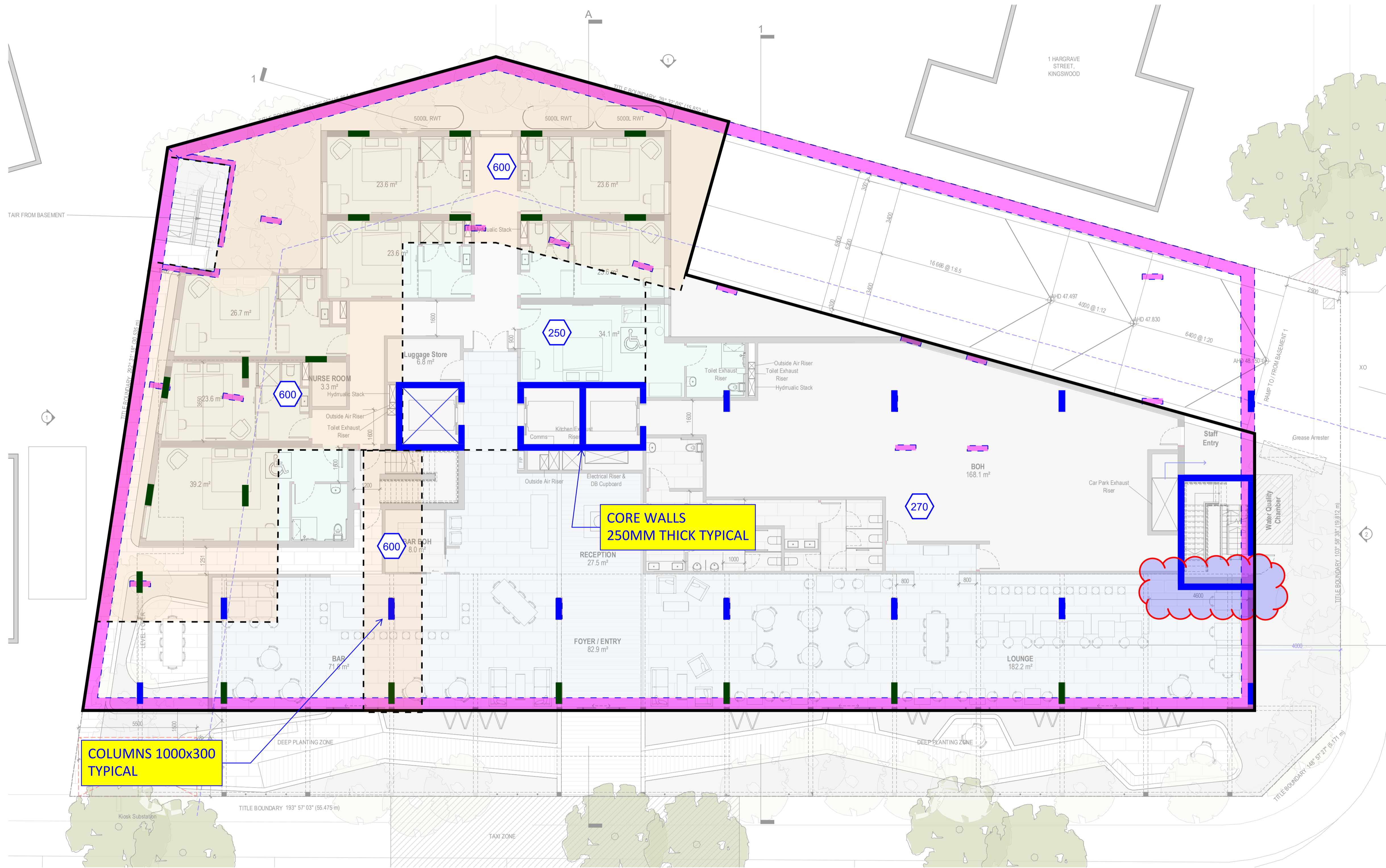
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28-32 SOMERSET STREET  
KINGSWOOD NSW 2747

DRAWING TITLE

**BASEMENT 1 - GENERAL ARRANGEMENT PLAN**

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<b>S202701</b>	
DRAWING NUMBER	REVISION
<b>SK-02</b>	<b>1</b>
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DRAWING TITLE

**GROUND FLOOR - GENERAL ARRANGEMENT PLAN**

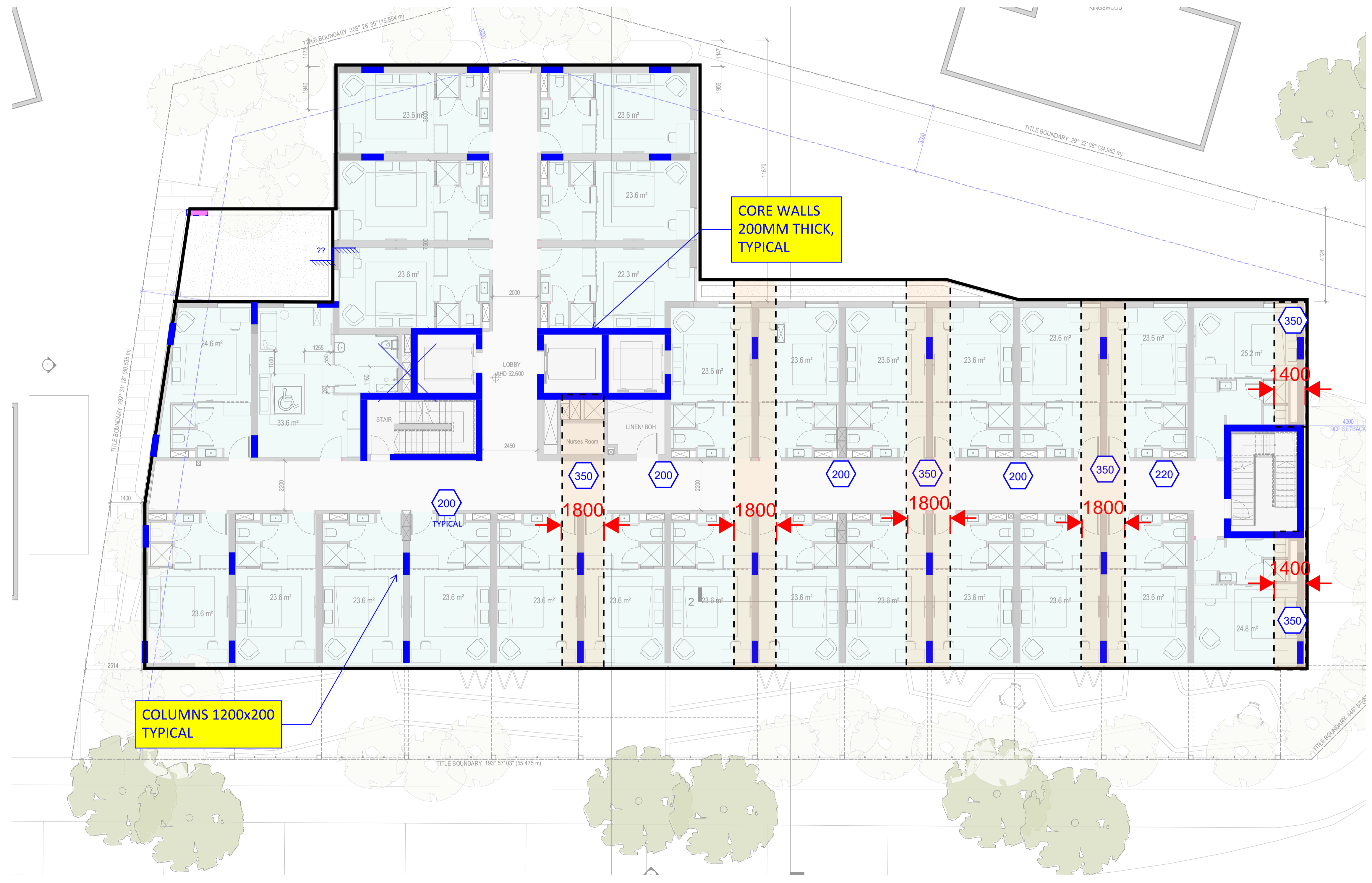
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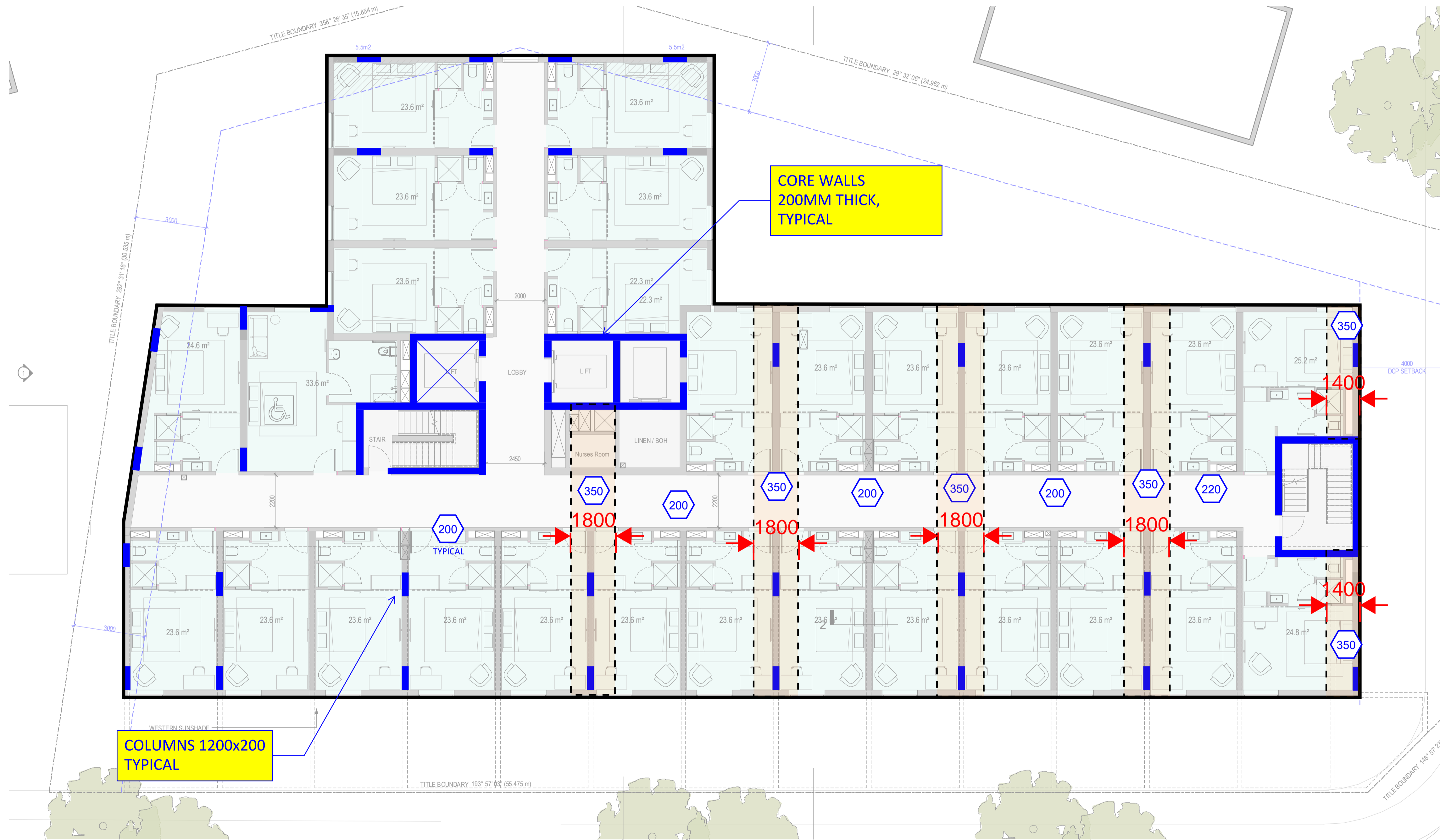
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**28-32 SOMERSET STREET**  
**KINGSWOOD NSW 2747**

**DRAWING TITLE**  
**LEVEL 1 - GENERAL ARRANGEMENT**  
**PLAN**

<b>JOB NUMBER</b> S202701	
<b>DRAWING NUMBER</b> SK-04	<b>REVISION</b> 1
<small>DRAWING SHEET SIZE = A1</small>	



CORE WALLS  
200MM THICK,  
TYPICAL

COLUMNS 1200x200  
TYPICAL

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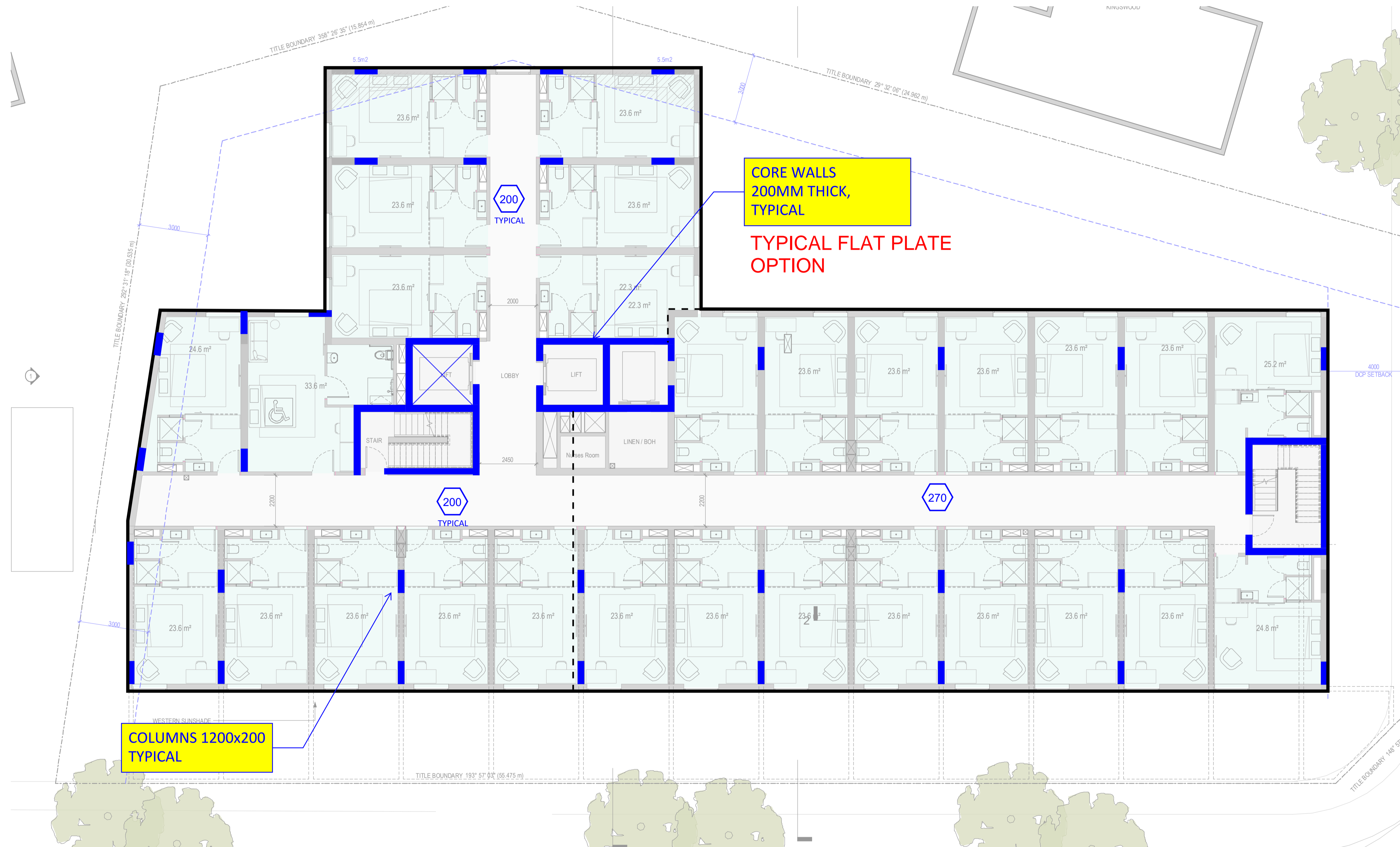
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DRAWING TITLE  
**LEVEL 2 & 3 - GENERAL  
ARRANGEMENT PLAN**

JOB NUMBER <b>S202701</b>	
DRAWING NUMBER <b>SK-05</b>	REVISION <b>1</b>
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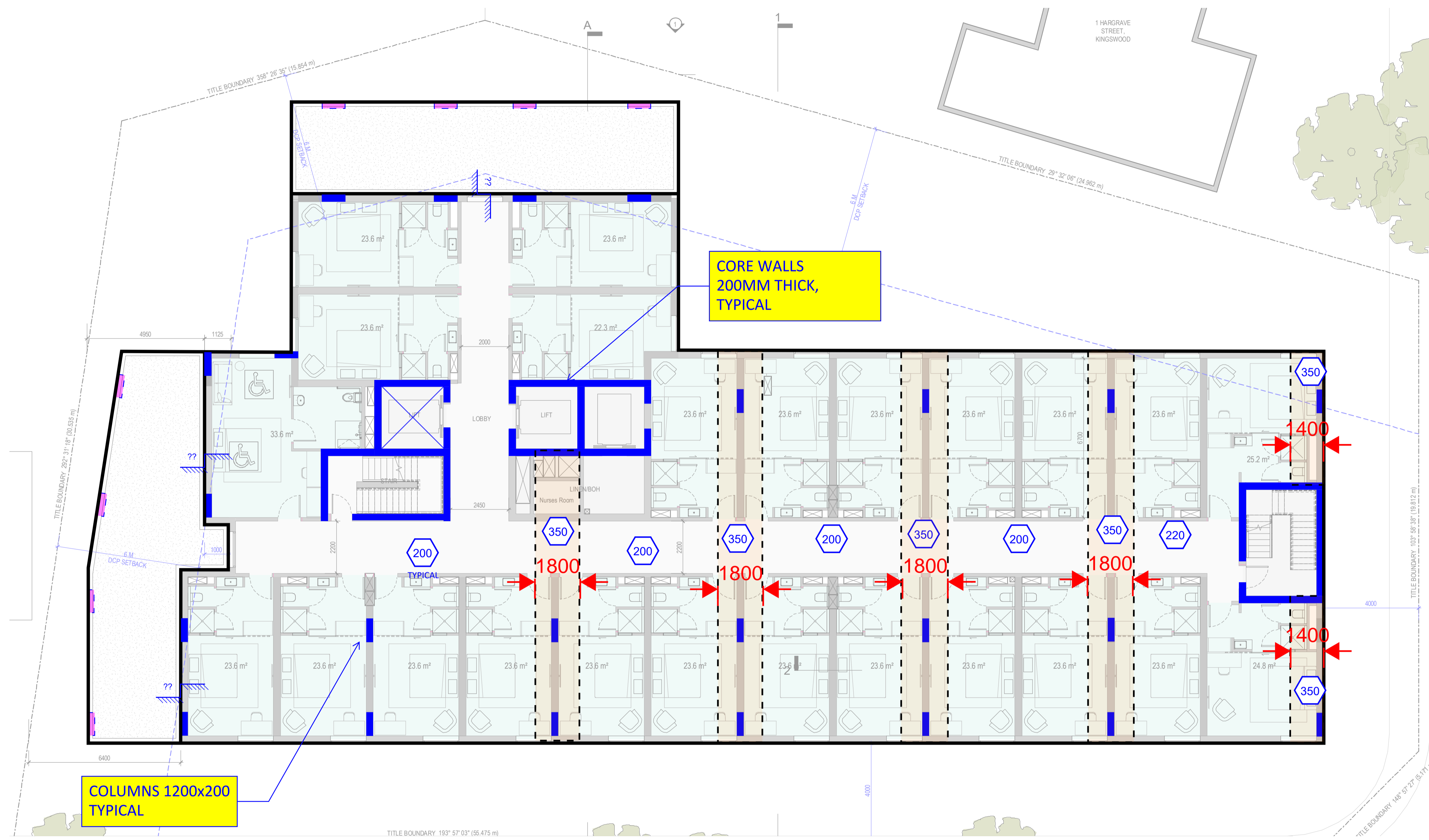
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DRAWING TITLE

TYPICAL FLAT PLATE OPTION -  
GENERAL ARRANGEMENT PLAN

JOB NUMBER		S202701
DRAWING NUMBER	REVISION	
SK-06	1	
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**LEVEL 4 & 5 - GENERAL ARRANGEMENT PLAN**

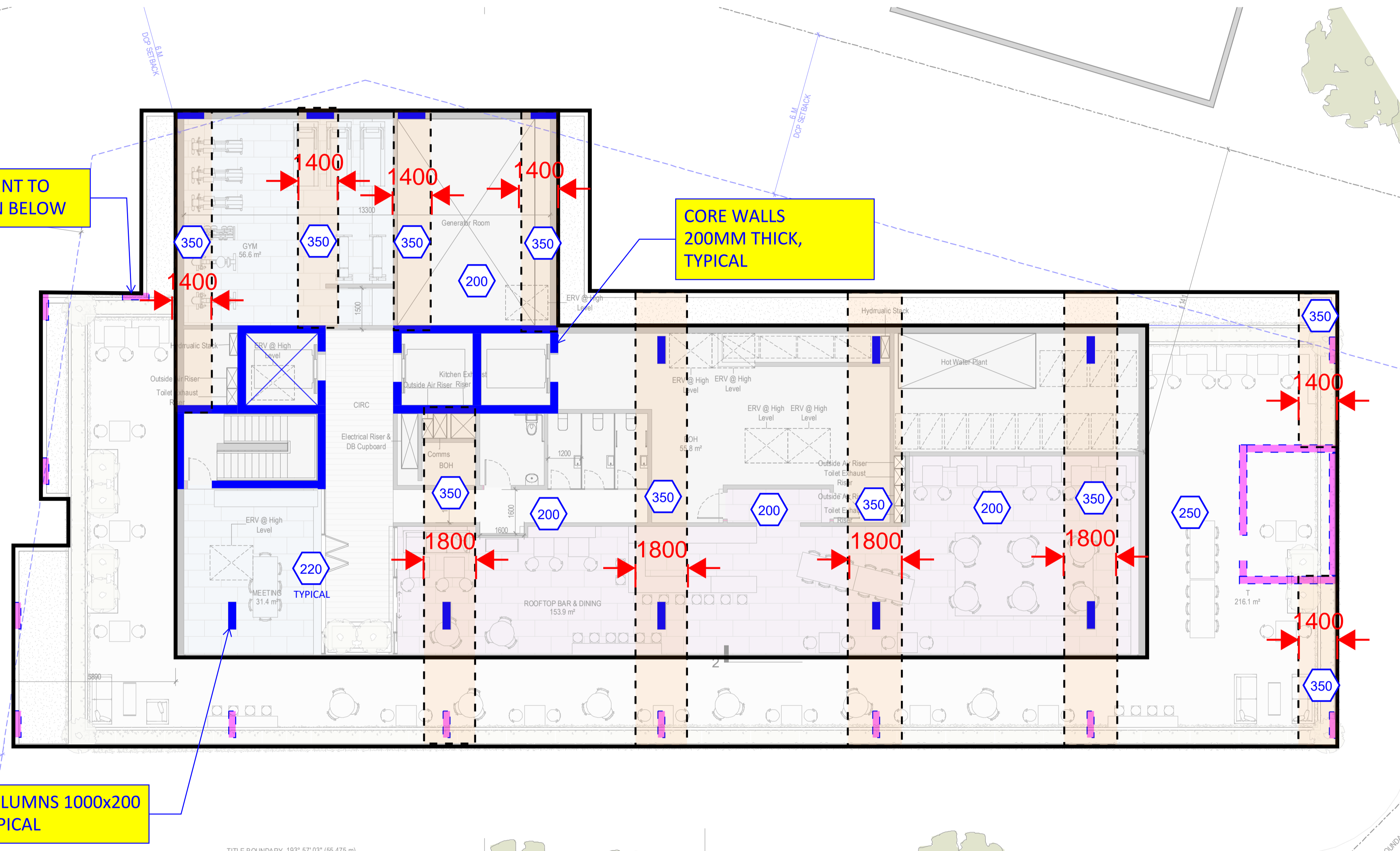
JOB NUMBER	
<b>S202701</b>	
DRAWING NUMBER	REVISION
<b>SK-07</b>	<b>1</b>
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ADJUST SLAB EXTENT TO BEAR ON COLUMN BELOW

CORE WALLS 200MM THICK, TYPICAL

COLUMNS 1000x200 TYPICAL



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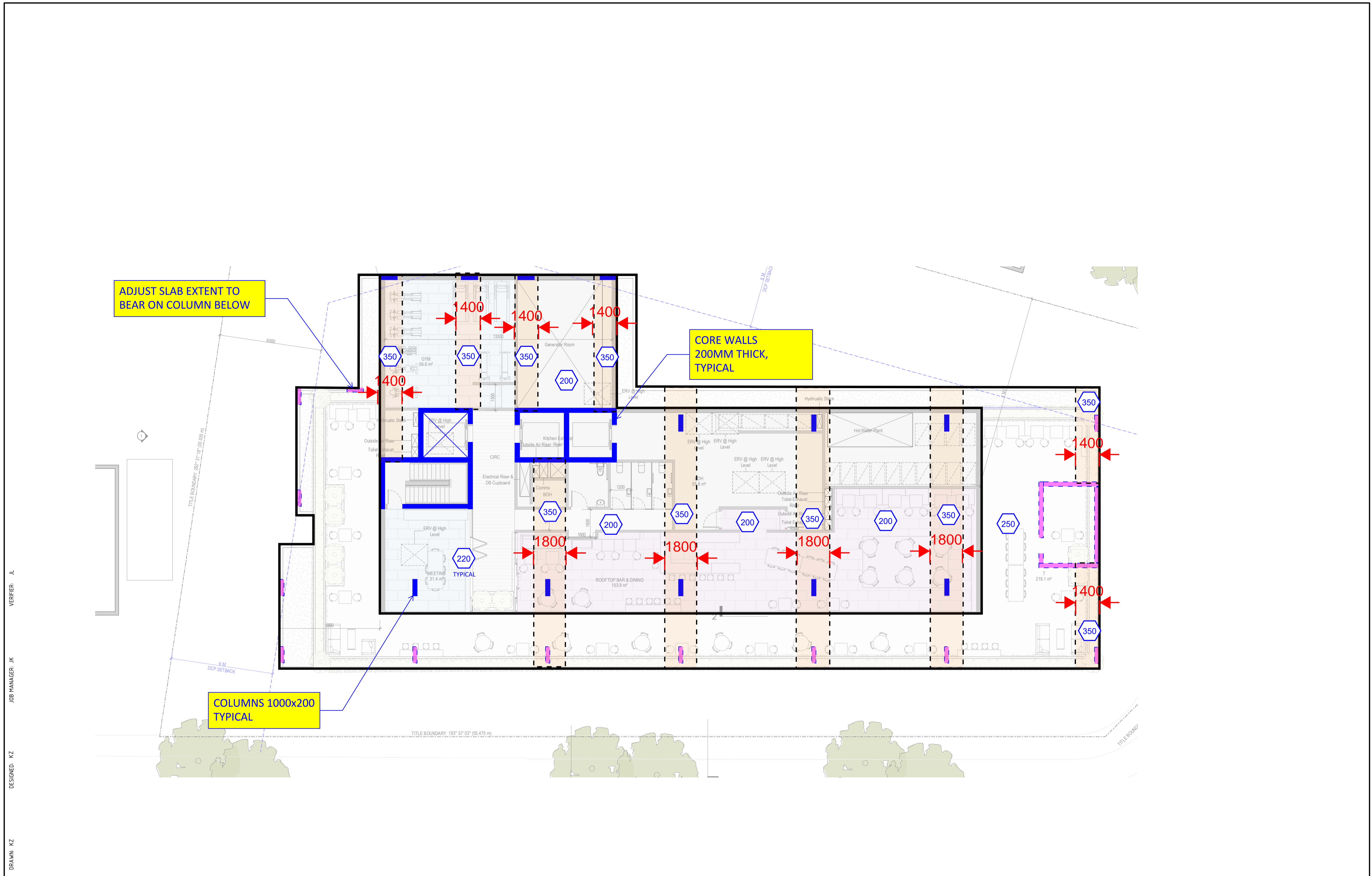
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**NEPEAN HOTEL**  
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DRAWING TITLE  
**ROOF LEVEL - GENERAL ARRANGEMENT PLAN**

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DRAWING NUMBER <b>SK-08</b>	REVISION <b>1</b>
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**STRUCTURAL PLANS**

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<b>SK-09</b>	<b>1</b>	
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