# 45-53 Macleay St, Potts Point

## Noise and Vibration Impact Assessment

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|---|---|
| Project No. | P00065 |
| Revision | 004 |
| Issued | 6 February 2026 |
| Client | Time & Place |

E-LAB Consulting

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# Document QA and Revisions

| ISSUE | DATE | COMMENTS | ENGINEER | REVIEWER |
|---|---|---|---|---|
| 1 | 27/10/2025 | Final Draft | Kanin Mungkarndee | Brandon Notaras |
| 2 | 10/11/2025 | For SSDA | Kanin Mungkarndee | Brandon Notaras |
| 3 | 18/11/2025 | For SSDA | Kanin Mungkarndee | Brandon Notaras |
| 4 | 06/02/2026 | Update for DPHI Comments | Artie Rattananikom | Brandon Notaras |



**Authorised by:**

**E-LAB Consulting**

**Brandon Notaras | Director**

**Acoustics & Vibration**

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# 1 EXECUTIVE SUMMARY

This Noise and Vibration Impact Assessment has been prepared by E-LAB Consulting on behalf of Time and Place Ltd (the Applicant) to accompany a State Significant Development Application (SSDA) for shop-top housing development at 45-53 Macleay Street, Potts Point (the site).

This report has been prepared to also address the relevant conditions of the Secretary's Environmental Assessment Requirements (SEARs) issued for SSD-83867719.

This report concludes that the proposed mixed-use development is acceptable and warrants approval subject to the implementation of the mitigation measures outlined in Section 8 and 11.

Following implementation of the mitigation measures, the remaining impacts are appropriate.

Further to the above, Revision 004 of this report dated 6th February 2026 has been prepared to address comments received from the NSW Department of Planning, House & Infrastructure regarding noise from the use of outdoor communal spaces located on Level 2 and Level 3 of the proposed development. Refer to the assessment provided in Section 7.7, and mitigation measures in Section 8.5.

# 2 INTRODUCTION

This Noise and Vibration Impact Assessment has been prepared by E-LAB Consulting on behalf of Time and Place Ltd (the Applicant) to accompany a State Significant Development Application (SSDA) for shop-top housing development at 45-53 Macleay Street, Potts Point (the site).

The proposal seeks approval for the construction and operation of a 16-storey shop-top housing development comprising:

- 44 apartments, including:
  - 23 affordable apartments on podium level 1 and 2 which will be managed by a community housing provider (CHP) for 15 years
  - 21 market apartments over 12 levels
- Ground floor retail
- Four levels of basement for parking, services and storage
- Vehicular and loading access from McDonald Street
- Landscaping and communal open space.

For a further detailed project description, please refer to the Environmental Impact Statement prepared by the Town Planner.

This report should be read in conjunction with the Architectural Plans prepared by KHA Studio, and the other accompanying technical documents that form part of the State Significant Development Application.

Furthermore, this Noise and Vibration Impact Assessment has been prepared in response to the Secretary's Environmental Assessment Requirements (SEARs) for the proposed development dated 16 May 2025 for SSD-83867719. Specifically, this report has been prepared to respond to those SEARs outlined in Table 1 below.

*Table 1: SEARs requirements and report section reference*

| ITEM | DESCRIPTION OF REQUIREMENT | SECTION REFERENCE (THIS REPORT) |
|---|---|---|
| 10 | **Noise and Vibration** | |
| | ▪ Provide a noise and vibration impact assessment prepared in accordance with the relevant NSW Environment Protection Authority (EPA) guidelines. The assessment must detail construction and operational noise and vibration impacts on nearby sensitive receivers and structures and outline the proposed management and mitigation measures that would be implemented. | Refer to Section 7 for operational assessment and Section 8 for operational mitigation measures.<br>Refer to Section 9 for construction assessment and Section 11 for construction mitigation measures. |

# 3 SITE OVERVIEW

The site is located at 45-53 Macleay Street, Potts Point and is legally identified as SP 934. It is situated within the City of Sydney Local Government Area (LGA). The surrounding area is characterised predominantly by residential dwellings.

The site has frontage on two primary roadways, being a 35m frontage to Macleay Street, and a 37m secondary frontage to McDonald Street. The site also has rear access to McDonald Lane, which acts as a service lane. The site currently accommodates a twelve (12) storey residential building and a two (2) storey private car park. The total site area is 1,289m$^2$.

*Figure 1: Site aerial (source: Sixmap)*


The location of the proposed development, noise monitoring and measurement locations, and surrounding noise-sensitive receivers are presented in Figure 2. Noise-sensitive receivers have been delineated into receiver catchments (RCs) as shown in Figure 2.

*Figure 2: Acoustic site plan identifying the surrounding noise-sensitive receivers and noise monitoring locations*

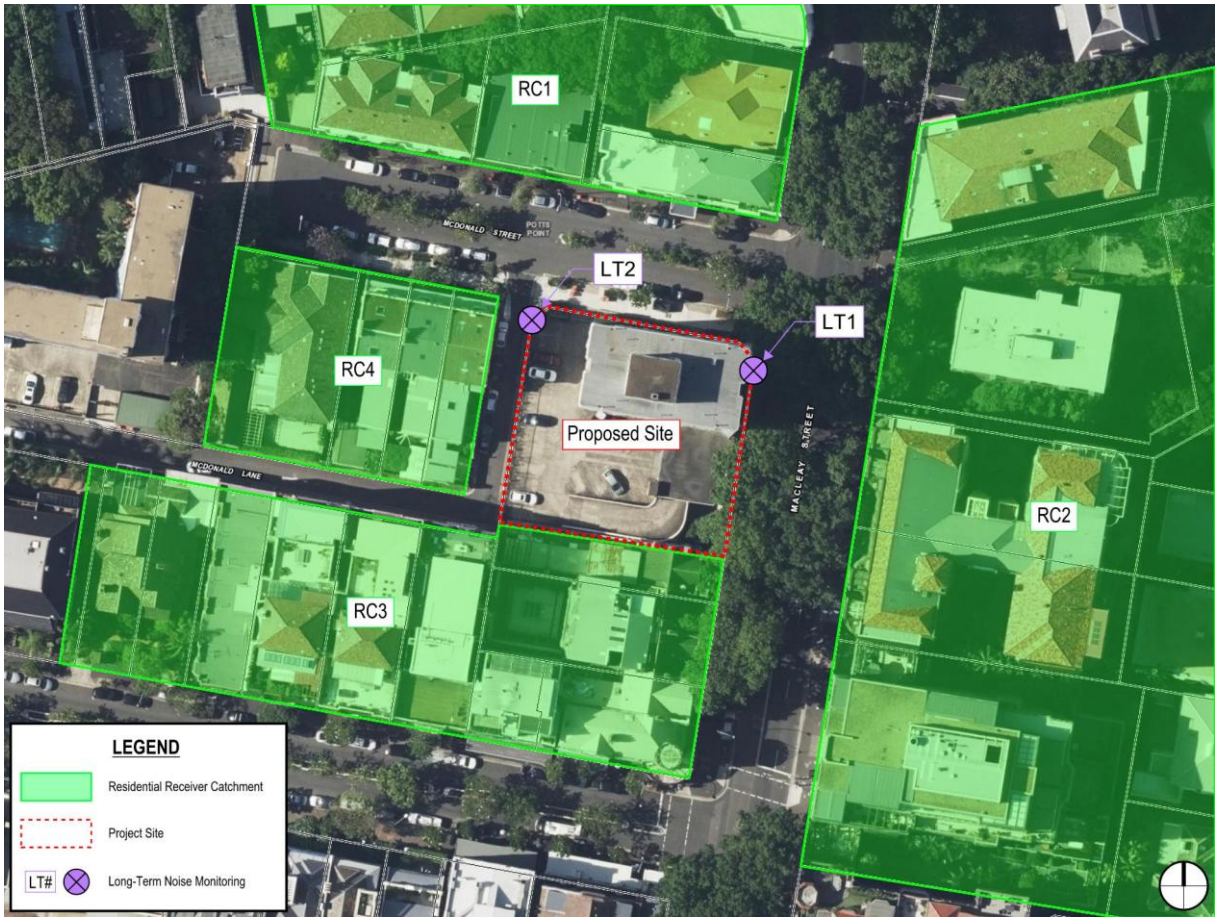



*Table 2: Description of nearby noise sensitive receiver catchments*

| RECEIVER CATCHMENT | DESCRIPTION |
|---|---|
| RC1 – Residential | Existing residential dwellings situated along McDonald St, north of the site |
| RC2 – Residential | Existing residential dwellings situated along Macleay St, east of the site. |
| RC3 – Residential | Existing residential dwellings situated along Challis Ave, south of the site |
| RC4 – Residential | Existing residential dwellings situated along McDonald St and McDonald Ln, west of the site |

# 4 METHODOLOGY

To assess the noise and vibration impacts of the proposed development, the following process was carried out:

- Identify and classify the surrounding noise and vibration sensitive receivers surrounding the proposed development
- Identify and classify the noise and vibration sources generated by the proposed development, together with external noise and vibration sources impacting on the proposed development
- Carry out site noise investigations to quantify the background noise levels local to the proposed development
- Determine the project noise and vibration criteria applicable to the proposed development in accordance with the requirements listed in the SEARs
- Assess the operational and construction noise and vibration impacts of the noise and vibration sources generated by the proposed development to the surrounding noise-sensitive receivers, together with any impacts on the occupants of the proposed development
- Provide details of mitigation measures required to alleviate noise and vibration impacts to achieve the project noise and vibration criteria

The following operational noise and vibration assessments were conducted as part of this noise and vibration impact assessment:

- Noise impact from the operation of the retail tenancies to surrounding noise-sensitive receivers
- Traffic noise intrusion impact on the development's residential apartments
- Noise impacts from traffic generated by the development to surrounding noise-sensitive receivers
- Noise emissions from mechanical plant associated with the project building to surrounding noise-sensitive receivers
- Noise impact from the operation of the carpark to surrounding noise-sensitive receivers
- Noise impact from the operation of the loading dock areas to surrounding noise-sensitive receivers

The following construction noise and vibration assessments were conducted as part of this noise and vibration impact assessment:

- Noise generated during the construction of the development and associated impacts on the surrounding noise sensitive receivers
- Vibration generated during the construction of the development and associated impacts on the surrounding vibration sensitive receivers

The noise and vibration assessments conducted as part of this report have been assessed to the noise and vibration criteria established in the following guidelines, standards and policies:

- NSW Department of Planning's Development Near Rail Corridors and Busy Roads – Interim Guideline (Interim Guideline)
- NSW Government's State Environmental Planning Policy (Transport and Infrastructure) 2021 (SEPP 2021)
- NSW EPA's Noise Policy for Industry 2017 (NPI)
- NSW EPA Road Noisy Policy (RNP)
- Assessing vibration: A Technical Guideline 2006
- British Standard BS5228 – Part 1:1997 "Noise and Vibration Control on Construction and Open Sites."
- British Standard BS7358:1993 "Evaluation and Measurement for Vibration in Buildings"
- German Standard DIN4150 – Part 3: "Structural vibration in buildings – Effects on structures"

# 5 SITE NOISE INVESTIGATIONS

## 5.1 NOISE MEASUREMENT EQUIPMENT

The following instrumentation was used for noise measurement and analysis:

- B&K 4231 Class 1 Sound Level Calibrator, S/N: 3334640
- 2 x NSRT_mk4 Type 1 Sound Level Meter Dataloggers
    - S/N: CPH0hV06U9UfoLlwayD5PD
    - S/N: AtP2pHW48309qLtySyJRlD

All instrument systems are laboratory calibrated using instrumentation traceable to Australian National Standards and certified within the last two years thus conforming to Australian Standards. The measurement system was also field calibrated prior to and after noise surveys. Calibration drift was found to be less than 0.2dB during measurements. No adjustments for instrument drift during the measurement period were warranted.

## 5.2 LONG-TERM NOISE MONITORING

### 5.2.1 Background Noise

Based on our site survey, the long-term monitoring locations shown in Figure 2 were chosen.

Background noise levels and subsequent Rating Background Noise Levels (RBL) have been established in accordance with the NPI using the results of the noise monitoring locations of LT2 as indicated in Figure 2. Monitoring was conducted between 21 to 27 July 2025.

The noise monitoring results are presented in Table 3 and have been adjusted to correct for façade reflections where applicable. Refer to Appendix A for graphical noise monitoring data.

The description of time of day presented in Table 3 is outlined within the NPI and described as follows:

- Day – the period from 7:00am to 6:00pm Monday to Saturday, 8am to 6pm on Sundays and public holidays
- Evening – the period from 6:00pm to 10:00pm
- Night – the period from 10:00pm to 7:00am, or 10:00pm to 8:00am on Sundays and public holidays.

*Table 3: Unattended background noise monitoring results*

| LOCATION | MEASURED RATING BACKGROUND NOISE LEVELS, $L_{A90}$ dB(A) | | |
|---|---|---|---|
| | DAY | EVENING | NIGHT |
| LT1 | 52 | 46 | 39 |
| LT2 | 47 | 44 | 39 |

The local ambient noise environment is typical of an Urban residential environment (as classified by the NPI). Please note that any adverse weather affected data (in accordance with the NPI) or extraneous noise sources during the period of logging has been excluded from the calculations. Appendix A provides a graphical summary of the long-term noise measurements.

### 5.2.2 Traffic Noise

In addition to background noise, long-term noise monitoring was also conducted at the project site to establish traffic noise levels respectively for the site and have been summarised in Table 4. The locations in Figure 2 were chosen to be suitable as there was direct line of sight to adjacent roads.

*Table 4: Long-term traffic noise monitoring results*

| LOCATION | MEASURED TRAFFIC NOISE LEVELS, $L_{Aeq,period}$ dB(A) | |
|---|---|---|
| | DAY (7AM – 10PM) $L_{eq(15hr)}$ dB(A) | NIGHT (10PM – 7AM) $L_{eq(9hr)}$ dB(A) |
| LT1 | 65 | 60 |
| LT2 | 57 | 50 |

# 6 PROJECT NOISE AND VIBRATION CRITERIA

## 6.1 INTERNAL NOISE LEVELS

### 6.1.1 SEPP (Transport and Infrastructure) 2021

For developments with residential accommodation which are adjacent to a transitway and that the consent authority considers is likely to be adversely affected by road noise or vibration, SEPP 2021 provides the following acoustic criteria.

***2.120 Impact of road noise or vibration on non-road development***

*(1) This section applies to development for any of the following purposes that is on land in or adjacent to the road corridor for a freeway, a tollway or a transitway or any other road with an annual average daily traffic volume of more than 20,000 vehicles (based on the traffic volume data published on the website of TfNSW) and that the consent authority considers is likely to be adversely affected by road noise or vibration—*

*(a) residential accommodation,*

*(b) a place of public worship,*

*(c) a hospital,*

*(d) an educational establishment or centre-based child care facility.*

*(2) Before determining a development application for development to which this section applies, the consent authority must take into consideration any guidelines that are issued by the Planning Secretary for the purposes of this section and published in the Gazette.*

*(3) If the development is for the purposes of residential accommodation, the consent authority must not grant consent to the development unless it is satisfied that appropriate measures will be taken to ensure that the following LAeq levels are not exceeded—*

*(a) in any bedroom in the residential accommodation—35 dB(A) at any time between 10 pm and 7 am,*

*(b) anywhere else in the residential accommodation (other than a garage, kitchen, bathroom or hallway)—40 dB(A) at any time.*

*(3A) Subsection (3) does not apply to a building to which State Environmental Planning Policy (Housing) 2021, Chapter 3, Part 7 applies.*

*(4) In this section, freeway, tollway and transitway have the same meanings as they have in the Roads Act 1993.*

Based on Transport for NSW's traffic volume maps (Map 12D), it is noted that Macleay St is classified as a road which triggers a mandatory noise assessment under clause 2.120 of SEPP (Transport and Infrastructure) 2021.

### 6.1.2 Development Near Rail Corridors and Busy Roads – Interim Guideline

The Interim Guideline provides guidance on designing residential developments which are adjacent to transitways by governing maximum internal noise levels averaged over certain periods within bedrooms and living areas.

The Interim Guideline details the application of the SEPP 2007, which we note has been superseded by SEPP 2021. In addition, the Interim Guideline also recommends the following in relation to the assessment of ventilation by means of opened windows or doors:

> *If internal noise levels with windows or doors open exceed the criteria by more than 10dBA, the design of the ventilation for these rooms should be such that occupants can leave windows closed, if they so desire, and also to meet the ventilation requirements of the Building Code of Australia.*

Table 5 provides a summary of the criteria established in accordance with the Interim Guideline and SEPP 2021.

*Table 5: Summary of internal noise criteria from the Interim Guideline and SEPP 2021*

| TYPE OF HABITABLE SPACE | APPLICABLE TIME PERIOD | INTERNAL NOISE LEVEL CRITERIA – WINDOWS/DOORS CLOSED | INTERNAL NOISE LEVEL CRITERIA – WINDOWS/DOORS OPEN |
|---|---|---|---|
| Sleeping areas (bedrooms) | 10:00pm – 7:00am | 35 dB(A)$L_{Aeq(9hour)}$ | 45 dB(A)$L_{Aeq(9hour)}$ |
| Living rooms | At any time | 40 dB(A)$L_{Aeq(15hour)}$ | 50 dB(A)$L_{Aeq(15hour)}$ |

## 6.2 NOISE EMISSIONS

### 6.2.1 Noise Policy for Industry 2017

The NPI has been implemented to assess the noise impacts of mechanical plant and equipment, as well as other industrial noise sources on the surrounding receiver catchments.

The NPI sets out a framework for the derivation of project noise trigger levels that are used to assess the potential impacts of noise from industry (and industrial noise sources) and indicate the noise level at which feasible and reasonable noise management measures should be considered.

This policy applies to noise sources from activities listed in Schedule 1 of the POEO Act and those regulated by the EPA. This includes noise sources from mechanical plant and equipment within the proposed development, for which this policy will be applied.

The project noise trigger level provides a benchmark for assessing a proposal, where if exceeded, indicates a potential noise impact on the community and so triggers a management response such as additional mitigation measures. The project noise trigger level is the lower (the more stringent) value of the project intrusiveness noise level and project amenity noise level determined in Sections 2.3 and 2.4 of the NPI, respectively.

**Project Intrusiveness Noise Level**

The intrusiveness of an industrial noise source may generally be considered acceptable if the level of noise from the source (in terms of $L_{Aeq}$) measured over a 15-minute period does not exceed the background noise level by more than 5 dB when beyond a minimum threshold. The project intrusiveness noise level is only applicable to surrounding residential receivers.

To account for the temporal variation of background noise levels, the method outlined in Fact Sheet A of the NPI establishes a method in determining the Rating Background Noise Level (RBL) to be used in the assessment.

The intrusiveness noise level is determined as follows:

$$L_{Aeq,15min}\text{ (Intrusiveness Criteria)} = \text{Rating Background Noise Level (RBL)} + 5\text{ dB(A)}$$

Table 6 provides the project intrusiveness noise levels applicable to each of the surrounding residential noise-sensitive receivers.

*Table 6: Project intrusiveness noise level criteria for each residential receiver catchment*

| RECEIVER CATCHMENT | TIME OF DAY | MEASURED RBL - dB(A) | PROJECT INTRUSIVENESS NOISE LEVELS - $L_{Aeq,15min}$ dB(A) |
|---|---|---|---|
| RC1 & RC4 | Day | 47 | 52 |
| | Evening | 44 | 49 |
| | Night | 39 | 44 |
| RC2 & RC3 | Day | 52 | 57 |
| | Evening | 46 | 51 |
| | Night | 39 | 44 |

**Project Amenity Noise Level**

The recommended amenity noise levels represent the objective for total industrial noise at a receiver location, whereas the project amenity noise level represents the objective for noise from a single industrial development at a receiver location.

To ensure that industrial noise levels (existing plus new) remain within the recommended amenity noise levels for an area, a project amenity noise level applies for each new source of industrial noise as follows:

Project Amenity Noise Level = Recommended Amenity Noise Level (see Table 7) – 5 dB(A)

The following exceptions to the above method to derive the project amenity noise level apply:

- In areas with high traffic noise levels. Where the level of transport noise, road traffic noise in particular is high enough to make noise from an industrial source inaudible, the project amenity noise level shall be set at 15 dB(A) below the measured $L_{Aeq,period(traffic)}$ for the particular assessment period
- In proposed developments in major industrial clusters
- Where the resultant project amenity noise level is 10 dB(A) or more lower than the existing industrial noise level. In this case the project amenity noise levels can be set at 10 dB(A) below existing industrial noise levels if it can be demonstrated that existing industrial noise levels are unlikely to reduce over time
- Where cumulative industrial noise is not a necessary consideration because no other industries are present in the area, or likely to be introduced into the area in the future. In such cases the relevant amenity noise level is assigned as the project amenity noise level for the development

The converted project amenity noise level for comparison with the intrusiveness criteria (from time of day period to 15-minute) is provided for each surrounding receiver catchment in Table 7.

*Table 7: Project amenity noise level criteria for each receiver catchment*

| RECEIVER CATCHMENT | RECEIVER TYPE | TIME OF DAY | RECOMMENDED AMENITY NOISE LEVEL - $L_{Aeq,period}$ dB(A) | PROJECT AMENITY NOISE LEVEL - $L_{Aeq,period}$ dB(A) | PROJECT AMENITY NOISE LEVEL - $L_{Aeq,15min}$ dB(A) |
|---|---|---|---|---|---|
| RC1 – RC4 | Residential (Urban) | Day | 60 | 55 | 58 |
| | | Evening | 50 | 45 | 48 |
| | | Night | 45 | 40 | 43 |

**Sleep Disturbance and Maximum Noise Level Assessment**

Where the proposed development night-time noise levels generated at a residential location exceed either:

- $L_{Aeq,15min}$ 40 dB(A) or the prevailing RBL plus 5 dB(A), whichever is greater, and/or
- $L_{AFmax}$ 52 dB(A) or the prevailing RBL plus 15 dB(A), whichever is greater.

a detailed maximum noise level event assessment should be undertaken.

**Corrections for Annoying Noise Characteristics – Noise Policy for Industry Fact Sheet C**

Fact Sheet C contained within the Noise Policy for Industry outlines the correction factors to be applied to the source noise level at the receiver before comparison with the project noise trigger levels established within this report, to account for the additional annoyance caused by these modifying factors.

The modifying factor corrections should be applied having regard to:

- The contribution noise level from the premises when assessed/measured at a receiver location, and
- The nature of the noise source and its characteristics (as set out in Fact Sheet C).

Table C1 within Fact Sheet C sets out the corrections to be applied for any assessment in-line with the NPI. The corrections specified for tonal, intermittent and low-frequency noise are to be added to be added to the measured or predicted levels at the receiver before comparison with the project noise trigger levels. The adjustments for duration are to be applied to the criterion.

**Project Noise Trigger Levels**

Table 8 presents the project intrusiveness and project amenity noise levels for each period, and each receiver catchment, as well as the resultant project noise trigger levels (PNTLs) that shall be applied for any assessment of impacts of mechanical plant and equipment noise on the surrounding receiver catchments.

*Table 8: Project noise trigger levels (PNTL) to be applied to each surrounding receiver catchment*

| RECEIVER CATCHMENT | RECEIVER TYPE | TIME OF DAY | PROJECT INTRUSIVENESS NOISE LEVEL - $L_{Aeq,15min}$ dB(A) | PROJECT AMENITY NOISE LEVEL - $L_{Aeq,15min}$ dB(A) | SLEEP DISTURBANCE NOISE LEVEL - dB(A) | PROJECT NOISE TRIGGER LEVEL - $L_{Aeq,15min}$ dB(A) |
|---|---|---|---|---|---|---|
| RC1 & RC4 | Residential | Day | 52 | 58 | N/A | **52** |
| | | Evening | 49 | 48 | N/A | **48** |
| | | Night | 44 | 43 | 44 $L_{Aeq,15min}$<br>54 $L_{AFmax}$ | **43** |
| RC2 & RC3 | | Day | 57 | 58 | N/A | **57** |
| | | Evening | 51 | 48 | N/A | **48** |
| | | Night | 44 | 43 | 44 $L_{Aeq,15min}$<br>54 $L_{AFmax}$ | **43** |

## 6.3 TRAFFIC NOISE GENERATION

The $L_{Aeq}$ noise level or the "equivalent continuous noise level" correlates best with the human perception of annoyance associated with traffic noise.

Road traffic noise impact is assessed in accordance with the NSW Road Noise Policy (RNP). The criterion (Table 3 – Road Traffic Noise Assessment Criteria for Residential Land Uses) divides land use developments into different categories and lists the respective criteria for each case. The category that is relevant to the proposed use of the site is shown below in Table 9.

*Table 9: NSW RNP – Traffic Noise Assessment Criteria*

| ROAD CATEGORY | TYPE OF PROJECT/LAND USE | ASSESSMENT CRITERIA – dB(A) | |
|---|---|---|---|
| | | DAY (7AM – 10PM) | NIGHT (10PM – 7AM) |
| Freeway / arterial / sub-arterial roads | 3. Existing residences affected by additional traffic on existing freeways/arterial/sub-arterial roads generated by land use developments | $L_{Aeq, (15\ hour)}$ 60 | $L_{Aeq, (9\ hour)}$ 55 |
| Local Roads | 4. Existing residences affected by noise from new local road corridors | $L_{Aeq, (1\ hour)}$ 55 | $L_{Aeq, (1\ hour)}$ 50 |
| | 5. Existing residences affected by noise from redevelopment of existing local roads | | |
| | 6. Existing residences affected by additional traffic on existing local roads generated by land use developments | | |

In the event that the traffic noise at the site is already in excess of the criteria noted above, the NSW RNP states that the primary objective is to reduce the existing level through feasible and reasonable measures to meet the criteria above.

If this is not achievable, Section 3.4.1 of the RNP states that for existing residences affected by additional traffic on existing roads generated by land use developments, any increase in the total traffic noise should be limited to 2 dB above that of the corresponding 'no build option'.

Also, the inherent quality of noise from vehicles on public roads arriving to and departing from the site would be indistinguishable from other traffic noise on public roads.

## 6.4 CONSTRUCTION NOISE CRITERIA

### 6.4.1 Interim Construction Noise Guideline (ICNG)

The noise criteria outlined within the ICNG has been adopted for the assessment of noise emissions from the construction of the proposed redevelopment.

**Airborne Noise – Residential Receiver Catchments**

The airborne noise criteria for surrounding residential receiver catchments have been extracted from Table 2 in the ICNG and is presented in Table 10 below.

*Table 10: NSW ICNG construction noise criteria for surrounding residential receiver catchments*

| TIME OF DAY | MANAGEMENT LEVEL $L_{Aeq,15min}$[1] | HOW TO APPLY |
|---|---|---|
| Recommended Standard Hours:<br><br>Monday – Friday<br>7am – 6pm<br><br>Saturday<br>8am – 1pm<br><br>No work on Sundays or public holidays | Noise Affected<br>RBL + 10dB | The noise-affected level represents the point above which there may be some community reaction to noise.<br>▪ Where the predicted or measured **$L_{Aeq,15min}$** is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to meet the noise affected level.<br>▪ The proponent should also inform all potentially impacted residences of the nature of works to be carried out, the expected noise levels and duration as well as contact details. |
| | Highly Noise Affected<br>75 dB(A) | The highly noise affected level represents the point above which there may be strong community reaction to noise.<br>▪ Where noise is above this level, the relevant authority (consent, determining or regulatory) may require respite periods by restricting the hours that the very noisy activities can occur in, taking into account:<br>– Times identified by the community when they are less sensitive to noise (such as before and after school, for works near schools, or mid-morning or mid-afternoon for works near residences)<br>– If the community is prepared to accept a longer period of construction in exchange for restrictions on construction times. |
| Outside Recommended Standard Hours | Noise Affected<br>RBL + 5dB | ▪ The proponent should apply all feasible and reasonable work practices to meet the noise affected level.<br>▪ Where all feasible and reasonable practices have been applied and noise is more than 5 dB(A) above the noise affected level, the proponent should negotiate with the community.<br>▪ For guidance on negotiating agreements see section 7.2.2. |

**Note 1:** Noise levels apply at the property boundary that is most exposed to construction noise, and at a height of 1.5 m above ground level. If the property boundary is more than 30 m from the residence, the location for measuring or predicting noise levels is at the most noise-affected point within 30m of the residence. Noise levels may be higher at upper floors of the noise affected residence.

**Airborne Noise – Commercial Receiver Catchments**

The airborne noise criteria for surrounding commercial receiver catchments have been extracted from Table 3 in the ICNG and is presented in Table 11 below.

*Table 11: NSW ICNG construction noise criteria for surrounding commercial receiver catchments*

| LAND USE | MANAGEMENT LEVEL (APPLIES WHEN PROPERTIES ARE BEING USED) $L_{Aeq,15min}$ |
|---|---|
| Offices, Retail Outlets | 70 dB(A) |

**Ground-borne Noise – Residential Receiver Catchments**

Ground-borne noise is noise generated by vibration transmitted through the ground into a structure, such as an excavator with a hydraulic hammer attachment, or impact/bore piling. The following ground-borne noise levels for residences have been extracted from Section 4.2 of the ICNG and indicate when management actions should be implemented.

- Evening (6pm to 10pm) – Internal Noise Level: $L_{Aeq,15min}$ 40 dB(A); and
- Night-time (10pm to 7am) – Internal Noise Level: $L_{Aeq,15min}$ 35 dB(A).

An assessment of ground-borne noise to these levels is only required when the ground-borne noise levels are higher than airborne noise levels, and for surrounding residential receiver catchments. The ground-borne noise levels are for evening and night-time periods only. The levels shall be assessed at the centre of the most affected habitable room.

## 6.5 OPERATIONAL & CONSTRUCTION VIBRATION CRITERIA

It is important for vibration emissions from vibration-intensive equipment utilised during the construction works be managed to maintain appropriate levels of human comfort, and to avoid both cosmetic and structural damage. The vibration limits proposed in the ensuing sub-sections aid in achieving this outcome.

### 6.5.1 Human Comfort

The office of Environment and Heritage (OEH) developed a document, "Assessing vibration: A technical guideline" in February 2006 to assist in preventing people from exposure to excessive vibration levels from construction and operation of a development within buildings. The guideline does not however address vibration induced damage to structures or structure-borne noise effects. Vibration and its associated effects are usually classified as continuous, impulsive or intermittent.

**Continuous and Impulsive Vibration**

Structural vibration in buildings can be detected by occupants and can affect them in many ways including reducing their quality of life and also their working efficiency. Complaint levels from occupants of buildings subject to vibration depend upon their use of the building and the time of the day.

Maximum allowable magnitudes of building vibration with respect to human response are shown in Table 12. It should be noted that the human comfort for vibration is more stringent than the building damage criteria.

*Table 12: Preferred and maximum weighted RMS values for continuous and impulsive vibration acceleration ($m/s^2$) 1-80 Hz*

| LOCATION | ASSESSMENT PERIOD[1] | PREFERRED VALUES | | MAXIMUM VALUES | |
|---|---|---|---|---|---|
| | | z-axis | x- and y-axes | z-axis | x- and y-axes |
| Continuous vibration | | | | | |
| Residences | Daytime | 0.010 | 0.0071 | 0.020 | 0.014 |
| | Night time | 0.007 | 0.005 | 0.014 | 0.010 |
| Offices, schools, educational institutions and places of worship | Day- or night time | 0.020 | 0.014 | 0.040 | 0.028 |
| Impulsive vibration | | | | | |
| Residences | Daytime | 0.30 | 0.21 | 0.60 | 0.42 |
| | Night time | 0.10 | 0.071 | 0.20 | 0.14 |
| Offices, schools, educational institutions and places of worship | Day- or night time | 0.64 | 0.46 | 1.28 | 0.92 |

**Note 1:** Daytime is 7:00am to 10:00pm and night time is 10:00pm to 7:00am

**Intermittent Vibration Criteria**

Disturbance caused by vibration will depend on its duration and its magnitude. This methodology of assessing intermittent vibration levels involves the calculation of a parameter called the Vibration Dose Value (VDV) which is used to evaluate the cumulative effects of intermittent vibration. Various studies support the fact that VDV assessment methods are far more accurate in assessing the level of disturbance than methods which is only based on the vibration magnitude.

*Table 13: Acceptable vibration dose values for intermittent vibration ($m/s^{1.75}$)*

| LOCATION | DAYTIME[1] | | NIGHT-TIME[1] | |
|---|---|---|---|---|
| | PREFERRED VALUE | MAXIMUM VALUE | PREFERRED VALUE | MAXIMUM VALUE |
| Residences | 0.20 | 0.40 | 0.13 | 0.26 |
| Offices, schools, educational institutions and places of worship | 0.40 | 0.80 | 0.40 | 0.80 |

**Note 1:** Daytime is 7:00am to 10:00pm and night time is 10:00pm to 7:00am

### 6.5.2 Cosmetic Damage

Structural vibration thresholds are set to minimize the risk of cosmetic surface cracks and lie below the levels that have the potential to cause damage to the main structure. Table 14 presents guide values for building vibration, based on the vibration thresholds above which cosmetic damage has been demonstrated outlined within BS7385-Part 2:1993. These values are evaluated to give a minimum risk of vibration-induced damage, where minimal risk for a named effect is usually taken as 95% probability of no effect.

*Table 14: Transient vibration guide values for cosmetic damage – BS 7385-2:1993*

| TYPE OF BUILDING | PEAK PARTICLE VELOCITY IN FREQUENCY RANGE OF PREDOMINANT PULSE (PPV) | |
|---|---|---|
| | 4 Hz TO 15 Hz | 15 Hz AND ABOVE |
| Reinforced or framed structures<br>Industrial or light commercial type buildings | 50mm/s | N/A |
| Unreinforced or light framed structures<br>Residential or light commercial type buildings | 15mm/s | 20mm/s<br>(50mm/s at 40Hz and above) |

### 6.5.3 Structural Damage

Ground vibration criteria is defined in terms of the levels of vibration emission from the construction activities which will avoid the risk of damaging surrounding buildings or structures. It should be noted that human comfort criteria are normally expressed in terms of acceleration whereas structural damage criteria are normally expressed in terms of velocity.

Most specified structural vibration levels are defined to minimize the risk of cosmetic surface cracks and are set below the levels that have the potential to cause damage to the main structure. Structural damage criteria are presented in German Standard DIN4150-Part 3 "Structural vibration in buildings – Effects on structures" and British Standard BS7385-Part 2: 1993 "Evaluation and Measurement for Vibration in Buildings". Table 15 indicates the vibration limits presented in DIN4150-Part 3 to ensure structural damage doesn't occur.

*Table 15: Guideline value of vibration velocity, vi, for evaluating the effects of short-term vibration – DIN4150-3*

| LINE | TYPE OF STRUCTURE | VIBRATION VELOCITY, $V_i$, IN mm/s | | | |
|---|---|---|---|---|---|
| | | FOUNDATION | | | PLANE OF FLOOR OF UPPERMOST FULL STOREY |
| | | AT A FREQUENCY OF | | | |
| | | LESS THAN 10HZ | 10 TO 50HZ | 50 TO 100HZ* | ALL FREQUENCIES |
| 1 | Buildings used for commercial purposes, industrial buildings and buildings of similar design | 20 | 20 to 40 | 40 to 50 | 40 |
| 2 | Dwellings and buildings of similar design and/or use | 5 | 5 to 15 | 15 to 20 | 15 |
| 3 | Structures that, because of their particular sensitivity to vibration, do not correspond to those listed in lines 1 and 2 and are of great intrinsic value (e.g. buildings that are under a preservation order) | 3 | 3 to 8 | 8 to 10 | 8 |
| *For frequencies above 100Hz, at least the values specified in this column shall be applied | | | | | |

### 6.5.4 Project Construction Vibration Limits

Table 16 indicates the vibration criteria for the surrounding sensitive receivers to the development.

*Table 16: Acceptable vibration dose values for intermittent vibration ($m/s^{1.75}$)*

| RECEIVER | PERIOD | HUMAN COMFORT VIBRATION OBJECTIVES | | | BUILDING DAMAGE OBJECTIVES mm/s |
|---|---|---|---|---|---|
| | | CONTINUOUS mm/s (RMS) | | INTERMITTENT $m/s^{1.75}$ (VDV) | |
| | | Z-AXIS | X- AND Y-AXIS | | |
| RC1 – RC4 | Day | 10 - 20 | 7 – 14 | 0.20 – 0.40 | 5 |
| | Night | 7 - 14 | 5 – 10 | 0.13 – 0.26 | |

# 7 OPERATIONAL NOISE AND VIBRATION IMPACT ASSESSMENT

## 7.1 MECHANICAL PLANT AND EQUIPMENT NOISE EMISSION

At this stage of the proposed development, mechanical plant and equipment selections have not been made. During the design development stage of the project, the mitigation measures outlined in Section 8.1 should be considered when preparing the mechanical services to design to ensure compliance with the external noise emissions criteria established in Section 6.2.

It should be noted that any significant external noise emissions from mechanical plant and equipment are not expected to occur from the development that would require screening or the like.

## 7.2 CARPARK NOISE EMISSION

All carparking for the development will be located underground and enclosed within 4 basement levels. In consideration of this, it is expected that noise generated by activities of these areas will not have an adverse noise impact on the surrounding noise-sensitive receivers and the project specific noise emission criteria are capable of being met without additional acoustic mitigation measures.

## 7.3 LOADING DOCK NOISE EMISSIONS

### 7.3.1 Details and Assumptions

The development proposes a dedicated and enclosed loading dock located on ground floor. An assessment of the noise generated by activities from the area has been conducted to determine the impacts to surrounding noise-sensitive receivers. At the time of writing, E-LAB are not aware of any operational constraints around the loading dock and have conducted this assessment based on the following details and assumptions:

- Loading dock can only accommodate 1 service vehicle at any given time, with the largest expected to be a 10.6m long Council waste truck as per JMT Consulting's Transport Impact Assessment
- Loading dock is not open for service vehicles during the night (10pm to 7am)
- The dominant noise source within the loading dock is from materials handling and waste collection and an assumed sound power level of 88dB(A)$L_{Aeq,15min}$, based on measurements of previous projects of comparable nature/activities

### 7.3.2 Predicted Noise Levels

Table 17 summarises the calculated noise levels at surrounding noise-sensitive receivers. We have assessed against the evening criteria for the residential receivers, being the most stringent criteria during operation.

*Table 17: Loading area noise emission assessment*

| RECERIVER LOCATION | PREDICTED NOISE LEVELS AT RECEIVER, $L_{Aeq,15min}$ dB(A) | NOISE EMISSION CRITERIA, $L_{Aeq,15min}$ dB(A) | COMPLIANCE (YES/NO) |
|---|---|---|---|
| RC1 – Residential | 48 | 48 | Yes |
| RC2 – Residential | 41 | 48 | Yes |
| RC3 – Residential | 27 | 48 | Yes |
| RC4 – Residential | 38 | 48 | Yes |

Based on the assessment of the noise generated by activities within the loading dock, the predicted noise levels at the surrounding noise-sensitive receivers are capable of compliance without additional acoustic mitigation measures.

## 7.4 RETAIL TENANCY NOISE EMISSION

At the time of writing, the tenant for the retail tenancy has not been determined and therefore the usage / type of activities for these spaces are unknown.

It is expected that the operation and activities within the retail space is generally not noise intensive and won't require special acoustic mitigation measurements, such as a high performing façade or glazing.

Future usage of the retail tenancy may be subject to a separate development application and detailed assessment of the expected operation and activities may be required by City of Sydney Council. The selected tenants may be required by Council to submit a separate Development Application based on use.

## 7.5 TRAFFIC AIRBORNE NOISE INTRUSION

### 7.5.1 Closed Windows/Doors

In order to provide acoustic amenity to occupants of the proposed development and comply with the project specific internal noise limits, the noise impact of surrounding roads was assessed at the façade of the proposed development.

3D acoustic modelling for noise emissions from the surrounding roads was conducted using the software SoundPlan (Version 9.0). Noise emissions and impacts from surrounding roads were modelled in accordance with the CoRTN prediction techniques and calibrated to the measurements conducted for this assessment.

Attenuation due to distances, building shielding and environmental absorption, together with additional noise incident on the façade due to façade reflections are taken into account within the 3D model. The results of 3D modelling are presented in Appendix B showing the incident noise levels on the façade as a result of external noise sources (traffic).

With the implementation of mitigation measures presented in Section 8.2, the development is capable of complying with the SEPP 2021 / Interim Guideline internal noise levels when windows are closed.

### 7.5.2 Open Windows / Doors

An open windows assessment has been conducted to determine whether the habitable spaces are able to meet the project internal noise limits established in Section 6.1 with windows open for natural ventilation (open in accordance with the natural ventilation requirements of the NCC).

If the project internal noise limits for windows/doors open is exceeded, the habitable area is considered noise-affected and an alternative means of ventilation is required in accordance with the requirements of the NCC (i.e. an alternative ventilation system complying with AS 1668.2 and AS/NZS 3666.1).

The assessment has been conducted under the assumption the occupant has opened their windows to achieve natural ventilation (and as recommended in the Interim Guideline), that is, when the windows are open to 5% of the floor area of the room being ventilated, with a reduction of incident noise level to internal noise level of 10dB(A). Room loss has also been considered as part of this assessment.

In order to achieve the project internal noise limits established in Section 6.1 whilst simultaneously achieving the ventilation requirements, mitigation measures have been proposed in Section 8.2 for the proposed development.

## 7.6 TRAFFIC NOISE GENERATION

Section 3.8 of JMT Consulting's Transport Impact Assessment indicates that the net traffic generation (existing site minus the proposed site) will result in a reduction of 5 vehicles per hour in the AM peak and a reduction of 3 vehicles per hour in the PM peak. As a result, the road noise generated by the proposed site is expected to be less than what the existing site generates, and the Road Noise Policy requirements will be satisfied without additional acoustic measures.

## 7.7 OUTDOOR COMMUNAL SPACE NOISE EMISSION

### 7.7.1 Details and Assumptions

The development proposes dedicated communal open spaces on Level 2 and Level 3 of the development. This includes landscaped areas, dining spaces, events spaces, outdoor recreation spaces and pool areas. A noise emissions assessment from the use of these spaces has been undertaken based on the following assumptions:

- A conservative estimate of 1 resident per 2sqm within the Level 2 and Level 3 outdoor communal spaces, with 1 in 2 people speaking at any given time.
- An average conversational sound power level of 63dB(A) per resident.
- 1.1m high balustrades line the perimeter of communal spaces.

There are no mandatory criteria or guidelines applicable in the assessment of outdoor communal residential spaces. Notwithstanding, we have adopted a Background + 5dB noise target, equivalent to the "Intrusiveness" noise criterion from the NPfI, applied to the nearest external noise sensitive receivers (being RC1, RC2, RC3 and RC4).

### 7.7.2 Predicted Noise Levels

Table 18 summarises the calculated noise levels at surrounding noise-sensitive receivers. We have assessed against the night criteria for residential receivers, being the most stringent criteria during use.

*Table 18: Outdoor communal area predicted noise levels*

| RECERIVER LOCATION | PREDICTED NOISE LEVELS AT RECEIVER, $L_{Aeq,15min}$ dB(A) | NOISE EMISSION CRITERIA, $L_{Aeq,15min}$ dB(A) | COMPLIANCE (YES/NO) |
|---|---|---|---|
| RC1 – Residential | < 41 | 44 | Yes |
| RC2 – Residential | < 40 | 44 | Yes |
| RC3 – Residential | < 41 | 44 | Yes |
| RC4 – Residential | < 42 | 44 | Yes |

Based on the assessment of the noise generated by activities within the communal spaces, the predicted noise levels at the surrounding noise-sensitive receivers are capable of compliance without additional acoustic mitigation measures.

# 8 OPERATIONAL MITIGATION MEASURES

## 8.1 MECHANICAL PLANT AND EQUIPMENT NOISE MITIGATION

### 8.1.1 General

Mitigation measures for the mechanical plant should be considered during the design development stage to ensure compliance with the outlined criteria at the nearest sensitive receiver catchments. These mitigation measures could include but not limited to the following:

- Positioning mechanical plant away from nearby receivers
- Acoustic attenuators fitted to duct work
- Screening around mechanical plant
- Acoustic insulation within duct work

It should be noted that the noise reduction requirements will likely be refined and reduced once the mechanical plant and equipment selections and designs have been progressed further during the detailed design of the proposed development. The mitigation measures proposed at this stage of the development are conservative in nature.

## 8.2 EXTERNAL SOUND ISOLATION – BUILDING ENVELOPE

### 8.2.1 Glazed Façade Elements

To ensure project internal noise levels are achieved with windows closed, the glazing components of the façade of the proposed development must meet the acoustic façade type presented in Table 19 below. The designations of acoustic façade types are indicated on the drawings provided in Appendix C.

The acoustic ratings provided in for each of the typical glazing arrangements in Table 19 are indicative of the glazing assembly in its entirety (glass and frame).

*Table 19: Acoustic façade type designation for glazed elements*

| ACOUSTIC FAÇADE TYPE | ACOUSTIC PERFORMANCE ($R_w + C_{tr}$) | TYPICAL EQUIVALENT GLASS LITE |
|---|---|---|
| 1 | 29 | **SGU:** 6.38mm laminated glass<br>or<br>**DGU:** 6mm float / 12mm airgap / 6.38mm laminated |
| 2 | 32 | **SGU:** 10.38mm laminated glass<br>or<br>**DGU:** 6mm float / 12mm airgap / 10.38mm laminated |

### 8.2.2 Non-Glazed Façade Elements

In addition to the required glazing systems outlined in Table 19 and indicated in Appendix C, the solid/non-glazed elements of the façade shall have an acoustic performance of no less than $R_w + C_{tr}$ 45 to ensure the resulting internal noise levels within each space in the proposed development do not exceed the project internal noise limits outlined in Section 6.1. Masonry constructions such as concrete or blockwork will be satisfactory with no additional acoustic treatment required.

## 8.3 ALTERNATE MEANS OF VENTILATION

An open windows assessment has been conducted in order to assess whether the residential spaces are able to meet the internal noise level requirements of the Interim Guideline with windows open for natural ventilation (open in accordance with the natural ventilation requirements of the NCC).

If the project internal noise limits for windows/doors open is exceeded, alternative means of ventilation is required in accordance with the requirements of the NCC (i.e. alternative ventilation system complying with AS 1668.2 and AS/NZS 3666.1) to the noise-affected spaces (noise-affected as defined in Section 6.1.2).

Areas requiring an alternative means of ventilation have been summarised in Appendix D. It should be noted that these zones are preliminary and may change as the design develops due to a change in the building form, form of the façade, internal finishes within each of the habitable spaces and location of openings.

## 8.4 LOADING DOCK

The following general noise mitigation and management procedures are recommended to be integrated into the overall Operational Management Plan for the development:

- Vehicles travel at no faster than 10km/h whilst on the premise
- All service vehicle engines are to be switched off when parked or when unloading goods
- Any releasing of airbrakes are to only occur once inside the development's basement levels
- Loading dock will not be used during the night (10pm to 7am)

## 8.5 OUTDOOR COMMUNAL AREAS

The following general noise mitigation and management procedures are recommended to be integrated into the overall Operational Management Plan for the development:

- Signage displayed reminding residents to be considerate and minimise noise while the space is in use (i.e. no shouting, restriction on any amplified music, and that the outdoor communal space is not to be used for parties)

# 9 CONSTRUCTION NOISE ASSESSMENT

It is noted that a detailed construction plan/methodology is not available at this stage and a contractor has not been appointed. As such, the below assessments are indicative and should be further developed as part of a Construction Noise and Vibration Management Sub-Plan.

## 9.1 PROPOSED CONSTRUCTION ACTIVITIES

At the time of writing, a contractor has not been engaged and a detailed description of work / construction methodology has not been determined. As such, the construction staging has been assumed as follows:

- Substructure and piling works
- Structural works

Similarly, hours of work are also yet to be determined. For the purpose of this assessment, we have assumed the recommended standard hours in the ICNG which are as follows:

- Monday to Friday: 7:00am to 6:00pm
- Saturday: 8:00am to 1:00pm
- Sunday and public holidays: no work

## 9.2 EXPECTED CONSTRUCTION EQUIPMENT

The noise sources likely to be associated with the works listed in the previous section of this report are presented in Table 20. The equipment noise levels have been extracted from AS2436:2010 “Guide to Noise and Vibration Control on Construction, Demolition and Maintenance Sites”.

*Table 20: Cumulative impact – construction equipment noise levels*

| STAGES | ESTIMATED DURATION | EQUIPMENT | QUANTITY | SOUND POWER LEVEL – dB(A) | ACOUSTICAL USAGE FACTOR (%) | USAGE IN 15-MINUTE PERIOD (MINUTES) | TIME CORRECTED SOUND POWER LEVEL– dB(A) $L_{Aeq,15min}$ |
|---|---|---|---|---|---|---|---|
| Substructure and Piling Works | 6 months | Piling (Bored) | 1 | 111 | 20 | 3 | **104** |
| | | Excavator 30 tonne | 1 | 107 | 40 | 6 | **103** |
| | | Bobcat | 1 | 107 | 40 | 6 | **103** |
| | | General Truck | 2 | 107 | 30 | 4.5 | **102** |
| Structural Works | 18 months | Powered hand tool | 6 | 102 | 50 | 7.5 | **99** |
| | | Concrete pump truck | 1 | 108 | 50 | 7.5 | **105** |
| | | General truck | 2 | 107 | 30 | 4.5 | **102** |
| | | Mobile crane | 1 | 104 | 20 | 3 | **97** |

## 9.3 NOISE MODELLING AND ASSUMPTIONS

In order to assess the noise impact from the site during the various construction stages, a noise model was prepared using commercial software SoundPLAN v9.0, which is a comprehensive software package for conducting three-dimensional complex noise propagation modelling. Using the software, a 3D model of the site and its surroundings was constructed including the nearby buildings, and the construction plant and equipment were positioned as noise sources. Within the model, the effects of the environment (built and natural) on propagation of sound were considered to reliably estimate the resulting noise effects on the surrounding noise sensitive receivers

The noise model represents the 'reasonable' worst case periods of construction activities, meaning that all the equipment of each stage is operating simultaneously during a 15-minute observation period.

The assumptions that were made within the assessment include the following:

- All construction equipment for each stage are operating simultaneously in an assessed 15-minute period, representing a reasonably worst-case scenario
- The predicted noise levels at the receivers have been assessed at a height of 1.5m above ground level in accordance with the assessment procedures of the ICNG and at what is considered the most-affected location
- No barriers/shielding have been taken into account (e.g. from construction site hoarding)
- The noise levels have been assessed using neutral weather conditions

## 9.4 PREDICTED NOISE LEVELS

The predicted noise levels at surrounding noise-sensitive receivers have been presented in Table 21 and Table 22 and have been assessed to the ICNG construction noise management levels established in Section 6.4, during the ICNG recommended hours of work.

The noise contour maps produced by the three-dimensional noise propagation modelling are provided in Appendix B.

*Table 21: Predicted 'worst-case' noise levels at surrounding noise-sensitive receivers (substructure and piling works)*

| RECEIVER CATCHMENT | PREDICTED NOISE LEVEL RANGE (dBA $L_{Aeq,15min}$) | NOISE MANAGEMENT LEVEL (dBA $L_{Aeq,15min}$) | NOISE MANAGEMENT LEVEL EXCEEDANCE (dBA) | EXCEEDS HIGHLY NOISE AFFECTED LEVEL (YES/NO) |
|---|---|---|---|---|
| RC1 | 70-75 | 57 | Up to 18 | No |
| RC2 | 65-70 | 62 | Up to 8 | No |
| RC3 | 70-75 | 62 | Up to 13 | No |
| RC4 | 70-75 | 57 | Up to 18 | No |

*Table 22: Predicted 'worst-case' noise levels at surrounding noise-sensitive receivers (structural works)*

| RECEIVER CATCHMENT | PREDICTED NOISE LEVEL RANGE (dBA $L_{Aeq,15min}$) | NOISE MANAGEMENT LEVEL (dBA $L_{Aeq,15min}$) | NOISE MANAGEMENT LEVEL EXCEEDANCE (dBA) | EXCEEDS HIGHLY NOISE AFFECTED LEVEL (YES/NO) |
|---|---|---|---|---|
| RC1 | 70-75 | 57 | Up to 18 | No |
| RC2 | 65-70 | 62 | Up to 8 | No |
| RC3 | 70-75 | 62 | Up to 13 | No |
| RC4 | 70-75 | 57 | Up to 18 | No |

# 10 CONSTRUCTION VIBRATION ASSESSMENT

Vibration intensive activities are typically limited to demolition of structures and excavation works with hydraulic hammers, rock breaking, and percussive methods of piling installation. Whilst substructure and construction works can generate ground vibration, the magnitude and extent of propagation are not expected to be as great as during demolition/excavation and will be highly dependent on equipment type, ground conditions, and separation distance.

Safe working distances for vibration intensive plant and are quoted for both "cosmetic" damage (in accordance with BS 7385) and human comfort (in accordance with Assessing Vibration – a technical guideline), have been provided, based on Transport for NSW's "Construction Noise and Vibration Guideline". The recommended safe working distances for each of the plant listed above are provided in Table 23.

*Table 23: Recommended safe working distances for vibration intensive plant*

| EQUIPMENT | APPROX. SIZE/ WEIGHT/ MODEL | MINIMUM DISTANCE – COSMETIC DAMAGE (BS 7385) | MINIMUM DISTANCE – HUMAN RESPONSE (OH&E VIBRATION GUIDELINE) |
|---|---|---|---|
| Vibratory roller | 1-2 tonne | 5m | 15m to 20m |
| | 2-4 tonne | 6m | 20m |
| | 4-6 tonne | 12m | 40m |
| | 7-13 tonne | 15m | 100m |
| | 13-18 tonne | 20m | 100m |
| | > 18 tonne | 25m | 100m |
| Small hydraulic hammer | 300 kg (5 to 12t excavator) | 2m | 7m |
| Medium hydraulic hammer | 900 kg (12 – 18t excavator) | 7m | 23m |
| Large hydraulic hammer | 1600 kg (18 to 34t excavator) | 22m | 73m |
| Pile driver – vibratory | Sheet piles | 2m to 20m | 20m |
| Piling rig – bored | ≤ 800mm | 2m (nominal) | N/A |
| Piling rig – hammer | 12t down force | 15m | 50m |
| Jackhammer | Handheld | 1m (nominal) | Avoid contact with structure |

The closest vibration sensitive receivers are considered to be the immediately adjacent properties (RC3) which we note also contains heritage listed properties (55 Macleay St and 57-59 Macleay St). Once a construction method is determined at time of head contractor appointment, it is recommended that the contractor engage a specialist to undertake attended vibration measurements at the commencement of work in order to verify the safe working distances.

If the levels are compliant with the vibration limits as listed in Section 6.5, then work may proceed based on the implementation of the measures detailed in this report. If there are exceedances, reasonable and feasible mitigation measures and additional vibration monitoring should be conducted. Measures to prevent cosmetic damage to surrounding structures are provided in Section 11 and a vibration monitoring strategy has been provided in Section 11.3.

# 11 CONSTRUCTION NOISE AND VIBRATION MANAGEMENT

It is noted that a detailed construction plan/methodology is not available at this stage and a contractor has not been appointed. As such, the below recommendations and mitigation measures are indicative and should be further developed as part of a Construction Noise and Vibration Management Sub-Plan.

## 11.1 PROJECT SPECIFIC RECOMMENDATIONS

### 11.1.1 Noise

In relation to noise impact at surrounding noise-sensitive residential receivers, predicted noise levels are expected to exceed the "noise affected" management level during highly concentrated works due to their close proximity and line of sight to the project site.

It is worth noting that the predicted exceedances are considered to be a reasonably worst-case scenario without any corrections for shielding or directivity and with all scheduled activities in Table 20 occurring simultaneously in a 15-minute period.

Noise levels at surrounding sensitive receivers can be expected to be less than those presented in Table 21 to Table 22 when works are further away from the project site boundary, if a solid hoarding is implemented around the boundary, and if works occur internally within the building shell.

Furthermore, it is noted that this is an indicative assessment for a worst-case scenario and shall be refined as part of a Construction Noise and Vibration Management Sub-Plan once detailed construction plan/methodologies are available.

Frequent and proactive communication with surrounding residents and neighbours is also encouraged and a Community Consultation Strategy should be developed by the contractor. This will allow occupants of surrounding residents to arrange their schedules to accommodate possible noise sensitive activities. More details regarding communication with the community can be found in Section 11.2.3

For exceedances of less than 3dB(A), careful selection and maintenance of plant equipment will ensure that disruptions to adjacent receivers are minimised.

### 11.1.2 Vibration

It is expected that the main vibration inducing activities could be from piling during substructure works. Other activities are generally considered to not be highly vibration intensive activities. It is recommended that the method of piling be bored piling, which is lower in vibration generation compared to alternative methods like vibratory or hammer piling.

Upon any complaints from surrounding residents, the following shall be undertaken:

- Vibration monitoring is recommended to be conducted at surrounding sensitive receivers (or at the location of complaint) in accordance with the monitoring program strategy proposed in Section 11.3
- Reasonable and feasible measures should be considered to lessen the impact, such as alternative methods or equipment for activities which are causing complaints to achieve the vibration levels required

We recommend that dilapidation reports be prepared on surrounding sensitive receivers and buildings which will be in close proximity to heavy machinery. Guidance for this may be provided by the geotechnical engineer and controlled by ground composition.

## 11.2 GENERAL ACOUSTIC RECOMMENDATIONS

According to AS 2436 the following techniques could be applied to minimize the spread of noise and vibrations to the potential receivers.

### 11.2.1 Noise

If a process that generates significant noise levels cannot be avoided, the amount of noise reaching the receiver should be minimized. Two ways of achieving this are to either increase the distance between the noise source and the receiver or to introduce noise reduction measures such as screens. Practices that will reduce noise from the site include:

- Increasing the distance between noise sources and sensitive receivers.
- Reducing the line-of-sight noise transmission to residences or other sensitive land uses using temporary barriers (stockpiles, shipping containers and site office transportables can be effective barriers).
- Constructing barriers that are part of the project design early in the project to introduce the mitigation of site noise.
- Installing purpose-built noise barriers, acoustic sheds and enclosures.

Physical methods to reduce the transmission of noise between the site works and residences, or other sensitive land uses, are generally suited to works where there is longer-term exposure to the noise. A few of these methods have been introduced below.

**Screening**

Hoarding: Another way of implementing screening is to build hoarding that includes a site office on an elevated structure. This option offers superior noise reduction when compared with a standard, simple hoarding. The acoustic performance is further enhanced when the hoarding is a continuous barrier.

General remarks: In many cases, it is not practical to screen earthmoving operations effectively, but it may be possible to partially shield a construction plant at the early stages of the project with protective features required to screen traffic noise.

The usefulness of a noise barrier will depend upon its length, its height, its position relative to the source and the receiver, and the material of which it is made. A barrier designed to reduce noise from a moving source should extend beyond the last property to be protected by at least ten times the shortest distance from the said property to the barrier. A barrier designed to reduce noise from a stationary source should, where possible, extend beyond the direct line of sight between the noise source and the receiver by a distance equal to ten times the effective barrier height, which is the height above the direct line between source and receiver.

If the works are already predominantly located within nominally closed structures, careful consideration should be given to reducing noise breakout at any openings.

**Cranes**

For the early works construction phases, any cranage will be limited to mobile cranes where the engines are typically enclosed in an acoustically treated housing.

**Reversing and warning alarms**

Community complaints often involve the intrusive noise of alarms commonly used to provide a safe system of work for vehicles operating on a site. Beeper reversing alarm noise is generally tonal and may cause annoyance at significant distances from the work site.

There are alternative warning alarms capable of providing a safe system of work that are equal to or better than the traditional “beeper”, while also reducing environmental noise impacts. The following alternatives should be considered for use on construction sites as appropriate (and combined where appropriate):

- Broadband audible alarms incorporating a wide range of sound frequencies (as opposed to the tonal-frequency ‘beep’) are less intrusive when heard in the neighbourhood.

- Variable-level alarms reduce the emitted noise levels by detecting the background noise level and adjusting the alarm level accordingly.
- Proximity alarms that use sensors to determine the distance from objects, such as people or structures, and generate an audible alarm in cabin for the driver.
- Spotters or observers.

**Selection of Alternate Equipment**

As part of the Contractor's Construction Methodology and Construction Management Plan, the noise and vibration impact of each equipment / machinery should be considered. Where feasible and practical, quieter equipment (lower Sound Power Level) shall be selected for the task. The Contractor can review the manufacturer's equipment sound data or utilise AS2436 and the TfNSW CNS as guides in understanding what the typical Sound Power Levels are for alternative types of machinery.

Attended short-term noise measurements can also be conducted to either compare the noise levels of machinery, or to understand what the noise level at surrounding noise sensitive receivers are.

The same consideration shall be taken for vibration intensive machinery, which are expected to be only rock hammering and piling. Where feasible and practical, less vibration intensive equipment shall be selected for the task such as favouring pulverising and sawing methods rather than hydraulic hammering for rock breaking.

As with noise, attended short-term vibration measurements can be conducted at start of vibration intensive works to ensure vibration criteria (see Section 6.5) at surrounding receivers are not exceeded.

As a guide, the Contractor can also refer to AS2436 and the TfNSW CNS to use as a guide in understanding vibration intensive activities and their alternate methods, based on minimum working distances.

Machinery shall be selected based on the noise criteria and vibration criteria as presented in Section 6.4 and 6.5.

### 11.2.2 Vibration

Vibration can be more difficult to control than noise, and there are few generalizations that can be made about its control. It should be kept in mind that vibration may cause disturbance by causing structures to vibrate and radiate noise in addition to perceptible movement.

Impulsive vibration can, in some cases, provide a trigger mechanism that could result in the failure of building components that had previously been in a stable state. Vibrations can also trigger annoyance, which might get elevated into action by occupants of exposed buildings and should therefore be included in the planning of communication with impacted communities.

It should be remembered that failures, sometimes catastrophic, can occur as a result of conditions not directly connected with the transmission of vibrations, e.g. the removal of supports from retaining structures to facilitate site access. BS 7385-2 provides more information on managing ground-borne vibration and its potential effects on buildings. Where site activities may affect existing structures, a thorough engineering appraisal should be made at the planning stage.

General principles of seeking minimal vibration at receiving structures should be followed in the first instance. Predictions of vibration levels likely to occur at sensitive receivers are recommended when they are relatively close, depending on the magnitude of the source of the vibration or the distance associated. Relatively simple prediction methods are available in textbooks, codes of practice and standards, however, it is preferable to assess site transmission and propagation characteristics between source and receiver locations through measurements.

Guidance for measures available for the mitigation of vibration transmitted can be sought in more detailed standards, such as BS 5228-2 or policy documents, such as the NSW DEC *Assessing Vibration: A technical guideline*. Identifying the strategy best suited to the control of vibration follows a similar approach to that of noise: avoidance, control at the source, control along the propagation path, control at the receiver, or a combination of these. It is noted that vibration sources can include stationary plants (pumps and compressors), portable plants (jackhammers and pavement vibrators), mobile plants, pile-drivers, tunnelling machines and activities, and

blasting, amongst others. Unusual ground conditions, such as a high water-table, can also cause a difference to expected or predicted results, especially when considering the noise propagated from piling.

### 11.2.3 Community Consultation to be Undertaken

The builder shall directly contact adjacent noise sensitive receivers and provide them with the following information:

- The contact details for a nominated representative in order to make noise / vibration complaints
- Explain the timeframe for the construction works and the proposed activities, i.e. the proposed start / stop dates of work and a description of the noise producing equipment that will be used
- Notify the noise sensitive receivers and relevant local / state authority in a timely manner should there be any need for an extension to the proposed arrangements
- Provide them with a copy of this report as approved by the relevant local / state authority
- Where noise is demonstrated as being compliant with criteria, this should not limit the proponent in undertaking further additional reasonable and feasible steps to reduce noise emissions.

### 11.2.4 Complaint Handling Procedures and Community Liaison

To assist in the management of noise and vibration complaints various procedures are to be followed. These include:

- Clearly visible signage identifying any key personnel along with their contact details to be erected along the perimeter of the building site including:
    - A 24-hour contact name, phone number and email address provided for the resident to address any complaint. The signage will declare; “For any enquiry, complaint or emergency relating to this site at any time please contact…”
- Give complaints a fair hearing
- Relevant local / state authority should be notified of the nature and details of complaints received (time, complainant etc.) and what remedial action has taken place, if any
- Have a documented complaints process, including an escalation procedure so that if a complaint is not satisfied there is a clear path to follow
- Call back as soon as possible to keep people informed of action to be taken to address noise problems. Call back at night time only if requested by the complainant to avoid further disturbance
- Implement all feasible and reasonable measures to address the source of the complaint
- A register is to be kept by the contractor to keep a record of complaints and detail any information associated with them. The contents of the register will include:
    - The name and the address of the complainant
    - Time and date of the complaint
    - The nature of the complaint (Noise/Vibration)
    - Subsequent details
    - Remedial action undertaken

The contents of the register will be maintained and updated on a monthly basis with any new complaint without delay. The complaints will be reported to both the relevant local / state authority and the Contractor. The investigation of the complaint and any remedial actions will be performed by the builder and/or client representative on a monthly basis. In the event of noisy works scheduled, the builder will notify residents 5 business days in advance.

## 11.3 NOISE & VIBRATION MONITORING STRATEGY

### 11.3.1 General Methodology

Monitoring may be in the form of regular checks by the builder or indirectly by an acoustic consultant engaged by the builder and in response to any noise or vibration complaints. Where noise and vibration criteria are being exceeded or in response to valid complaints, noise and / or vibration monitoring should be undertaken. This would be performed inside the premises of the affected property and on site adjacent to the affected receivers.

Monitoring is to be undertaken by an experienced noise and vibration monitoring professional or an acoustic consultant. The results of any noise or vibration monitoring are to be provided to the relevant party or person in a timely manner allowing the builder to address the issue and respond to the complaints.

Noise and vibration monitoring can take two forms:

- Short-term monitoring
- Long-term monitoring

Both of these approaches are elaborated below.

### 11.3.2 Short-term Monitoring

Short-term monitoring consists of attended monitoring when critical stages of the construction are occurring. This normally provides real-time assistance and guidance to the subcontractor on site, telling them when the noise and vibration criteria are exceeded. Thus, the selection of alternative method on construction or equipment selection is allowed in order to minimise noise and vibration impacts.

Short-term monitoring may also be undertaken prior to start of works to ensure noise levels emitted from machinery and equipment are within the manufacturer's tested data / tolerance. This check can be implemented periodically throughout the construction program as a maintenance routine to ensure machinery and equipment stay within the manufacturer's data / tolerance and are not faulty.

### 11.3.3 Long-term Monitoring

Similarly, to short-term monitoring, long-term monitoring provides real-time alerts to the builder / site manager when the noise and vibration criteria are exceeded. Instead of someone being on site measuring, noise and vibration loggers are used.

Typically, the noise and vibration loggers stay on site for a period of several months for the critical construction stages of the project, such as the demolition and excavation phases.

Both methodologies are complementary and normally used simultaneously providing a significant amount of data via the long-term monitoring but also providing information on the sources of noise and vibration generating exceedances via the short-term or attended monitoring.

Long-term noise monitoring reports shall be prepared and presented in accordance with the recommendations of the NSW ICNG (Section 8.2 of the ICNG).

### 11.3.4 Proposed Monitoring Programme

A monitoring programme is recommended to be developed as part of a Construction Noise and Vibration Management Sub-Plan, once construction plans/methodologies are available and a contractor is appointed.

# 12 CONCLUSION

This Noise and vibration Impact Assessment has been prepared in support of a State Significant Development Application (DA) made to Department of Planning, Housing and Infrastructure for the mixed-use development at 45-53 Macleay Street, Potts Point.

The following operational noise and vibration assessments were conducted as part of this noise and vibration impact assessment:

- Noise impact from the operation of the retail tenancy to surrounding noise-sensitive receivers
- Traffic noise intrusion impact on the development's residential apartments
- Noise impacts from traffic generated by the development to surrounding noise -sensitive receivers
- Noise emissions from mechanical plant associated with the project building to surrounding noise-sensitive receivers
- Noise impact from the operation of the carpark to surrounding noise-sensitive receivers
- Noise impact from the operation of the loading dock areas to surrounding noise-sensitive receivers

The following construction noise and vibration assessments were conducted as part of this noise and vibration impact assessment:

- Noise generated during the construction of the development and associated impacts on the surrounding noise sensitive receivers
- Vibration generated during the construction of the development and associated impacts on the surrounding vibration sensitive receivers

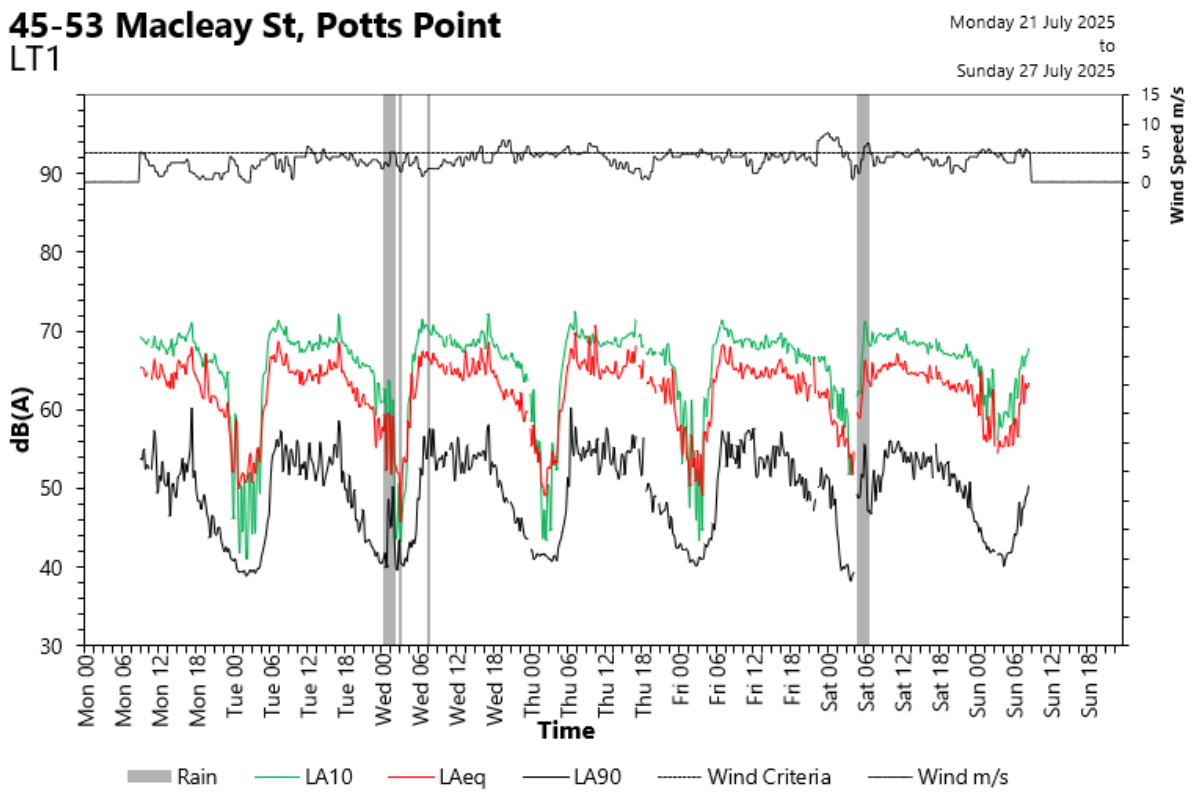
To assess each of the acoustic considerations for the proposed redevelopment, noise and vibration criteria has been established in Section 6 in accordance with the following documents:

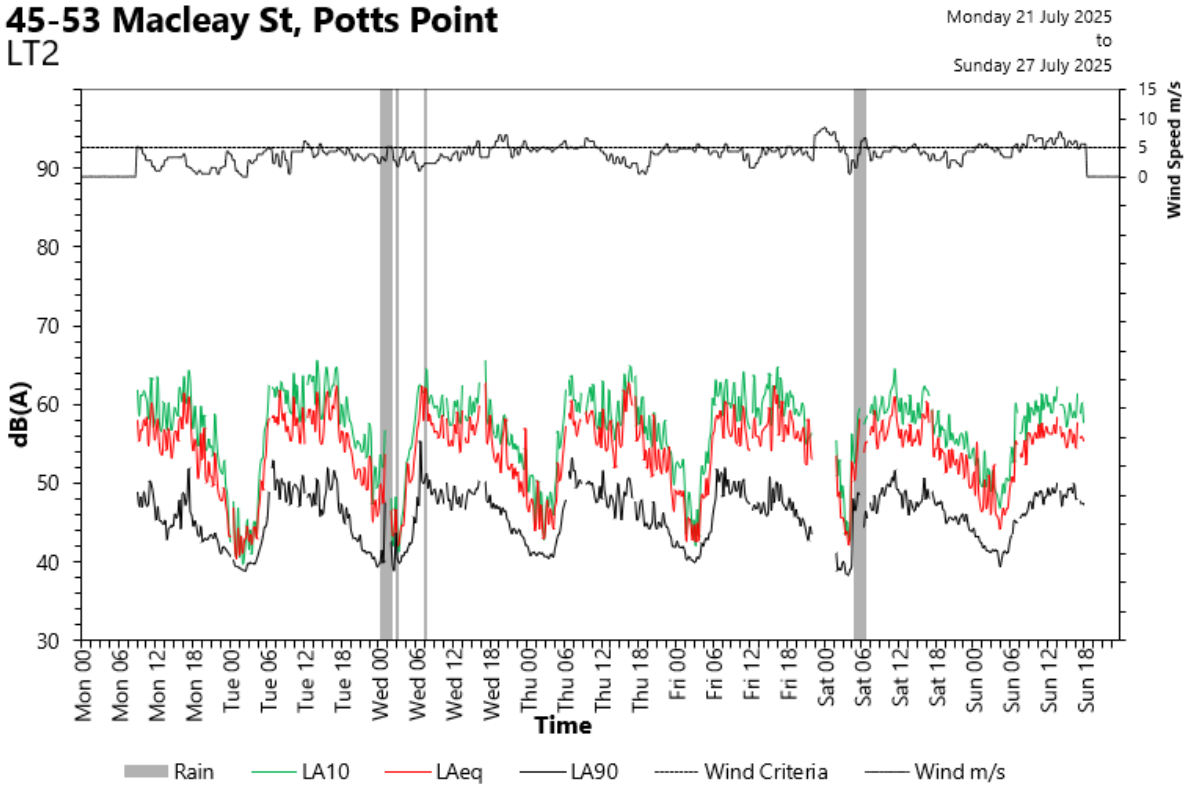
- NSW Department of Planning's Development Near Rail Corridors and Busy Roads – Interim Guideline (Interim Guideline)
- NSW Government's State Environmental Planning Policy (Transport and Infrastructure) 2021 (SEPP 2021)
- NSW EPA's Noise Policy for Industry 2017 (NPI)
- NSW EPA Road Noisy Policy (RNP)
- Assessing vibration: A Technical Guideline 2006
- British Standard BS5228 – Part 1:1997 "Noise and Vibration Control on Construction and Open Sites."
- British Standard BS7358:1993 "Evaluation and Measurement for Vibration in Buildings"
- German Standard DIN4150 – Part 3: "Structural vibration in buildings – Effects on structures"

Having given regard to the analysis conducted within this report, it is the finding of this noise and vibration impact assessment that the proposed redevelopment is compliant with the relevant noise and vibration criteria controls for this type of development, and it is expected to comply with the applicable regulations with regards to noise and vibration, particularly those listed above.

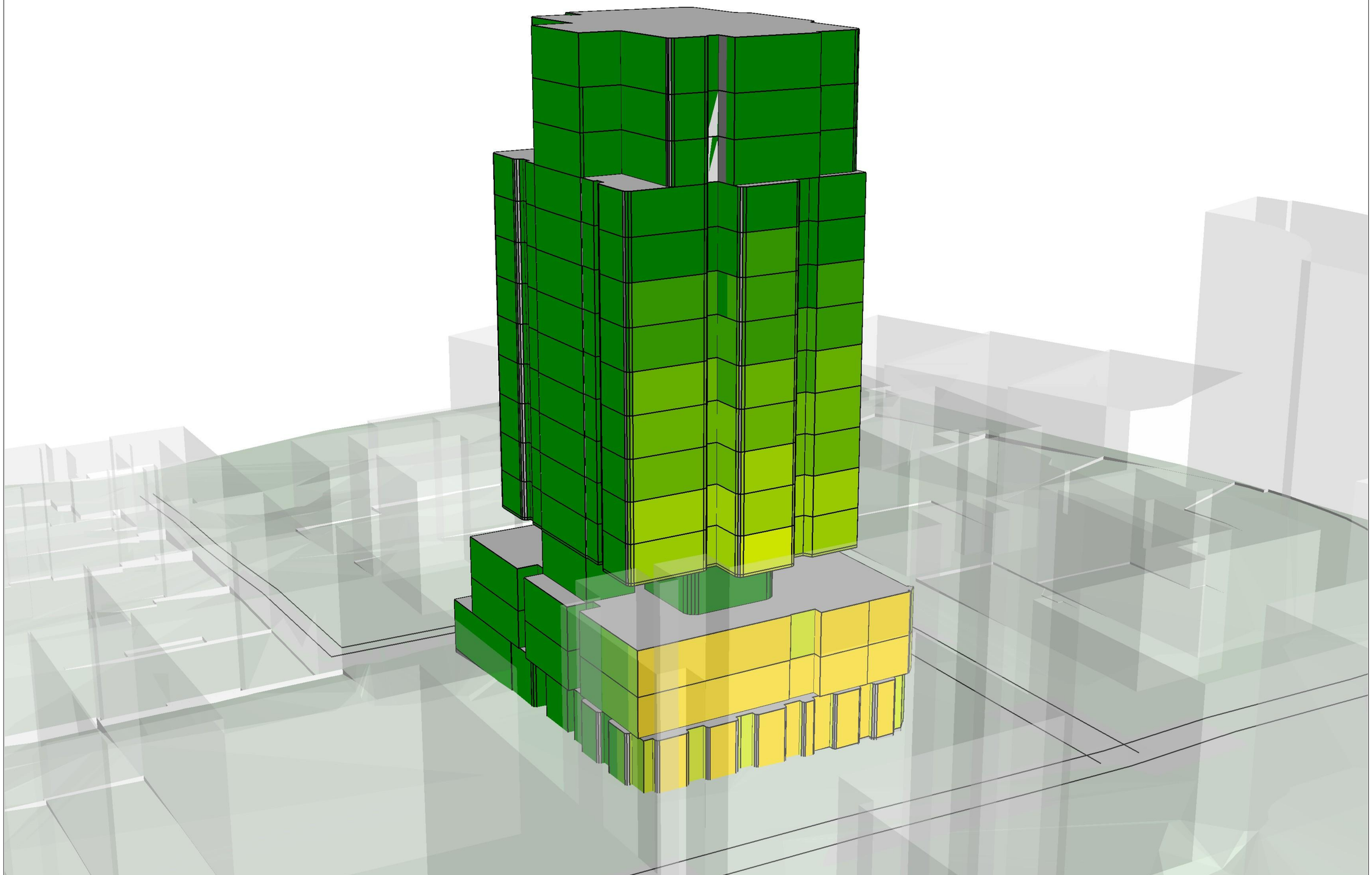
It is recommended the development application for the proposed development is approved on the basis of noise and vibration, under the implementation of the mitigation measures outlined within the report.

# Appendix A **Noise Monitoring Data**



# Appendix B **Façade Noise Maps**



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| ISSUE | DATE | STATUS |
|---|---|---|
| 1 | 27/10/2025 | FOR INFORMATION |

LEGEND

Day Time Facade Noise Level, $L_{eq(15hour)}$ dB(A)

- < 60
- 60 - 61
- 61 - 62
- 62 - 63
- 63 - 64
- 64 - 65
- 65 - 66
- 66 - 67
- 67 - 68
- 68 - 69
- 69 - 70
- > 70

NOTES

PROJECT
45-53 MACLEAY ST, POTTS POINT

PROJECT NO.
P00065

ARCHITECT
KHA STUDIO

CLIENT
TIME & PLACE

SCALE
NTS

STATUS
FOR INFORMATION

DRAWING
FACADE NOISE MAP - DAY TIME VIEW 1

DISCIPLINE
ACOUSTICS AND VIBRATION

| DRAWING NUMBER | REVISION |
|---|---|
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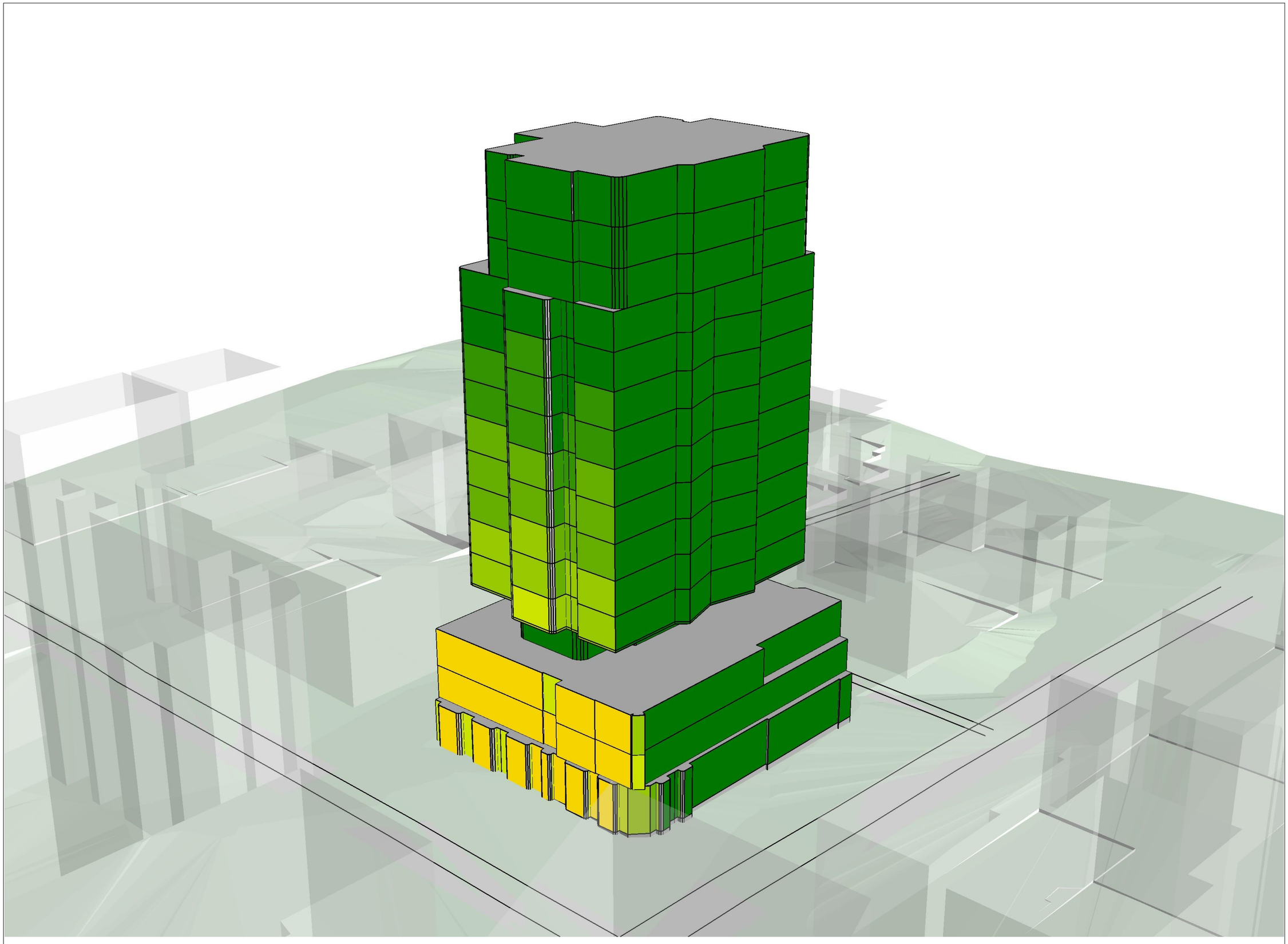

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|---|---|---|
| 1 | 27/10/2025 | FOR INFORMATION |

LEGEND

Day Time Facade Noise Level, $L_{Aeq,15hour}$ dB(A)

- < 60
- 60 - 61
- 61 - 62
- 62 - 63
- 63 - 64
- 64 - 65
- 65 - 66
- 66 - 67
- 67 - 68
- 68 - 69
- 69 - 70
- > 70

NOTES

PROJECT
45-53 MACLEAY ST, POTTS POINT

PROJECT NO.
P00065

ARCHITECT
KHA STUDIO

CLIENT
TIME & PLACE

SCALE
NTS

STATUS
FOR INFORMATION

DRAWING
FACADE NOISE MAP - DAY TIME VIEW 2

DISCIPLINE
ACOUSTICS AND VIBRATION

| DRAWING NUMBER | REVISION |
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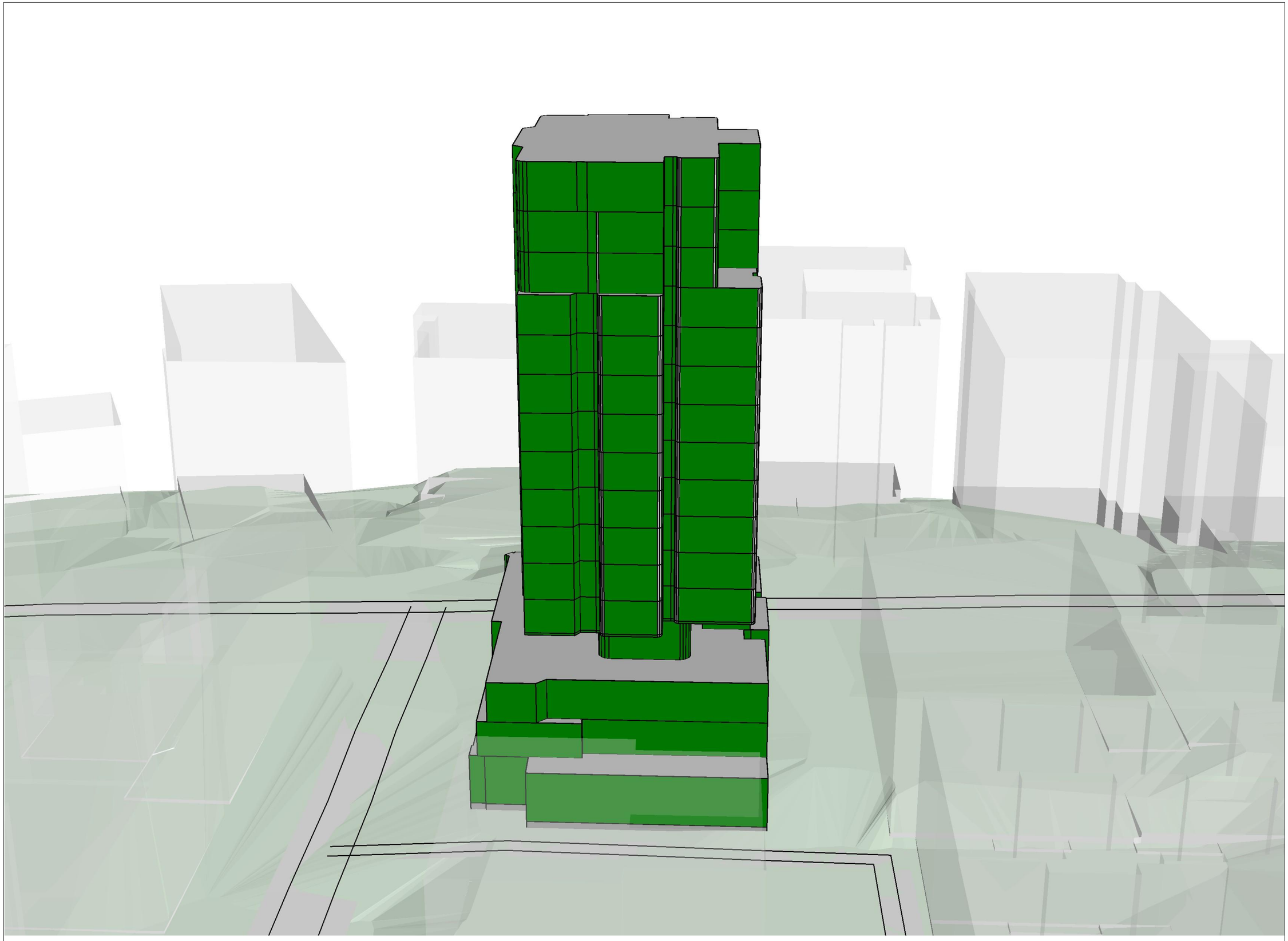

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| ISSUE | DATE | STATUS |
|---|---|---|
| 1 | 27/10/2025 | FOR INFORMATION |

LEGEND

Day Time Facade Noise Level, $L_{eq(15hour)}$ dB(A)

- < 60
- 60 - 61
- 61 - 62
- 62 - 63
- 63 - 64
- 64 - 65
- 65 - 66
- 66 - 67
- 67 - 68
- 68 - 69
- 69 - 70
- > 70

NOTES

PROJECT
45-53 MACLEAY ST, POTTS POINT

PROJECT NO.
P00065

ARCHITECT
KHA STUDIO

CLIENT
TIME & PLACE

SCALE
NTS

STATUS
FOR INFORMATION

DRAWING
FACADE NOISE MAP - DAY TIME VIEW 3

DISCIPLINE
ACOUSTICS AND VIBRATION

| DRAWING NUMBER | REVISION |
|---|---|
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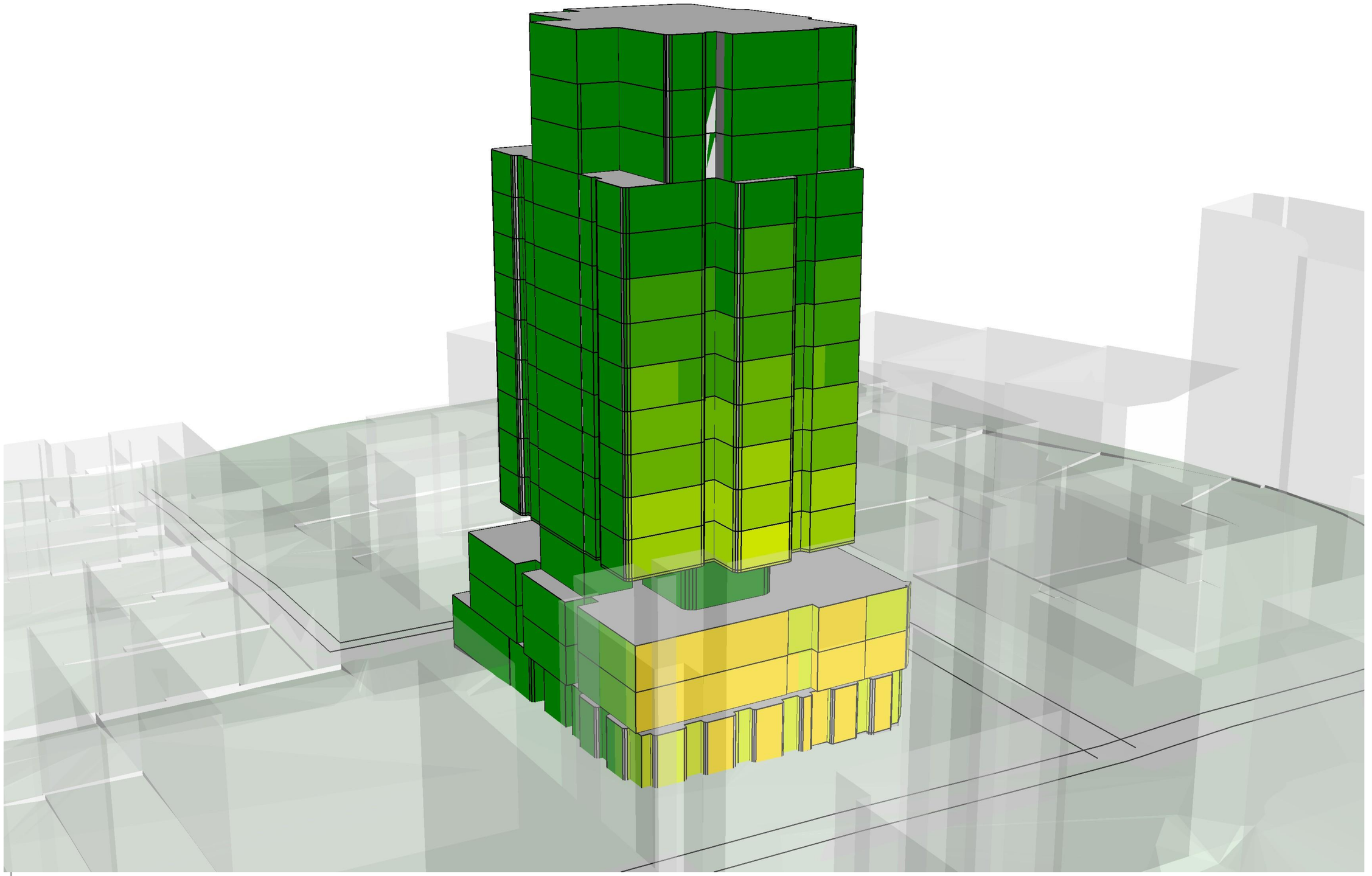

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| ISSUE | DATE | STATUS |
|---|---|---|
| 1 | 27/10/2025 | FOR INFORMATION |

LEGEND

Night Time Facade Noise Level, $L_{Aeq,1Hour}$ dB(A)

- < 55
- 55 - 56
- 56 - 57
- 57 - 58
- 58 - 59
- 59 - 60
- 60 - 61
- 61 - 62
- 62 - 63
- 63 - 64
- 64 - 65
- > 65

NOTES

PROJECT
45-53 MACLEAY ST, POTTS POINT

PROJECT NO.
P00065

ARCHITECT
KHA STUDIO

CLIENT
TIME & PLACE

SCALE
NTS

STATUS
FOR INFORMATION

DRAWING
FACADE NOISE MAP - NIGHT TIME VIEW 1

DISCIPLINE
ACOUSTICS AND VIBRATION

DRAWING NUMBER
AC-DWG-100-01-04

REVISION
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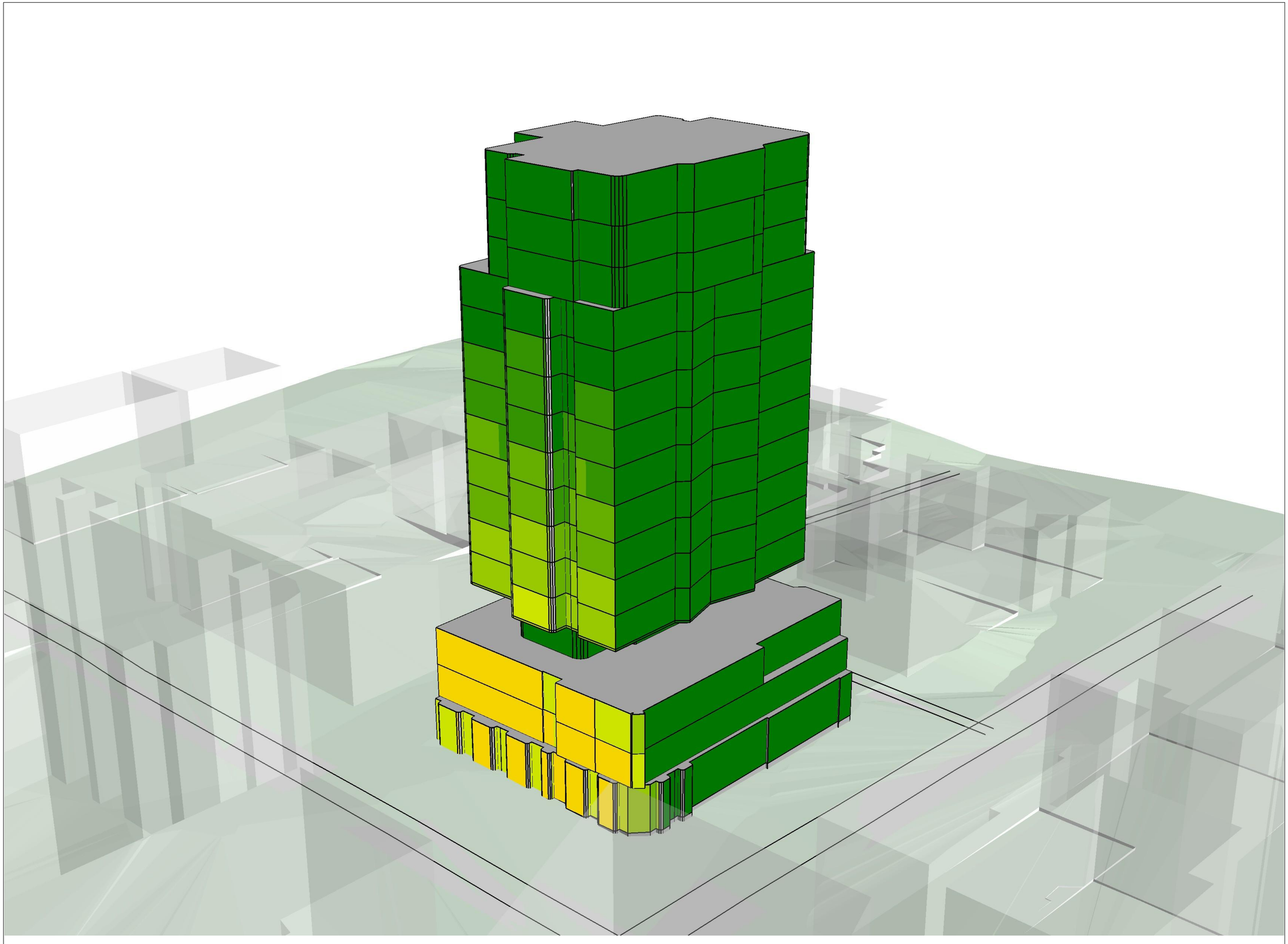

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| ISSUE | DATE | STATUS |
|---|---|---|
| 1 | 27/10/2025 | FOR INFORMATION |

LEGEND

Night Time Facade Noise Level, $L_{Aeq,1Hour}$ dB(A)

- < 55
- 55 - 56
- 56 - 57
- 57 - 58
- 58 - 59
- 59 - 60
- 60 - 61
- 61 - 62
- 62 - 63
- 63 - 64
- 64 - 65
- > 65

NOTES

PROJECT
45-53 MACLEAY ST, POTTS POINT

PROJECT NO.
P00065

ARCHITECT
KHA STUDIO

CLIENT
TIME & PLACE

SCALE
NTS

STATUS
FOR INFORMATION

DRAWING
FACADE NOISE MAP - NIGHT TIME VIEW 2

DISCIPLINE
ACOUSTICS AND VIBRATION

| DRAWING NUMBER | REVISION |
|---|---|
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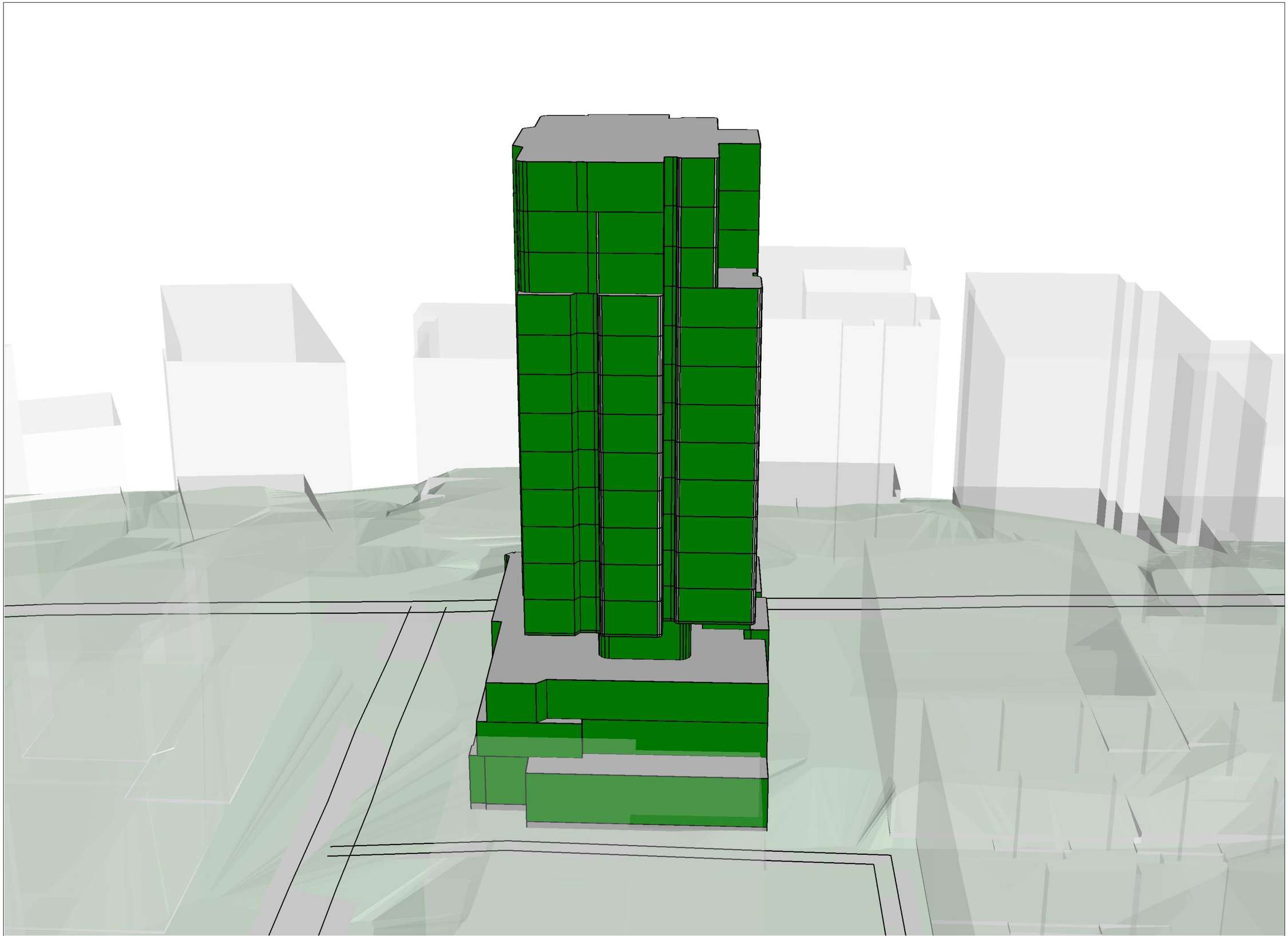

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| ISSUE | DATE | STATUS |
|---|---|---|
| 1 | 27/10/2025 | FOR INFORMATION |

LEGEND

Night Time Facade Noise Level, $L_{Aeq,9hour}$ dB(A)

- < 55
- 55 - 56
- 56 - 57
- 57 - 58
- 58 - 59
- 59 - 60
- 60 - 61
- 61 - 62
- 62 - 63
- 63 - 64
- 64 - 65
- > 65

NOTES

PROJECT
45-53 MACLEAY ST, POTTS POINT

PROJECT NO.
P00065

ARCHITECT
KHA STUDIO

CLIENT
TIME & PLACE

SCALE
NTS

STATUS
FOR INFORMATION

DRAWING
FACADE NOISE MAP - NIGHT TIME VIEW 3

DISCIPLINE
ACOUSTICS AND VIBRATION

DRAWING NUMBER
AC-DWG-100-01-06

REVISION
001

# Appendix C **Acoustic Façade Types**


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| ISSUE | DATE | STATUS |
|---|---|---|
| 1 | 27/10/2025 | For SSDA |

LEGEND

- Acoustic Facade Type 1
- Acoustic Facade Type 2

NOTES

PROJECT
45-53 MACLEAY ST, POTTS POINT

PROJECT NO.
P00065

ARCHITECT
KHA STUDIO

CLIENT
TIME & PLACE

SCALE
NTS

STATUS
FOR SSDA

DRAWING
FACADE GLAZING MARKUP

LEVEL 1

DISCIPLINE
ACOUSTICS AND VIBRATION

| DRAWING NUMBER | REVISION |
|---|---|
| AC-DWG-200-01-01 | 001 |


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| ISSUE | DATE | STATUS |
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LEGEND

- Acoustic Facade Type 1
- Acoustic Facade Type 2

NOTES

PROJECT
45-53 MACLEAY ST, POTTS POINT

PROJECT NO.
P00065

ARCHITECT
KHA STUDIO

CLIENT
TIME & PLACE

SCALE
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STATUS
FOR SSDA

DRAWING
FACADE GLAZING MARKUP
LEVEL 2

DISCIPLINE
ACOUSTICS AND VIBRATION

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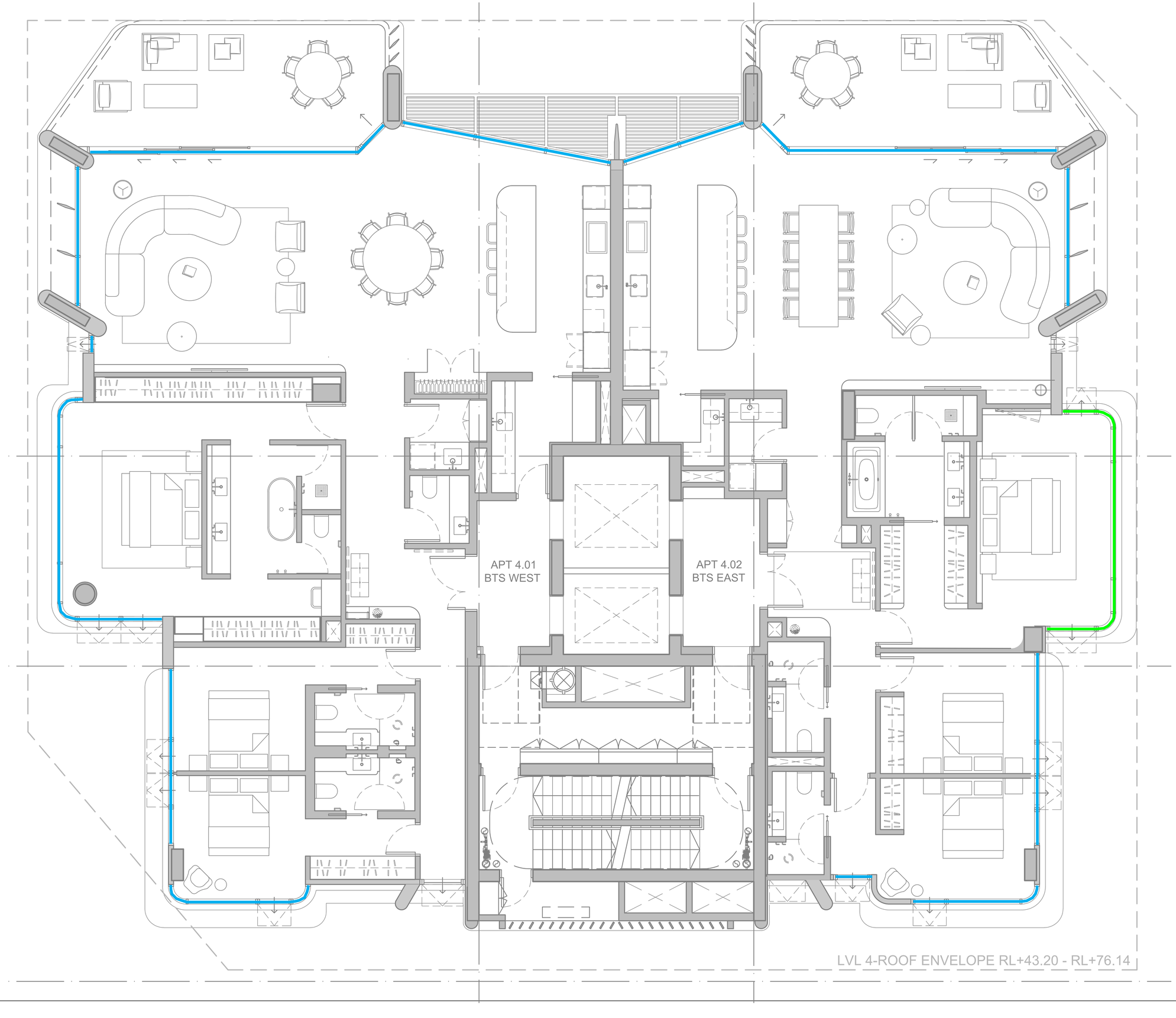


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| ISSUE | DATE | STATUS |
|---|---|---|
| 1 | 27/10/2025 | For SSDA |

LEGEND

- Acoustic Facade Type 1
- Acoustic Facade Type 2

NOTES

PROJECT
45-53 MACLEAY ST, POTTS POINT

PROJECT NO.
P00065

ARCHITECT
KHA STUDIO

CLIENT
TIME & PLACE

SCALE
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STATUS
FOR SSDA

DRAWING
FACADE GLAZING MARKUP

LEVEL 4

DISCIPLINE
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DRAWING NUMBER
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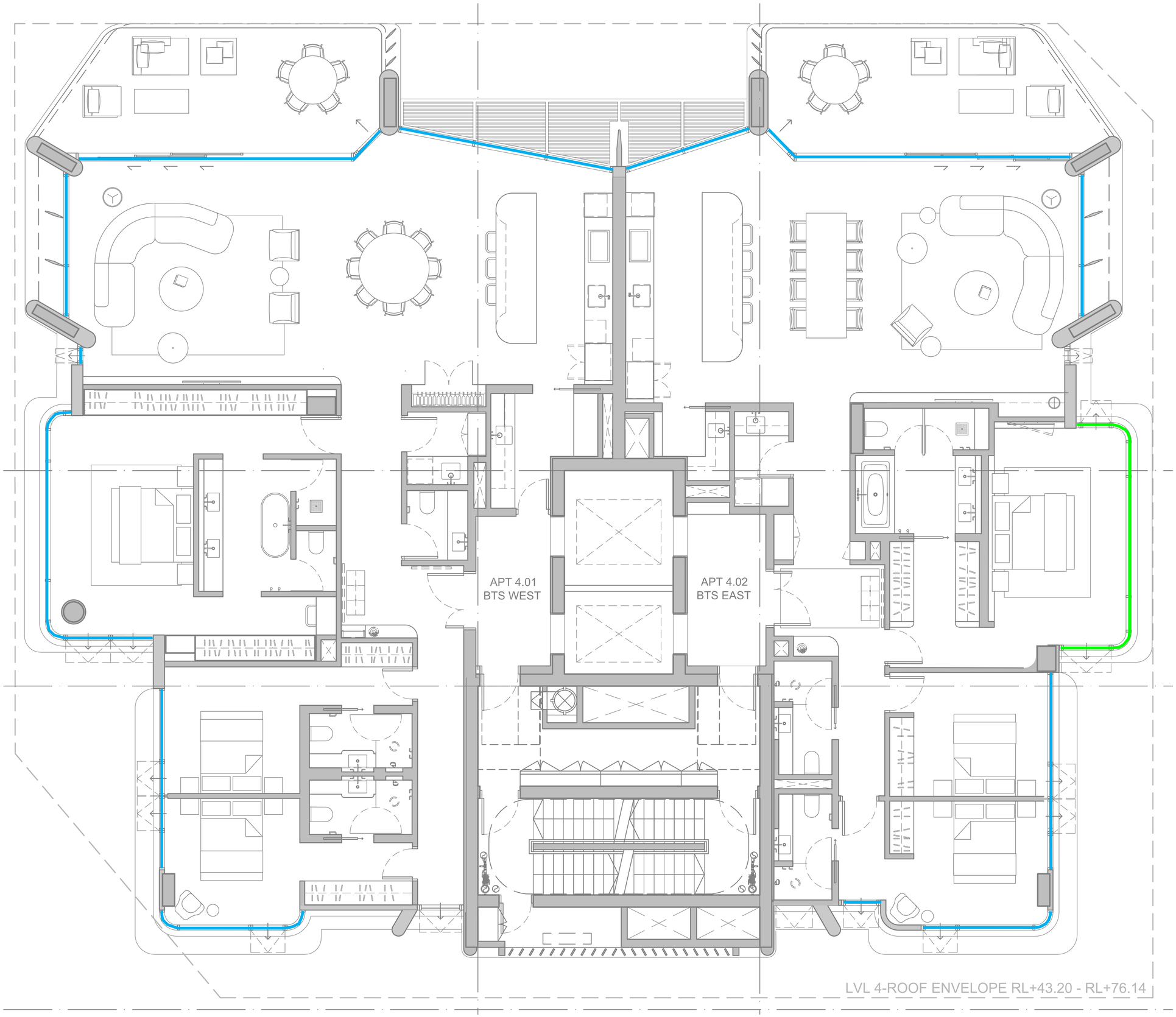


E-LAB CONSULTING

| ISSUE | DATE | STATUS |
|---|---|---|
| 1 | 27/10/2025 | For SSDA |

LEGEND

- Acoustic Facade Type 1
- Acoustic Facade Type 2

NOTES

PROJECT
45-53 MACLEAY ST, POTTS POINT

PROJECT NO.
P00065

ARCHITECT
KHA STUDIO

CLIENT
TIME & PLACE

SCALE
NTS

STATUS
FOR SSDA

DRAWING
FACADE GLAZING MARKUP
LEVEL 5

DISCIPLINE
ACOUSTICS AND VIBRATION

DRAWING NUMBER
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REVISION
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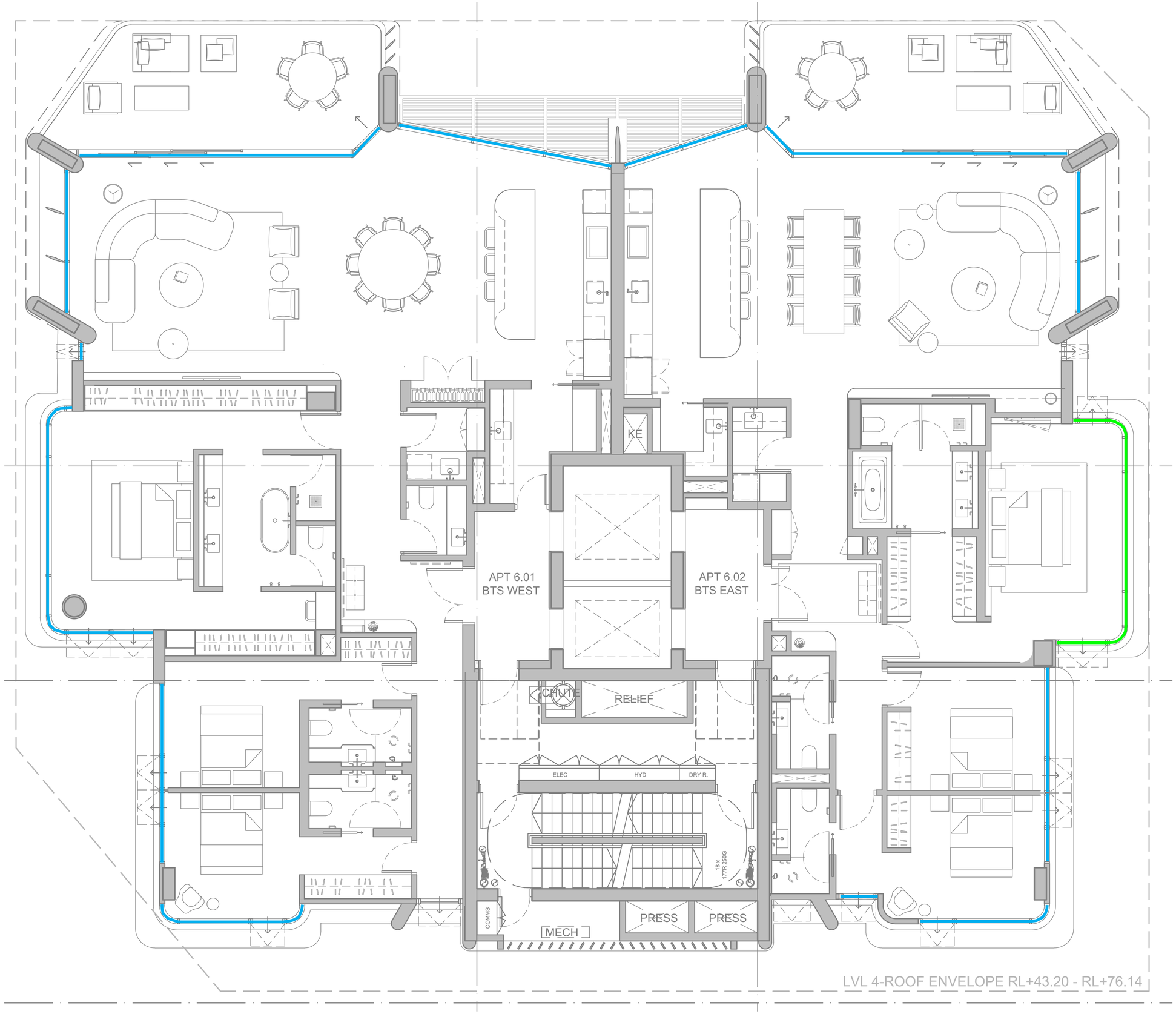


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| ISSUE | DATE | STATUS |
|---|---|---|
| 1 | 27/10/2025 | For SSDA |

LEGEND

- Acoustic Facade Type 1
- Acoustic Facade Type 2

NOTES

PROJECT
45-53 MACLEAY ST, POTTS POINT

PROJECT NO.
P00065

ARCHITECT
KHA STUDIO

CLIENT
TIME & PLACE

SCALE
NTS

STATUS
FOR SSDA

DRAWING
FACADE GLAZING MARKUP

LEVEL 6

DISCIPLINE
ACOUSTICS AND VIBRATION

DRAWING NUMBER
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REVISION
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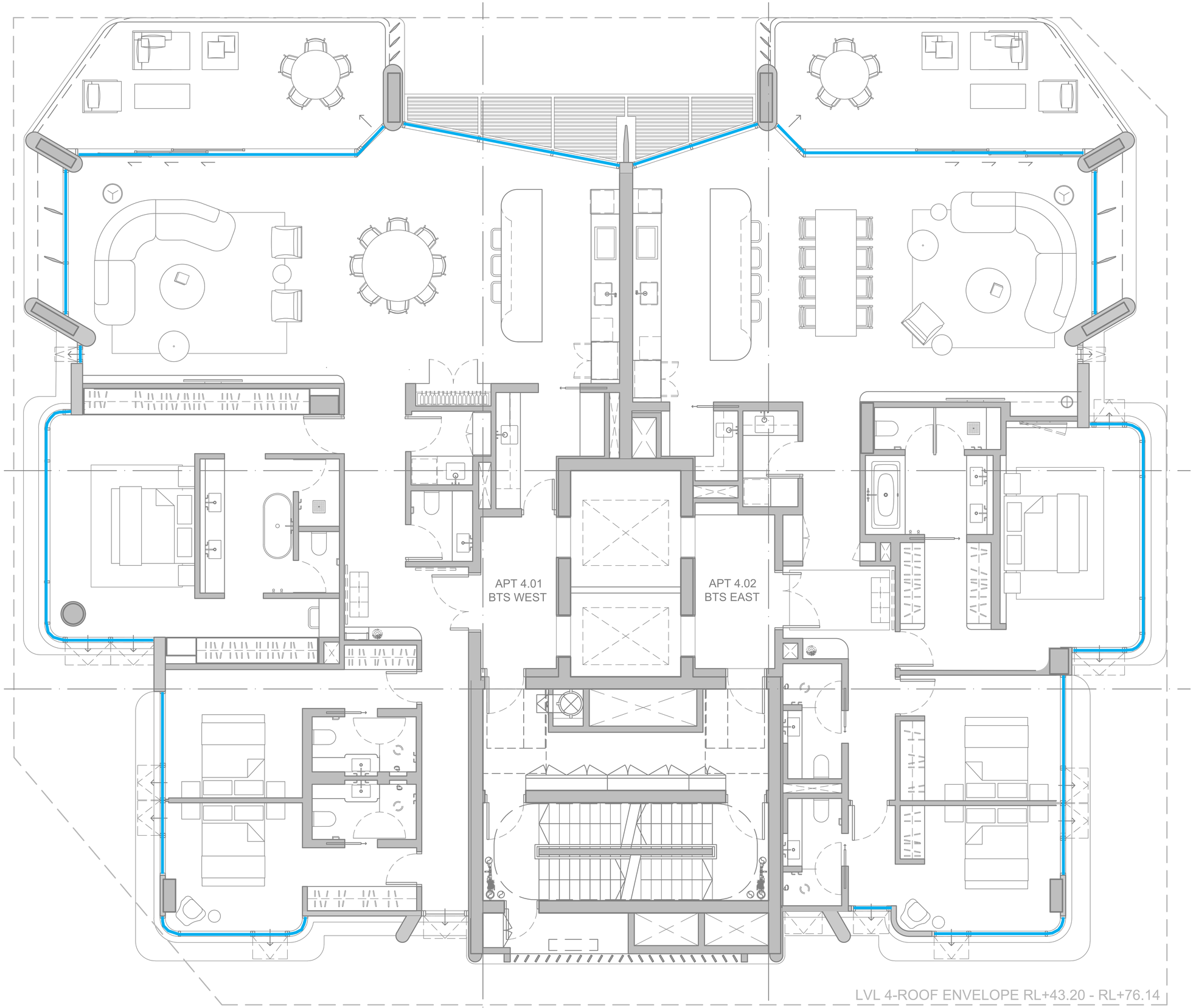


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| ISSUE | DATE | STATUS |
|---|---|---|
| 1 | 27/10/2025 | For SSDA |

LEGEND

- Acoustic Facade Type 1
- Acoustic Facade Type 2

NOTES

PROJECT
45-53 MACLEAY ST, POTTS POINT

PROJECT NO.
P00065

ARCHITECT
KHA STUDIO

CLIENT
TIME & PLACE

SCALE
NTS

STATUS
FOR SSDA

DRAWING
FACADE GLAZING MARKUP
LEVEL 7

DISCIPLINE
ACOUSTICS AND VIBRATION

DRAWING NUMBER
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REVISION
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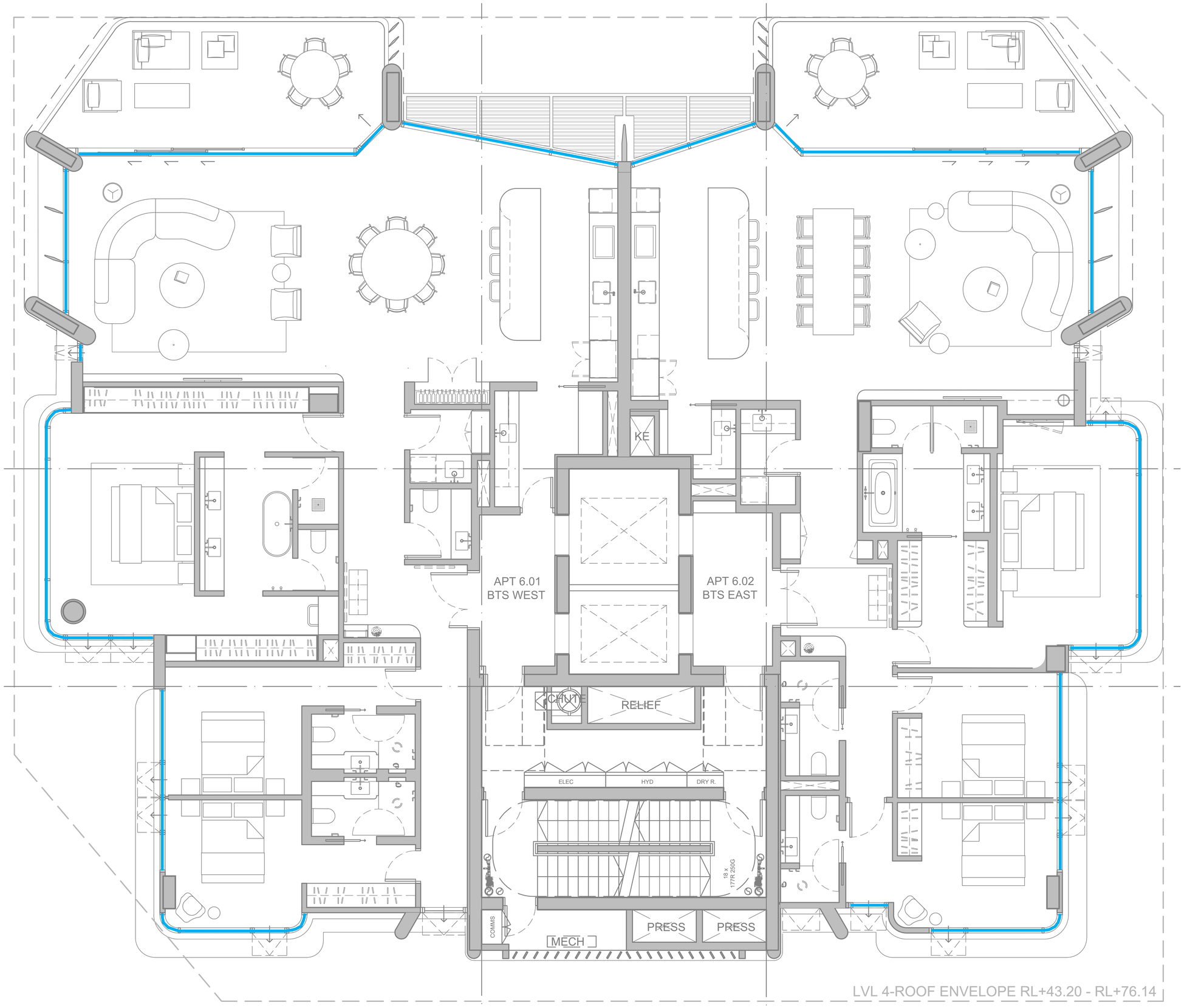


E-LAB CONSULTING

| ISSUE | DATE | STATUS |
|---|---|---|
| 1 | 27/10/2025 | For SSDA |

LEGEND

- Acoustic Facade Type 1
- Acoustic Facade Type 2

NOTES

PROJECT
45-53 MACLEAY ST, POTTS POINT

PROJECT NO.
P00065

ARCHITECT
KHA STUDIO

CLIENT
TIME & PLACE

SCALE
NTS

STATUS
FOR SSDA

DRAWING
FACADE GLAZING MARKUP

LEVEL 8

DISCIPLINE
ACOUSTICS AND VIBRATION

DRAWING NUMBER
AC-DWG-200-01-08

REVISION
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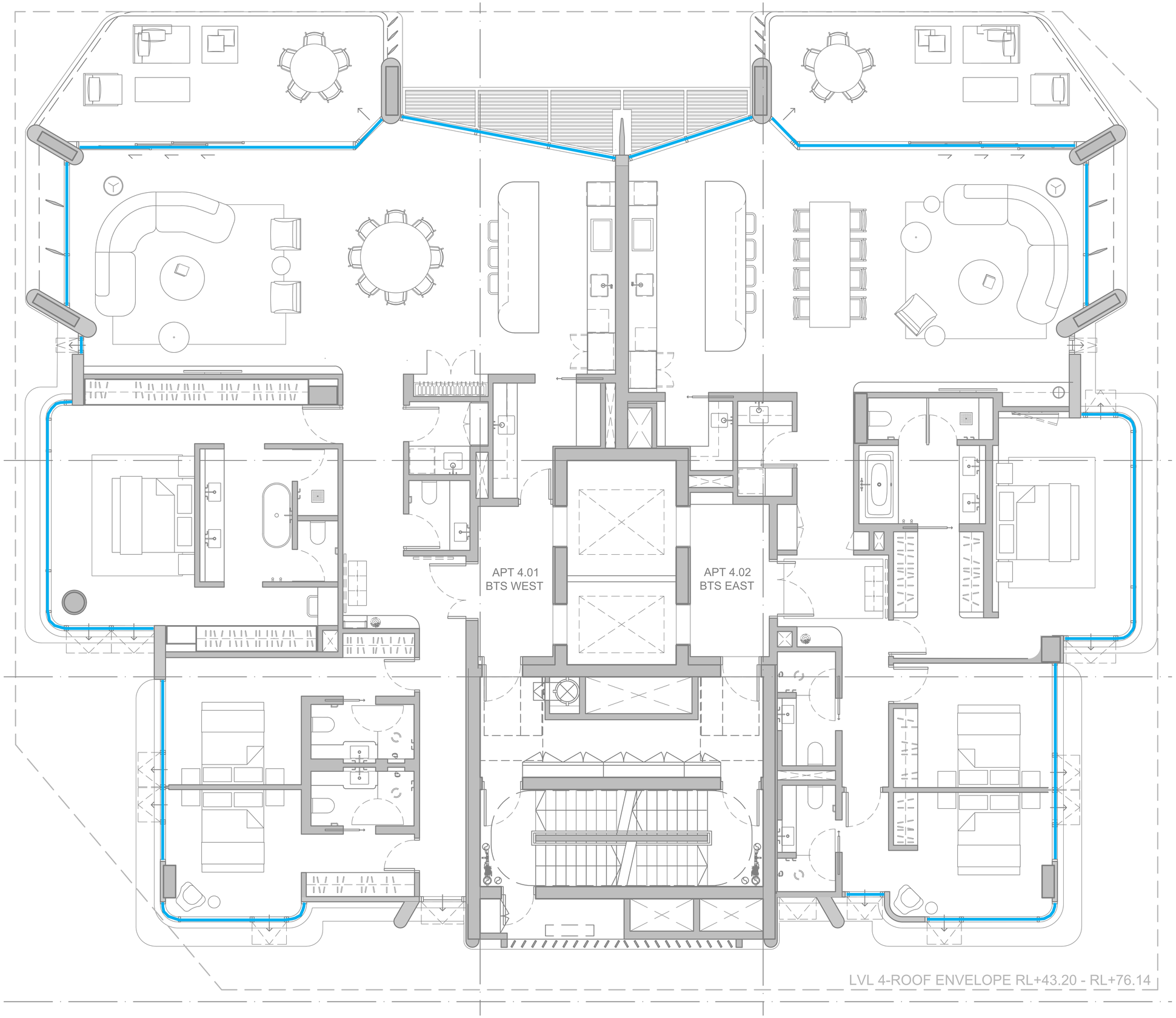


E-LAB CONSULTING

| ISSUE | DATE | STATUS |
|---|---|---|
| 1 | 27/10/2025 | For SSDA |

LEGEND

- Acoustic Facade Type 1
- Acoustic Facade Type 2

NOTES

PROJECT
45-53 MACLEAY ST, POTTS POINT

PROJECT NO.
P00065

ARCHITECT
KHA STUDIO

CLIENT
TIME & PLACE

SCALE
NTS

STATUS
FOR SSDA

DRAWING
FACADE GLAZING MARKUP

LEVEL 9

DISCIPLINE
ACOUSTICS AND VIBRATION

DRAWING NUMBER
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REVISION
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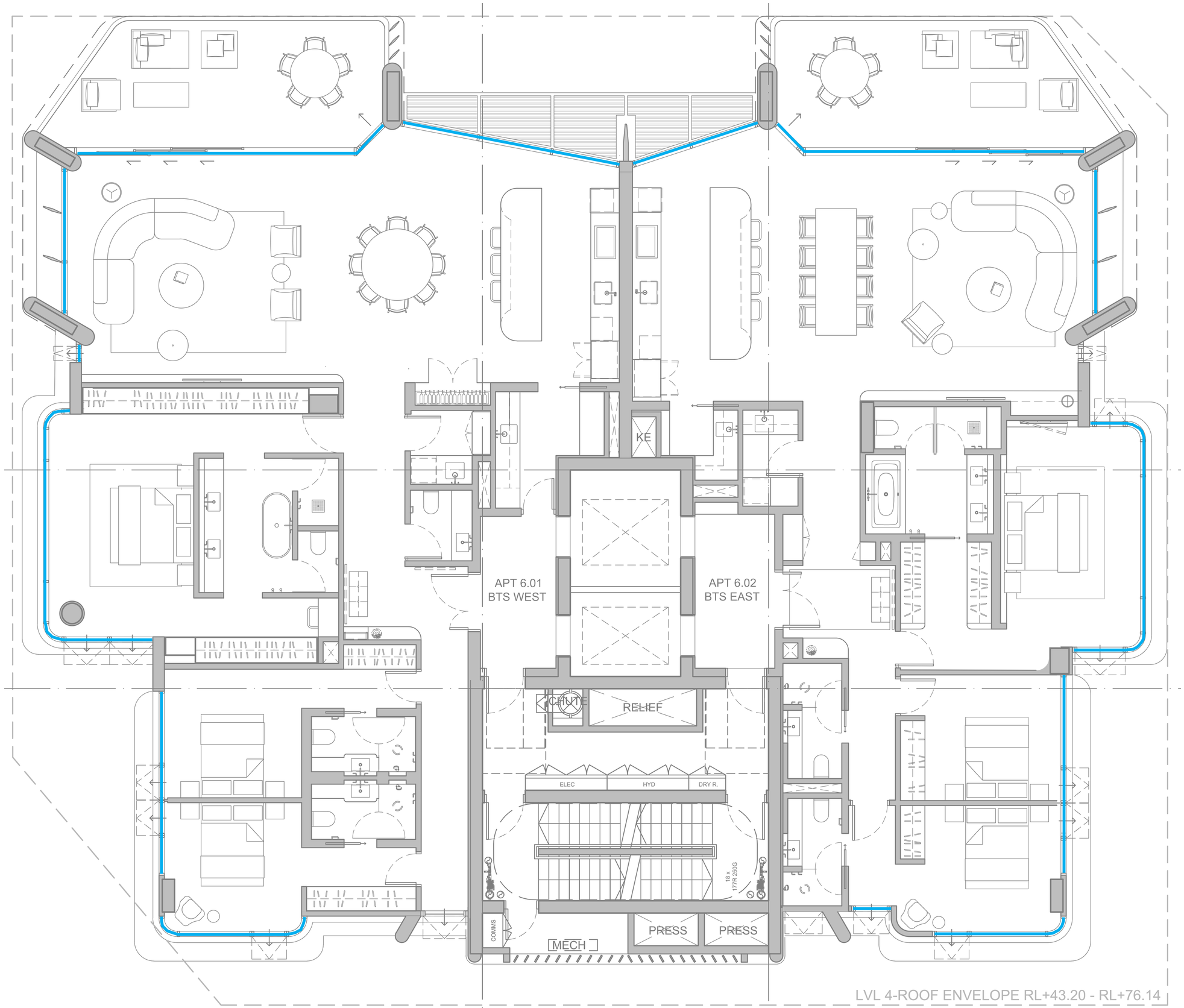


E-LAB CONSULTING

| ISSUE | DATE | STATUS |
|---|---|---|
| 1 | 27/10/2025 | For SSDA |

LEGEND

- Acoustic Facade Type 1
- Acoustic Facade Type 2

NOTES

PROJECT
45-53 MACLEAY ST, POTTS POINT

PROJECT NO.
P00065

ARCHITECT
KHA STUDIO

CLIENT
TIME & PLACE

SCALE
NTS

STATUS
FOR SSDA

DRAWING
FACADE GLAZING MARKUP

LEVEL 10

DISCIPLINE
ACOUSTICS AND VIBRATION

DRAWING NUMBER
AC-DWG-200-01-10

REVISION
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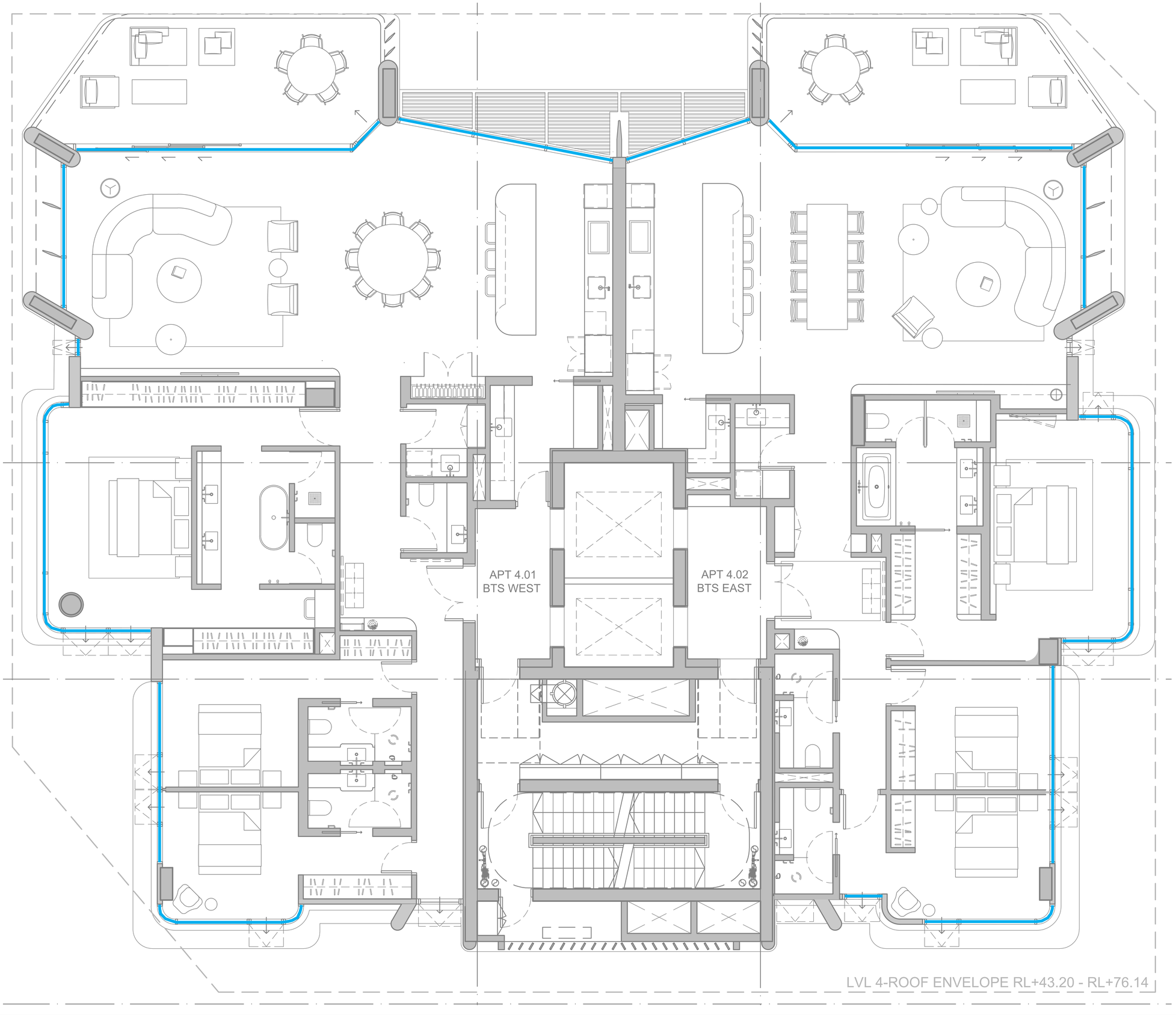


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| ISSUE | DATE | STATUS |
|---|---|---|
| 1 | 27/10/2025 | For SSDA |

LEGEND

- Acoustic Facade Type 1
- Acoustic Facade Type 2

NOTES

PROJECT
45-53 MACLEAY ST, POTTS POINT

PROJECT NO.
P00065

ARCHITECT
KHA STUDIO

CLIENT
TIME & PLACE

SCALE
NTS

STATUS
FOR SSDA

DRAWING
FACADE GLAZING MARKUP

LEVEL 11

DISCIPLINE
ACOUSTICS AND VIBRATION

| DRAWING NUMBER | REVISION |
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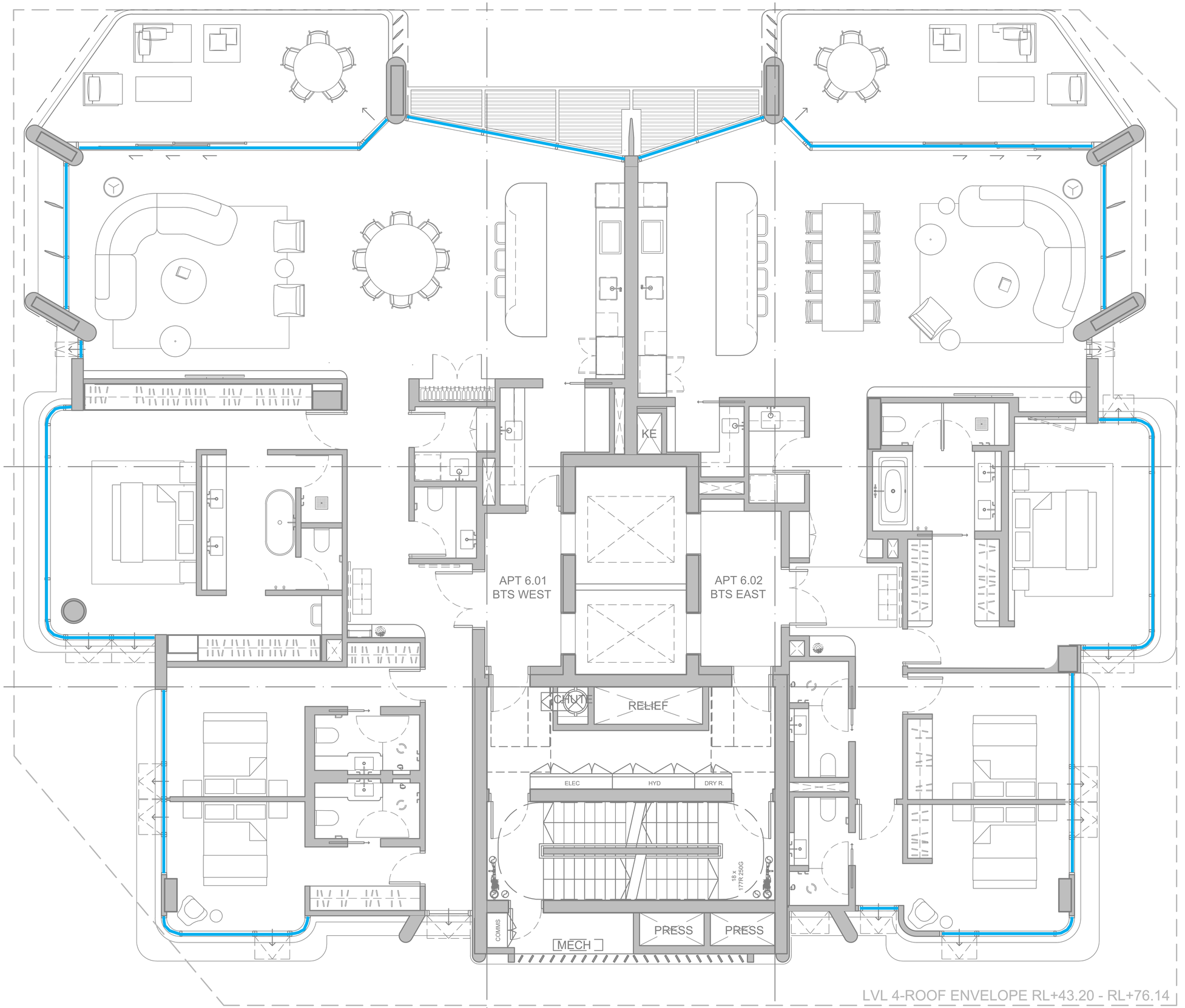


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| ISSUE | DATE | STATUS |
|---|---|---|
| 1 | 27/10/2025 | For SSDA |

LEGEND

- Acoustic Facade Type 1
- Acoustic Facade Type 2

NOTES

PROJECT
45-53 MACLEAY ST, POTTS POINT

PROJECT NO.
P00065

ARCHITECT
KHA STUDIO

CLIENT
TIME & PLACE

SCALE
NTS

STATUS
FOR SSDA

DRAWING
FACADE GLAZING MARKUP

LEVEL 12

DISCIPLINE
ACOUSTICS AND VIBRATION

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REVISION
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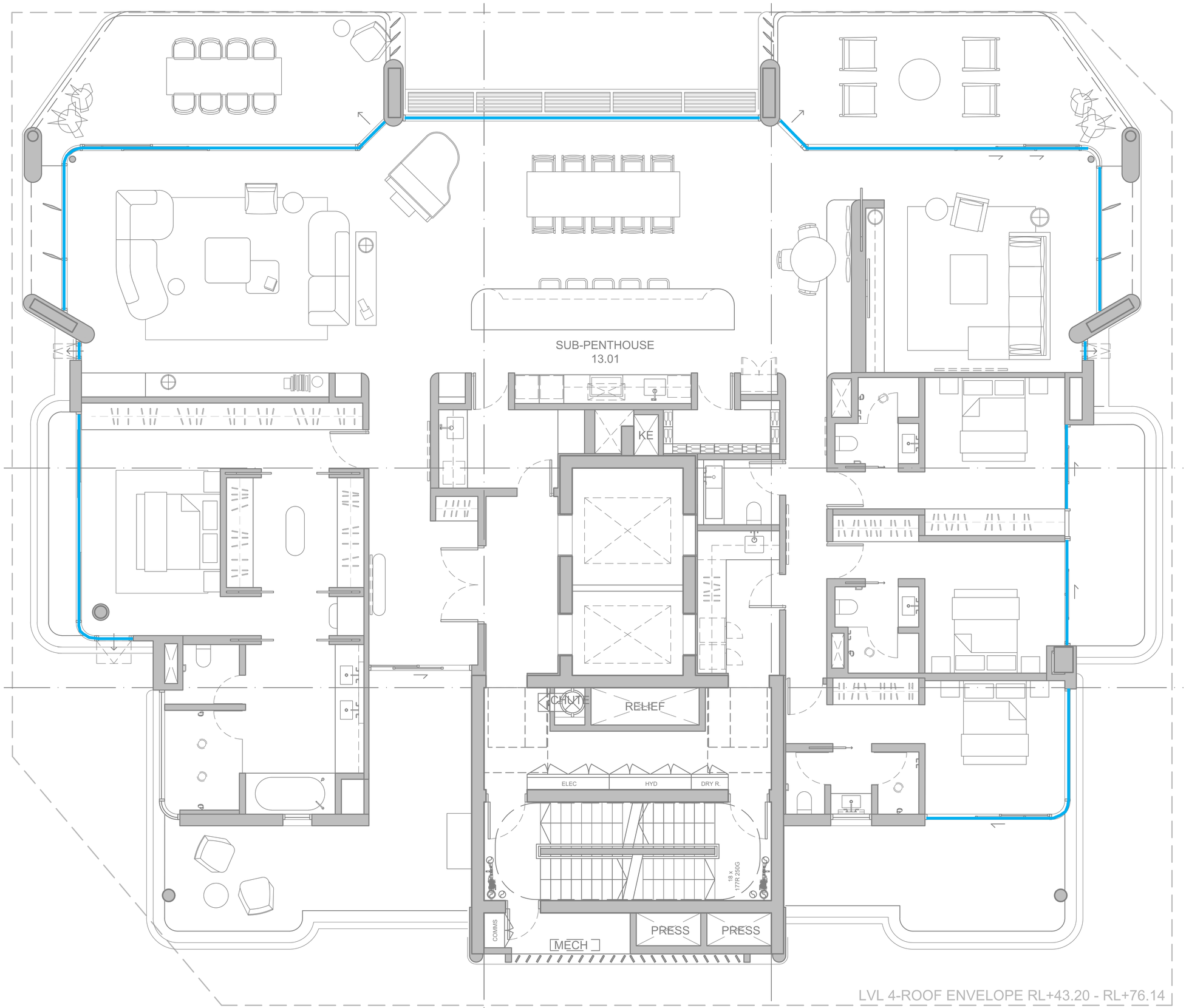


E-LAB CONSULTING

| ISSUE | DATE | STATUS |
|---|---|---|
| 1 | 27/10/2025 | For SSDA |

LEGEND

- Acoustic Facade Type 1
- Acoustic Facade Type 2

NOTES

PROJECT
45-53 MACLEAY ST, POTTS POINT

PROJECT NO.
P00065

ARCHITECT
KHA STUDIO

CLIENT
TIME & PLACE

SCALE
NTS

STATUS
FOR SSDA

DRAWING
FACADE GLAZING MARKUP

LEVEL 13 & 14

DISCIPLINE
ACOUSTICS AND VIBRATION

DRAWING NUMBER
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REVISION
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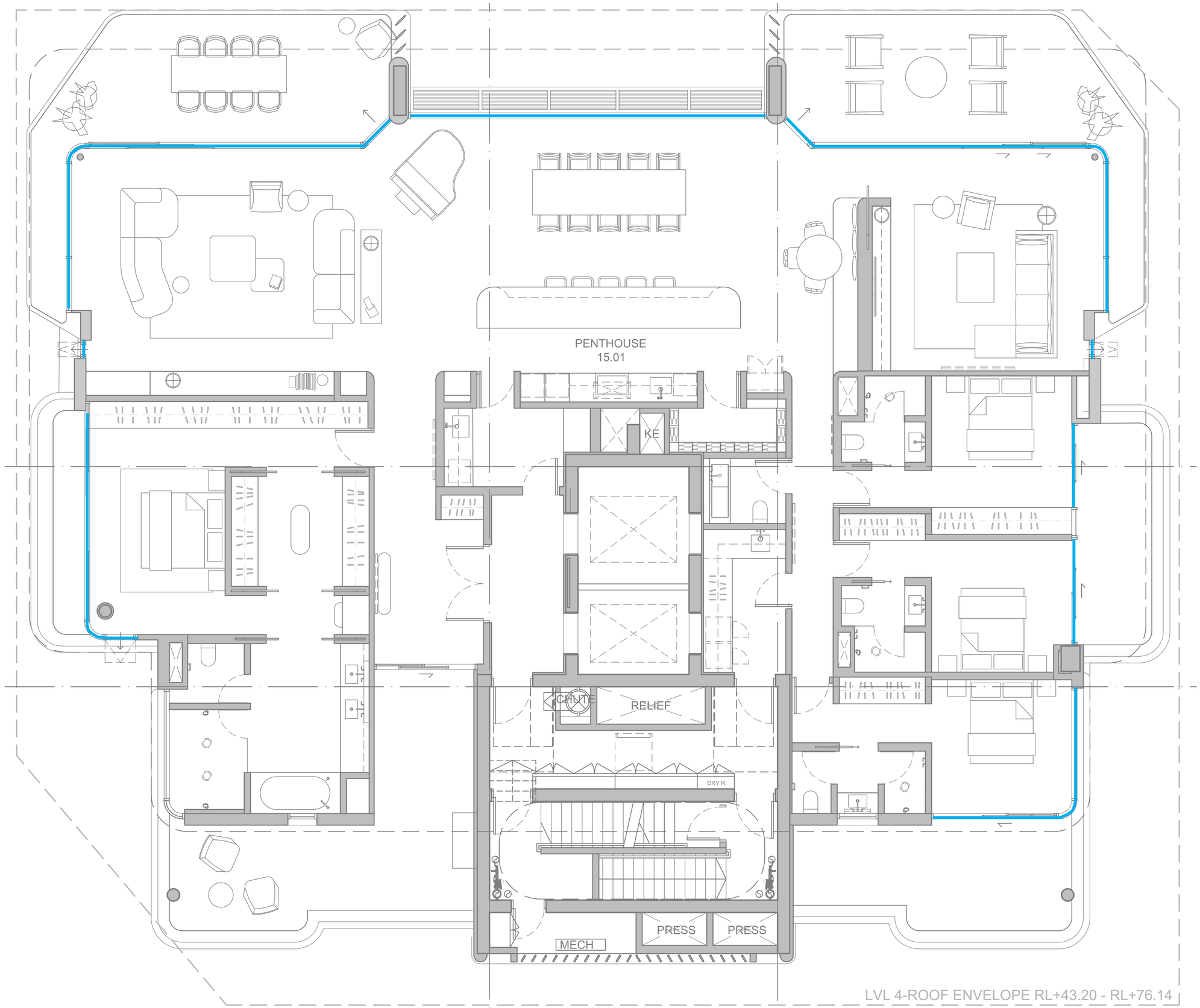


E-LAB CONSULTING

| ISSUE | DATE | STATUS |
|---|---|---|
| 1 | 27/10/2025 | For SSDA |

LEGEND

- Acoustic Facade Type 1
- Acoustic Facade Type 2

NOTES

PROJECT
45-53 MACLEAY ST, POTTS POINT

PROJECT NO.
P00065

ARCHITECT
KHA STUDIO

CLIENT
TIME & PLACE

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DRAWING
FACADE GLAZING MARKUP

LEVEL 15

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AC-DWG-200-01-15

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# Appendix D **Alternate Means of Ventilation Areas**


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| 1 | 27/10/2025 | For SSDA |

LEGEND

Highlighted areas require an alternative means of ventilation (e.g. mechanical ventilation)

NOTES

PROJECT
45-53 MACLEAY ST, POTTS POINT

PROJECT NO.
P00065

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TIME & PLACE

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DRAWING
ALTERNATE MEANS OF VENTILATION ZONES

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AC-DWG-300-01-01

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LEGEND

Highlighted areas require an alternative means of ventilation (e.g. mechanical ventilation)

NOTES

PROJECT
45-53 MACLEAY ST, POTTS POINT

PROJECT NO.
P00065

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LEVEL 2

DISCIPLINE
ACOUSTICS AND VIBRATION

| DRAWING NUMBER | REVISION |
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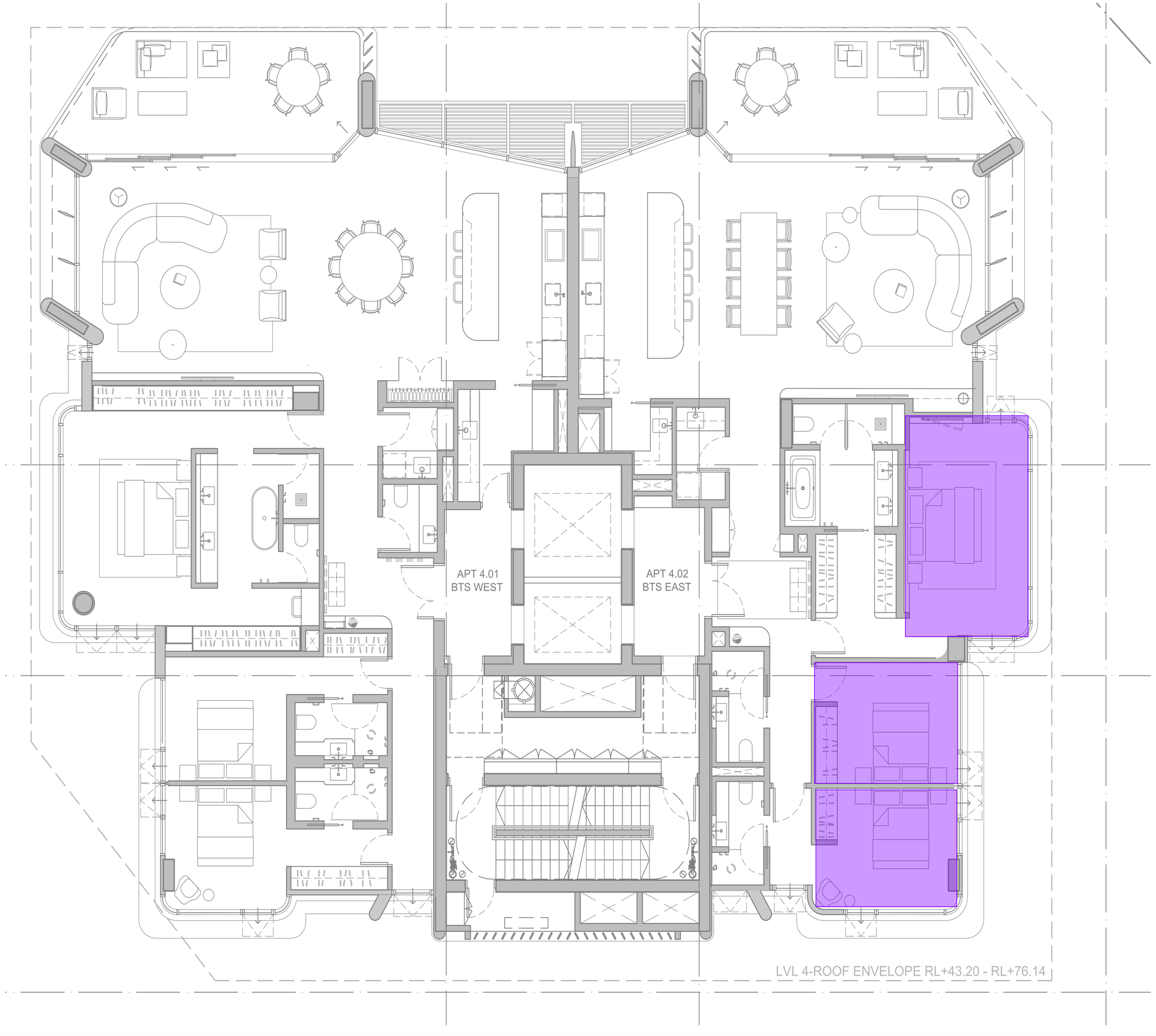


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| 1 | 27/10/2025 | For SSDA |

LEGEND

Highlighted areas require an alternative means of ventilation (e.g. mechanical ventilation)

NOTES

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PROJECT NO.
P00065

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ALTERNATE MEANS OF VENTILATION ZONES

LEVEL 4

DISCIPLINE
ACOUSTICS AND VIBRATION

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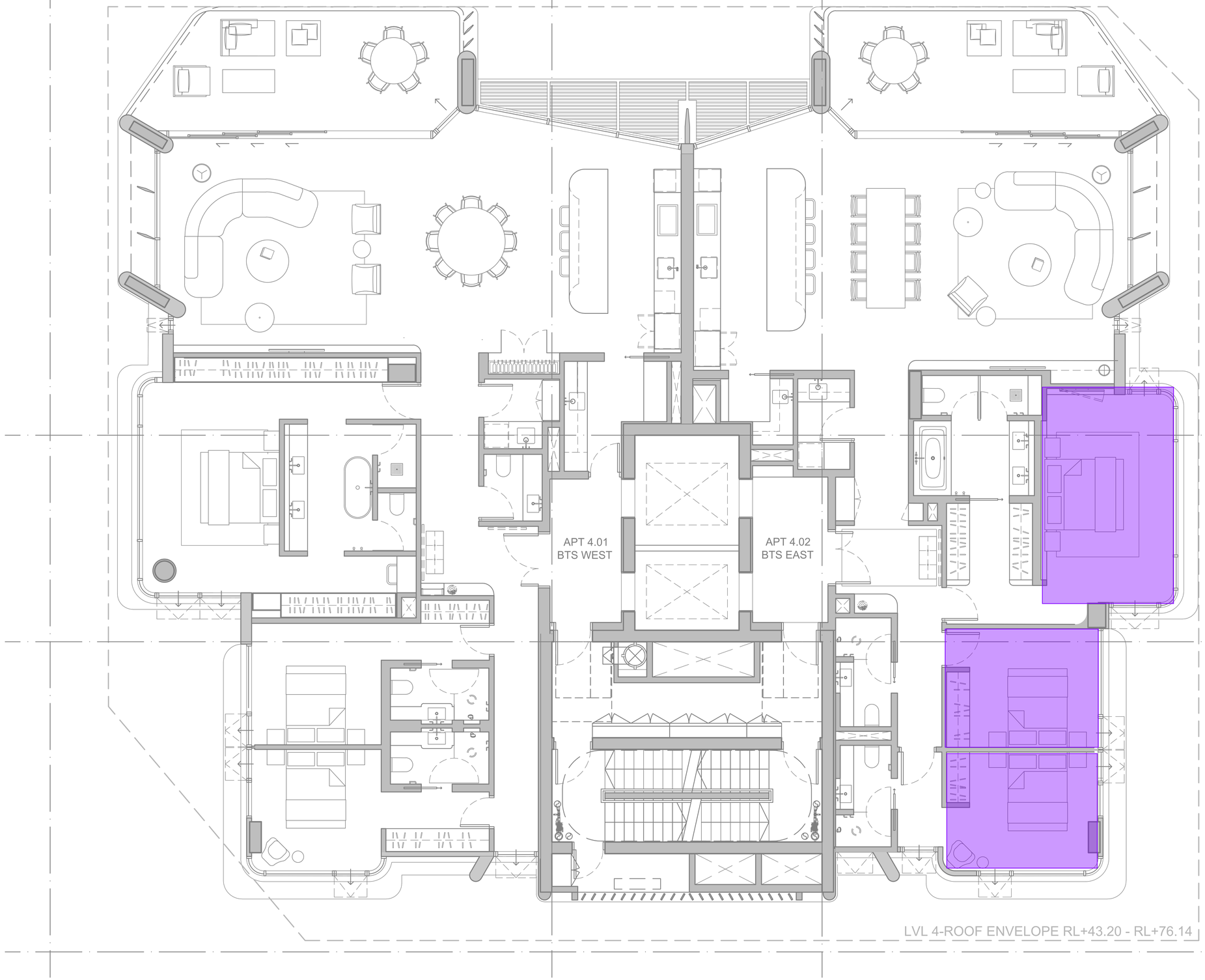


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LEGEND

Highlighted areas require an alternative means of ventilation (e.g. mechanical ventilation)

NOTES

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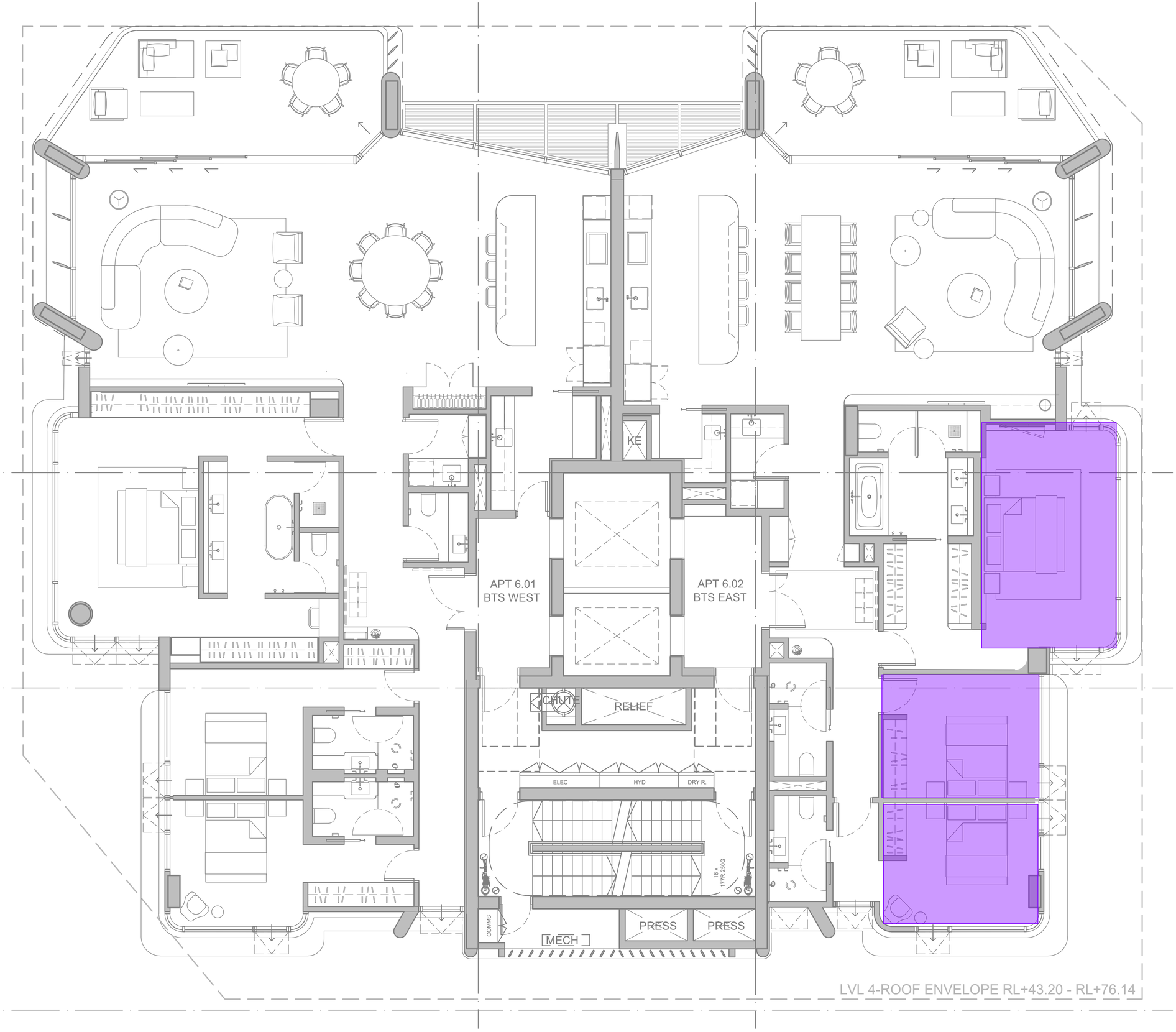
LEVEL 5

DISCIPLINE
ACOUSTICS AND VIBRATION

DRAWING NUMBER
AC-DWG-300-01-04

REVISION
001

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| 1 | 27/10/2025 | For SSDA |

LEGEND

Highlighted areas require an alternative means of ventilation (e.g. mechanical ventilation)

NOTES

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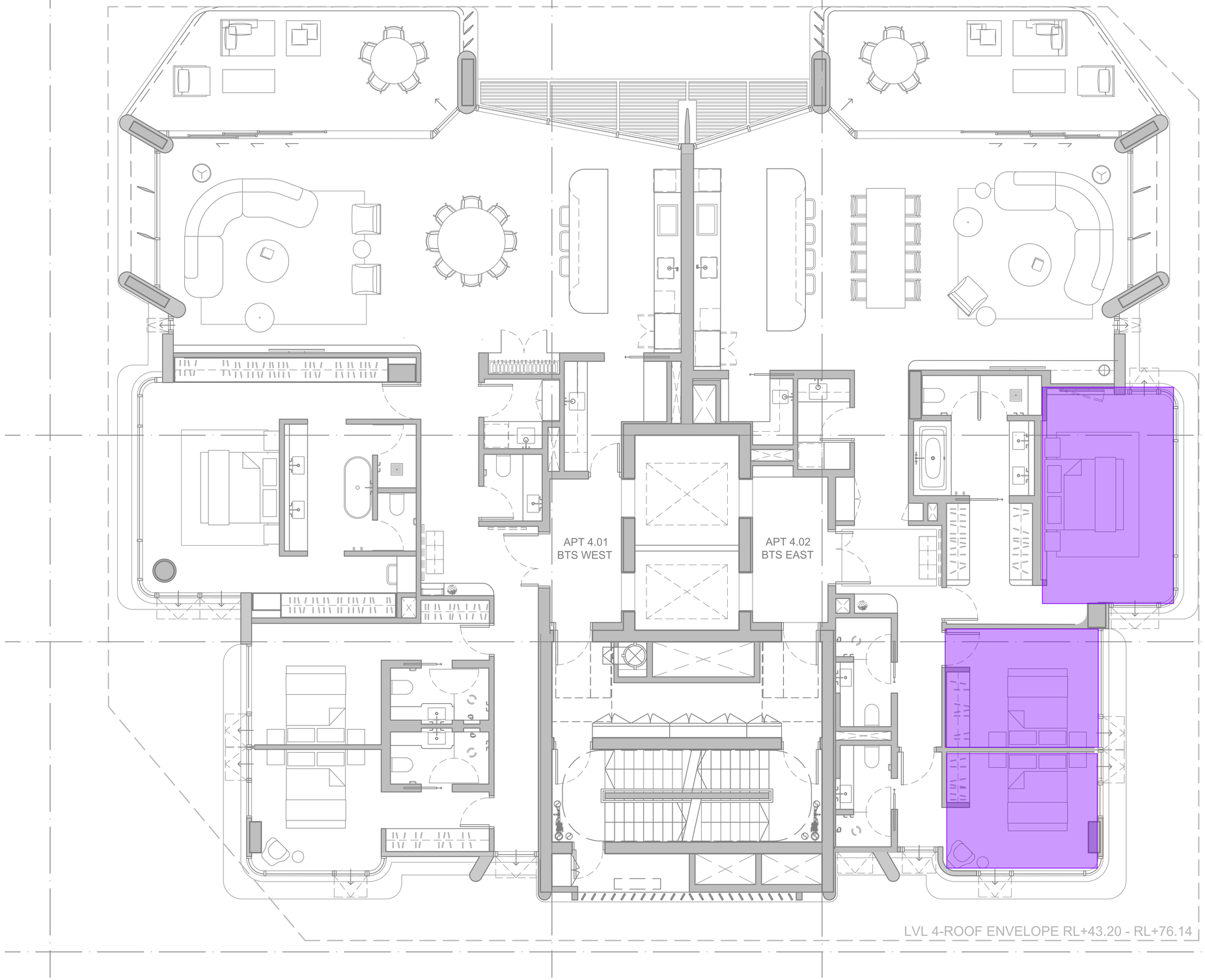
DISCIPLINE
ACOUSTICS AND VIBRATION

DRAWING NUMBER
AC-DWG-300-01-05

REVISION
001

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LEGEND

Highlighted areas require an alternative means of ventilation (e.g. mechanical ventilation)

NOTES

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LEVEL 7

DISCIPLINE
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DRAWING NUMBER
AC-DWG-300-01-06

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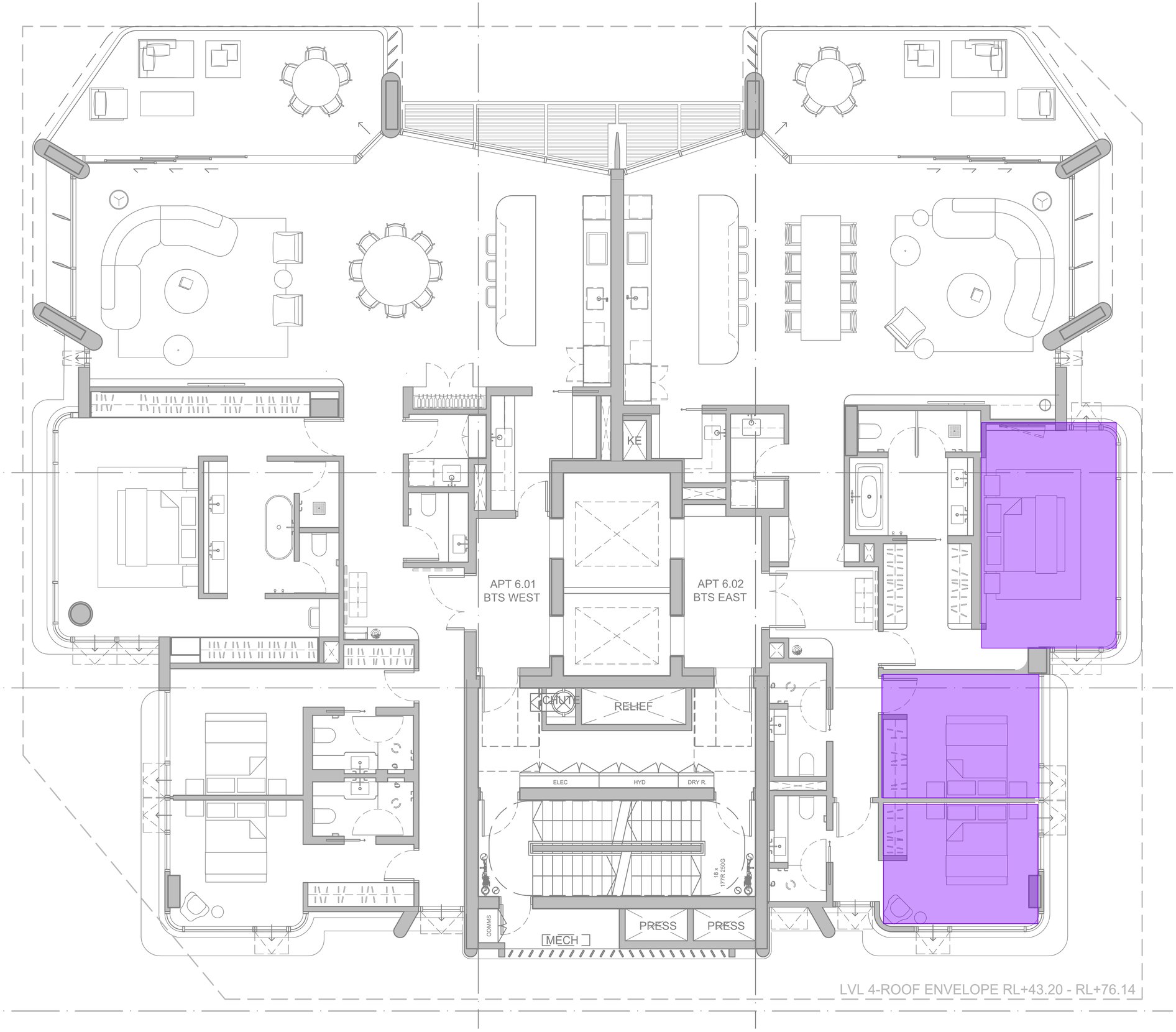


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| 1 | 27/10/2025 | For SSDA |

LEGEND

Highlighted areas require an alternative means of ventilation (e.g. mechanical ventilation)

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AC-DWG-300-01-07

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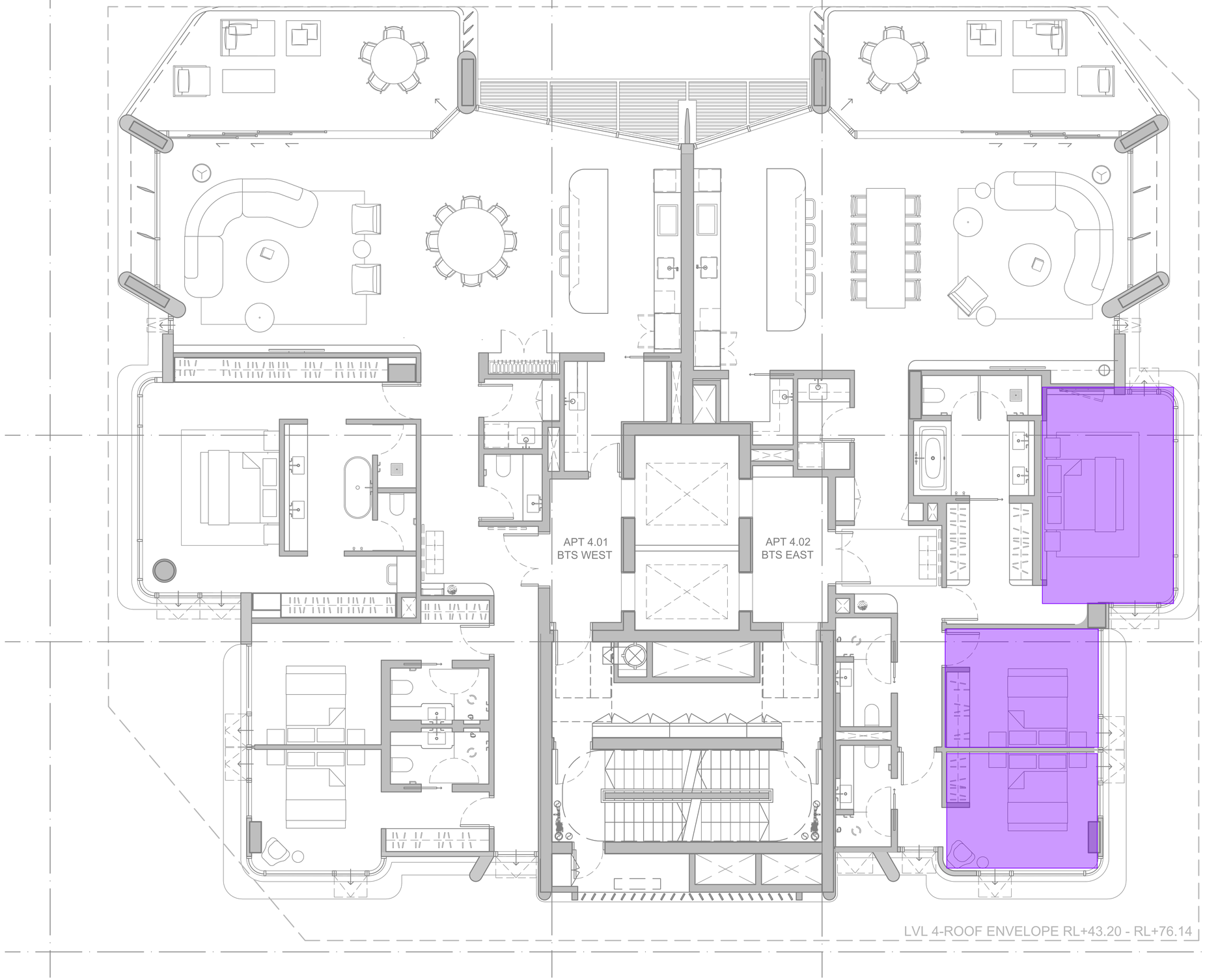


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LEGEND

Highlighted areas require an alternative means of ventilation (e.g. mechanical ventilation)

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DRAWING NUMBER
AC-DWG-300-01-08

REVISION
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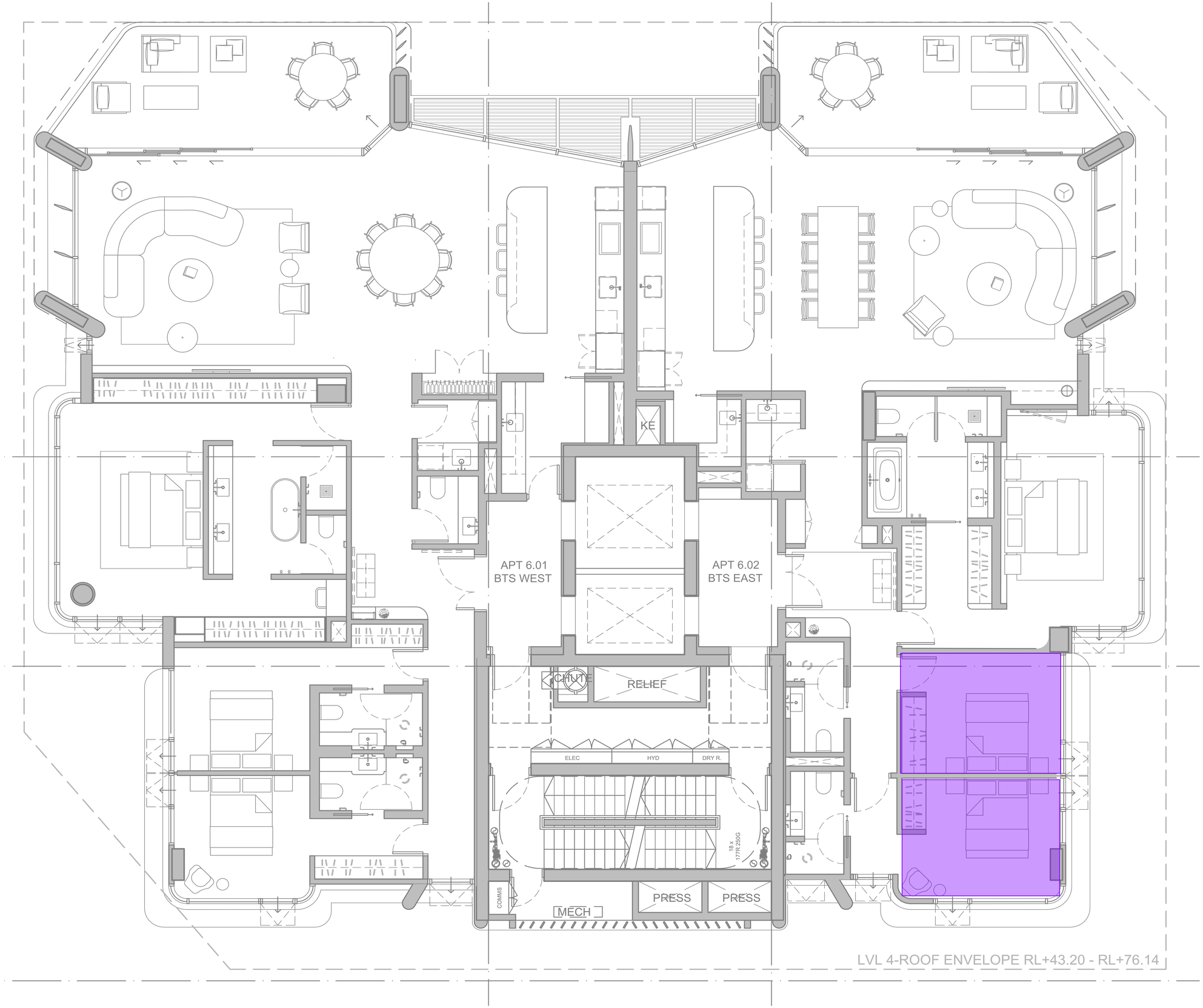


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| 1 | 27/10/2025 | For SSDA |

LEGEND

Highlighted areas require an alternative means of ventilation (e.g. mechanical ventilation)

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LEVEL 10

DISCIPLINE
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DRAWING NUMBER
AC-DWG-300-01-09

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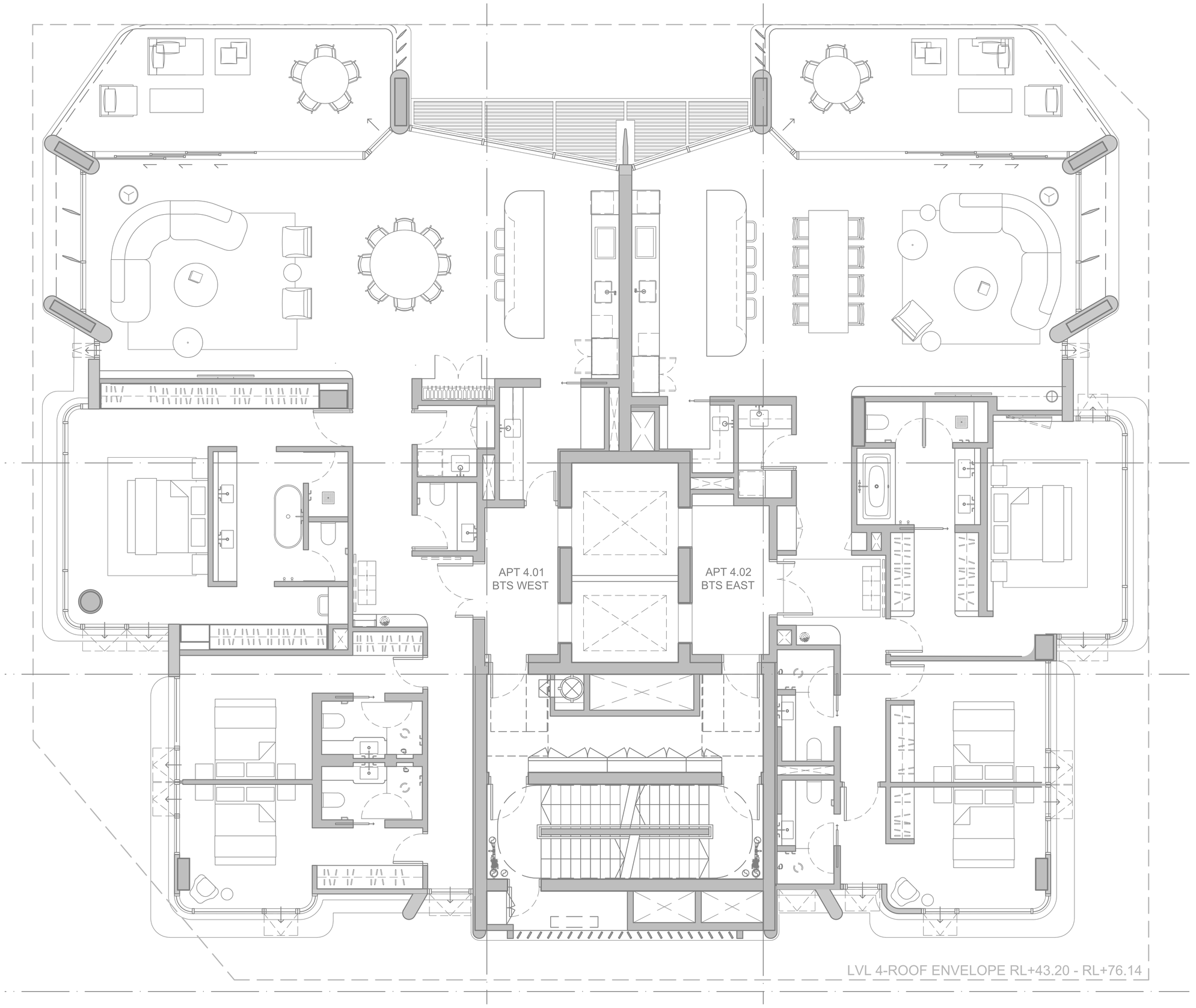


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| 1 | 27/10/2025 | For SSDA |

LEGEND

Highlighted areas require an alternative means of ventilation (e.g. mechanical ventilation)

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DRAWING NUMBER
AC-DWG-300-01-10

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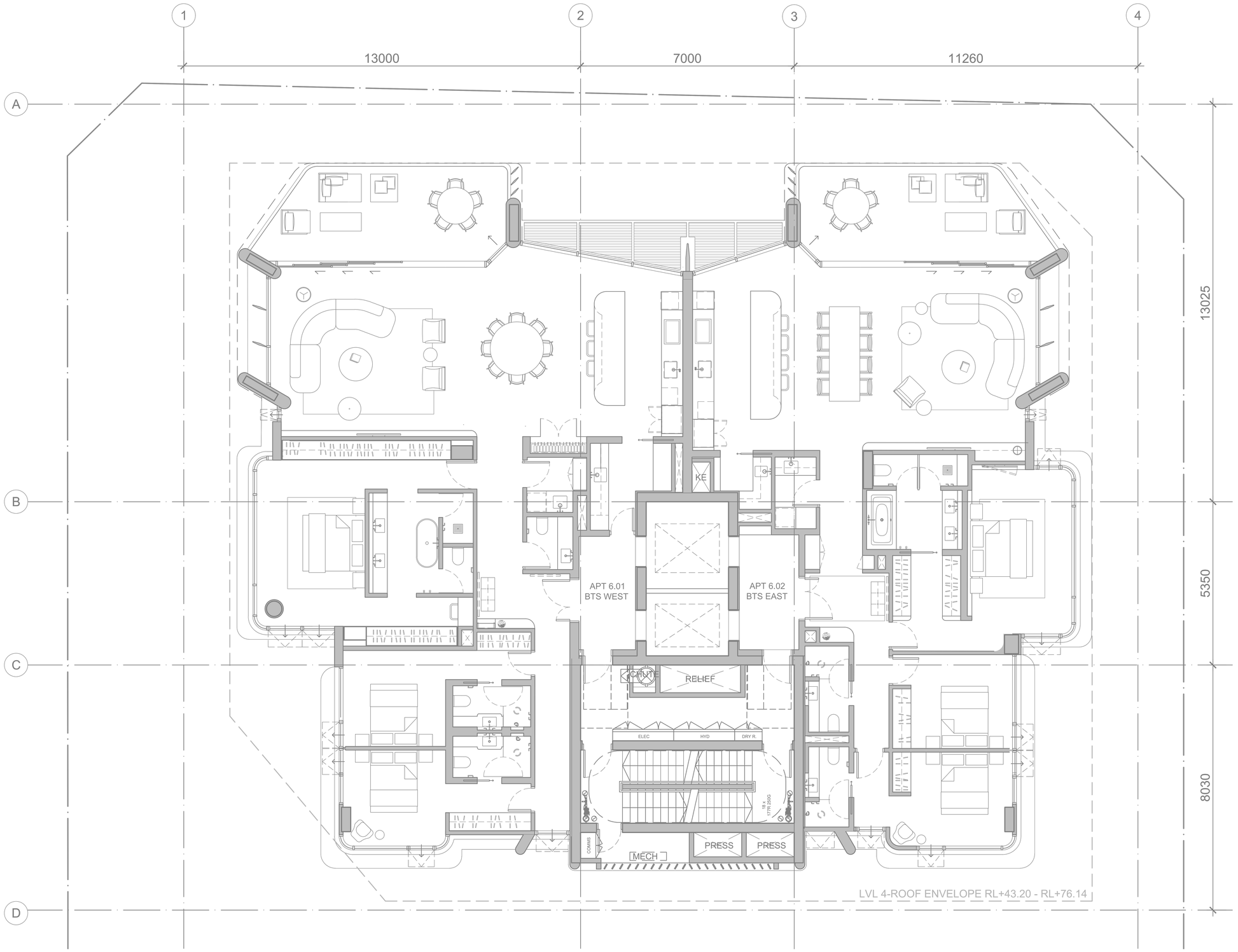


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| 1 | 27/10/2025 | For SSDA |

LEGEND

Highlighted areas require an alternative means of ventilation (e.g. mechanical ventilation)

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DRAWING NUMBER
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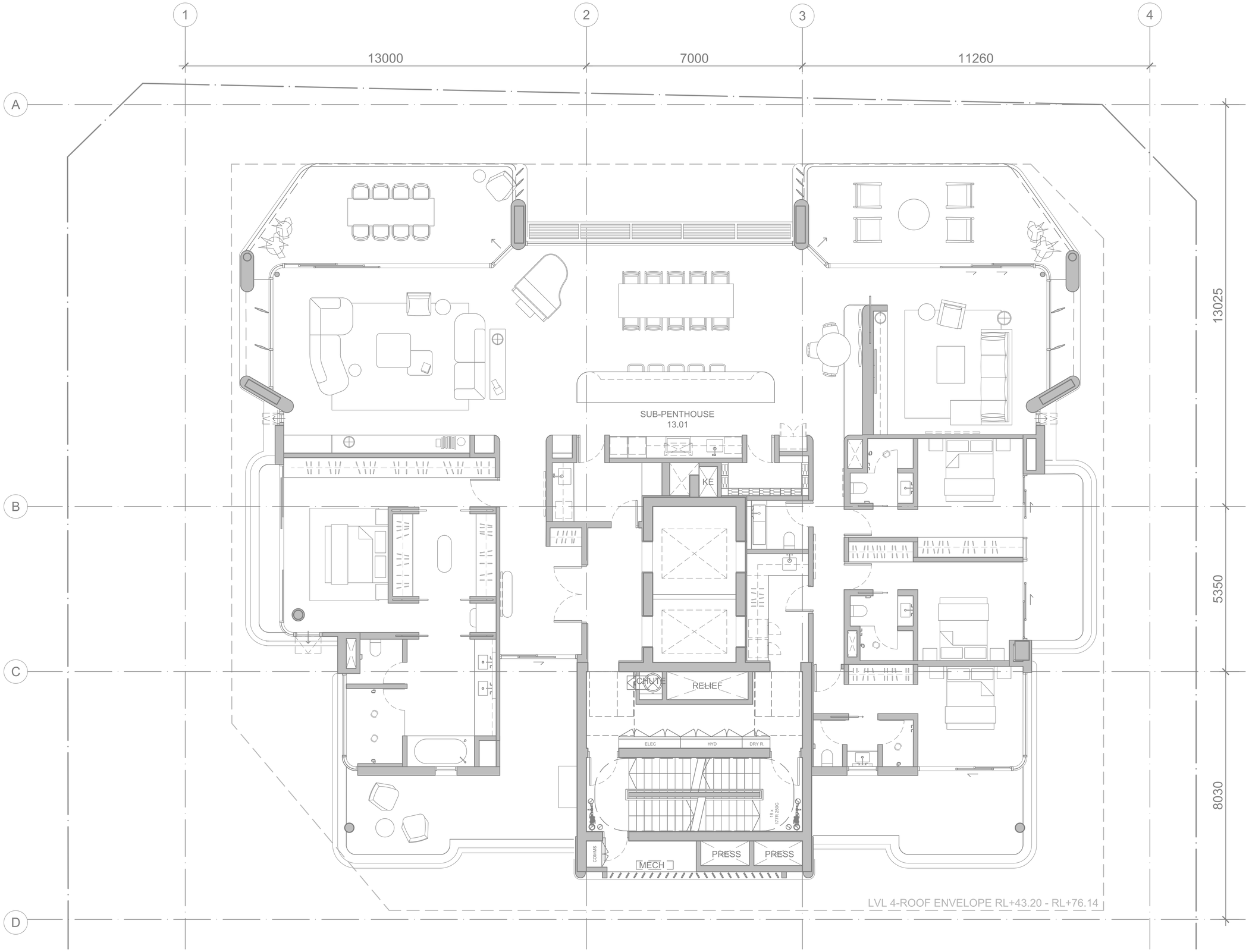


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| ISSUE | DATE | STATUS |
|---|---|---|
| 1 | 27/10/2025 | For SSDA |

LEGEND

Highlighted areas require an alternative means of ventilation (e.g. mechanical ventilation)

NOTES

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LEVEL 13

DISCIPLINE
ACOUSTICS AND VIBRATION

DRAWING NUMBER
AC-DWG-300-01-12

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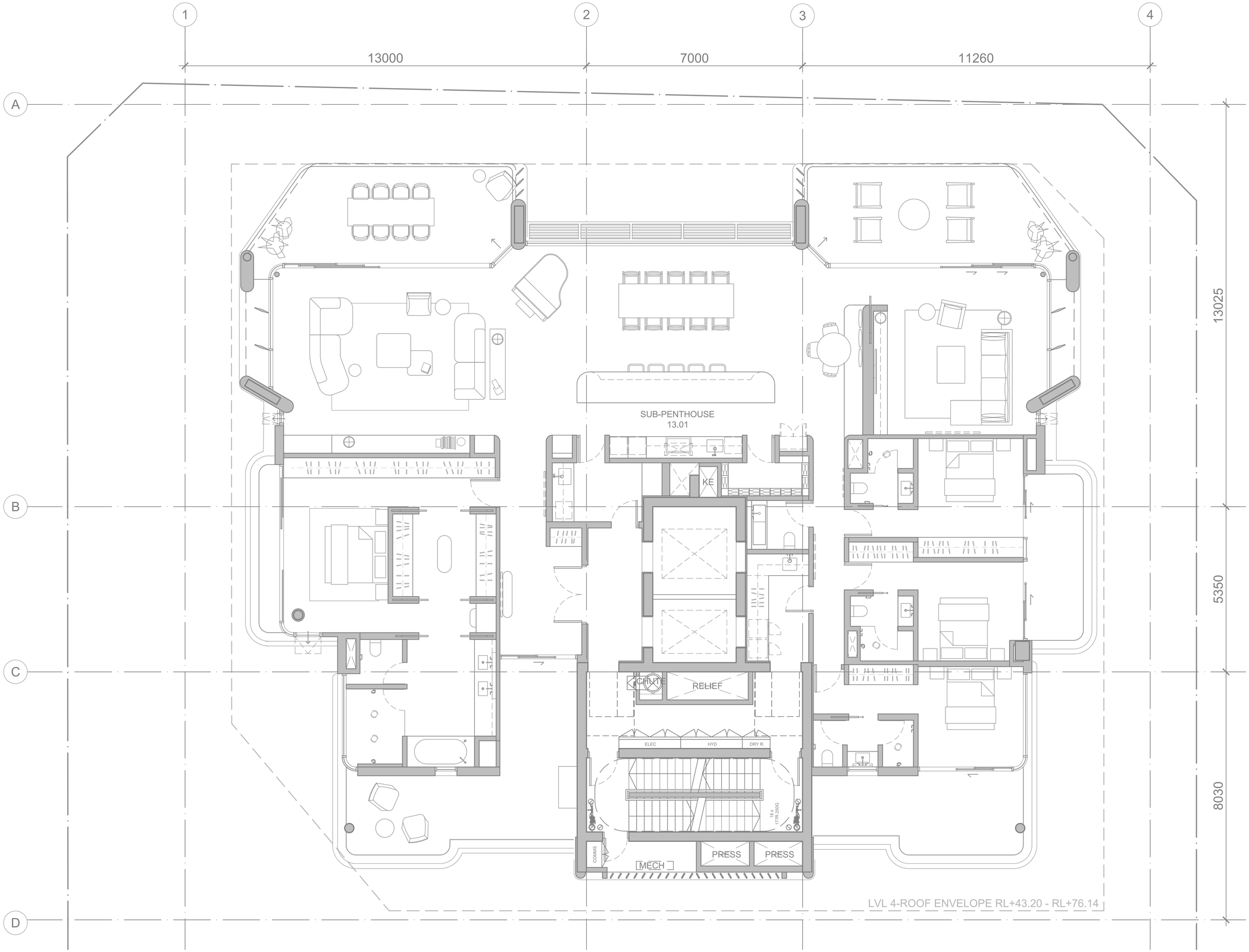


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| 1 | 27/10/2025 | For SSDA |

LEGEND

Highlighted areas require an alternative means of ventilation (e.g. mechanical ventilation)

NOTES

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45-53 MACLEAY ST, POTTS POINT

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LEVEL 14

DISCIPLINE
ACOUSTICS AND VIBRATION

DRAWING NUMBER
AC-DWG-300-01-13

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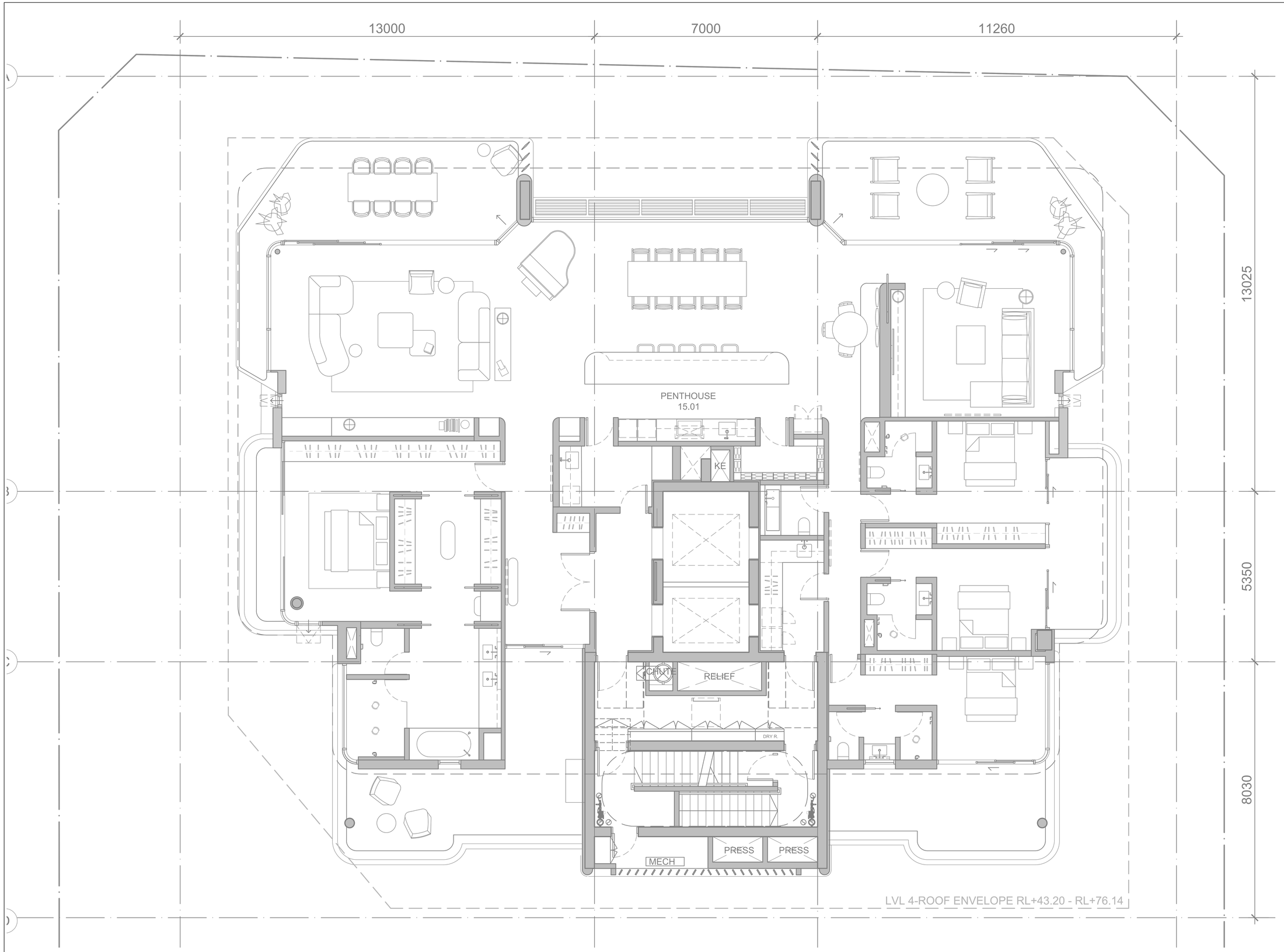


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| 1 | 27/10/2025 | For SSDA |

LEGEND

Highlighted areas require an alternative means of ventilation (e.g. mechanical ventilation)

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45-53 MACLEAY ST, POTTS POINT

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LEVEL 15

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DRAWING NUMBER
AC-DWG-300-01-14

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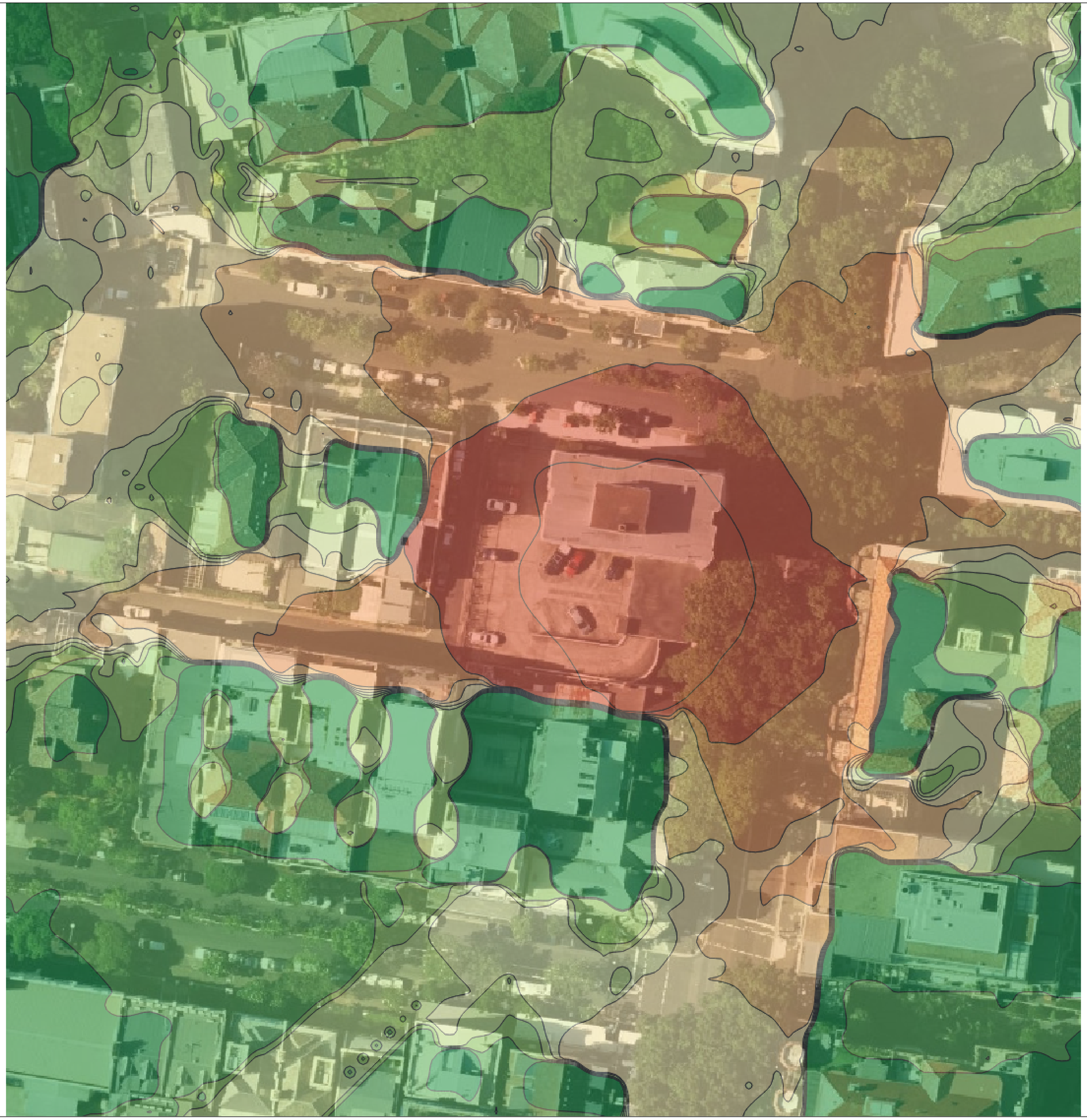
# Appendix E **Construction Noise Contour Map**



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| 1 | 27/10/2025 | FOR INFORMATION |

LEGEND

Noise Level, $L_{AEQ,\ 15min}$ dB(A)

- < 40
- 40 - 45
- 45 - 50
- 50 - 55
- 55 - 60
- 60 - 65
- 65 - 70
- 70 - 75
- 75 - 80
- > 80

NOTES

PROJECT
45-53 MACLEAY ST, POTTS POINT

PROJECT NO.
P00065

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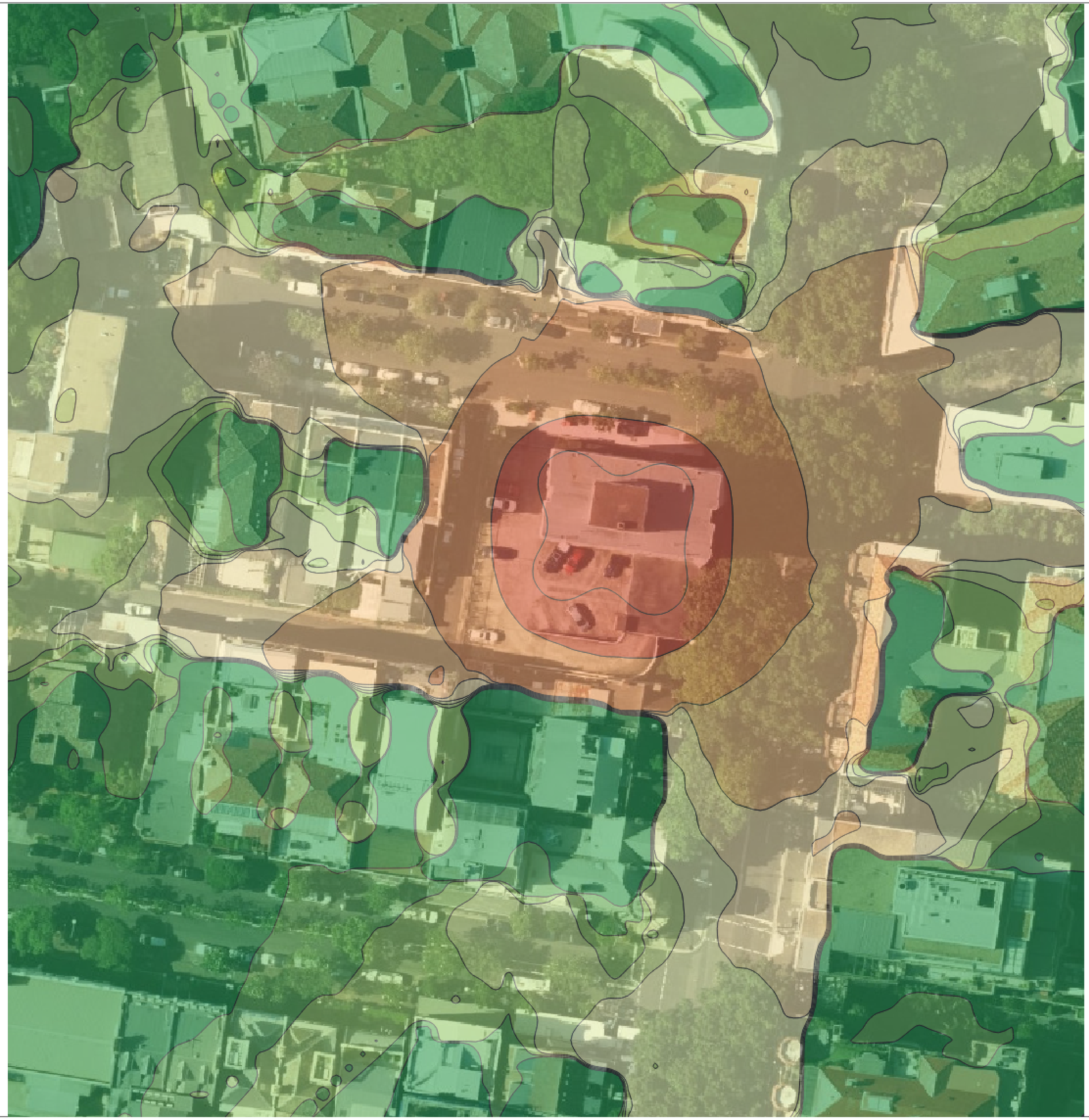
DRAWING
NOISE CONTOUR MAP - DEMOLITION WORKS

DISCIPLINE
ACOUSTICS AND VIBRATION

| DRAWING NUMBER | REVISION |
|---|---|
| AC-DWG-400-01-01 | 001 |



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|---|---|---|
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LEGEND

Noise Level, $L_{AEQ, 15min}$ dB(A)

- < 40
- 40 - 45
- 45 - 50
- 50 - 55
- 55 - 60
- 60 - 65
- 65 - 70
- 70 - 75
- 75 - 80
- > 80

NOTES

PROJECT
45-53 MACLEAY ST, POTTS POINT

PROJECT NO.
P00065

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NOISE CONTOUR MAP - EXCAVATION WORKS

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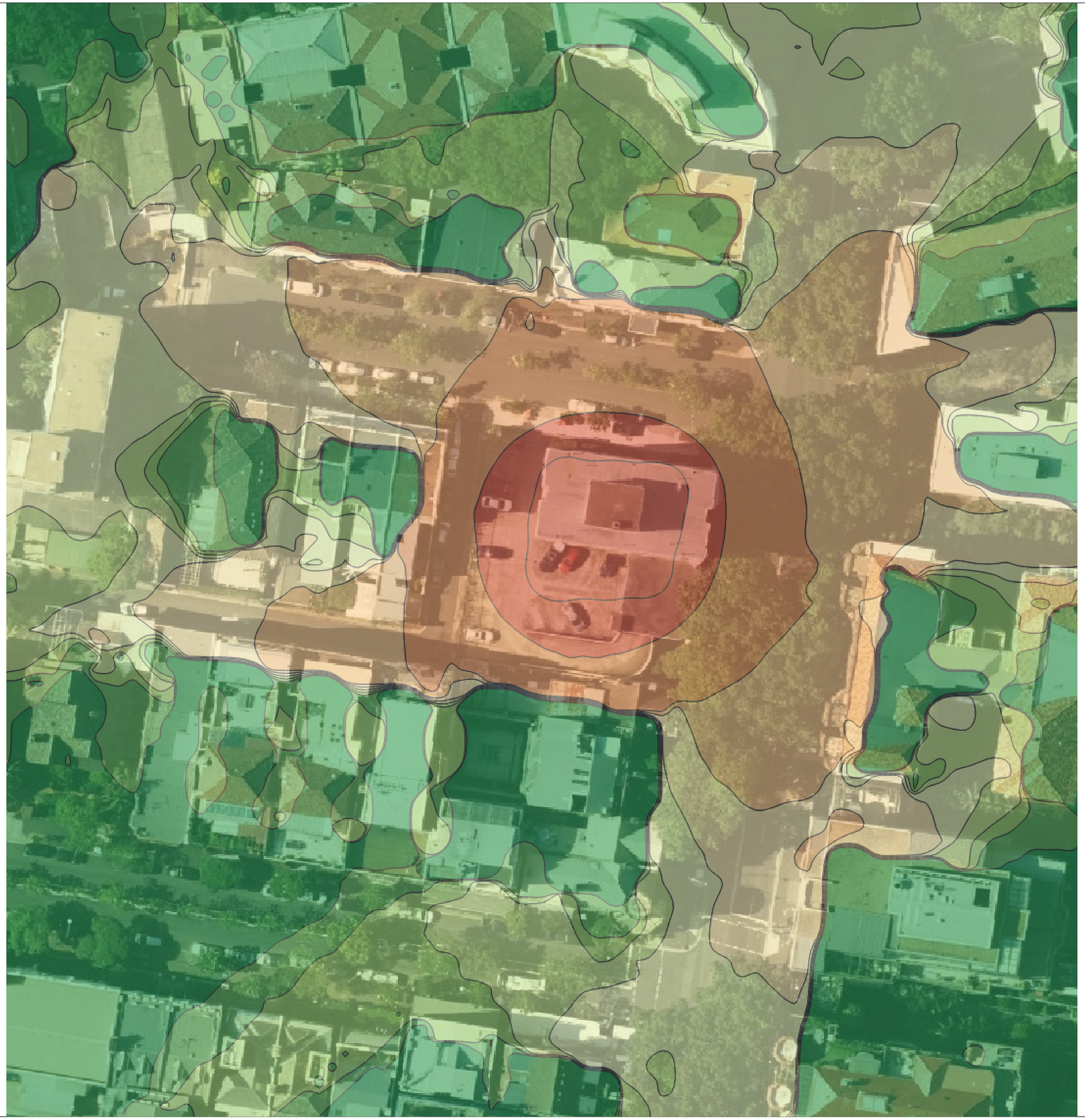

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| 1 | 27/10/2025 | FOR INFORMATION |

LEGEND

Noise Level, $L_{AEQ,\ 15min}$ dB(A)

- < 40
- 40 - 45
- 45 - 50
- 50 - 55
- 55 - 60
- 60 - 65
- 65 - 70
- 70 - 75
- 75 - 80
- > 80

NOTES

PROJECT
45-53 MACLEAY ST, POTTS POINT

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NOISE CONTOUR MAP - STRUCTURAL WORKS

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