



IGLU UNSW

Noise Impact Assessment

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1 INTRODUCTION

Acoustic Logic has been engaged to conduct an acoustic assessment of potential noise impacts associated with the proposed mixed-use development to be located at 215B Anzac Parade, Kensington – Iglu at UNSW.

This document addresses noise impact associated with the following:

- Noise intrusion to the project site from adjacent light rail lines.
- Noise intrusion to the project site from adjacent road traffic.
- Vibration impacts to project site from adjacent light rail lines.
- Noise emissions from noise sources generated by the site.

Acoustic Logic has utilised the following documents and regulations in the noise assessment of the development:

- The Randwick City Council '*Kensington and Kingsford Town Centres*' DCP, 2020.
- Australian and New Zealand AS/NZS 2107:2016 'Recommended design sound levels and reverberation times for building interiors'.
- NSW Department of Planning – '*Developments near Rail Corridors or Busy Roads – Interim Guideline*'.
- NSW Department of Planning – '*State Environmental Planning Policy (SEPP) (Transport and Infrastructure) 2021*'.
- NSW Environmental Protection Authority (EPA) Document – '*Noise Policy for Industry (NPfI) 2017*'.

This assessment has been conducted based on the architectural drawings provided by BatesSmart, Project No. S12561, Revision D, dated 19th April 2024.

1.1 RANDWICK CITY COUNCIL REQUEST FOR ADDITIONAL INFORMATION

Comments have been received from Randwick City Council on the initially submitted acoustic report, requesting additional information and general clarifications. These have reproduced below, along with the relevant section within this report, or additional comments where applicable.

Matter Raised	Response
Randwick City Council RFI (14 November 2023)	
7. Environmental Health Concerns	
The applicant must submit an acoustic report for the operation of the proposed gym, the acoustic report must demonstrate compliance with the below noise criteria.	Refer Section 8.5
<p><i>Commercial plant noise criteria</i></p> <p>Noise from commercial plant and industrial development must not exceed a project amenity/intrusiveness noise level or maximum noise level in accordance with relevant requirements of the NSW EPA Noise Policy for Industry 2017 (NPfI).</p> <p><u>Note:</u> The stricter of the amenity/intrusiveness criteria becomes the prevailing criteria for the development.</p> <p>Background noise monitoring must be carried out in accordance with the long- term methodology in Fact Sheet B of the NPfI unless otherwise agreed by Councils Planning Manager.</p> <p>Commercial plant is limited to heating, ventilation, air conditioning, refrigeration and energy generation equipment.</p> <p>In addition, noise from commercial plant, when assessed as an $L_{Aeq, 15 \text{ min}}$ must not exceed the $L_{A90, 15 \text{ min}}$ background noise level by more than 3dB when assessed inside any habitable room of any affected residence or noise-sensitive commercial premises when is use. The noise level and the background noise level shall both be measured with all external doors and windows of the affected residence closed.</p> <p>Background noise measurements must not include noise from the development but may include noise from necessary ventilation at the affected premise.</p>	Refer Section 8.5.1

<p>Entertainment noise criteria</p> <p>The LA10, 15 minute noise level emitted from the use must not exceed the background noise level (LA90, 15minute) in any Octave Band Centre Frequency (31.5 Hz to 8 kHz inclusive) by more than 5dB between the hours of 7.00am and 12.00 midnight when assessed at the boundary of any affected residence.</p> <p>The LA10, 15 minute noise level emitted from the use must not exceed the background noise level (LA90, 15 minute) in any Octave Band Centre Frequency (31.5 Hz to 8 kHz inclusive) between the hours of 12.00 midnight and 7.00am when assessed at the boundary of any affected residence.</p> <p>Noise from the use when assessed as an LA10, 15 minute enters any residential use through an internal-to-internal transmission path is not to exceed the existing internal LA90, 15 minute (from external sources excluding the use) in any Octave Band Centre Frequency (31.5 Hz to 8 kHz inclusive) when assessed within a habitable room at any affected residential use between the hours of 7am and 12midnight.</p> <p>Noise from the use must not be audible within any habitable room in any residential use between the hours of 12.00 midnight and 7.00am.</p> <p>Inaudibility should be taken as the existing internal LA90, 15 minute (from external sources excluding the use) minus 10dB in any octave band (reference frequency 31.5 Hz to 8 kHz inclusive) inside a habitable room of any affected residential accommodation.</p> <p>The LA10, 15 minute noise level emitted from the use must not exceed the background noise level (LA90, 15 minute) in any Octave Band Centre Frequency (31.5 Hz to 8 kHz inclusive) by more than 3dB when assessed indoors at any affected commercial premises.</p> <p>Note: The LA10, 15 minute noise level emitted from the use is as per the definition in the Australian Standard AS1055-2018 Acoustics – Description and measurement of environmental noise.</p> <p>The background noise level LA90, 15 minute is to be determined in the absence of noise emitted by the use and be representative of the noise sensitive receiver.</p> <p>Background noise monitoring must be carried out in accordance with the long- term methodology in Fact Sheet B of the NPfl unless otherwise agreed by Council's Planning Manager.</p> <p>Where the LA10, 15 minute noise level is below the threshold of hearing, Tf at any Octave Band Centre Frequency as defined in Table 1 of International Standard ISO 226 : 2003- Normal Equal-Loudness-Level Contours then the value of Tf corresponding to that Octave Band Centre Frequency shall be used instead.</p>	<p>Refer Section 8.5.1</p>
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<p>Structure borne noise criteria</p> <p>Structure borne noise emanating from the use of the premises is not to exceed the following criterion (when doors and windows are closed:</p> <p>Commercial premises - LA1, Slow 15 minute \leq LA90, 15 minute +3 dB(A)</p> <p>Residential premises - LA1, Slow 15 minute \leq LA90, 15 minute + 0 dB(A)</p>	Refer Section 8.5.1
<p align="center">Acoustic Report General Notes</p>	
It is not appropriate to use AS2107 to justify internal noise levels in relation to gym noise, as per the limitations of the standard in section 2.2. The existing background noise level will be the basis of the noise criteria associated with the gym.	Noted.
In the event of any inconsistency the consent authority's noise conditions prevail over any private body guidance documents (i.e. AAAC gym noise guidance).	Noted.
If applicants are intending on operating a gym in a mixed-use residential building the gym must be fit for purpose and not impact existing residents in the building. In particular the fit out must be appropriate to control noise emissions from the gym including air-borne noise (music, patrons, commercial plant etc.), structure borne noise (dropping of weights etc.), removal of flanking paths and so on. This must be considered at the design stage and incorporated in all construction drawings.	Noted. Refer Section 8.5.2 for recommendations of acoustic treatments and management controls which may be implemented.
Management controls should be considered a secondary control and are designed to underpin the fit-out controls.	Noted. Preliminary construction methods and mitigation measures have been provided in Section 8.5.2.
Mechanical and/or natural ventilation should be sufficient to allow the operation of the gym with windows and doors closed, if required. In this regard the premises must be ventilated in accordance with the Building Code of Australia; AS1668.1 and AS1668.2 - <i>The Use of Ventilation and Air- conditioning in Buildings - Mechanical Ventilation in Buildings</i> ; AS 1668.4- 2012 <i>The use of ventilation and air-conditioning in buildings Natural ventilation of buildings</i> .	Noted.
<p align="center">Council requests the following matters to be further addressed</p>	
An acoustic report be submitted addressing the relevant noise and vibration criteria as it relates to the gym operations and impact on Tower A residents and other uses.	Refer Section 8.5

2 SITE DESCRIPTION

The proposed development is a multistorey, mixed-use building comprising of five building blocks of various uses and storeys. It consists of:

- Basement level parking.
- Ground level retail and dining.
- Office lobbies and spaces
- Communal areas
- One gymnasium.
- Up to 14 stories of residential student accommodation units.

A site investigation has been conducted with regards to the existing properties and noise impacts surrounding the proposed development, which is detailed below.

- Road traffic from Anzac Parade bounding the site to the east, which carries a high volume of traffic greater than 40,000 AADT., consisting of passenger vehicles and buses.
- Light rail corridor adjacent to the site along Anzac Parade, bounding the site to the east. There are two tracks at this location.

The nearest noise receivers around the site include:

- **R1** – Existing seven-storey residential student accommodation to the south, at 251 Anzac Parade.
- **R2** – Existing one and two-storey residential receivers to the west, along Doncaster Avenue.
- **C1** – Existing multi-storey commercial building to the north, at 215 Anzac Parade.
- **M1**– Existing multi-storey mixed-use buildings associated with UNSW, across the road from the site, along Anzac Parade.

A site map, measurement location, description and surrounding receivers are presented in the figure below.

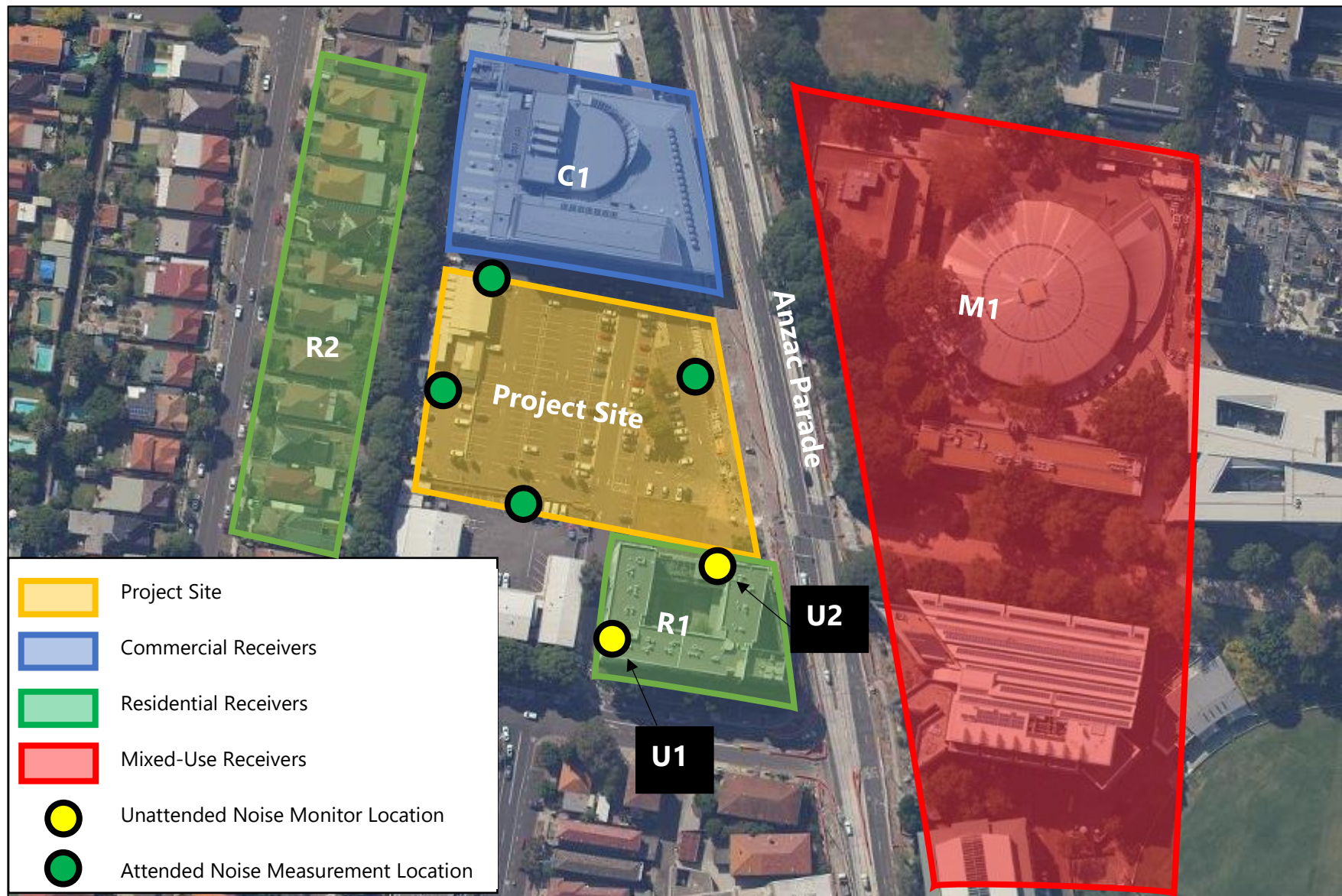


Figure 1 – Site Survey and Monitoring Locations

3 NOISE DESCRIPTORS

Ambient noise constantly varies in level from moment to moment, so it is not possible to accurately determine prevailing noise conditions by measuring a single, instantaneous noise level.

To quantify ambient noise, a 15-minute measurement interval is typically utilised. Noise levels are monitored continuously during this period, and then statistical and integrating techniques are used to characterise the noise being measured.

The principal measurement parameters obtained from the data are:

L_{eq} - represents the average noise energy during a measurement period. This parameter is derived by integrating the noise levels measured over the measurement period. **L_{eq}** is important in the assessment of noise impact as it closely corresponds with how humans perceive the loudness of time-varying noise sources (such as traffic noise).

L₉₀ – This is commonly used as a measure of the background noise level as it represents the noise level heard in the typical, quiet periods during the measurement interval. The **L₉₀** parameter is used to set noise emission criteria for potentially intrusive noise sources since the disturbance caused by a noise source will depend on how audible it is above the pre-existing noise environment, particularly during quiet periods, as represented by the **L₉₀** level.

L₁₀ is used in some guidelines to measure noise produced by an intrusive noise source since it represents the average of the loudest noise levels produced at the source. Typically, this is used to assess noise from licenced venues.

L_{max} is the highest noise level produced during a noise event, and is typically used to assess sleep arousal impacts from short term noise events during the night. It is also used to assess internal noise levels resulting from aircraft and railway ground vibration induced noise.

L₁ is sometimes used in place of **L_{max}** to represent a typical noise level from a number of high-level, short-term noise events.

4 UNATTENDED NOISE MONITORING

4.1 AMBIENT NOISE SURVEY

NSW EPA's Rating Background Noise Level (RBL) assessment procedure requires determination of background noise level for each day (the ABL), and the median of the individual days is the RBL for the entire monitoring period.

Appendices in this report present results of unattended noise monitoring conducted at the project site. Weather affected data was excluded from the assessment. The processed RBL (lowest 10th percentile noise levels during operation time period) are presented in Table 1 below.

4.1.1 Measurement Position

U1 – Unattended Noise Monitor located along the western façade of the nearest residential receiver, R1. The noise monitor was shielded from direct view of light-rail and traffic movements along Anzac Parade. This monitor is representative of background noise levels experienced by residences nearby to the site.

Refer to Figure 1 for detailed monitoring locations.

4.1.2 Measurement Period

Noise monitoring was conducted between Wednesday 19th October to Tuesday 1st November 2022. Attended noise measurements were undertaken between the hours of 8am and 10am on the 1st of November 2022.

4.1.3 Measurement Equipment

Equipment used consisted of an Acoustic Research Laboratories Pty Ltd noise logger. The logger was set to A-weighted fast response and was programmed to store 15-minute statistical noise levels throughout the monitoring period. The monitor was calibrated at the start and end of the monitoring period using a Rion NC-73 calibrator. No significant drift was noted. Noise monitoring data is provided in Appendix B.

4.1.4 Summarised Rating Background Noise Levels

Summarised rating background noise levels for the project site and immediate surroundings are presented below.

Table 1 – Measured Rating Background Noise Levels

Location	Time of day	Rating Background Noise Level dB(A) _{L90(Period)}
215A Anzac Parade, Kensington (Rear of site)	Day (7am – 6pm)	49
	Evening (6pm – 10pm)	48
	Night (10pm – 7am)	44

4.2 TRAFFIC NOISE SURVEY

Existing traffic noise levels impacting the site were determined by attended and unattended noise measurements.

4.2.1 Measurement Position

U2 – Unattended Noise Monitor located along the northern façade of the nearest residential receiver, R1. The noise monitor was placed 15m away from the kerb of Anzac Parade, on the fourth storey, overlooking Anzac Parade traffic and light-rail movements, with a 90-degree field of view of the road.

Refer to Figure 1 for detailed monitoring locations.

4.2.2 Measurement Period

Noise monitoring was conducted between Wednesday 19th October to Tuesday 1st November 2022. Attended noise measurements were undertaken between the hours of 8am and 10am on the 1st of November 2022.

4.2.3 Measurement Equipment

Equipment used consisted of an Acoustic Research Laboratories Pty Ltd noise logger. The logger was set to A-weighted fast response and was programmed to store 15-minute statistical noise levels throughout the monitoring period. The monitor was calibrated at the start and end of the monitoring period using a Rion NC-73 calibrator. No significant drift was noted. Noise monitoring data is provided in Appendix A.

4.2.4 Summarised External Noise Levels

The following noise levels have been established based on attended measurements and noise monitoring.

Table 2 – Measured Traffic Noise Levels

Location	Time of Day	Noise Level
215A Anzac Parade, Kensington (Building C Eastern Facade)	Daytime 7am – 10pm	67 dB(A) L_{eq} (15hr)
	Night-time 10pm – 7am	63 dB(A) L_{eq} (9hr)

5 EXTERNAL NOISE INTRUSION ASSESSMENT

Site investigation indicates that the major external noise sources around project site are from light-rail and traffic movements along Anzac Parade.

5.1 NOISE INTRUSION CRITERIA

A noise intrusion assessment has been conducted based on the requirements of the following acoustic noise criteria and standards:

- The Randwick City Council '*Kensington and Kingsford Town Centres*' DCP, 2020.
- Australian and New Zealand AS/NZS 2107:2016 'Recommended design sound levels and reverberation times for building interiors'.
- NSW Department of Planning – '*Developments near Rail Corridors or Busy Roads – Interim Guideline*'.
- NSW Department of Planning – '*State Environmental Planning Policy (SEPP) (Transport and Infrastructure) 2021*'.

5.1.1 The Randwick City Council '*Kensington and Kingsford Town Centres*' DCP, 2020

Part C, Section 14.1 'Acoustic Privacy' states the following with respect to noise intrusion:

Residential uses

- a) All new development is to be constructed to achieve the following acoustic amenity criteria for the residential component of the building in accordance with Australian Standard AS2107:2016 based on an acoustic report specified in clauses d) and k). For the purposes of this clause, the residential component includes dwellings situated within shop top housing, mixed use buildings, or occupancies in student housing, boarding houses, serviced apartments, hotel and motel accommodation.
- b) In naturally ventilated spaces for the residential component, the repeatable maximum Leq (1hour) should not exceed:
 - i) 35 dB(A) between 10.00 pm and 7.00 am in sleeping areas when the windows are closed;
 - ii) 40 dB(A) in sleeping areas when windows are open (24 hours);
 - iii) 45 dB(A) in living areas (24 hours) when the windows are closed, and
 - iv) 50 dB(A) in living areas (24 hours) when the windows are open.
- c) Where natural ventilation cannot achieve the limits listed in clause b) the development is to include mechanical ventilation, air conditioning or other complying means of ventilation (in accordance with the ventilation requirements of the Building Code of Australia and Australian Standard AS 1668.2-2012), when doors and windows are shut. In such circumstances the repeatable maximum Leq (1hour) with the alternative ventilation operating should not exceed:
 - i) 38 dB(A) between 10.00 pm and 7.00 am in sleeping areas;
 - i) 46 dB(A) in living areas (24 hours);
 - ii) (45 dB(A) in sleeping areas between 7.00 am and 10.00 pm.

5.1.2 Australian and New Zealand AS/NZS 2107:2016 'Recommended design sound levels and reverberation times for building interiors'

AS2107:2016: Recommended design sound levels and reverberation times for building interiors specifies allowable internal noise levels for internal spaces within residential and commercial buildings. The following table gives the following maximum internal noise levels for commercial buildings and residential buildings near major roads.

Table 3– Recommended Design Sound Levels

Space /Activity Type	Recommended Design Sound Levels
Sleeping Areas	35-40 dB(A) _{Leq(10pm-7am)}
Living Areas	35-45 dB(A) _{Leq(anytime)}
Small Retail Stores (General)	<50 dB(A) _{Leq(anytime)}

5.1.3 NSW Department of Planning's 'Development Near Rail Corridors and Busy Roads (Interim Guideline)'

In conjunction with clause 102 of the *ISEPP 2007* which has since been superseded by the *SEPP 2021*, the development will need to ensure compliance with the *DNRCBR* guideline which states the following:

"The following provides an overall summary of the assessment procedure to meet the requirements of clauses 87 and 102 of the Infrastructure SEPP [2.99 and 2.119 of the SEPP 2021]. The procedure covers noise at developments for both road and rail.

If the development is for the purposes of a building for residential use, 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 L_{Aeq} levels are not exceeded:

- *In any bedroom in the building – 35 dB(A) at any time between 10pm and 7am,*
- *Anywhere else in the building (other than a garage, kitchen, bathroom, or hallway) – 40 dB(A) at any time."*

5.1.4 NSW Department of Planning and Environment document – 'State Environmental Planning Policy (Transport and Infrastructure)' (SEPP) 2021

"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 childcare facility.*

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 L_{Aeq} 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."*

Anzac Parade is classified as a busy road with an estimated annual average daily traffic volume of over 40,000 vehicles. Therefore, a noise intrusion assessment is mandatory.

Refer to Figure 2 for location of the project site in relation to Anzac Parade.



Figure 2 – SEPP Traffic Volume Map

5.1.5 Summarised Internal Noise Criteria

Table 4 - Summarised Internal Noise Criteria

Space /Activity Type	Internal Noise Requirement
Sleeping Areas/Studio Apartments	35dB(A) $L_{Aeq}(9 \text{ hour})$
Other Habitable Areas	40dB(A) $L_{Aeq}(15 \text{ hour})$
Small Retail Stores (General)	<50 dB(A) $L_{eq}(\text{anytime})$

6 COMPLYING CONSTRUCTIONS

Internal noise levels will primarily be as a result of noise transfer through glazing elements, as façade and roof constructions are assumed to be masonry or concrete at this stage of the assessment.

Assessment of façade requirements to achieve required indoor noise levels has been undertaken. Dimensions of rooms, setbacks from roadways, window openings and floor areas have been used.

6.1 GLAZED WINDOWS AND DOORS

The following constructions are nominated to comply with the project noise objectives. Aluminium framed/sliding glass doors and windows will be satisfactory provided they meet the following criteria. All external windows and doors listed are required to be fitted with Q-Ion type acoustic seals. **(Mohair Seals are unacceptable)**.

Thicker glazing may be required for structural, safety or other purposes. Where it is required to use thicker glazing than scheduled, this will also be acoustically acceptable. The recommended minimum constructions are detailed in Appendix C.

It is recommended that only window systems having test results indicating compliance with the required ratings obtained in a certified laboratory be used where windows with acoustic seals have been recommended.

These recommendations are made using information available at the time of this report. Room layout and program relates specifically to architectural drawings provided by BatesSmart, Project No. S12561, Revision D, dated 19th April 2024.

In addition to complying with the minimum scheduled glazing thickness, the R_w rating of the glazing fitted into open-able frames and fixed into the building opening should not be lower than the values listed in the following table for all areas. Where nominated, this will require the use of acoustic seals around the full perimeter of open-able frames and the frame will need to be sealed into the building opening using a flexible sealant.

Table 5 - Minimum R_w of Glazing Assembly (with Acoustic Seals)

Glazing Assembly	Double Glazed Unit (DGU) Equivalent	Minimum R_w of Installed Window
6mm Float	6mm/12mm Air Gap/6mm	29
6.38mm Laminated	8mm/16mm Air Gap/8mm	31
10mm Float	6mm/12mm Air Gap/10mm	33
10.38mm Laminated	6mm/12mm Air Gap/10.38mm Laminated	35
12.38mm Laminated	6mm/12mm Air Gap/12.38mm Laminated	37

6.2 EXTERNAL ROOF/CEILING

Roofs constructed from masonry/concrete elements will not require upgrading to achieve acoustic requirements. In the event that a lightweight roof construction was proposed, it is to be reviewed as part of the detailed design of the project to ensure internal noise levels are achieved. Any penetrations required through the external skin are to be sealed with an acoustic grade sealant should be used to minimise all gaps.

6.3 EXTERNAL WALLS

External wall constructions from concrete elements are acoustically acceptable. In the event that lightweight external wall constructions are proposed they are to be reviewed as part of the detailed design of the project to ensure internal noise levels are achieved. Any penetrations required through the external skin are to be sealed with an acoustic grade sealant should be used to minimise all gaps.

6.4 VENTILATION REQUIREMENTS

With respect to natural ventilation of the dwelling, the NSW Department of Planning document "Development near Busy Roads and Rail Corridors - Interim Guideline" dictates that:

"If internal noise levels with windows or doors open exceed the criteria by more than 10dB(A), 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."

With windows open, the allowable internal noise goal is permitted to be 10dB(A) higher than when the windows are closed (i.e. – allowable level in bedrooms becomes 45dB(A), and 50dB(A) in living rooms).

Given the external traffic noise levels measured on site, facades which require acoustical treatment are identified in Appendix D of this report. Further details regarding ventilation methods will be addressed in the Construction Stage.

7 RAIL INDUCED VIBRATION ASSESSMENT

Light-rail movements induce ground borne vibration that is transmitted through the subsoil. This vibration can be perceptible near to rail corridors.

7.1 ASSESSMENT CRITERIA

This section presents the applicable assessment criteria for ground borne noise and tactile vibration.

7.1.1 Ground Borne Noise

Development located adjacent to rail corridors lines must be assessed in accordance with Clause 87 of the SEPP (Infrastructure) 2007. It is noted that the requirements of this standard are achieved when assessed in accordance with the NSW Department of Planning *Development Near Rail Corridors and Busy Roads – Interim Guideline (2008)*. The section relevant to ground borne noise is as follows:

Where buildings are constructed over or adjacent to land over tunnels, ground borne noise may be present without the normal masking effect of airborne noise. In such cases, residential buildings should be designed so that the 95th percentile of train pass-bys complies with a ground borne L_{Amax} noise limit of 40dBA (daytime) or 35dBA (night-time) measured using the "slow" response time setting on a sound level meter.

Table 6 - Railway Noise Level Requirements for Ground Borne Noise

LOCATION	TIME OF DAY	Internal Ground Borne Noise Criteria $dB(A)L_{max}$ (Slow)
Living and sleeping areas	Day (7am-10pm)	40
	Night (10pm-7am)	35

7.1.2 Tactile Vibration

Human comfort is normally assessed with reference to the British Standard BS 7385 Part 2 1993 or Australian Standard AS 2670.2 1990.

The Interim Guideline references the DECCW *Assessing Vibration- A technical guideline* which recommends that habitable rooms should comply with the criteria therein which is in line with the requirements of British Standard BS 6472:1992 "Evaluation of Human Exposure to Vibration in Buildings (1Hz to 80Hz)".

British Standard BS 6472:1992 "Evaluation of Human Exposure to Vibration in Buildings (1Hz to 80Hz)" is recommended by the RIC's and SRA's Interim Guidelines for Councils "Consideration of rail noise and vibration in the planning process" as this standard includes guidance for the assessment of human response to building vibration including intermittent vibrations such as that caused by trains.

Human response to vibration has been shown to be biased at particular frequencies, which are related to the orientation of the person. This standard provides curves of equal annoyance for various orientations. These curves are applied as correction filters such that an overall weighted acceleration level is obtained. As the orientation of the resident is unknown or varying the weighting filter used is based on the combined base curve as given in ISO 2631 & Australian Standard 2670 "Evaluation of Human Exposure to Vibration and Shock in Buildings (1 to 80Hz)" which represent the worst case of the X, Y and Z axes. Filtered measurements are made in all three co-ordinate axes and the highest value axis used.

This standard assesses the annoyance of intermittent vibration by using the Vibration Dose Value (VDV). Alternatively, the VDV may be estimated by the eVDV which is derived by a simpler calculation using an empirical factor. The VDV or eVDV is calculated for the two periods of the day being the "Daytime" (6am-10pm) and "Night-time" (10pm-6am). The overall value is then compared to the levels in Table 9. For this project the aim will be for a low probability of adverse comment.

Table 7 - Vibration Dose Values (m/s^{1.75}) above which various degrees of adverse comment may be expected in residential buildings

Place	Low Probability of adverse comment	Adverse comment possible	Adverse comment probable
Residential buildings 16hr day (Daytime)	0.2 to 0.4	0.4 to 0.8	0.8 to 1.6
Residential buildings 8hr night (Night-time)	0.13	0.26	0.51

7.2 VIBRATION MEASUREMENTS

Rail vibration measurements were conducted externally at the existing 215B Anzac Parade site. Measurements were taken at a 7m distance from the kerb of Anzac Parade.

Attended light-rail vibration measurements were conducted on Tuesday 1st of November 2022 between 9am and 11am. A Svan 958 Vibration Analyser was used for the vibration measurements. The analyser was fitted with a Dytran triaxial accelerometer.

7.2.1 Tactile Vibration

The measured vibration levels, duration of pass-by and the number of rail movements per hour were used to determine the overall vibration dose (VDV) at the proposed development for both daytime and night-time periods. The results are presented the table below.

Table 8 - Vibration Dose Values

Time Period	Calculated VDV m/s^{1.75}	Criteria VDV m/s^{1.75}	Compliance
Day (7am – 10pm)	<0.1	0.2 to 0.4	Yes
Night (10pm -7am)	<0.1	0.13	Yes

The Vibration Dose Values were found to be less than the “low probability of adverse comment” criteria (the most stringent criteria) for the subject site.

The results above indicate that vibration isolation treatment is not required to comply with tactile vibration requirements.

7.2.2 Structure Borne Noise Measurements

As noted in section 3.6.2 of the *Development Near rail Corridors and Busy Roads – Interim Guideline*, structure borne noise is not typically an issue for developments adjacent to surface rail lines - development near tunnels is more commonly a problem. The reason for this is for above ground rail lines, the airborne noise from the rail movement will be higher than the structure borne noise and will therefore mask the structure borne component of the noise.

8 NOISE EMISSION ASSESSMENT

8.1 MEASURED BACKGROUND NOISE LEVELS

Background noise levels have been presented in Section 4.1 of this report. The measured background noise levels are summarised in the following table:

Table 9 – Rating Background Noise Level Summary

Location	Time of day	Rating Background Noise Level dB(A) _{L90(Period)}
215A Anzac Parade, Kensington (Rear of site)	Day (7am – 6pm)	49
	Evening (6pm – 10pm)	48
	Night (10pm – 7am)	44

8.2 NOISE EMISSION CRITERIA

The noise emissions from the project site shall comply with the requirements of the following:

- The Randwick City Council 'Kensington and Kingsford Town Centres' DCP, 2020
- NSW EPA Noise Policy for Industry (NPfI) 2017

8.2.1 The Randwick City Council 'Kensington and Kingsford Town Centres' . DCP, 2020

We note that the Randwick City Council DCP provides the following advice with respect to noise emissions from the proposed development site:

- i) The design of the building is to address the requirements of clause d) with respect to noise from licensed premises and noise/vibration from mechanical plant and ventilation ducts associated with plant and equipment (including kitchen exhausts) serving the commercial spaces.

j) The design of new buildings or substantial alterations to existing buildings are to take into account the following noise conditions that would apply to each commercial tenancy in the development:

i) Noise from commercial plant and the use of the premises when assessed as an $L_{Aeq, 15 \text{ minute}}$ must not exceed the $L_{A90, 15 \text{ minute}}$ background noise level by more the 3dB when assessed inside any habitable room of any affected residence or noise sensitive commercial premises when in use.

ii) Noise from the provision of entertainment and patron noise when assessed as an LA_{10^*} enters any residential use through and internal to internal transmission path is not to exceed the existing internal $L_{A90, 15 \text{ minute}}$ level in any Octave Band Centre Frequency (31.5 Hz to 8 kHz inclusive) when assessed within a habitable room at any affected residential use within the mixed use development between the hours of 7am and midnight, and is to be inaudible between midnight and 7am.

iii) For any gymnasiums or similar facilities in mixed use development the above noise conditions would apply noting that the noise limits include the creation of noise as a result of any vibration induced into the building structure is to be inaudible in any residence between the hours of 10pm and 7am the following day.

iv) The noise limits in this clause applies with doors and windows closed and mechanical ventilation operating.

- k) A noise and vibration assessment report, prepared by an appropriately qualified acoustical consultant/engineer, is to be submitted with DAs for new buildings or substantial alterations to existing buildings that include residential units or occupancies in student housing, boarding houses, serviced apartments, hotel and motel accommodation and any other sensitive land uses, addressing appropriate measures to minimise potential future noise and vibration impacts permissible in the B2 Local Centre Zone including amplified music associated with restaurants, small bars and cafes, noise from light rail movements. This assessment is to:
- i) be prepared having regard to the NSW Environmental Protection Authority's Noise Policy for Industry, the DECC (EPA) Assessing Vibration, a Technical Guideline, and relevant Australian Standards pertaining to noise measurements and the noise conditions identified above
 - ii) incorporate an assessment of external noise sources and internal noise sources (such as mechanical ventilation) with respect to the criteria specified in b), c) and d); and
- iii) detail the design measures needed to achieve the required internal acoustic amenity specified in b), c) and d).

Note: The noise and vibration assessment report prepared at the DA stage will identify a noise design base for the entire mixed use building and would become the benchmark for subsequent assessments of the entire mixed use building (or existing buildings subject to substantial alterations) and would become the benchmark for subsequent acoustic assessments. Any individual Das for commercial occupation within the mixed-use building or the altered existing building for an accompanying acoustic assessment is required to rely on the acoustic benchmark described above.

- iv) To maintain the intent of the acoustic objectives, prior to the issue of a Construction Certificate or an Occupation Certificate, a certificate of acoustic compliance confirming compliance with the specified noise limits referred to above and the noise design base for the mixed use building or alterations to existing buildings is to be submitted to Council.

Commercial Uses

- l) The assessment for consideration of the future development within the town centre is to also consider an external noise external target of 70 dB(A) for general noise and an L10* level of 80 dB(A)/ 88 dB(C) when assessed at 1 metre from the future development, noting that future venues where entertainment is to be provided will be subject to the standard LA10 Condition in relation to the operation of those premises.
- m) The site and building layout for new development in the town centre is to maximise acoustic privacy by providing adequate building separation within the development and from neighbouring buildings (refer 3.1.6: Building Separation).

Note 1: The noise and vibration report prepared at the DA stage will identify a noise design base for the entire mixed use building and would become the benchmark for subsequent acoustic assessments of that building.

Note 2: To maintain the intent of the acoustic objectives prior to the issue of a Construction Certificate or an Occupation Certificate there will be a requirement for a certificate of acoustic compliance confirming compliance with the specified noise limits referred to above and the noise design base for the mixed use building.

8.2.2 NSW EPA Noise Policy for Industry (NPfI) 2017

The NPfI provides guidelines for assessing noise impacts from developments. The recommended assessment objectives vary depending on the potentially affected receivers, the time of day, and the type of noise source. The NPfI has two requirements, both of which will need to be complied with, namely an amenity criterion and an intrusiveness criterion.

Noise levels are to be assessed at the property boundary or nearby dwelling, or at the balcony or façade of an apartment.

8.2.2.1 Intrusiveness Criterion

The guideline is intended to limit the audibility of noise emissions at residential receivers and requires that noise emissions measured using the L_{eq} descriptor not exceed the background noise level by more than 5 dB(A). Background noise levels adopted are presented in Table 5. Noise emissions from the site should comply with the noise levels presented below when measured at the nearest property boundary.

Table 10 – Intrusiveness Noise Emission Goals

Location	Period/Time	Background Noise Level dB(A) L_{90}	Intrusiveness Noise Emission Goal dB(A) $L_{eq(15min)}$ Background + 5dB
Nearby Residences	Day (7am-6pm)	49	54
	Evening(6pm-10pm)	48	53
	Night(10pm-7am)	44	49

8.2.3 Project Amenity Criterion

The guideline is intended to limit the absolute noise level from all noise sources to a level that is consistent with the general environment.

The EPA's NPfI sets out acceptable noise levels for various localities. The recommended noise amenity area is based upon the measured background noise levels at the sensitive receiver. Based on the measured background noise levels detailed in Table , the Noise Policy for Industry suggests the adoption of the 'urban' categorisation.

The NPfI requires project amenity noise levels to be calculated in the following manner;

$$L_{Aeq,15min} = \text{Recommended Amenity Noise Level} - 5 \text{ dB(A)} + 3 \text{ dB(A)}$$

The amenity levels appropriate for the receivers surrounding the project site are presented in the following table:

Table 11 – EPA Amenity Noise Levels

Type of Receiver	Time of day	Recommended Noise Level dB(A) $L_{eq}(\text{period})$	Project Amenity Noise Level dB(A) $L_{eq}(15 \text{ minute})$
Residential – Urban	Day	60	58
	Evening	50	48
	Night	45	43
Commercial	When in use	65	63
School Classroom - Internal	Noisiest 1-hour period when in use	35	35

8.2.4 Sleep Arousal Criteria

The Noise Policy for Industry recommends the following noise limits to mitigate sleeping disturbance:

Where the subject development / premises night -time noise levels at a residential location exceed:

- *$L_{eq,15min}$ 40 dB(A) or the prevailing RBL plus 5 dB, whichever is the greater, and/or*
- *L_{AFmax} 52 dB(A) or the prevailing RBL plus 15 dB, whichever is the greater, a detailed maximum noise level even assessment should be undertaken.*

Table 12 – Sleep Arousal Criteria for Residential Receivers

Receiver	Rating Background Noise Level (Night) dB(A) L_{90}	Emergence Level
Residences Surrounding Site Night (10pm – 7am)	44	49 dB(A) $L_{eq, 15min}$; 59 dB(A) L_{Fmax}

8.2.5 Summarised Noise Emission Criteria

Applicable noise limits are bolded in the following table:

Table 13 –Noise Emission Criteria (Residents Surrounding Project Site)

Receiver	Time Period	Assessment Background Noise Level dB(A)L₉₀	Project Amenity Criteria dB(A) L_{eq}	Intrusiveness Criteria L_{eq}(15min)	NPI Criteria for Sleep Disturbance
Residential Receivers	Day	49	58	54	N/A
	Evening	48	48	53	N/A
	Night	44	43	49	49 dB(A)L_{eq, 15min}; 59 dB(A)L_{Fmax}
Commercial Receiver	When in Use	-	63	-	-
School Classroom (Internal)	Noisiest 1-hour period when in use	-	35	-	-

8.3 NOISE EMISSION FROM MECHANICAL PLANT

Detailed plant selection and location has not been undertaken at this stage. Satisfactory levels will be achievable through appropriate plant selection, location and if necessary, standard acoustic treatments such as duct lining, acoustic silencers and enclosures.

Noise emissions from all mechanical services to the closest residential receiver should comply with the requirements of Section 7.2.

Detailed acoustic review should be undertaken at CC stage to determine acoustic treatments to control noise emissions to satisfactory levels.

8.4 NOISE EMISSIONS FROM COMMERCIAL TENANCY

The primary sources of noise generated by commercial uses are likely to be outdoor patron noise associated with food and beverage outlets. It is expected that the retail/commercial tenancy would be subject to a separate development application, at which time the specific measures required to control noise emissions could be addressed.

Key acoustic considerations for the proposed tenancies are detailed below.

- Retail outlets are expected to have a minimal impact on surrounding receivers.
- Licensed tenancies (especially those which are proposed to operate during the night time period) will likely have a higher potential acoustic impact, pending their capacity and siting. Tenancies of this nature are expected to require a noise impact assessment to determine appropriate management controls and/or treatments to mitigate noise impacts to nearby residents of the development.

Notwithstanding the above, it is recommended that any proposed retail/commercial/hospitality uses within the site be subject to a separate development application once specific uses and operators have been determined. At this time, individual tenancies should demonstrate that noise emission requirements are able to be met, and the specific management controls/building treatments which may be implemented to ensure compliance.

8.5 NOISE EMISIONS FROM COMMUNAL GYM

A communal gym for the use of occupants within the student accommodation portion of the development is proposed on level 2 of Building A – general commercial use is not currently proposed. Whilst specific layouts/proposed equipment to be contained within the gym are not yet known, operation is likely to involve:

- 24 hour access for students.
- Background music only within the space.
- Use of both fixed/pin loaded equipment, as well as free weights.

8.5.1 Noise Emission Requirements

The following noise emission requirements have been requested by Council to be incorporated:

Commercial plant noise criteria

Noise from commercial plant and industrial development must not exceed a project amenity/intrusiveness noise level or maximum noise level in accordance with relevant requirements of the NSW EPA Noise Policy for Industry 2017 (NPfI).

Note: The stricter of the amenity/intrusiveness criteria becomes the prevailing criteria for the development.

Background noise monitoring must be carried out in accordance with the long-term methodology in Fact Sheet B of the NPfI unless otherwise agreed by Councils Planning Manager.

Commercial plant is limited to heating, ventilation, air conditioning, refrigeration and energy generation equipment.

In addition, noise from commercial plant, when assessed as an LAeq, 15 min must not exceed the LA90, 15 min background noise level by more than 3dB when assessed inside any habitable room of any affected residence or noise-sensitive commercial premises when in use. The noise level and the background noise level shall both be measured with all external doors and windows of the affected residence closed.

Background noise measurements must not include noise from the development but may include noise from necessary ventilation at the affected premise.

Entertainment noise criteria

The LA10, 15 minute noise level emitted from the use must not exceed the background noise level (LA90, 15minute) in any Octave Band Centre Frequency (31.5 Hz to 8 kHz inclusive) by more than 5dB between the hours of 7.00am and 12.00 midnight when assessed at the boundary of any affected residence.

The LA10, 15 minute noise level emitted from the use must not exceed the background noise level (LA90, 15 minute) in any Octave Band Centre Frequency (31.5 Hz to 8 kHz inclusive) between the hours of 12.00 midnight and 7.00am when assessed at the boundary of any affected residence.

Noise from the use when assessed as an LA10, 15 minute enters any residential use through an internal-to-internal transmission path is not to exceed the existing internal LA90, 15 minute (from external sources excluding the use) in any Octave Band Centre Frequency (31.5 Hz to 8 kHz inclusive) when assessed within a habitable room at any affected residential use between the hours of 7am and 12midnight.

Noise from the use must not be audible within any habitable room in any residential use between the hours of 12.00 midnight and 7.00am.

Inaudibility should be taken as the existing internal LA90, 15 minute (from external sources excluding the use) minus 10dB in any octave band (reference frequency 31.5 Hz to 8 kHz inclusive) inside a habitable room of any affected residential accommodation.

The LA10, 15 minute noise level emitted from the use must not exceed the background noise level (LA90, 15 minute) in any Octave Band Centre Frequency (31.5 Hz to 8 kHz inclusive) by more than 3dB when assessed indoors at any affected commercial premises.

Note: The LA10, 15 minute noise level emitted from the use is as per the definition in the Australian Standard AS1055-2018 Acoustics – Description and measurement of environmental noise.

The background noise level LA90, 15 minute is to be determined in the absence of noise emitted by the use and be representative of the noise sensitive receiver.

Background noise monitoring must be carried out in accordance with the long- term methodology in Fact Sheet B of the NPfl unless otherwise agreed by Council's Planning Manager.

Where the LA10, 15 minute noise level is below the threshold of hearing, Tf at any Octave Band Centre Frequency as defined in Table 1 of International Standard ISO 226 : 2003- Normal Equal-Loudness-Level Contours then the value of Tf corresponding to that Octave Band Centre Frequency shall be used instead.

Structure borne noise criteria

Structure borne noise emanating from the use of the premises is not to exceed the following criterion (when doors and windows are closed:

Commercial premises - LA1, Slow 15 minute \leq LA90, 15 minute +3 dB(A)

Residential premises - LA1, Slow 15 minute \leq LA90, 15 minute + 0 dB(A)

With respect to the above, we note the following:

- Commercial plant noise criteria is made with reference to the Noise Policy for Industry, detailed in Section 8.2.2 / Table 13.
- The entertainment noise criteria is that typically applied to hospitality venues, such as licensed premises. Notwithstanding, this can be applied to use of the gym. Additionally, requirements are provided with respect to internal audibility and background noise levels. Whilst this can be incorporated, determination of future internal noise levels is not possible during the development application phase, prior to construction.
- The structure borne noise criteria is primarily related to impact noise from use of gym equipment, and in particular free weights. The requested criteria is set in relation to the internal background noise level. Whilst this can be incorporated, determination of future internal noise levels is not possible during the development application phase, prior to construction.

8.5.2 Assessment of Gym Operations

With respect to the operation of the gym tenancy, compliance with the nominated criteria is expected to all external receivers (i.e. those outside of the development site) – Any acoustic impacts would be expected to occupants within the development itself.

With respect to internal/internal noise transfer this may be through either airborne noise through concrete slabs, or impact/structure borne noise. Whilst the concrete slab will provide a high level of performance on its own, further control of noise transmission is possible through the use of acoustic ceilings and resilient flooring – incorporation of these elements is common in mixed use design.

For other buildings within the development, airborne noise transfer through the façade should be considered. Within the gym, only background music is proposed. Patron noise from use of the gym itself is not expected to be significant, however can similarly be mitigated. Acoustic design of the façade, incorporation of acoustic seals to operable elements, and the closure of external elements (either at all times, or only noise sensitive times such as night) will be able to effectively mitigate acoustic impacts.

In light of the above, the following is recommended to be incorporated into the construction and management of the gym tenancy:

- Installation of isolated flooring/machinery to prevent structure borne (impact) noise to student rooms directly above. In this regard, we note the following indicative treatments:
 - Rowing machines and similar will to be installed on isolation mounts;
 - Pin loaded weights machines to have spring isolation incorporated;
 - Free weights areas to have multilayer rubber or spring isolation flooring;
- Installation of additional acoustically rated ceilings below the concrete slab where required;
- Installation of acoustic seals to operable elements of the façade (e.g. doors to outdoor terraces), and closure of these where necessary to control noise. In particular, it is anticipated that this may be required during the night time period.
- The limiting of amplified music levels within the space. In this respect, background music only is proposed, nominally limited to 70 dB(A) within the space.
- Management of gym activities and patrons to control noise and vibration emissions. In this regard, techniques which may be incorporated include:
 - Management methods to be adopted to prevent excessive noise, such as restrictions on the height of weight drops.
 - Limitations on the maximum weight of free weights in particular.
 - Complaints handling mechanisms.

Alternatives to the above are likely to be acceptable, and are to be reviewed during the detailed design and construction stages of the project as additional information on both operation and construction techniques are available.

9 CONCLUSION

This report presents an acoustic assessment of noise impacts associated with the mixed-use development to be located at 215B Anzac Parade, Kensington.

Provided that the complying constructions presented in Section 6 are implemented, internal noise levels for the development will comply with the acoustic requirements of the following documents:

- The Randwick City Council '*Kensington and Kingsford Town Centres*' DCP, 2020.
- Australian and New Zealand AS/NZS 2107:2016 'Recommended design sound levels and reverberation times for building interiors'.
- NSW Department of Planning – '*Developments near Rail Corridors or Busy Roads – Interim Guideline*'.
- NSW Department of Planning – '*State Environmental Planning Policy (SEPP) (Transport and Infrastructure) 2021*'.

External noise emissions criteria have been established in this report to satisfy the requirements from the following documents:

- The Randwick City Council '*Kensington and Kingsford Town Centres*' DCP, 2020
- NSW EPA Noise Policy for Industry (NPfI) 2017

Detailed acoustic control measures for the plant servicing the proposed development will be determined at CC stage.

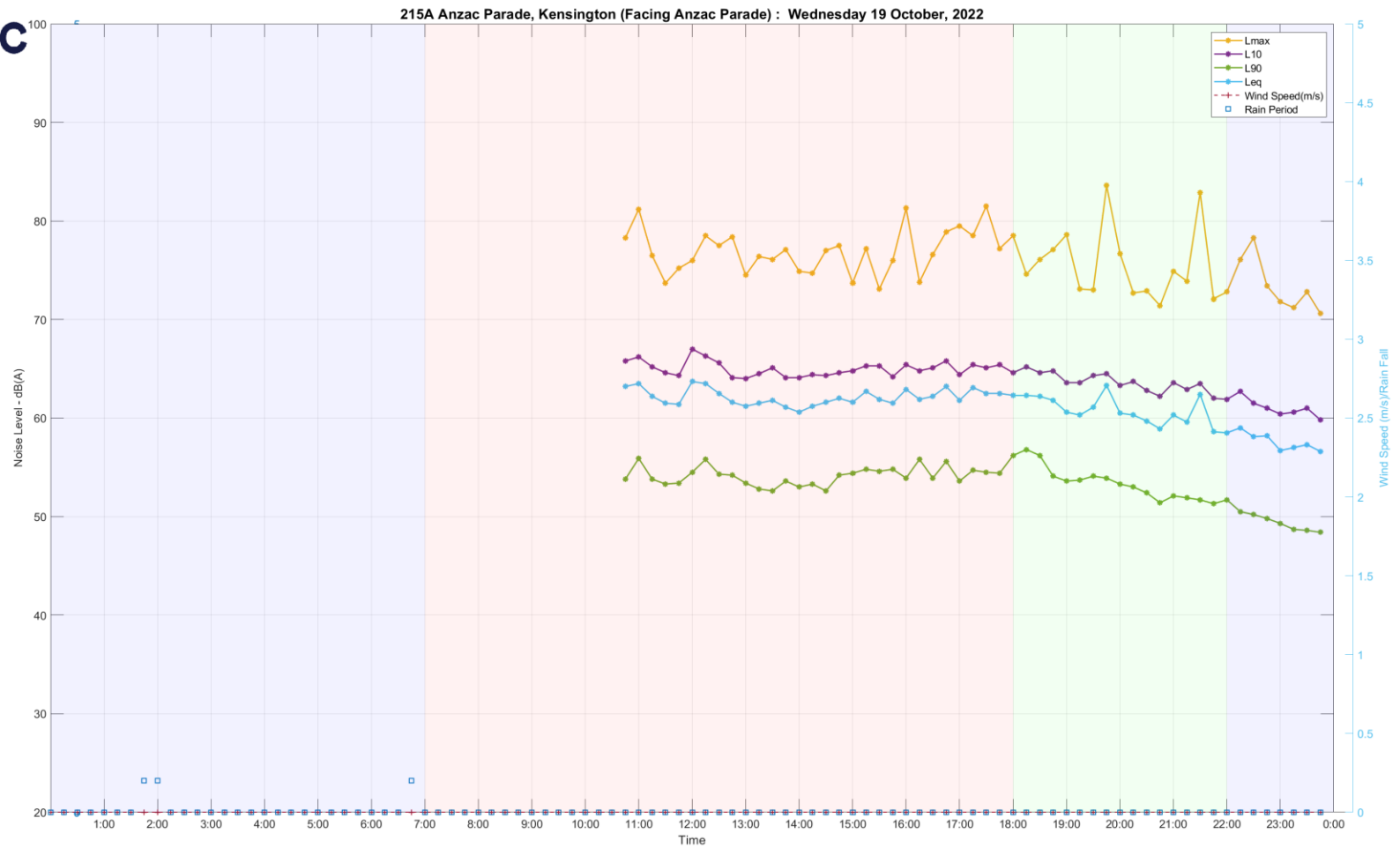
We trust this information is satisfactory. Please contact us should you have any further queries.

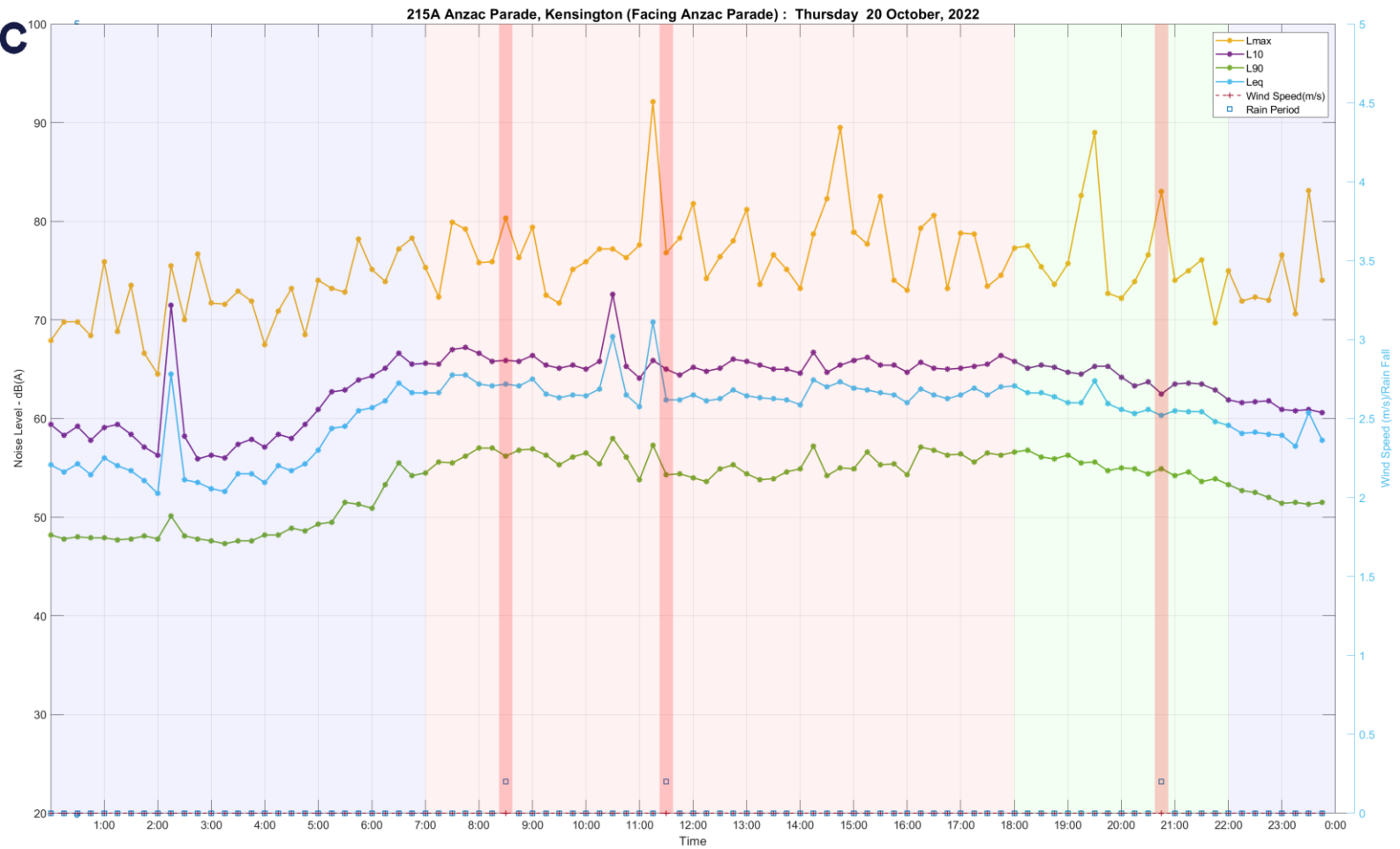
Yours faithfully,

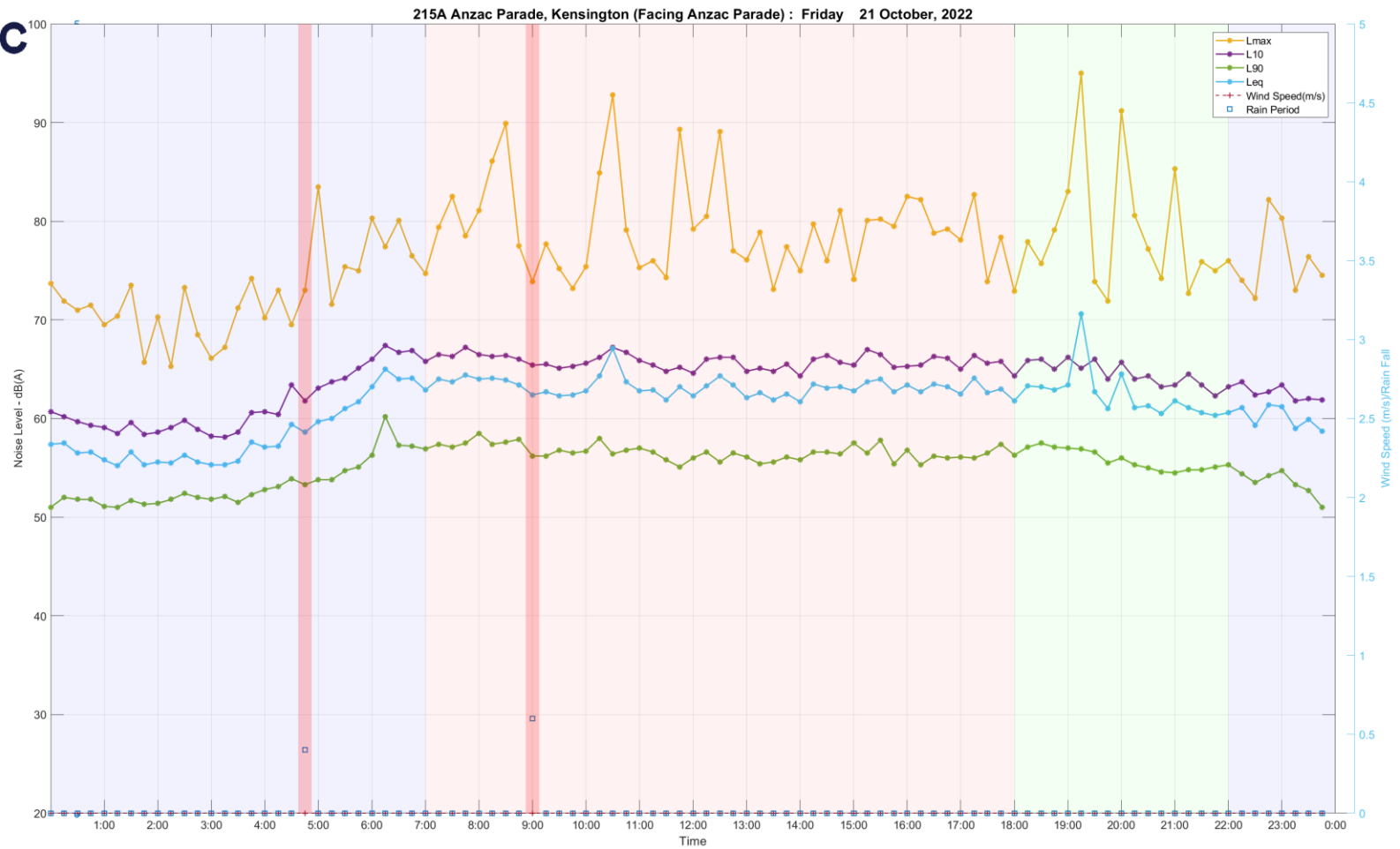


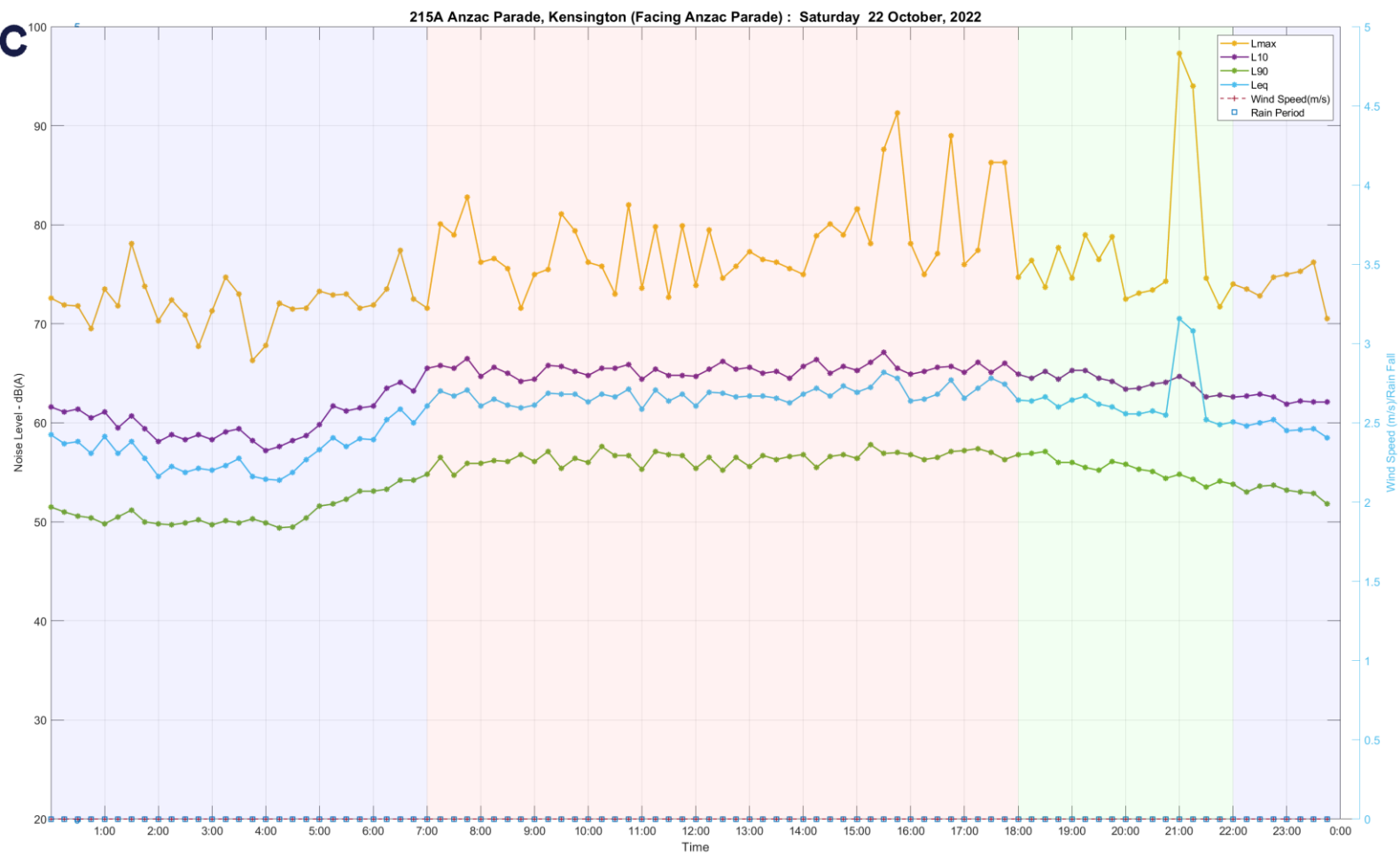
Acoustic Logic Pty Ltd
Bruno Lobato Da Jornada

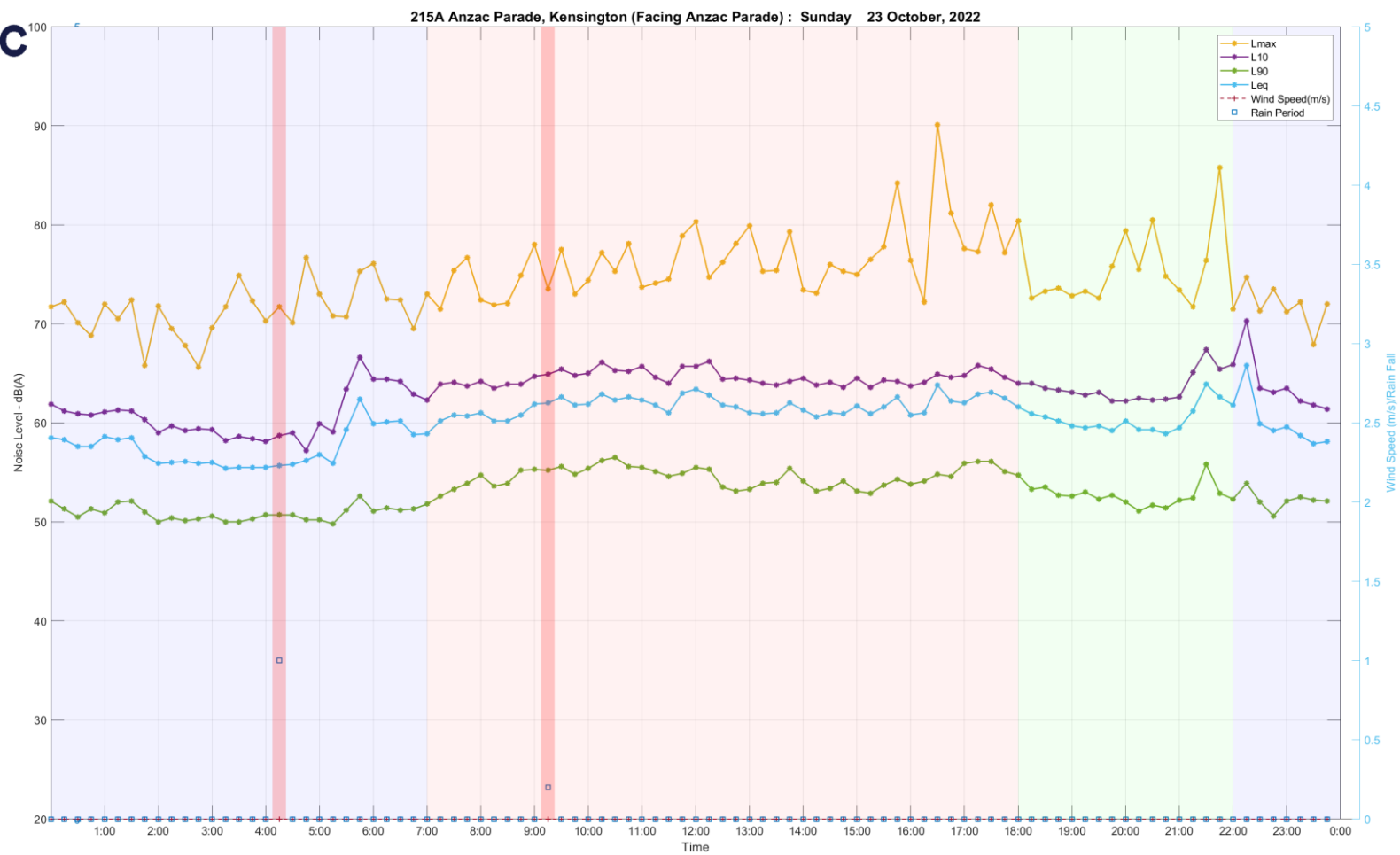
APPENDIX A – TRAFFIC LOGGER DATA

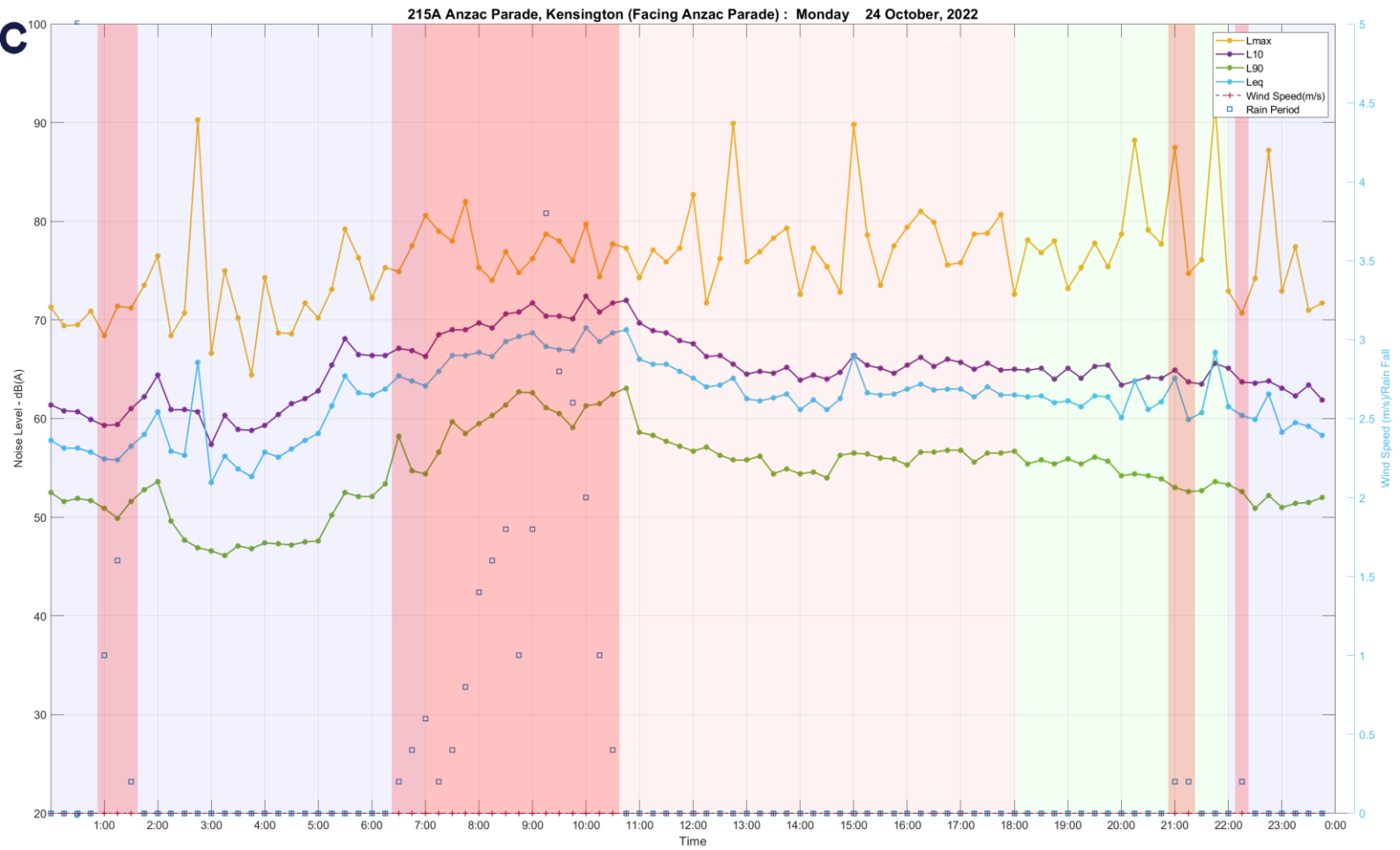


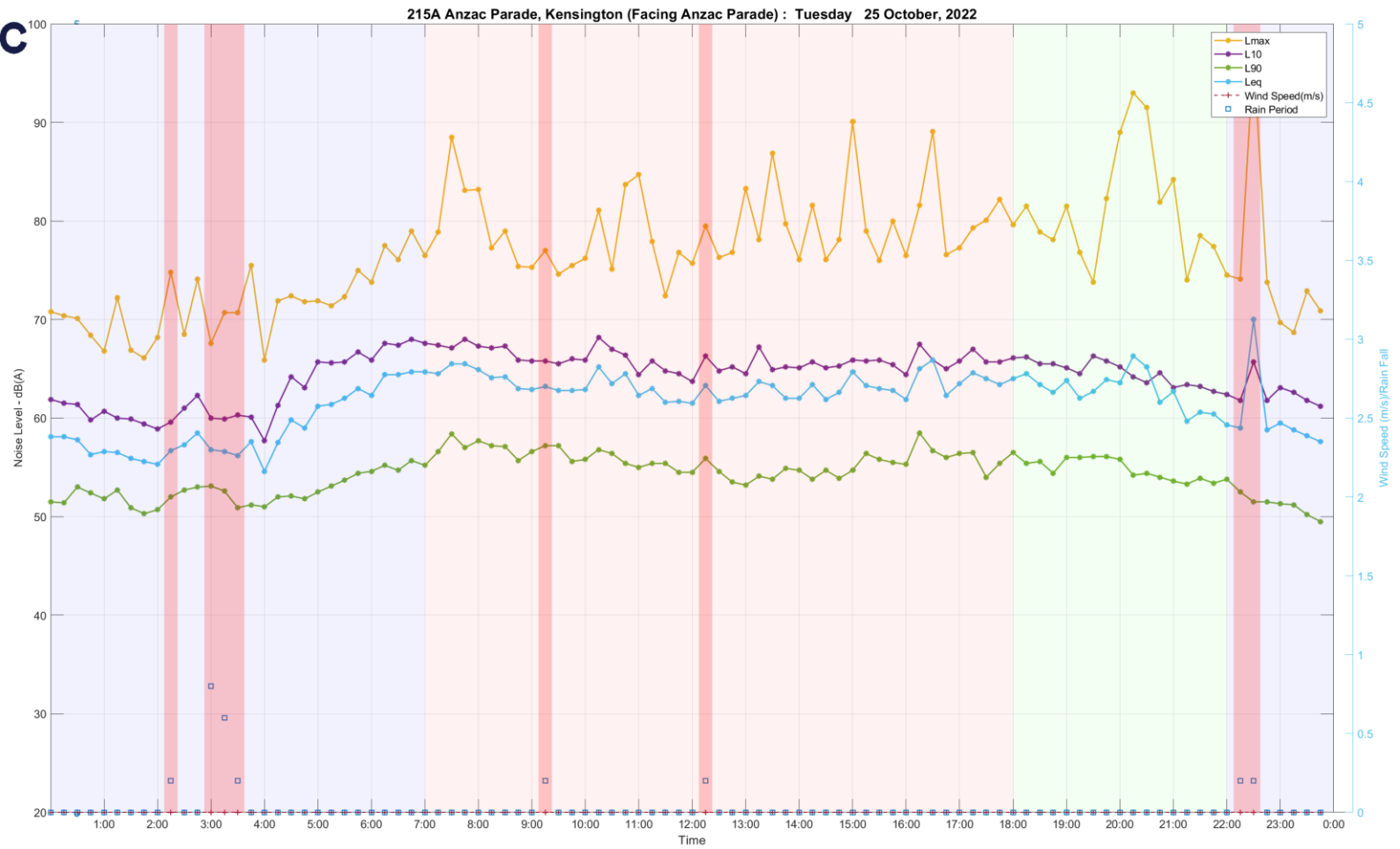


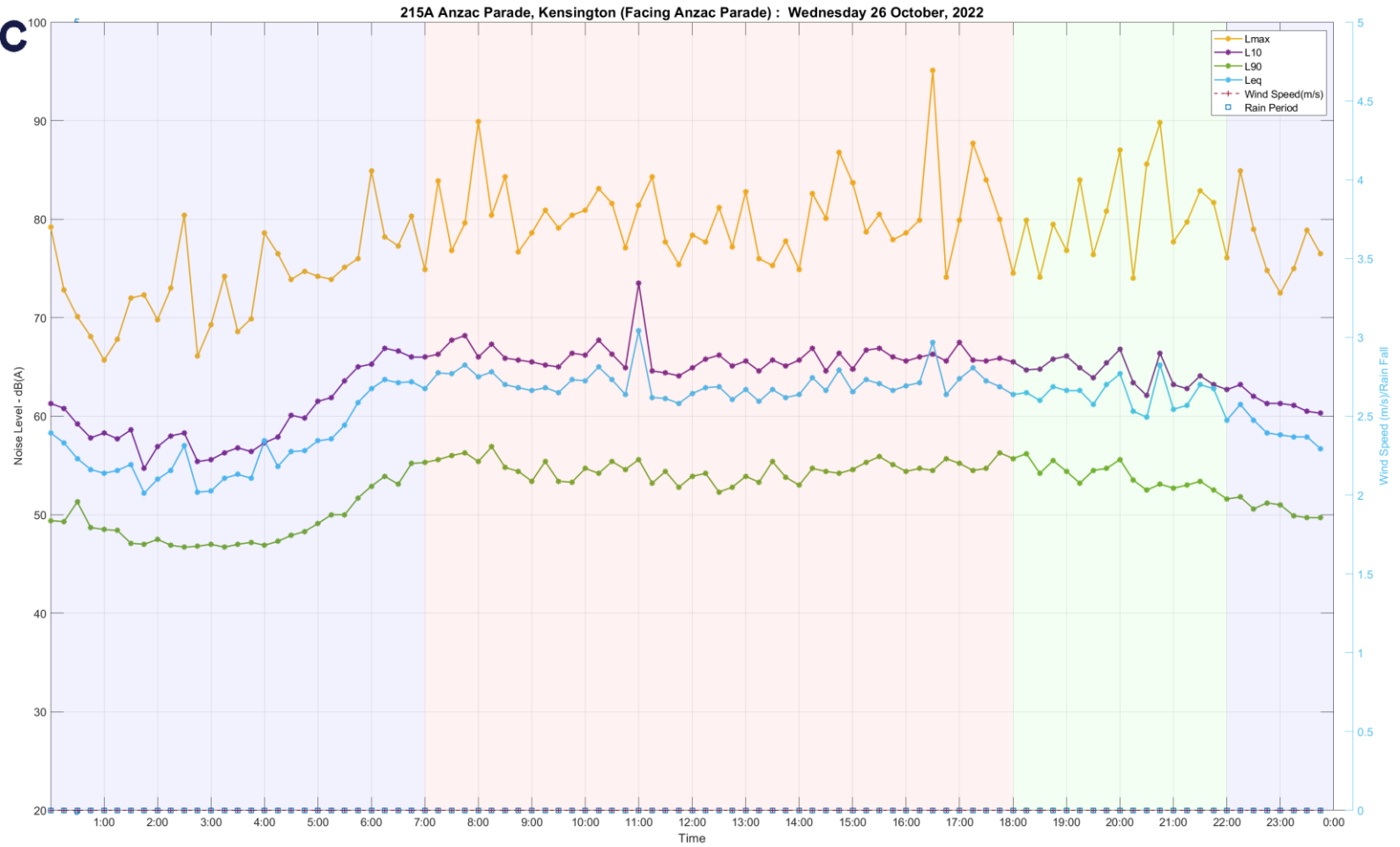


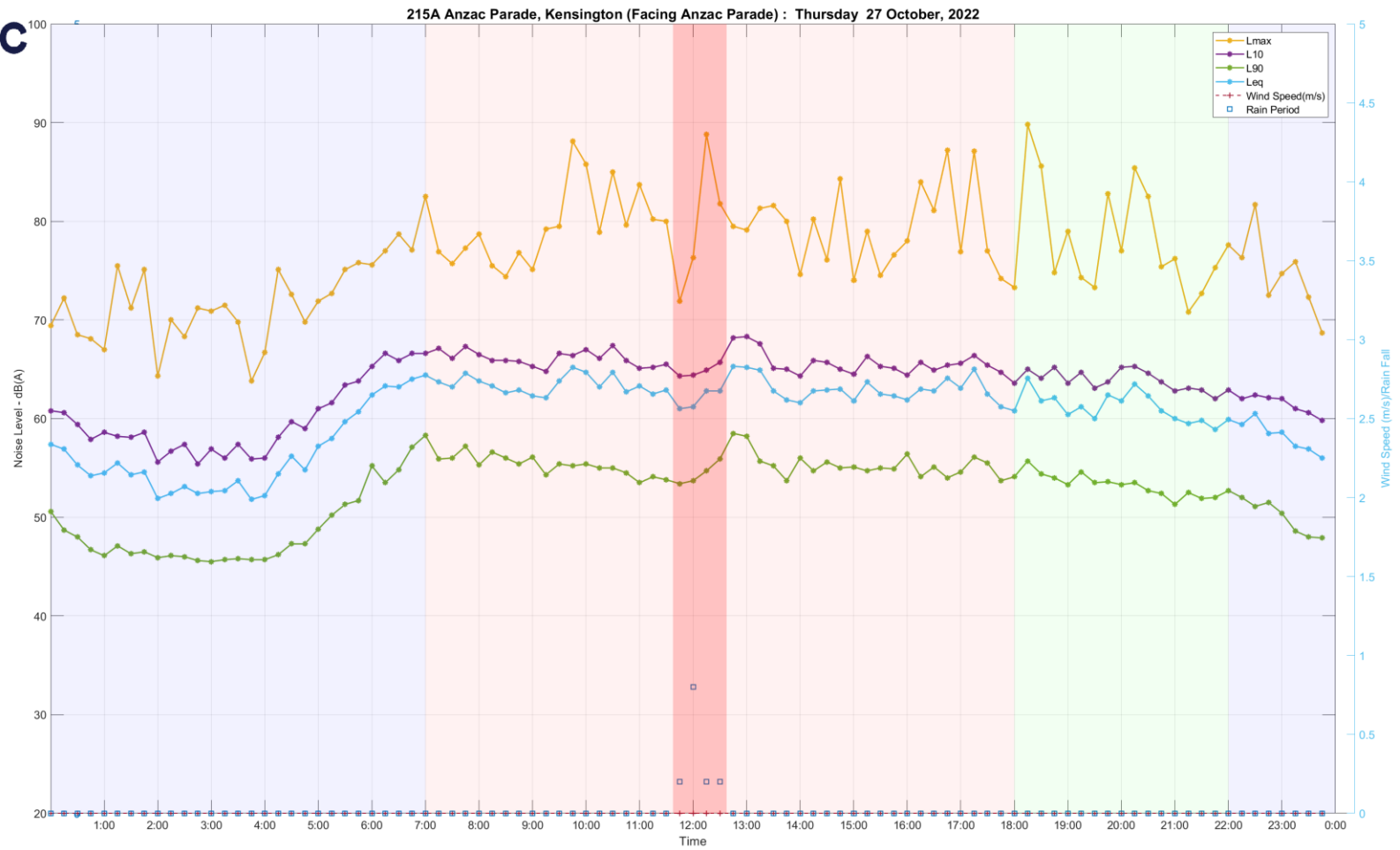


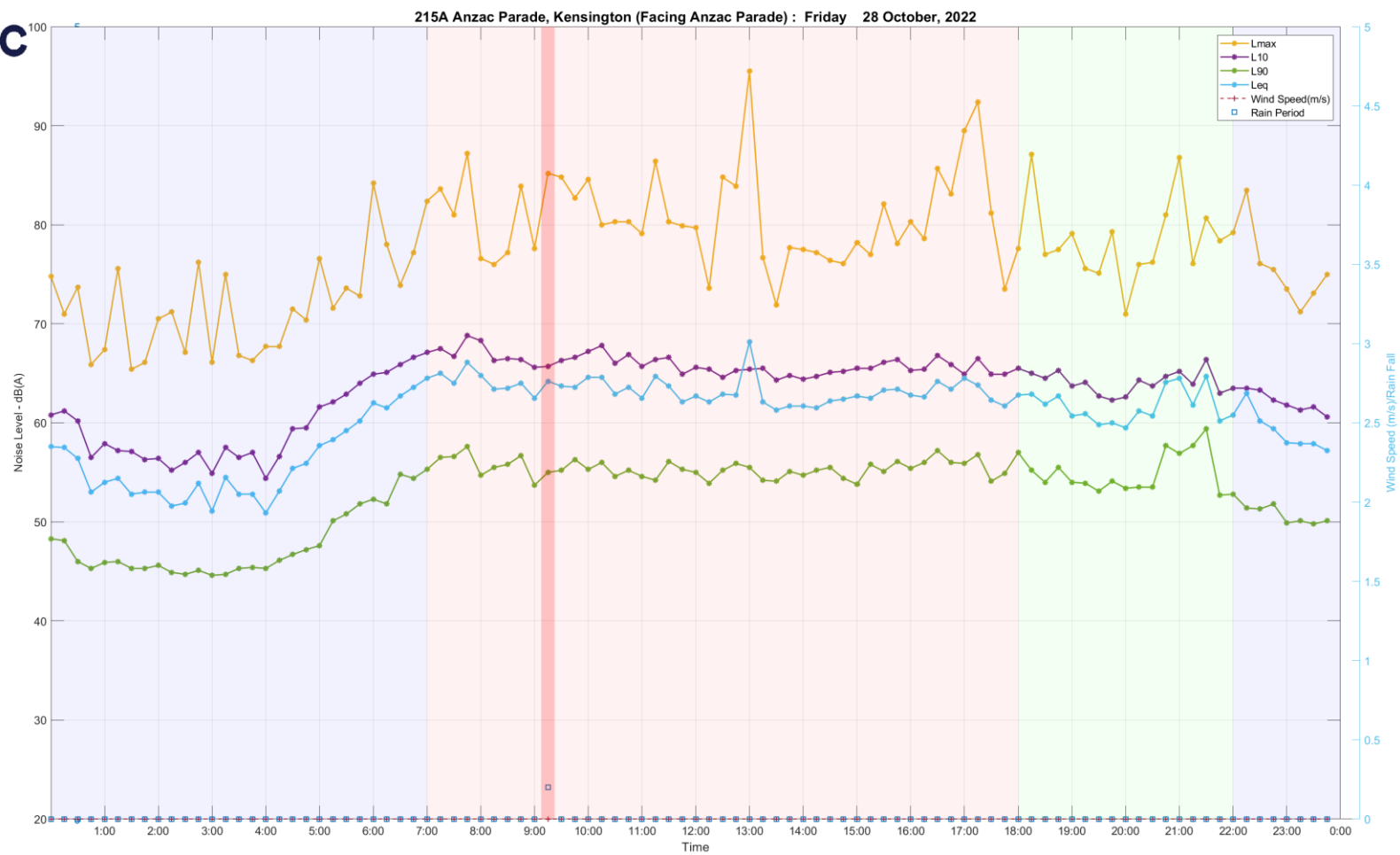


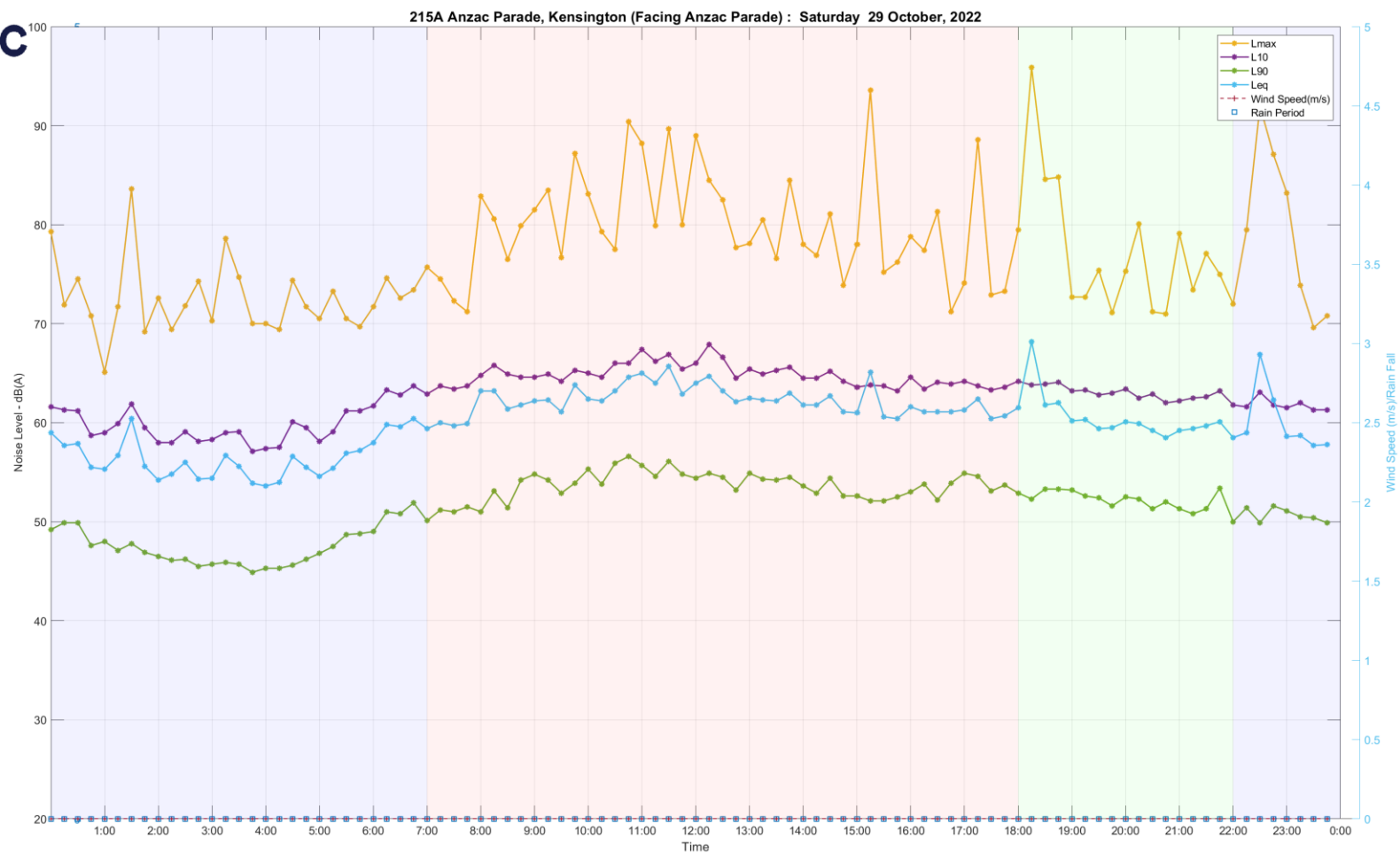


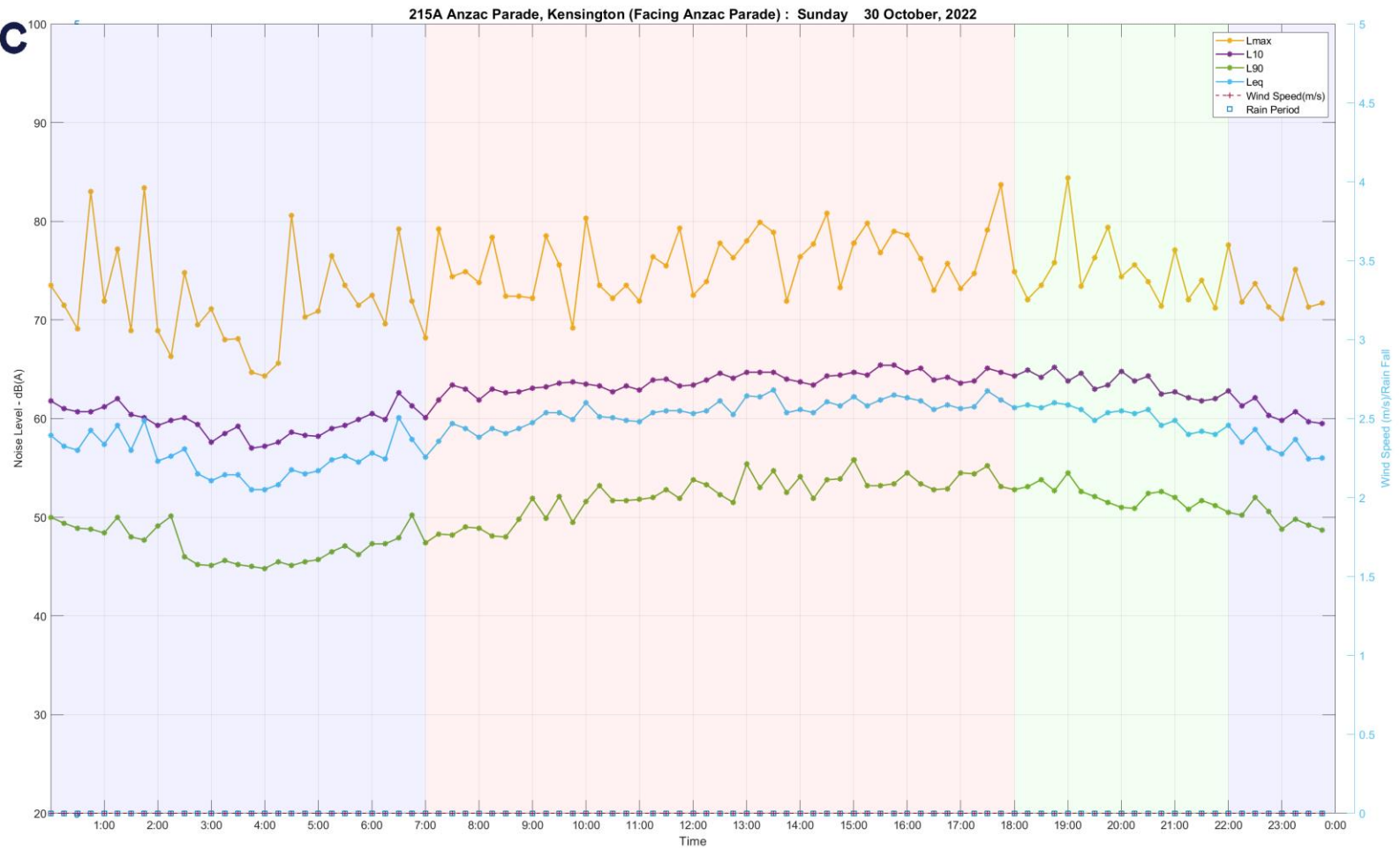


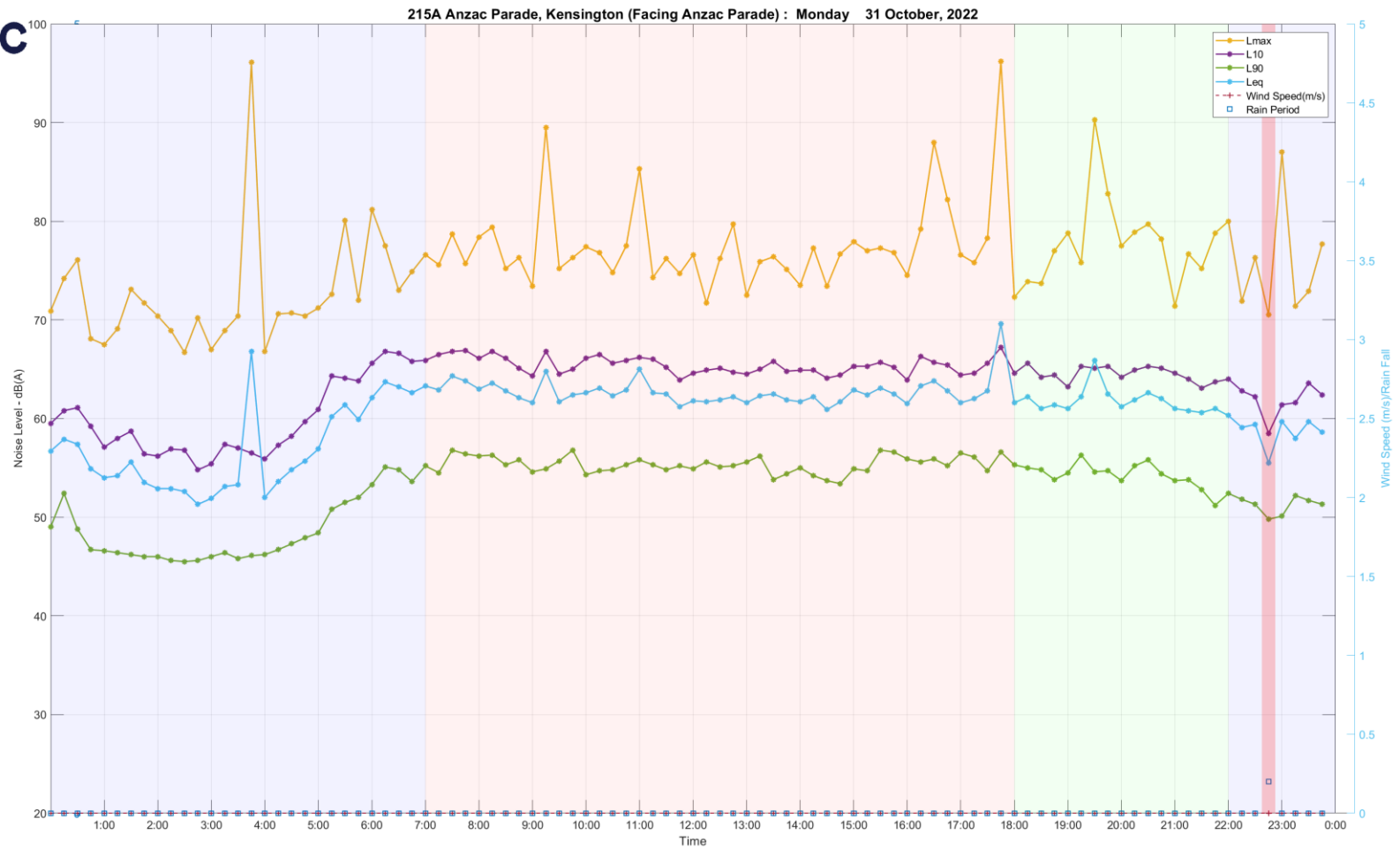


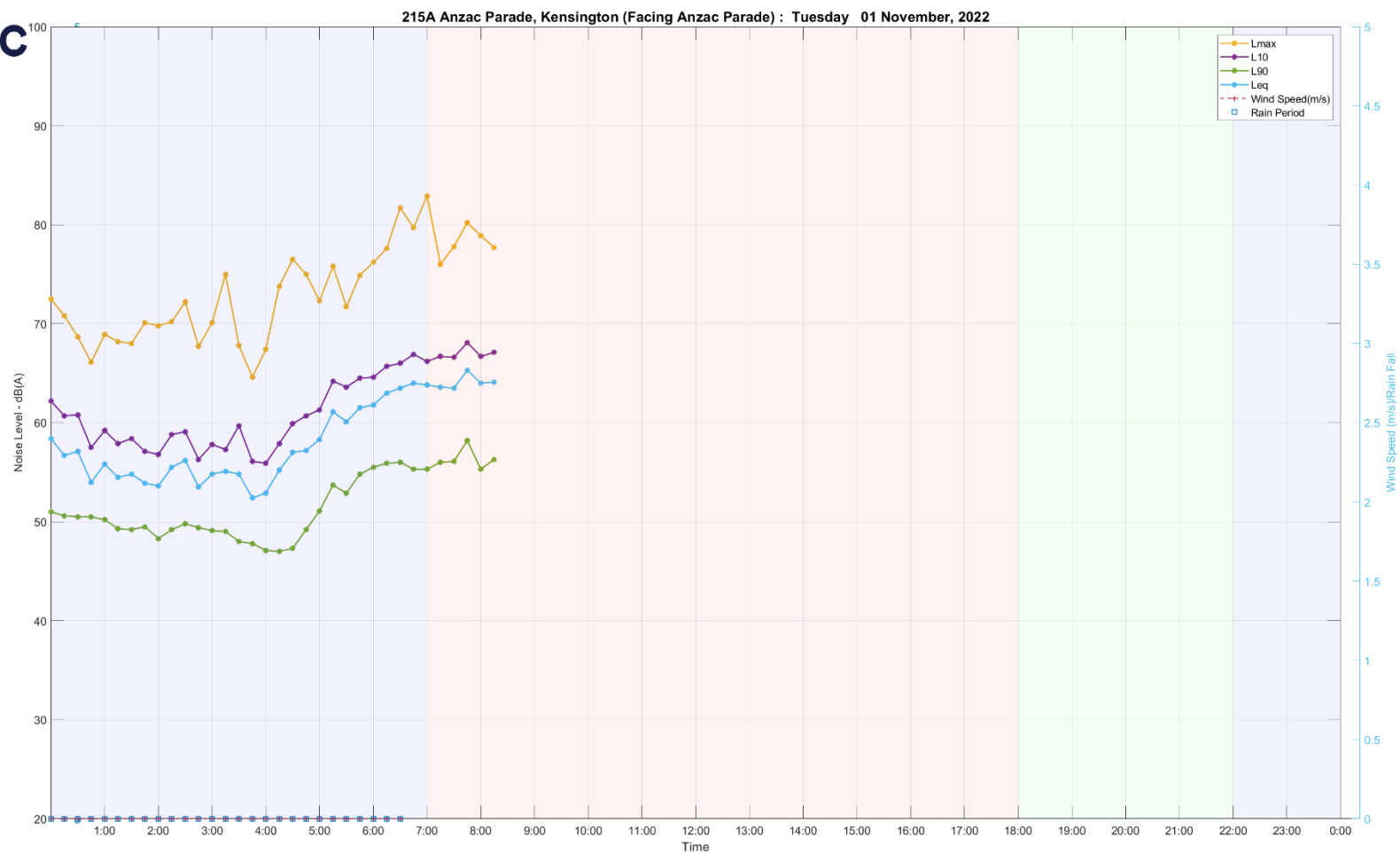






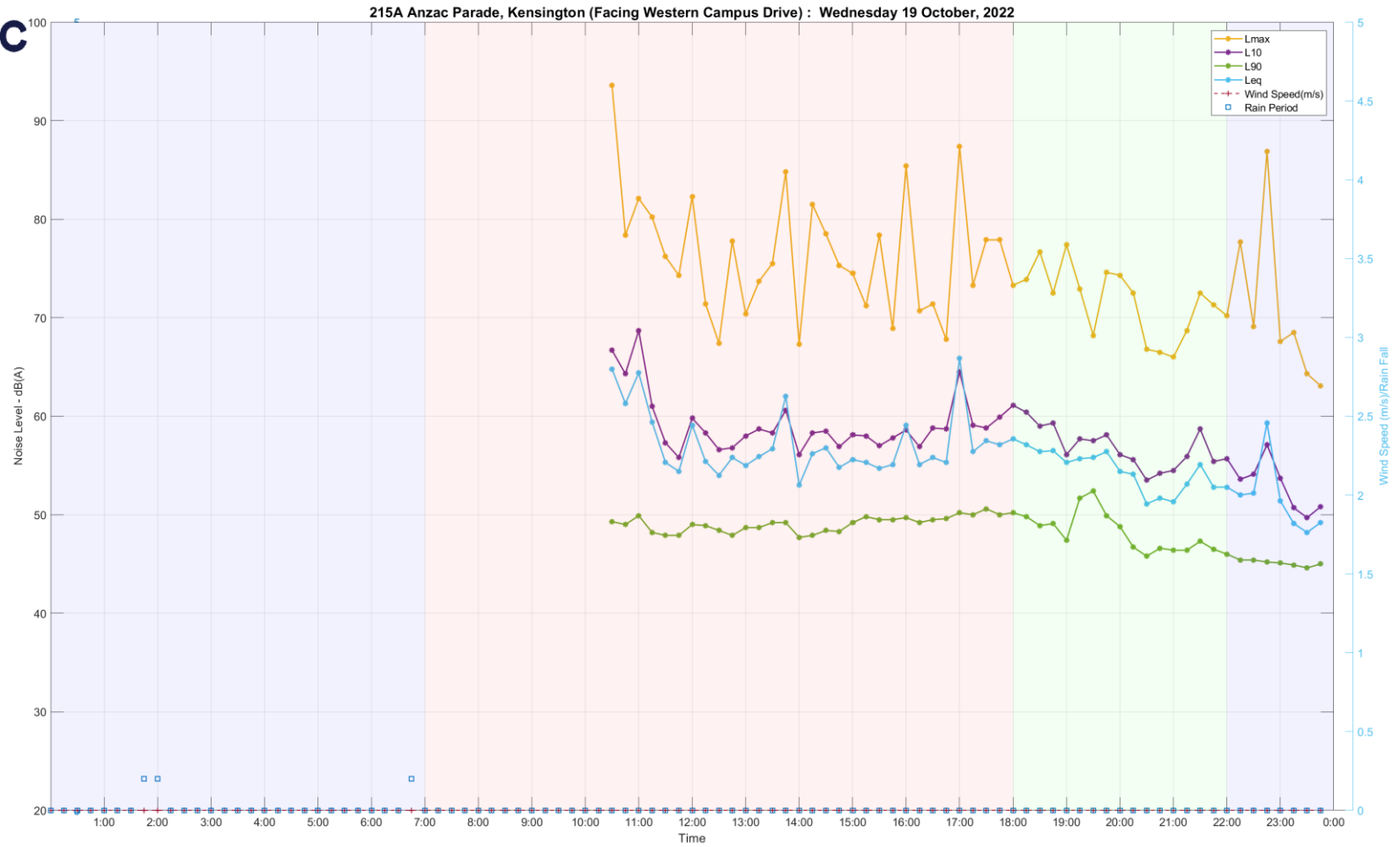


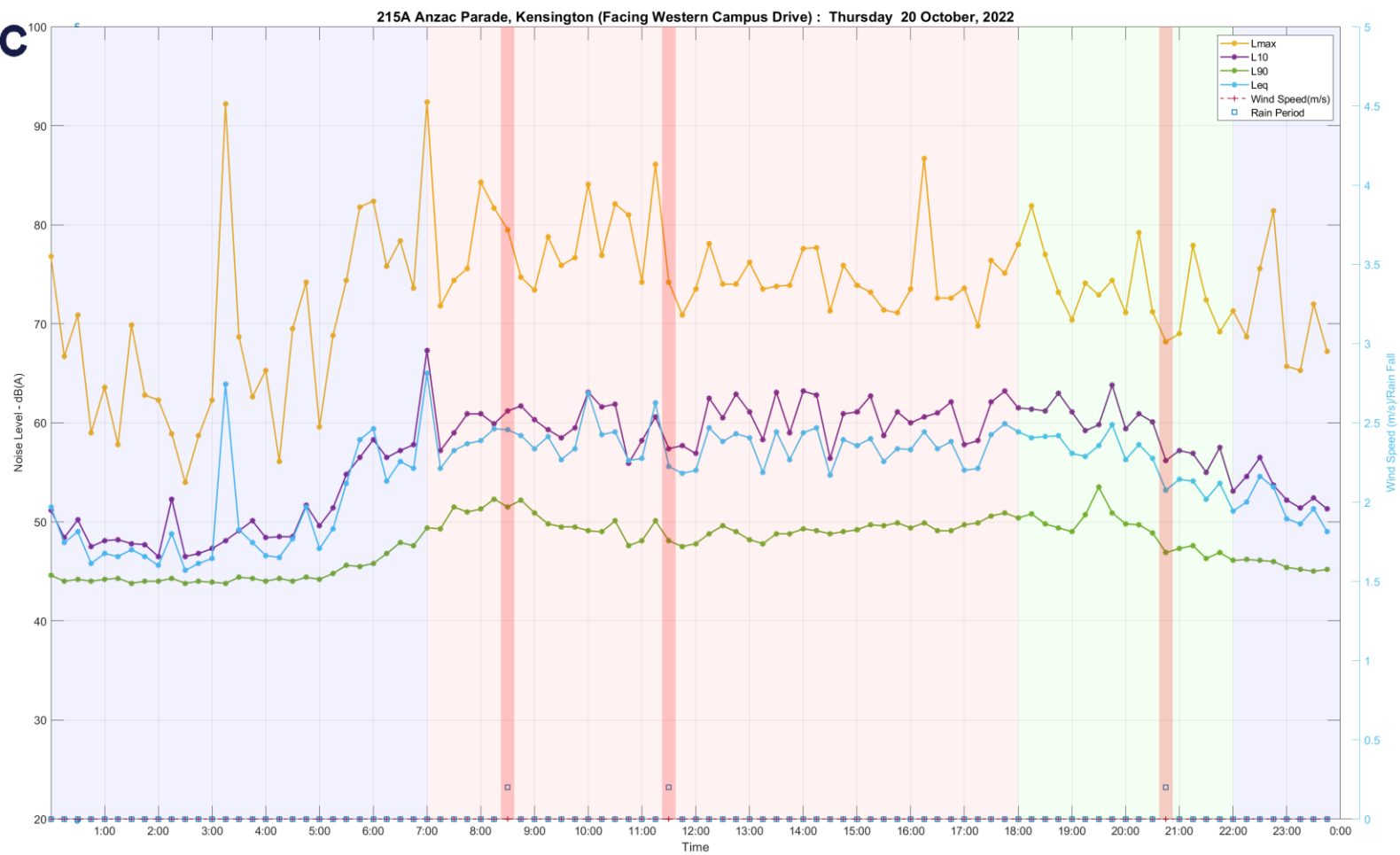


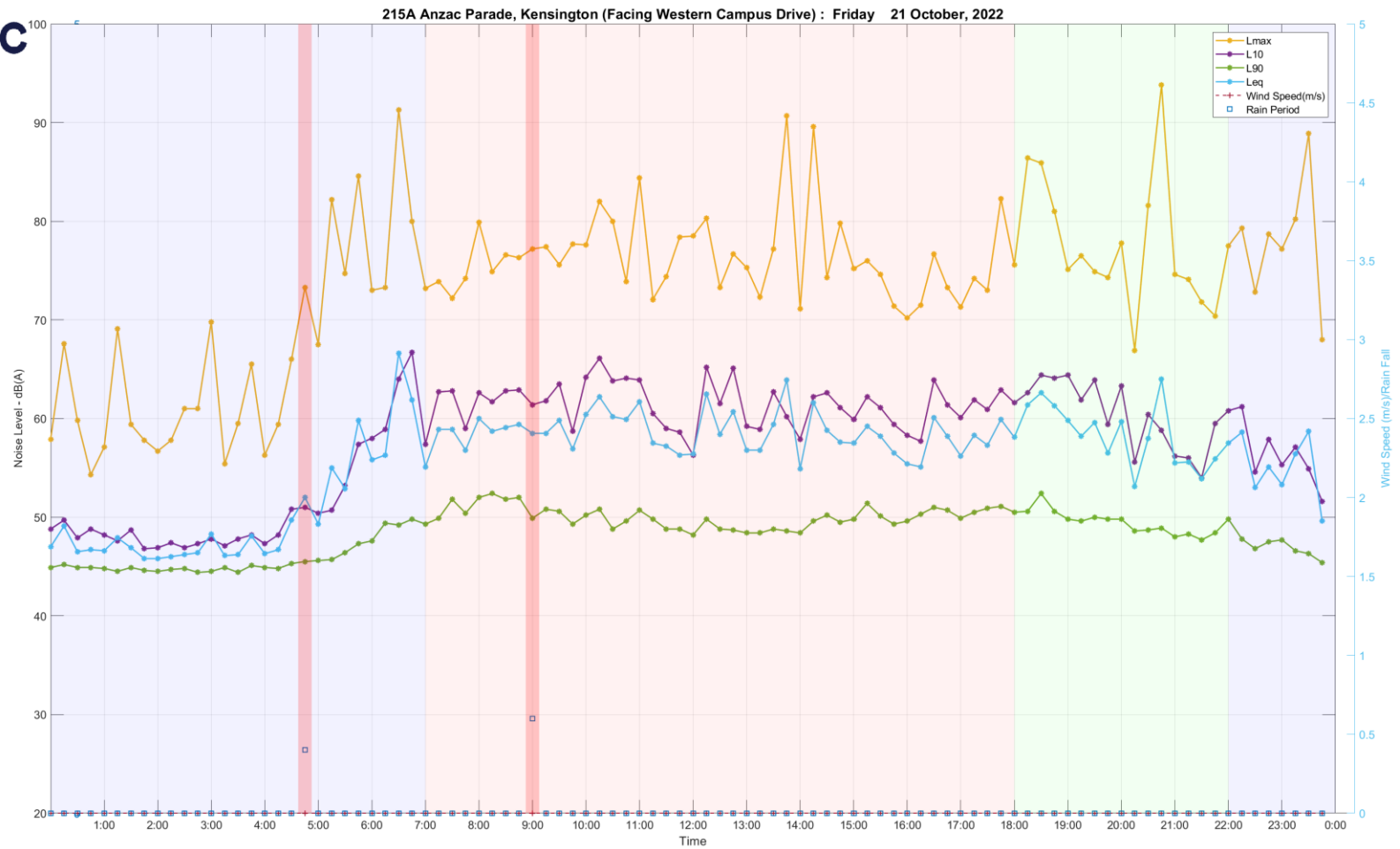


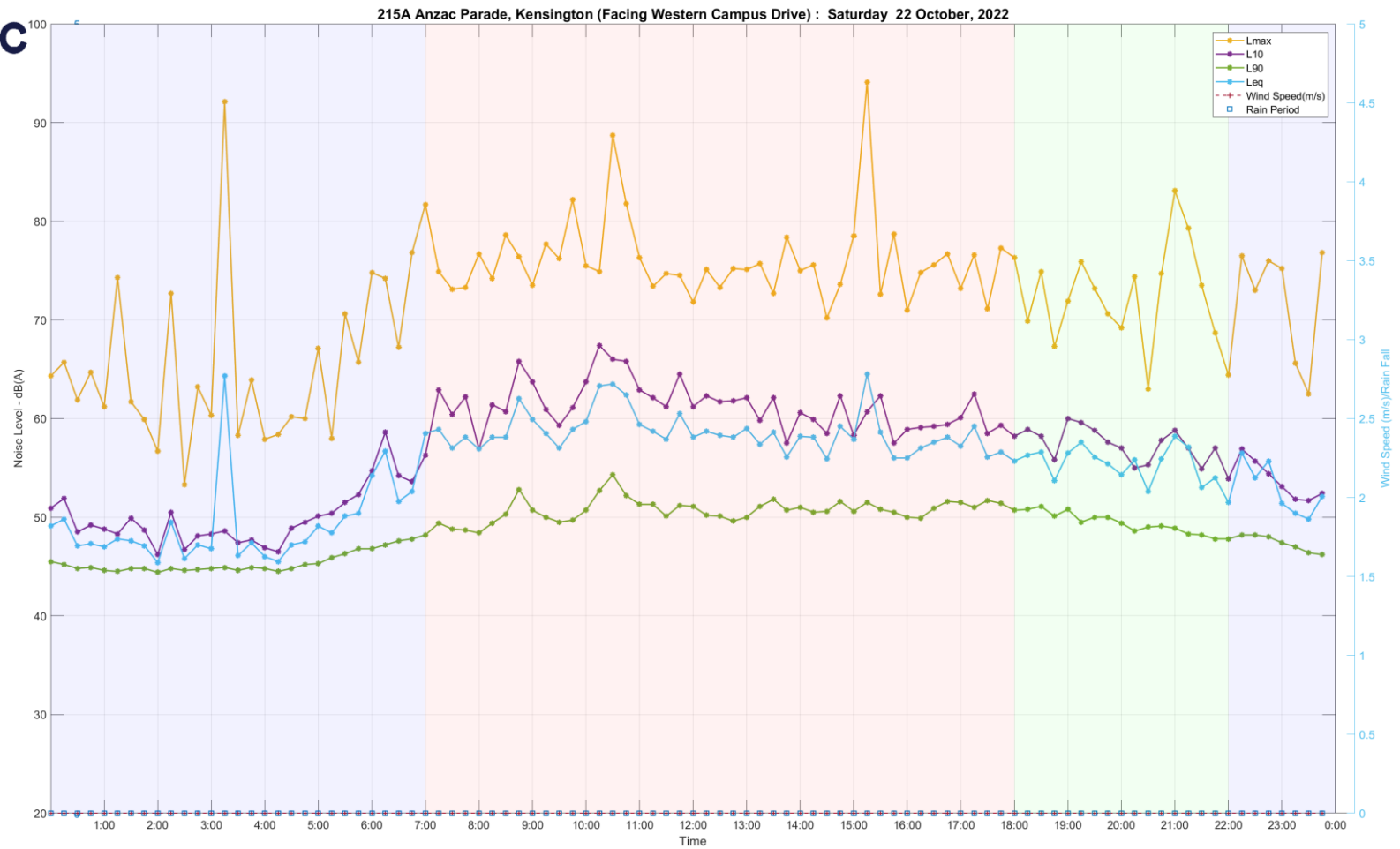
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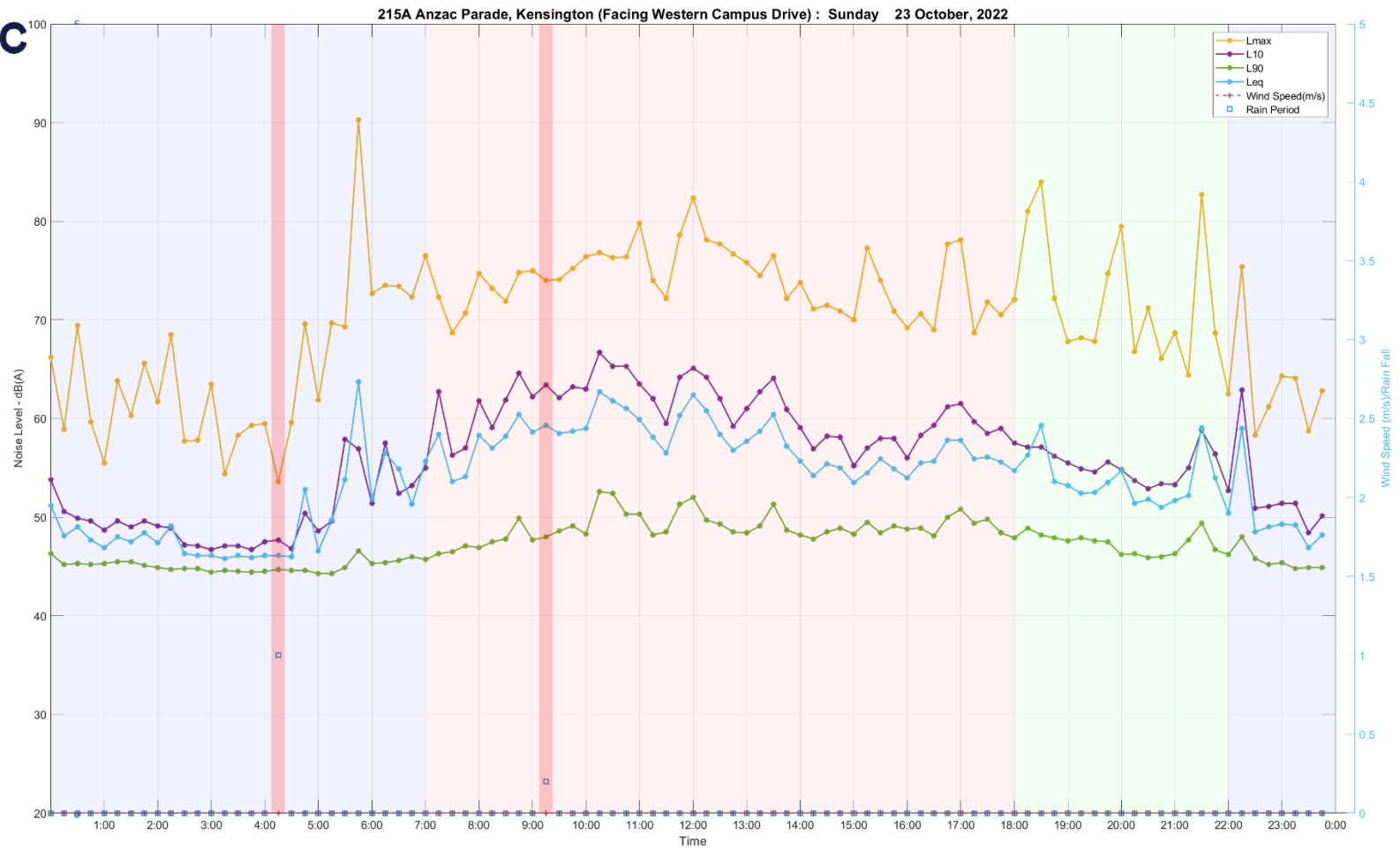
APPENDIX B – BACKGROUND LOGGER DATA

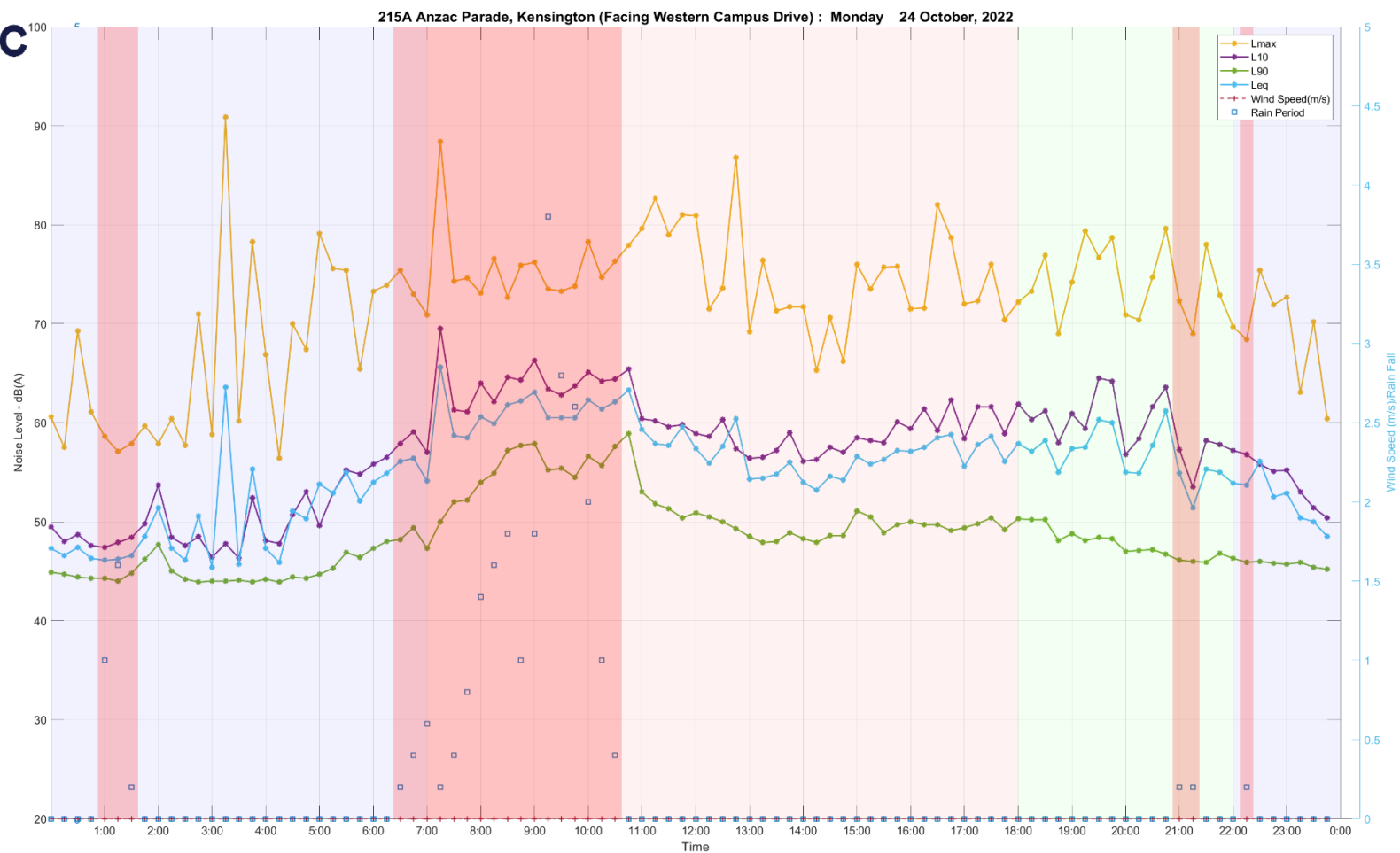


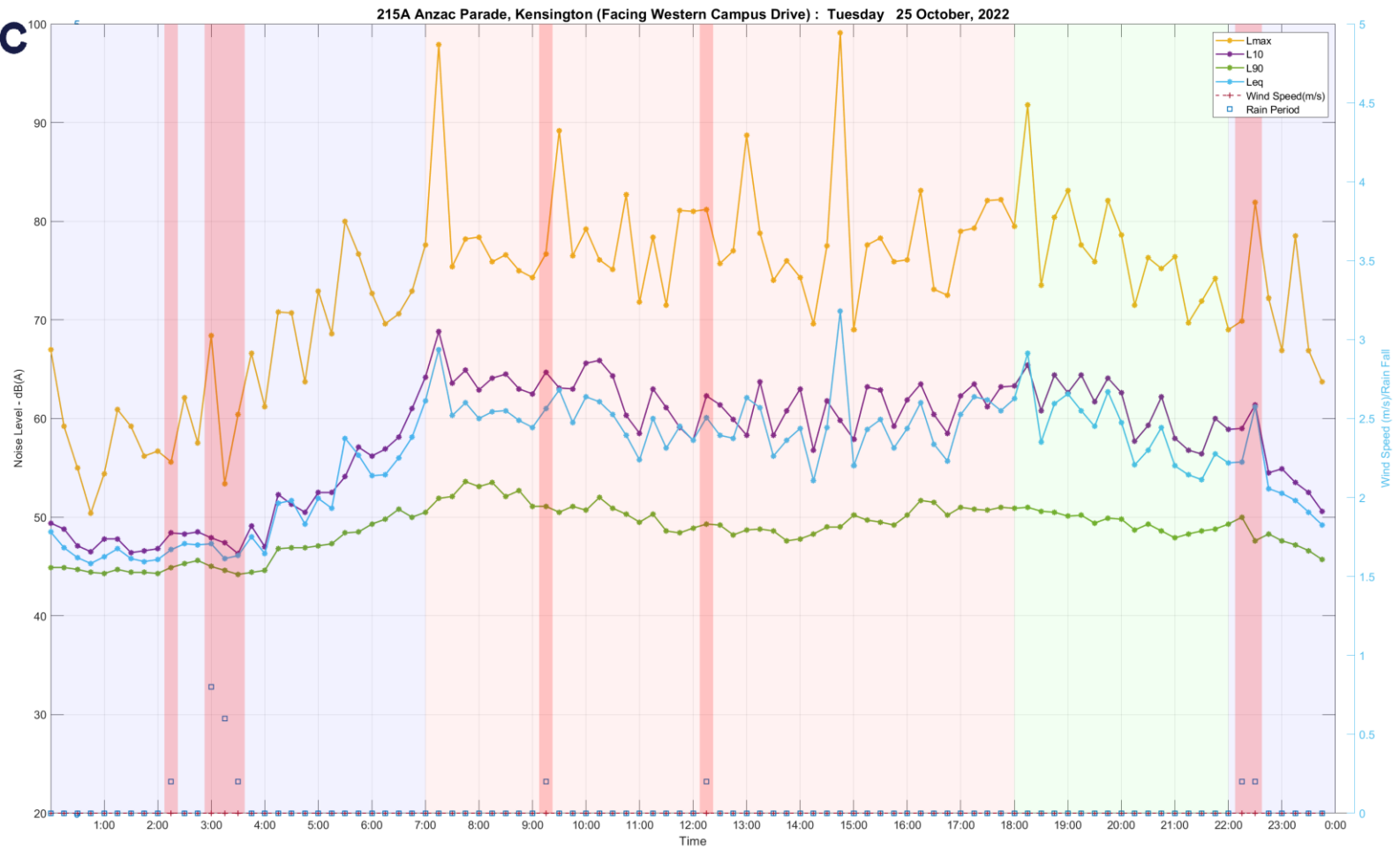


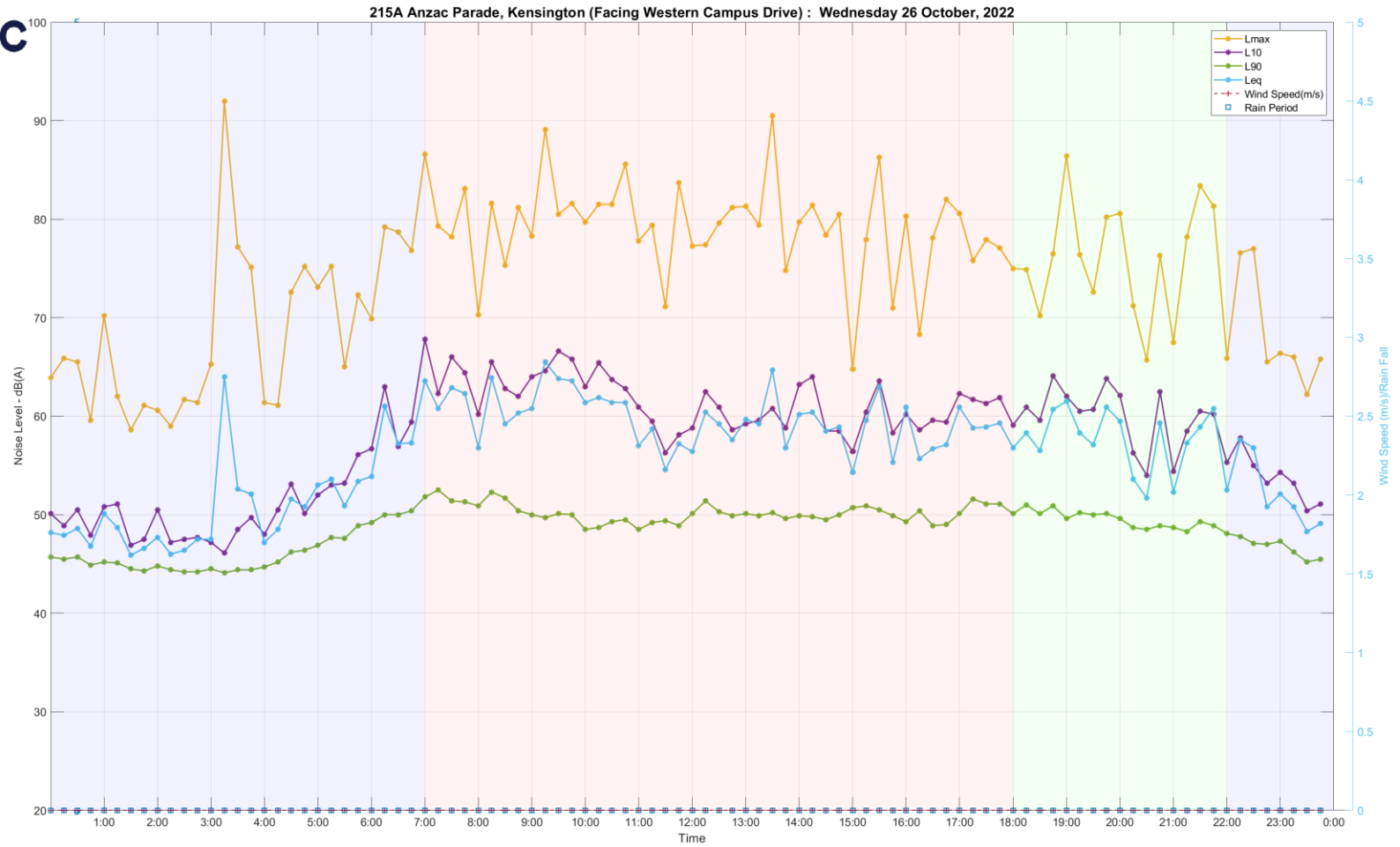


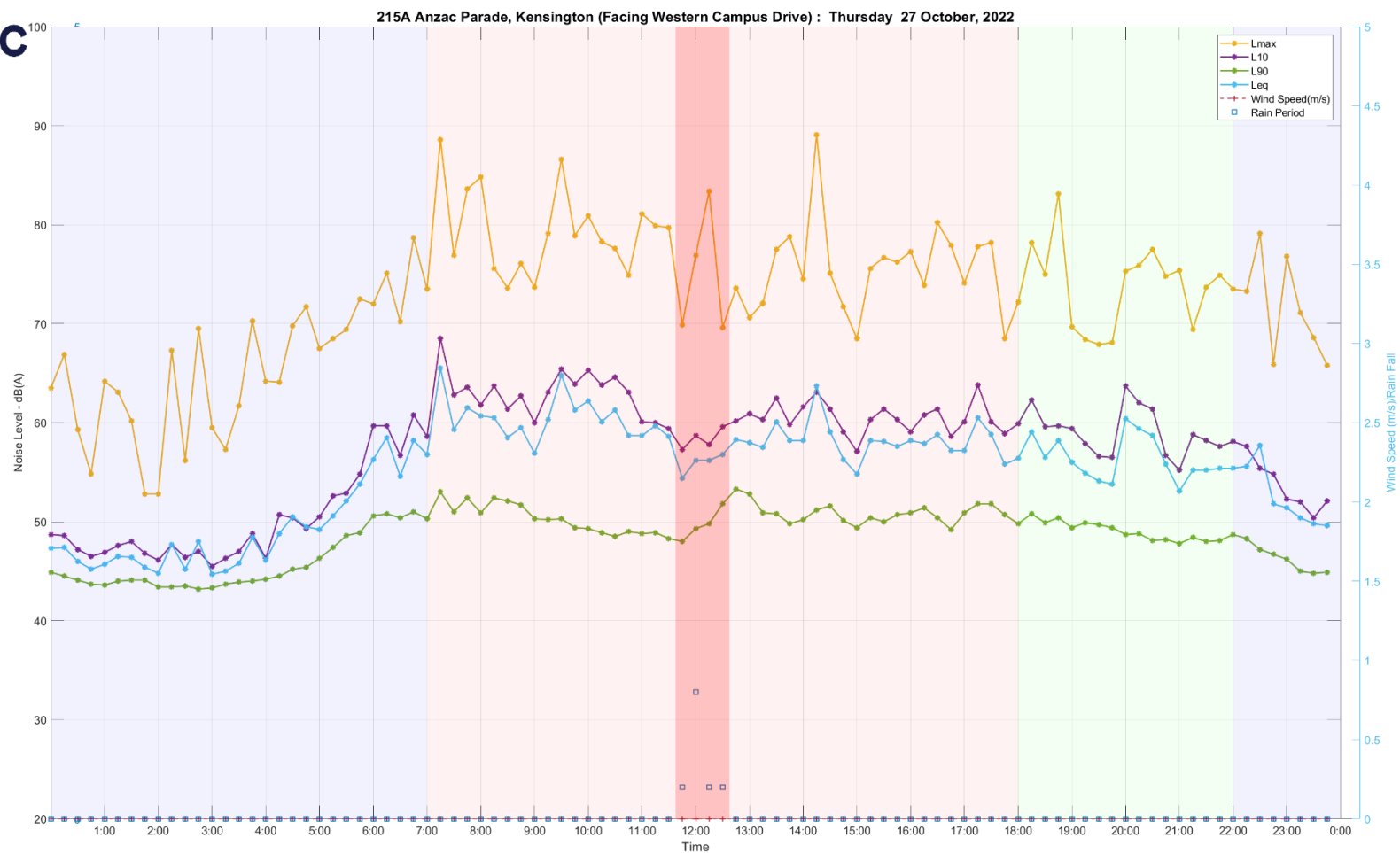


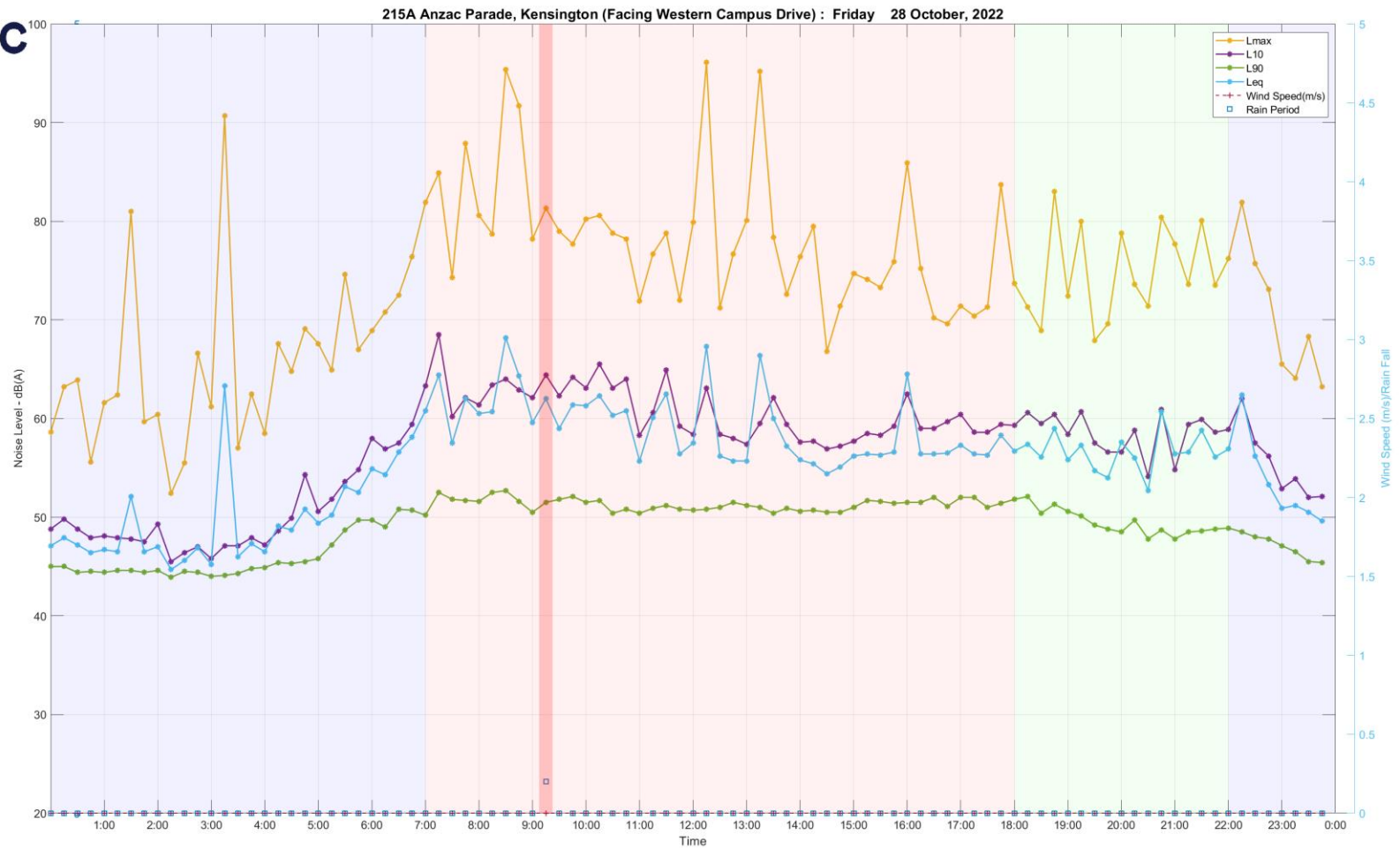


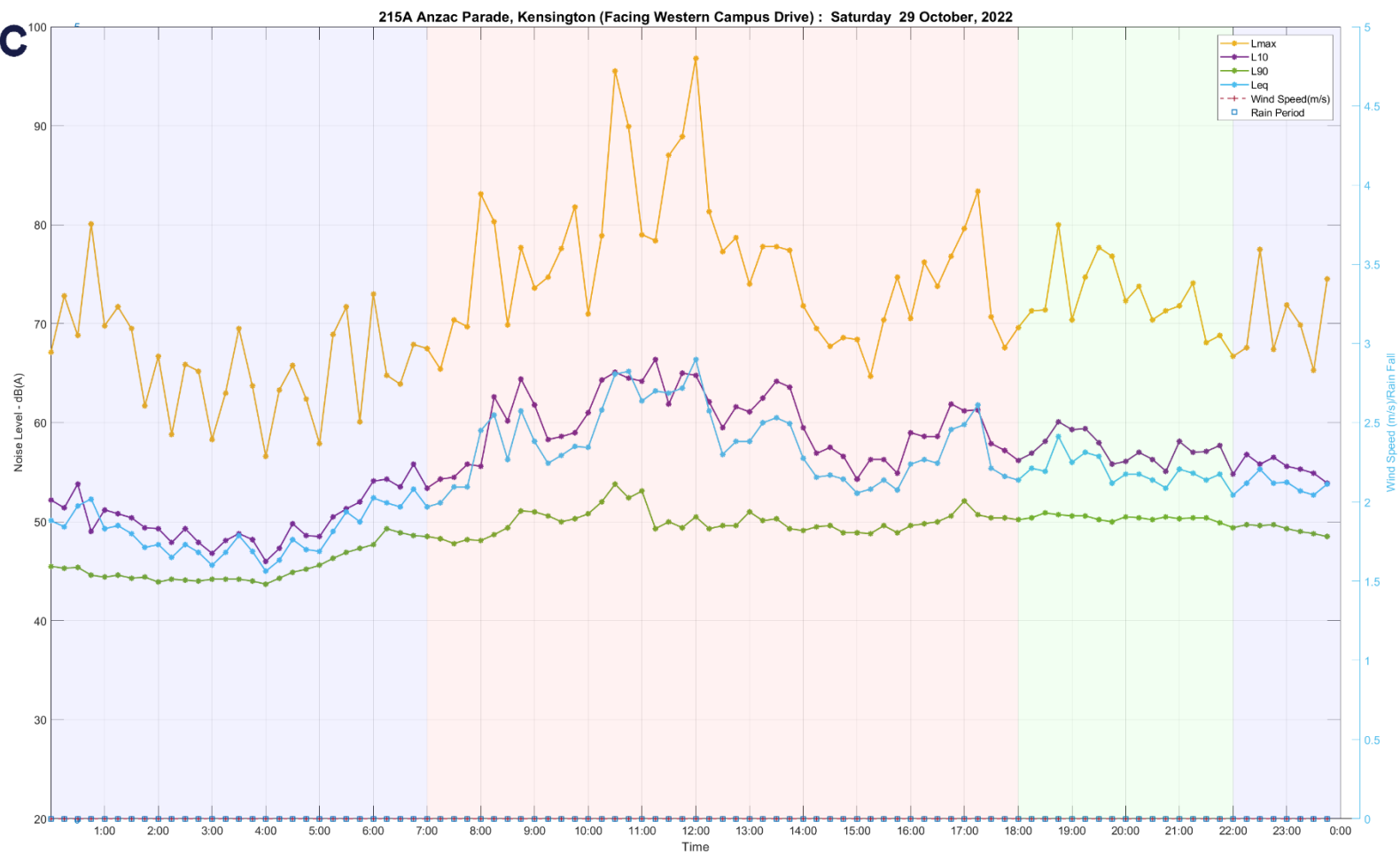


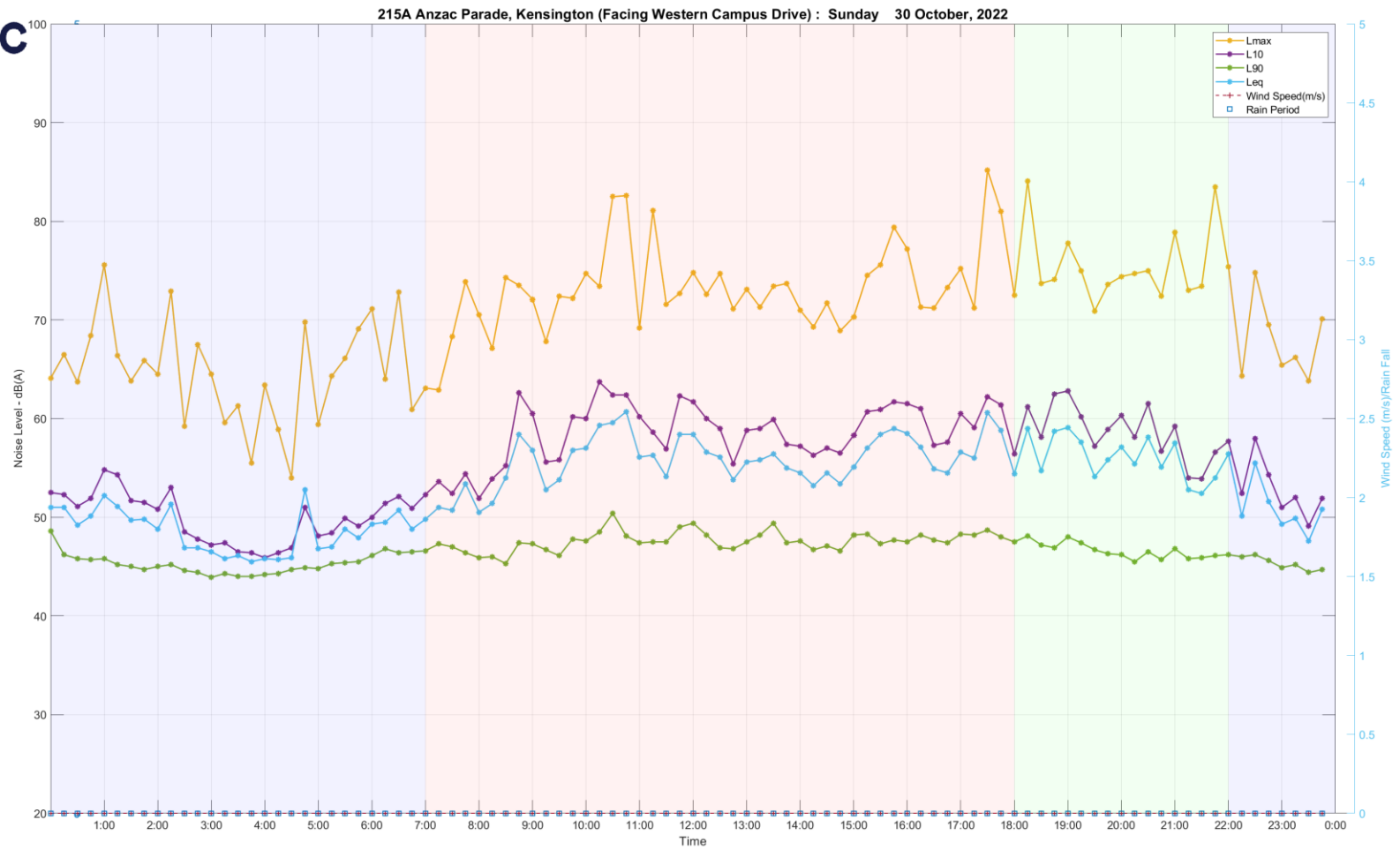


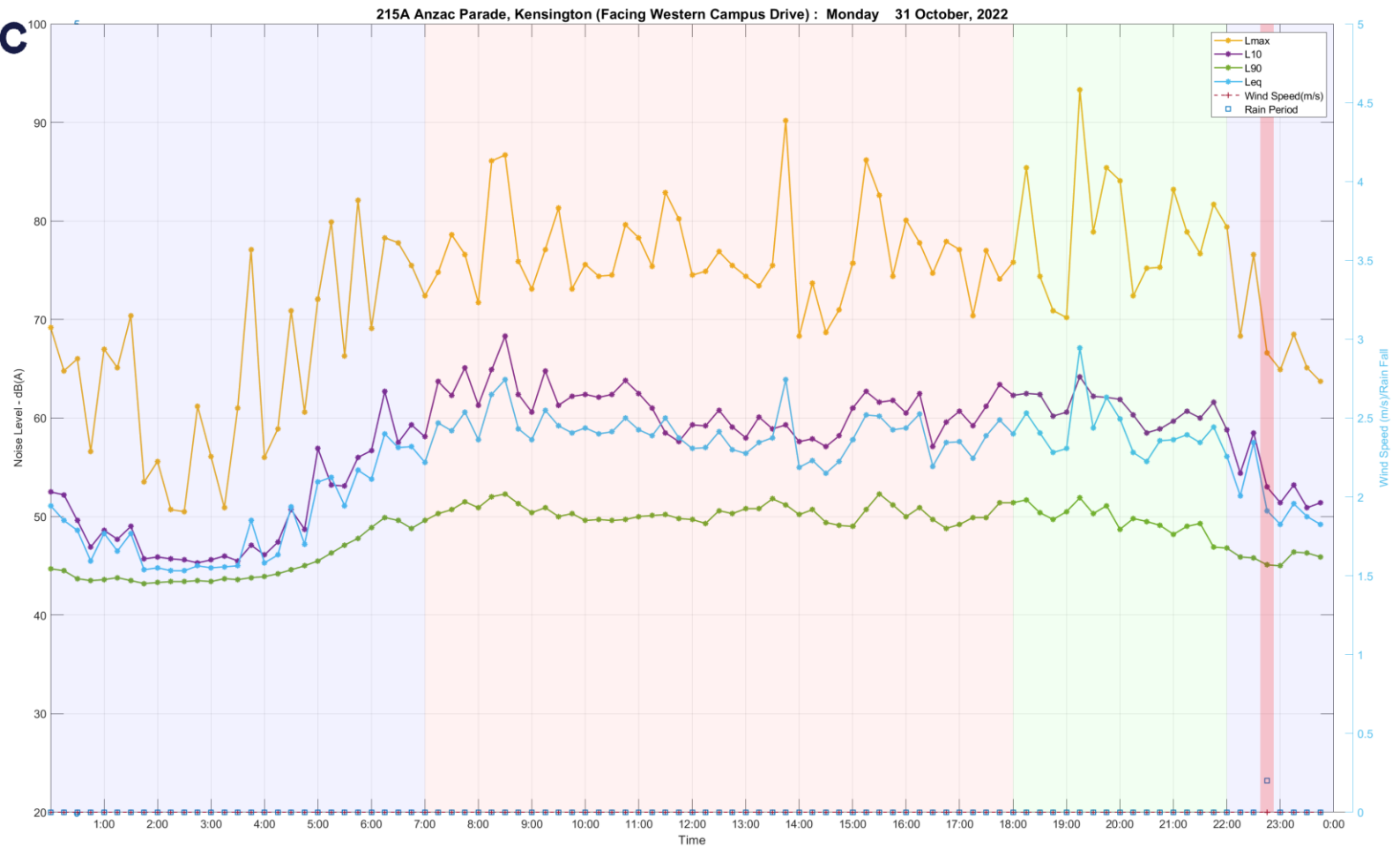


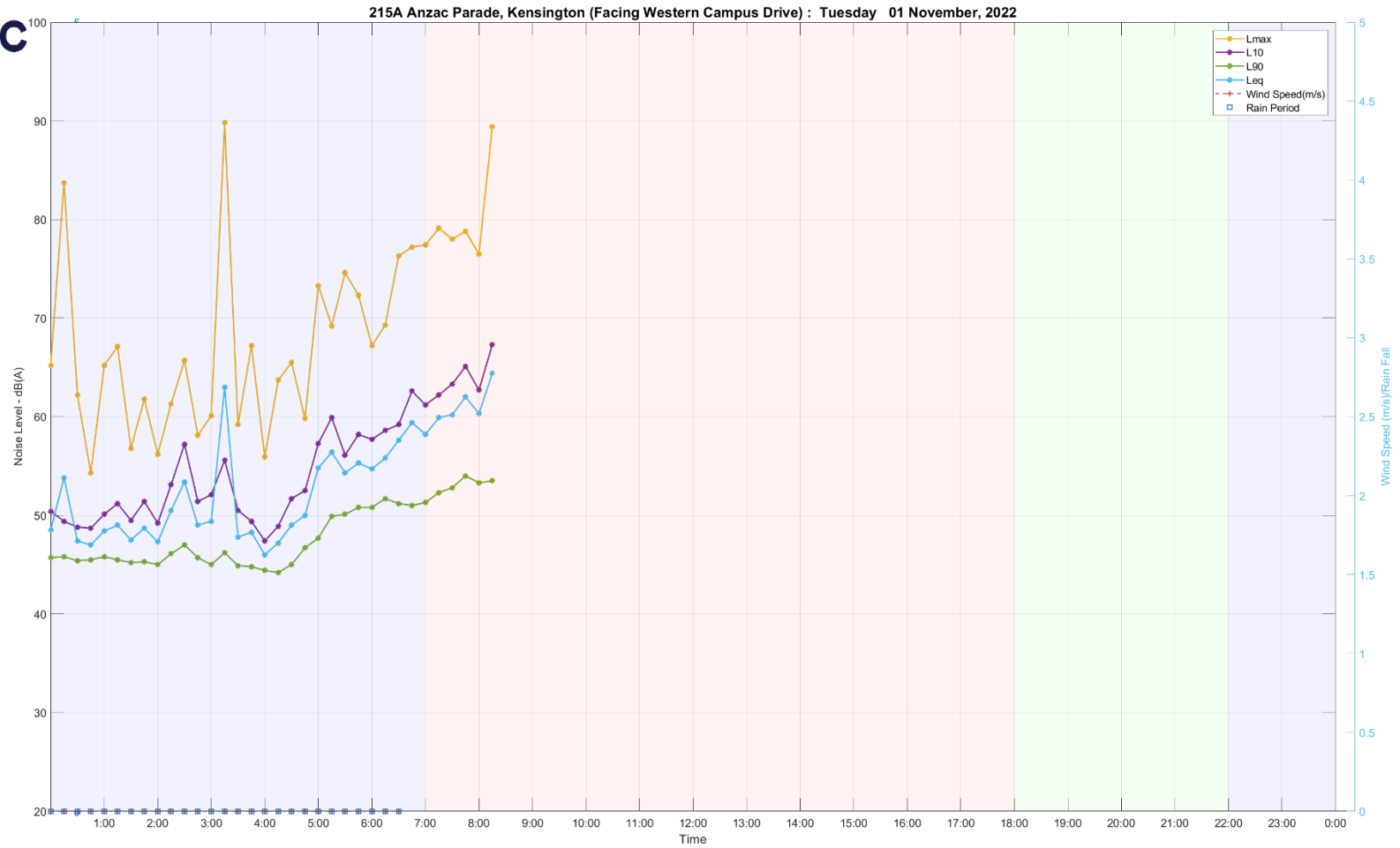












Wind Speed is corrected using factor 0.5000 based on logger location

APPENDIX C – GLAZING MARKUP

Do not scale drawings - refer to figured dimensions only. Any discrepancies shall immediately be referred to the architect for clarification.



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|------|----------|-------------------------|---------|---------|
| D | 19.04.24 | REVISED DA | PB | TG |
| C | 04.03.24 | REVISED DA (DRAFT) | MH | WM |
| B | 21.12.22 | DEVELOPMENT APPLICATION | WA | JC |
| A | 07.11.22 | DEVELOPMENT APPLICATION | WA | JC |
| Rev. | Date | Description | Initial | Checked |

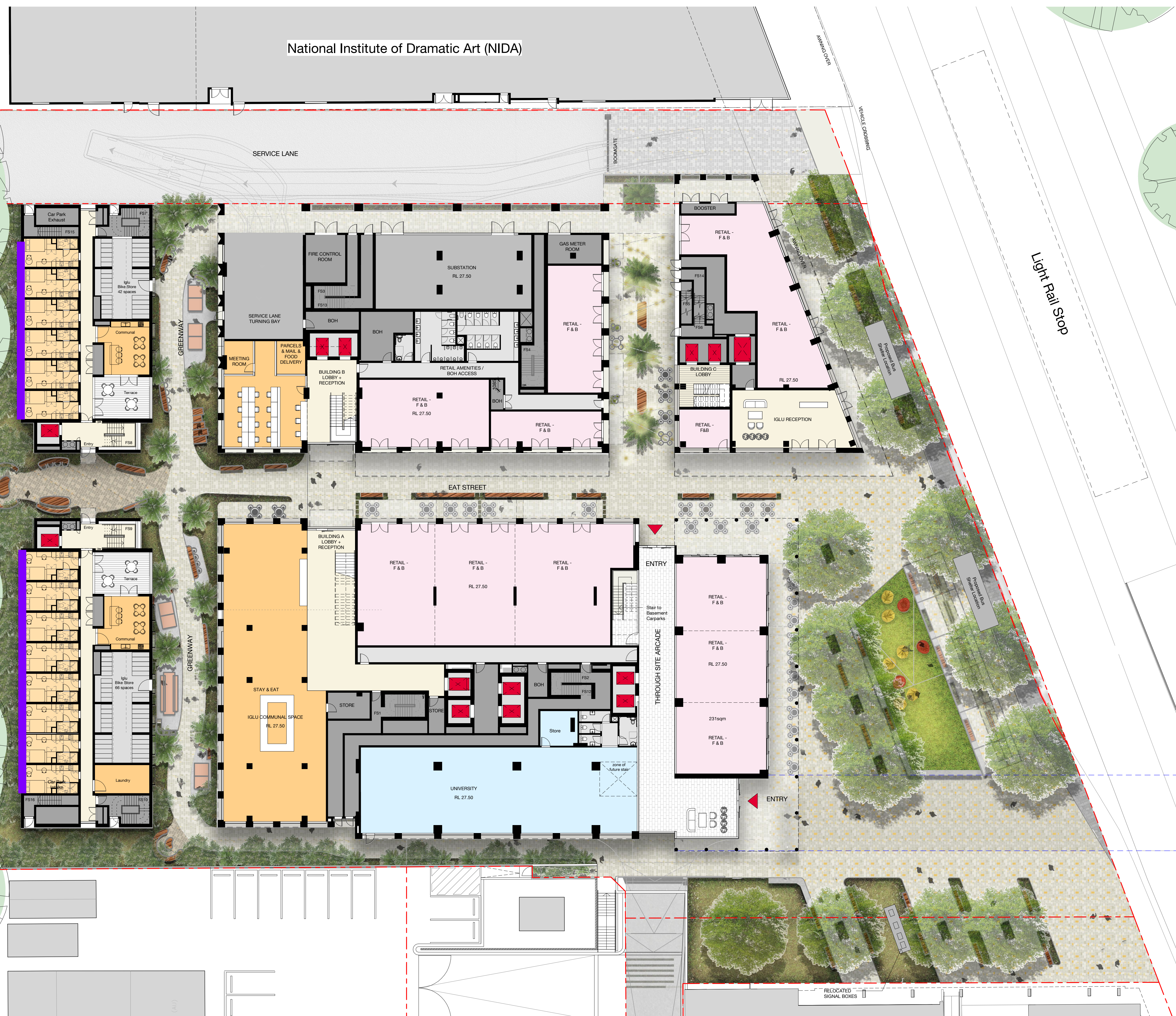
Level 00 Ground Floor

BIM

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| D | 19.04.24 | REVISED DA | PB | TG |
| C | 04.03.24 | REVISED DA (DRAFT) | MH | WM |
| B | 21.12.22 | DEVELOPMENT APPLICATION | WA | JC |
| A | 07.11.22 | DEVELOPMENT APPLICATION | WA | JC |
| Rev | Date | Description | Initial | Checked |

Level 01 Plan

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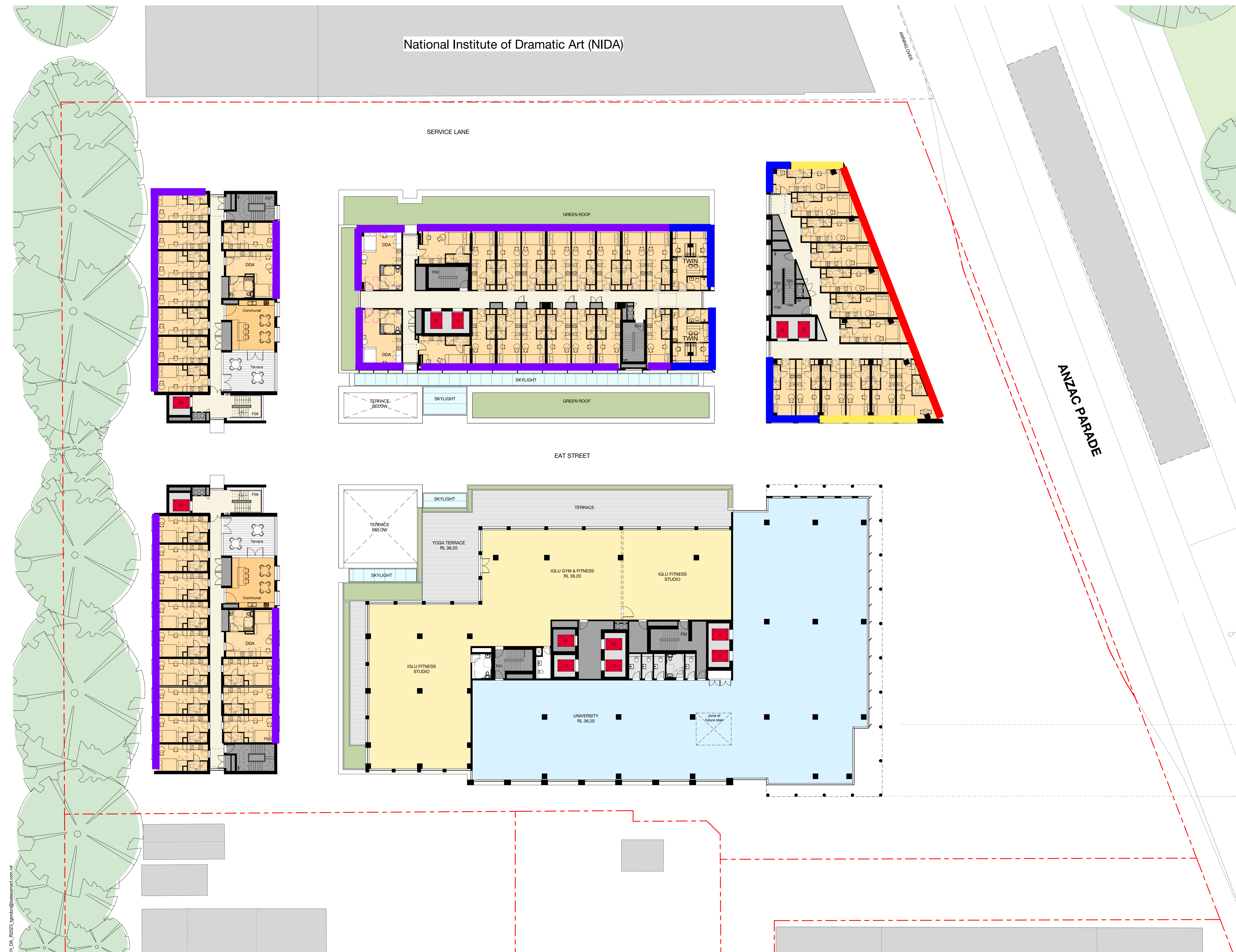
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| C | 04.03.24 | REVISED DA (DRAFT) | MH | WM |
| B | 21.12.22 | DEVELOPMENT APPLICATION | WA | JC |
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Level 02 Plan

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






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ANZAC PARADE



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|  | 10.38mm Laminate (R_w 35) |
|  | 10mm Float (R_w 33) |
|  | 6.38mm Laminate (R_w 31) |
|  | 6mm Float (R_w 29) |

Iglu at UNSW
215B Anzac Parade, Kensington

Level 03 Plan



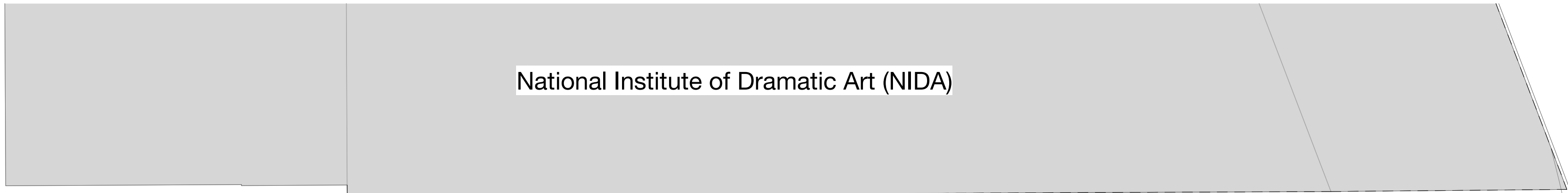
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Drawing no.	Revision		
DA03.103	D		

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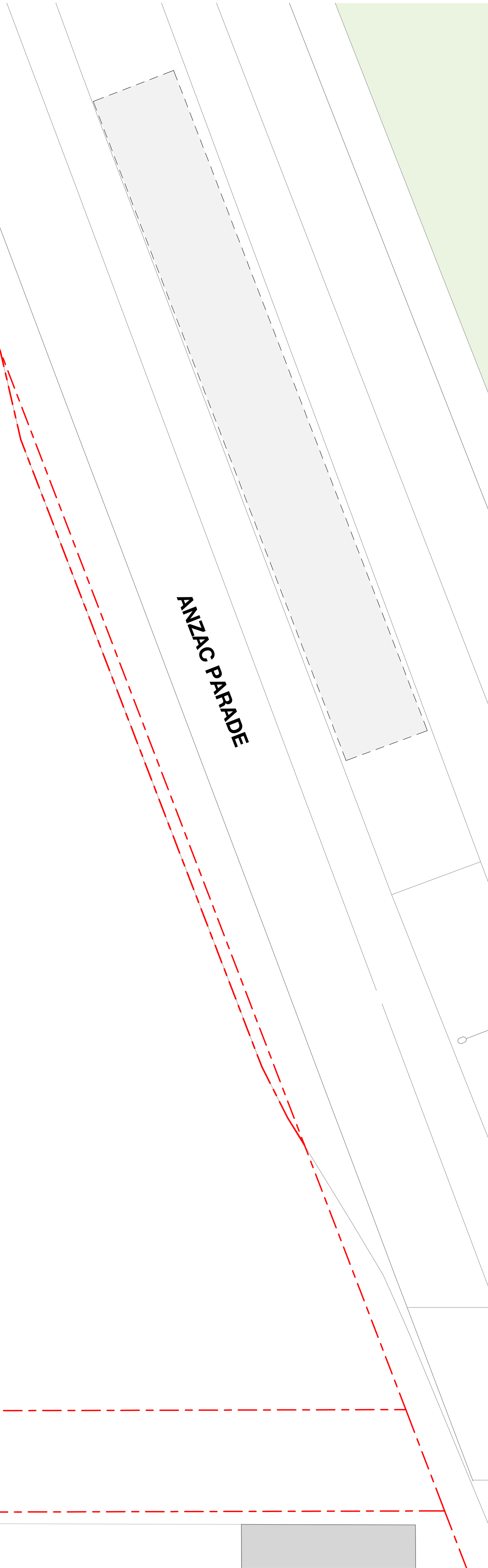
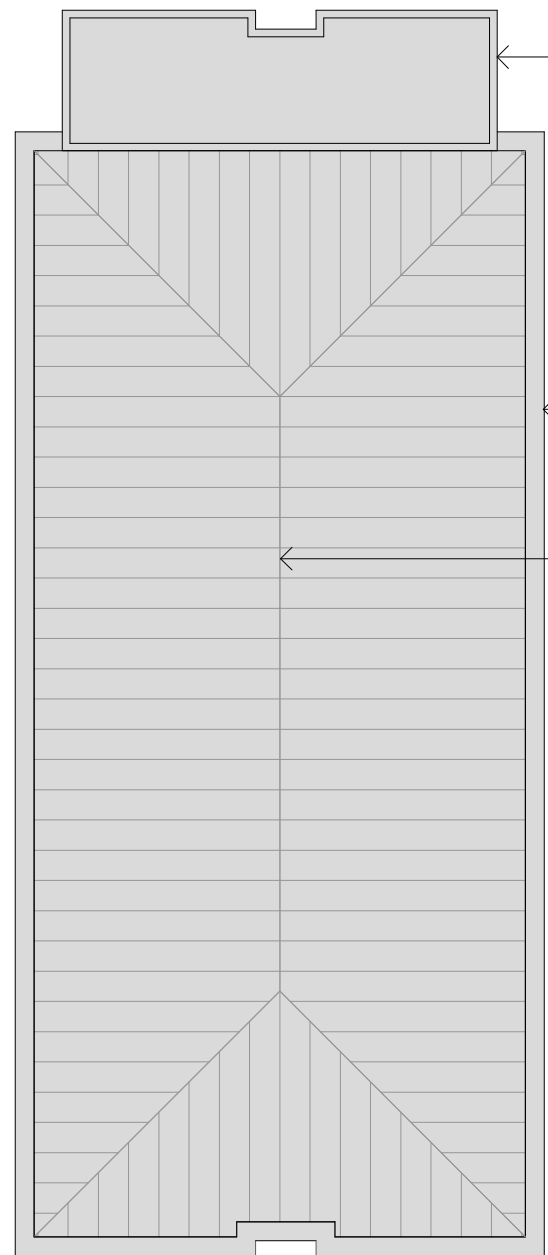
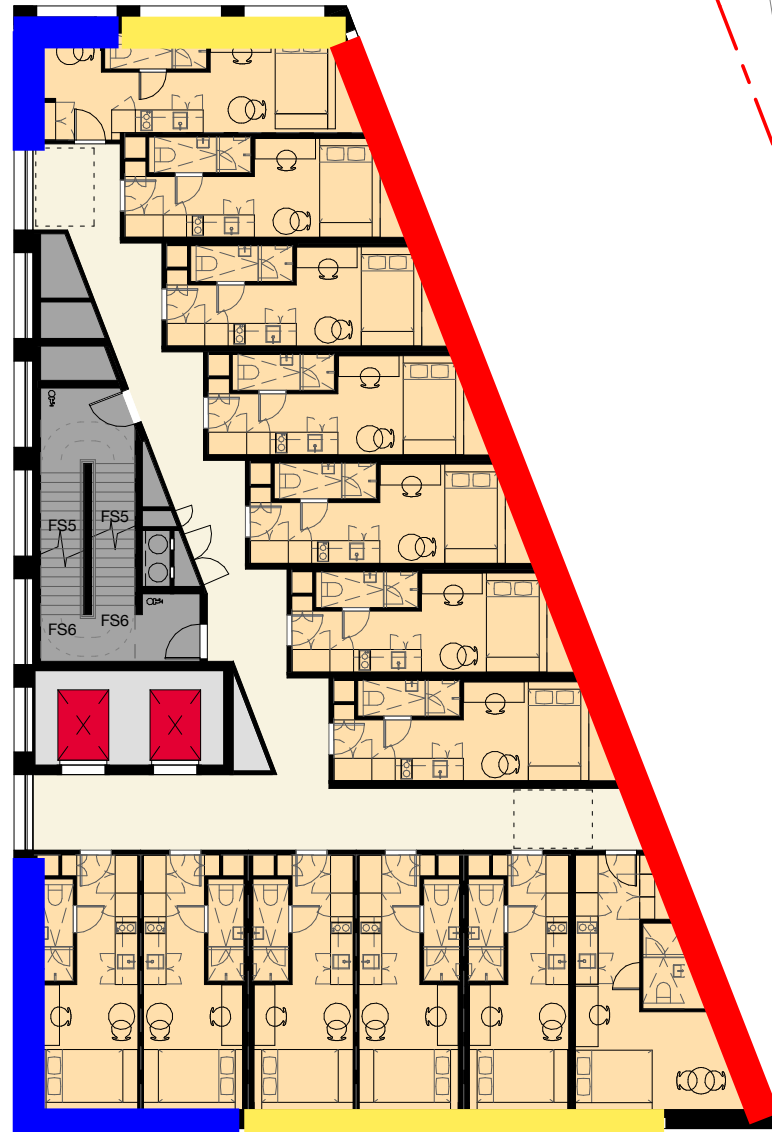
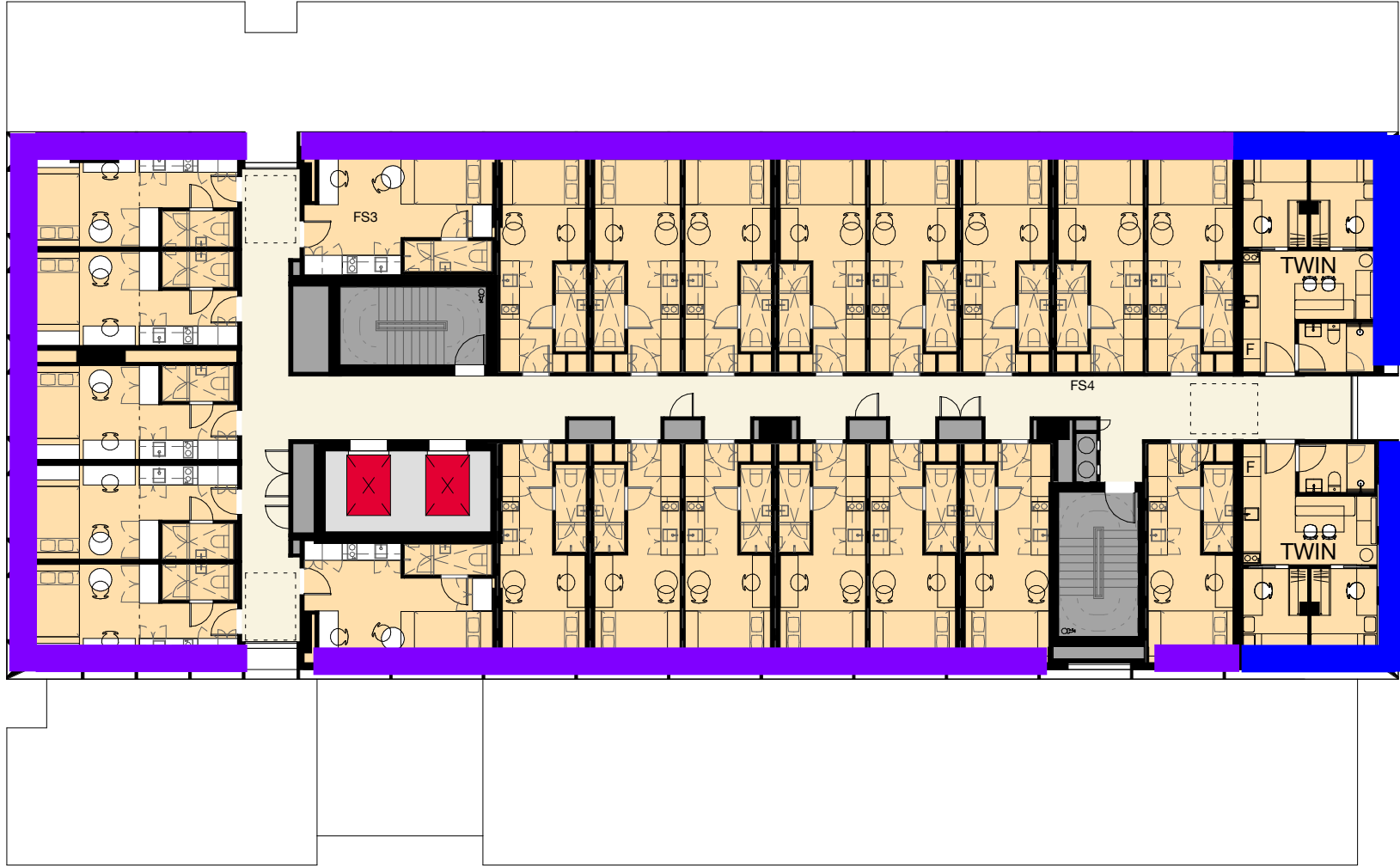
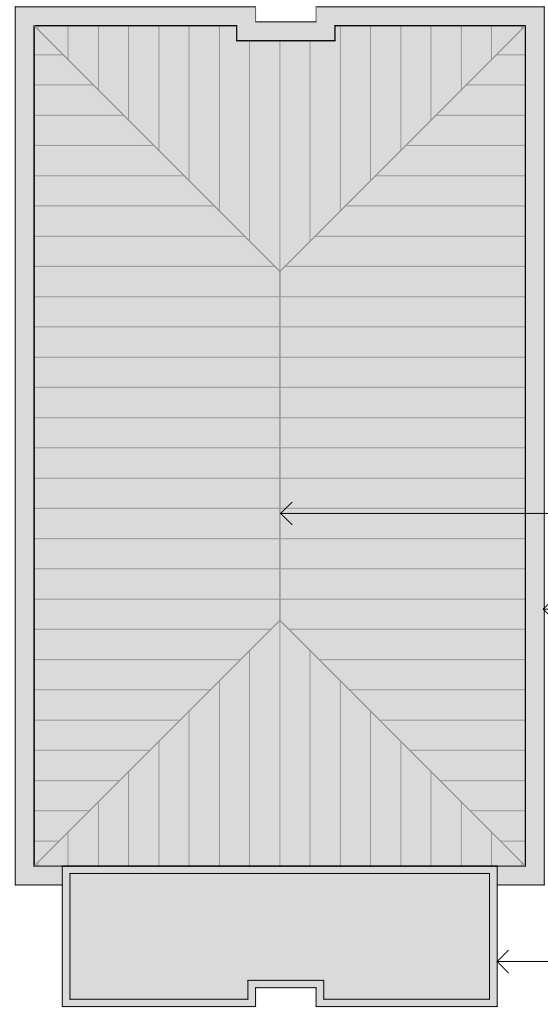
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Glazing Type Markup Key

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- 6.38mm Laminate (R_w 31)
- 6mm Float (R_w 29)

D	19.04.24	REVISED DA	PB	TG
C	04.03.24	REVISED DA (DRAFT)	MH	WM
B	21.12.22	DEVELOPMENT APPLICATION	WA	JC
A	07.11.22	DEVELOPMENT APPLICATION	WA	JC
Rev	Date	Description	Initial	Checked

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Level 04 Plan



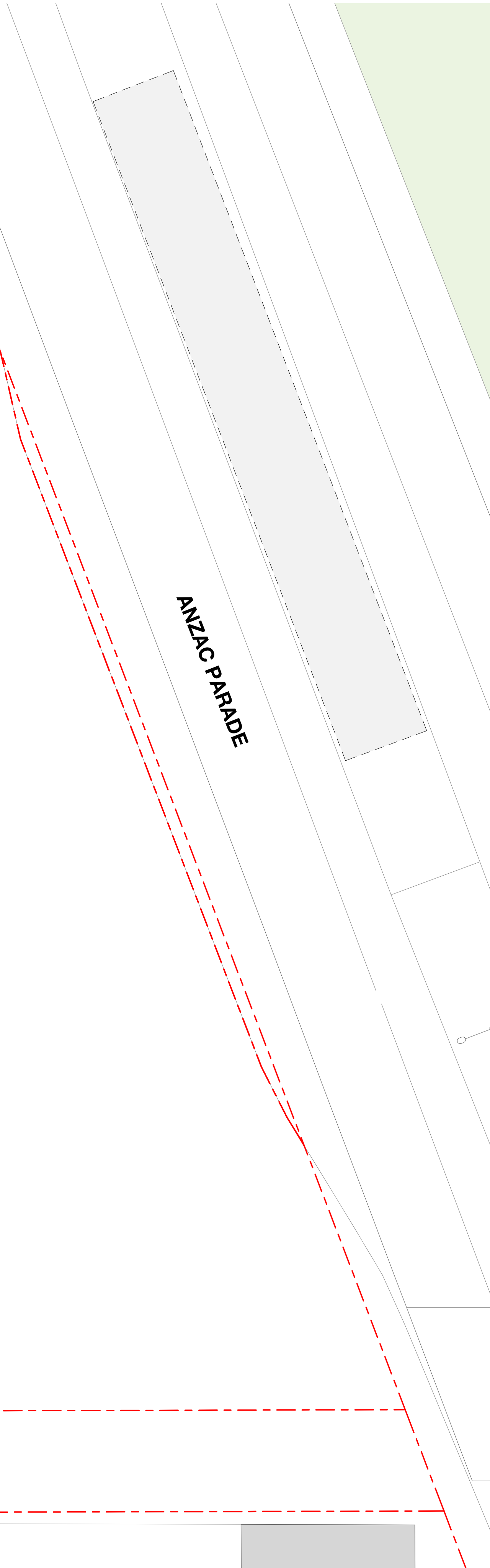
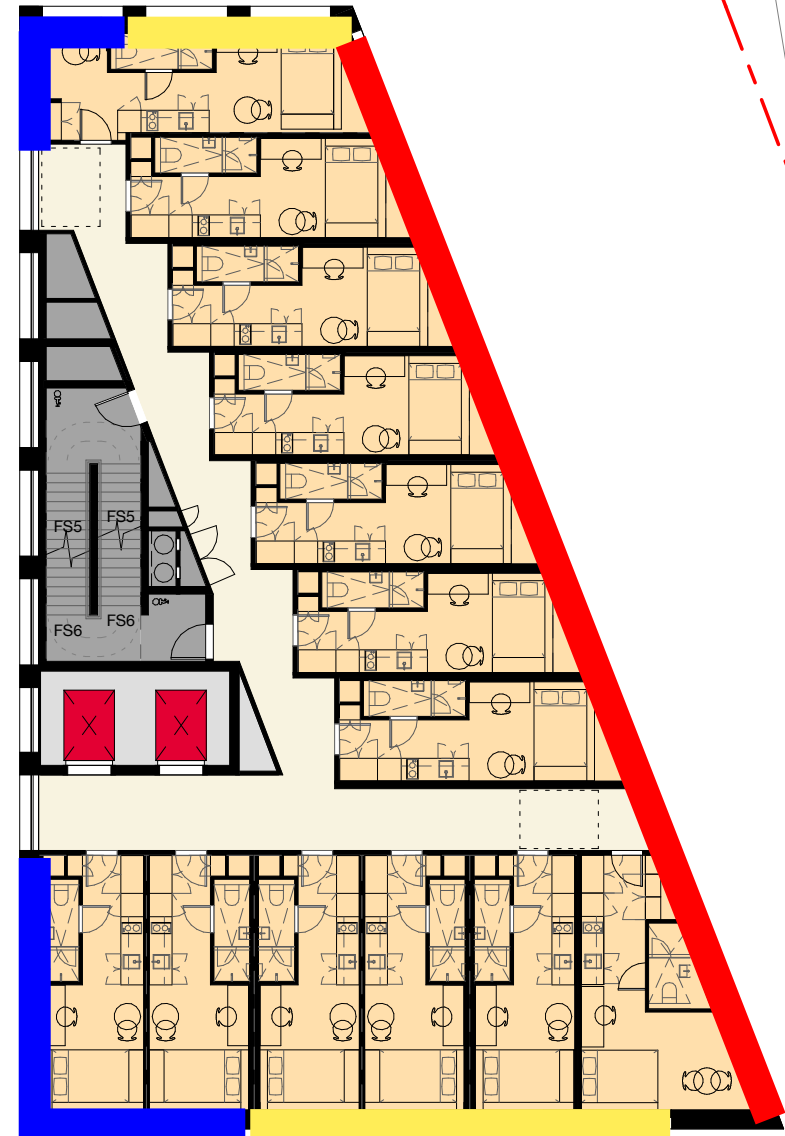
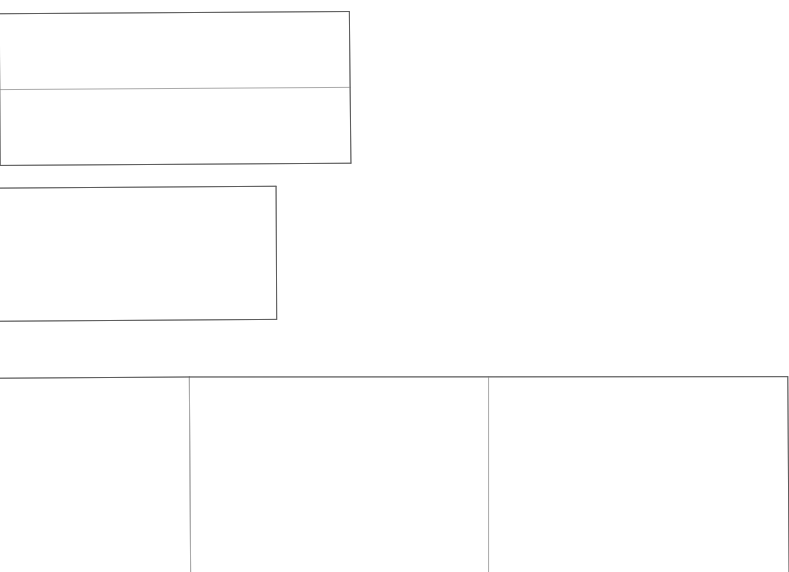
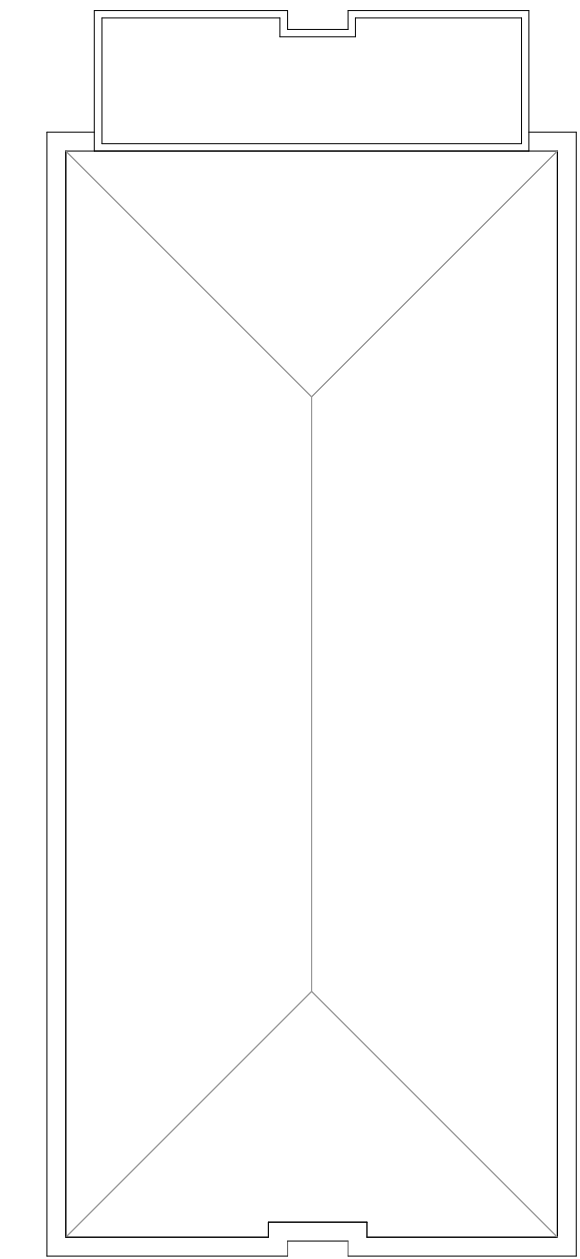
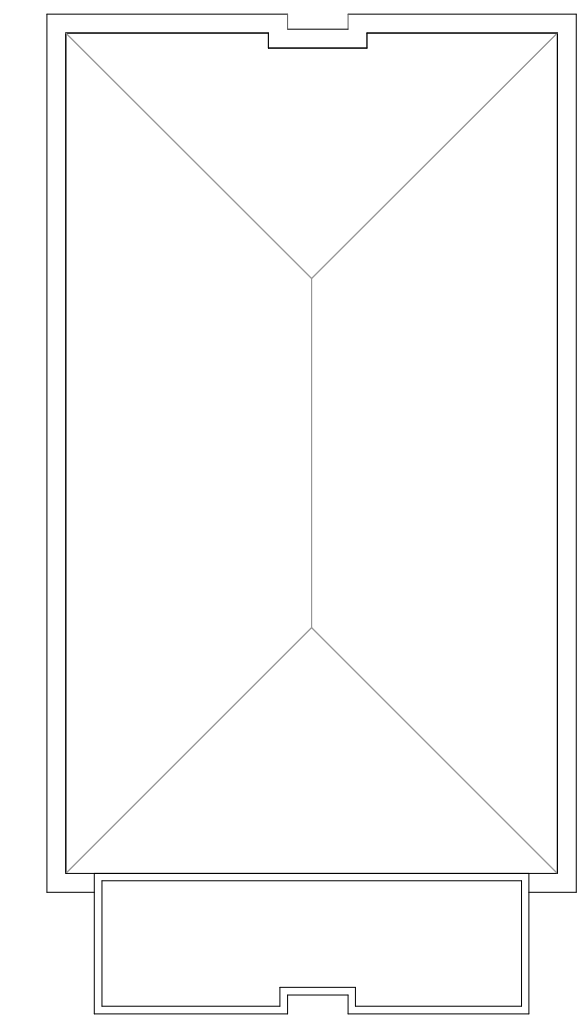
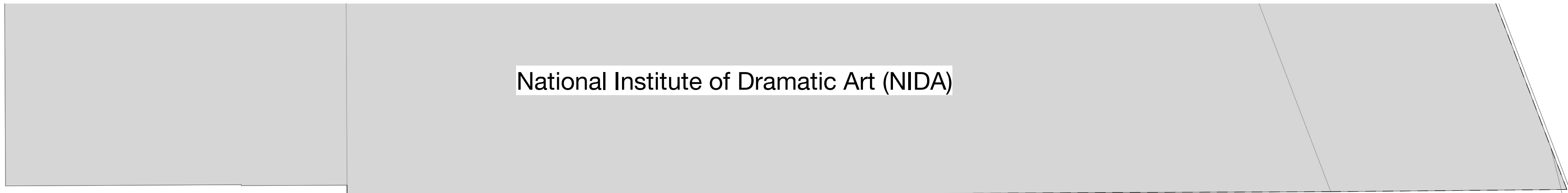
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Drawing no.	DA03.104		Revision
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- 10mm Float (R_w 33)
- 6.38mm Laminate (R_w 31)
- 6mm Float (R_w 29)

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C	04.03.24	REVISED DA (DRAFT)	MH	WM
B	21.12.22	DEVELOPMENT APPLICATION	WA	JC
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Rev	Date	Description	Initial	Checked

Iglu at UNSW 215B Anzac Parade, Kensington

Level 05 Plan



Status	Development Application		
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Drawn	WA	Checked	JC
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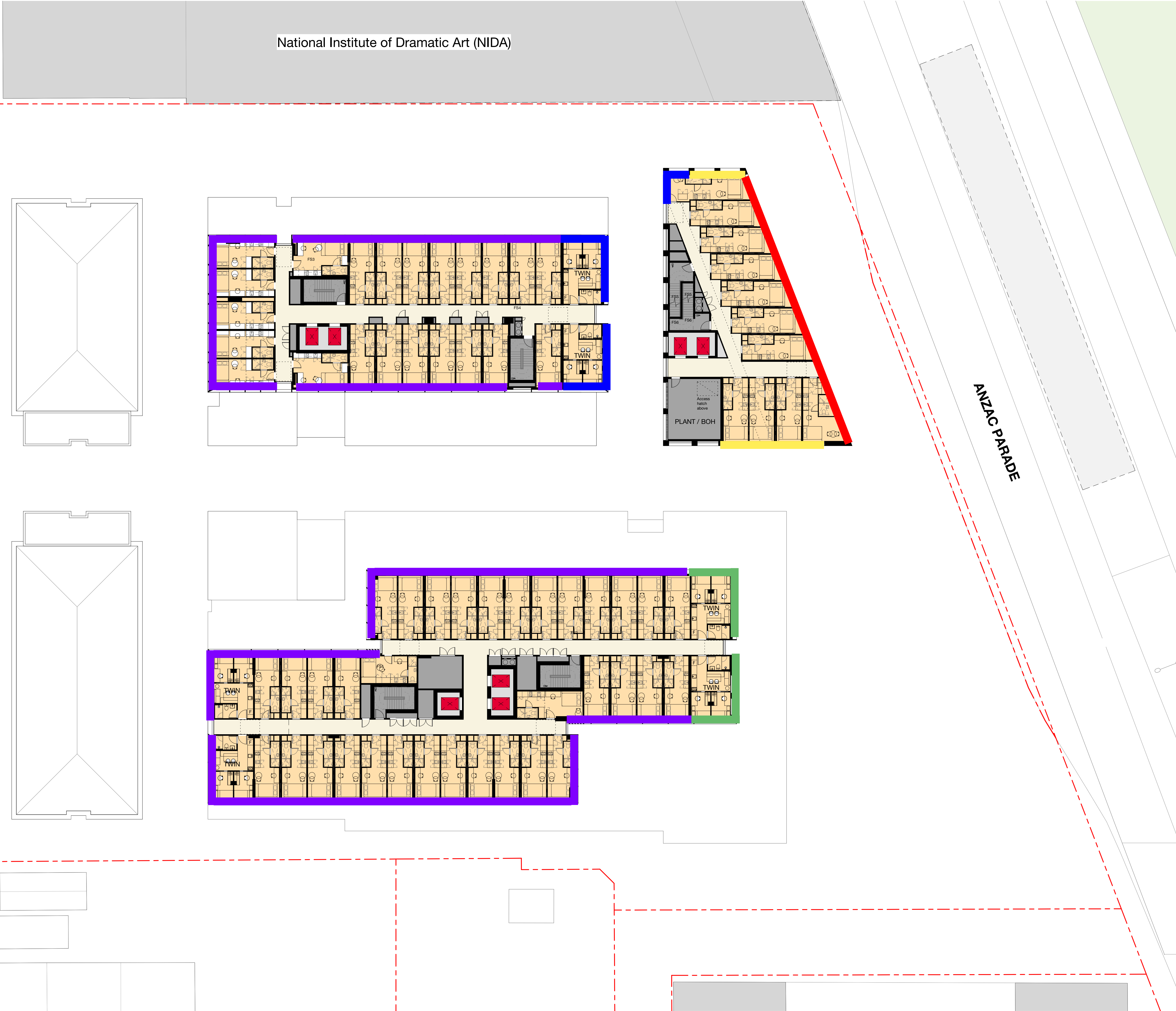
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A	07.11.22	DEVELOPMENT APPLICATION	WA	JC
Rev	Date	Description	Initial	Checked

Iglu at UNSW
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Level 06 Plan



Status	Development Application		
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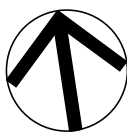
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A	07.11.22	DEVELOPMENT APPLICATION	WA	JC
Rev	Date	Description	Initial	Checked

Iglu at UNSW
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Level 07 Plan



Status	Development Application		
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A	07.11.22	DEVELOPMENT APPLICATION	WA	JC
Rev	Date	Description	Initial	Checked

Iglu at UNSW
215B Anzac Parade, Kensington

Level 08-13 Plan



Status	Development Application		
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Drawing no.	Revision
DA03.108	D

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A	07.11.22	DEVELOPMENT APPLICATION	WA	JC
Rev	Date	Description	Initial	Checked

Iglu at UNSW
215B Anzac Parade, Kensington

Level 14 Plan



Status	Development Application		
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Drawn	WA	Checked	JC
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Plot Date	18/04/2024 12:51:15 PM		
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Drawing no.	Revision
DA03.114	D

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APPENDIX D - VENTILATION MARKUP

National Institute of Dramatic Art (NIDA)

SERVICE LANE

AWNING OVER

VEHICLE CROSSING

Light Rail Stop

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Ventilation Markup Key

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Rev	Date	Description	Initial	Checked

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Level 00 Ground Floor



Status	Development Application		
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STANDARDS 2018 (AU)

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Rev.	Date	Description	Initial	Checked

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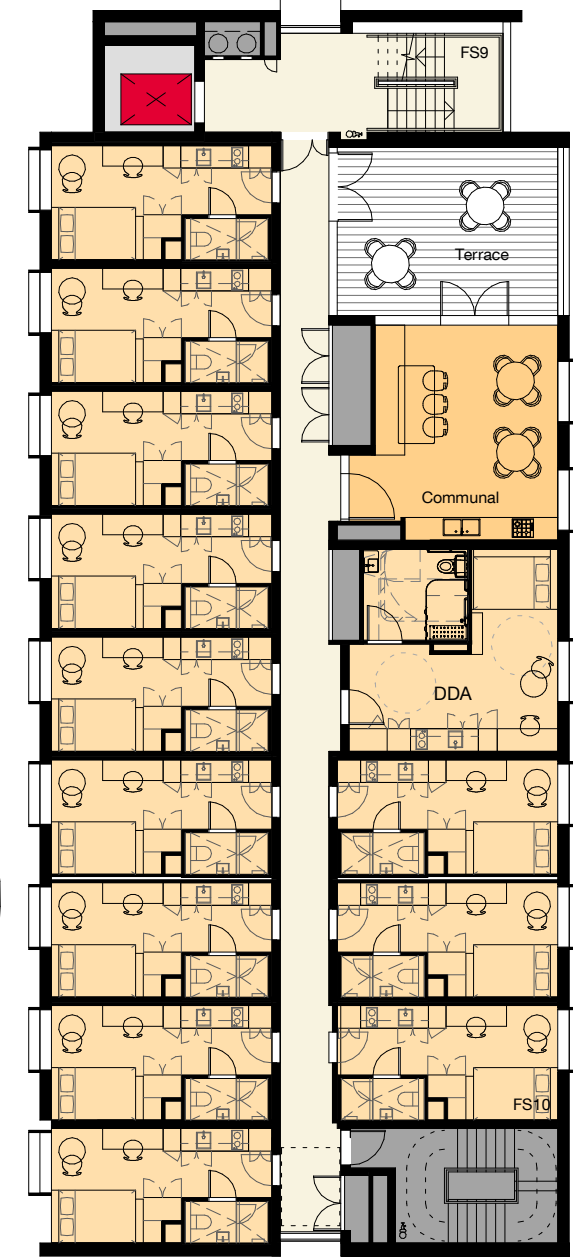
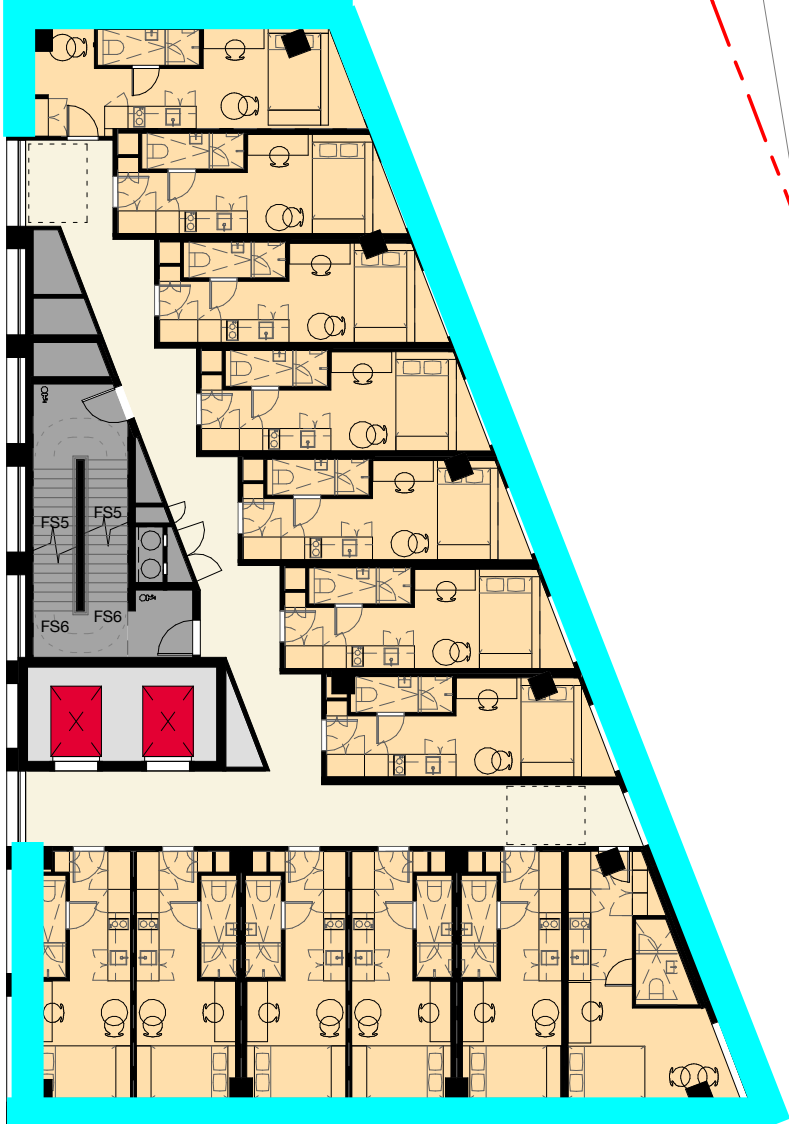
National Institute of Dramatic Art (NIDA)

SERVICE LANE

ANZAC DR

ANZAC PARADE

EAT STREET



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A	07.11.22	DEVELOPMENT APPLICATION	WA	JC
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Level 02 Plan



Status	Development Application		
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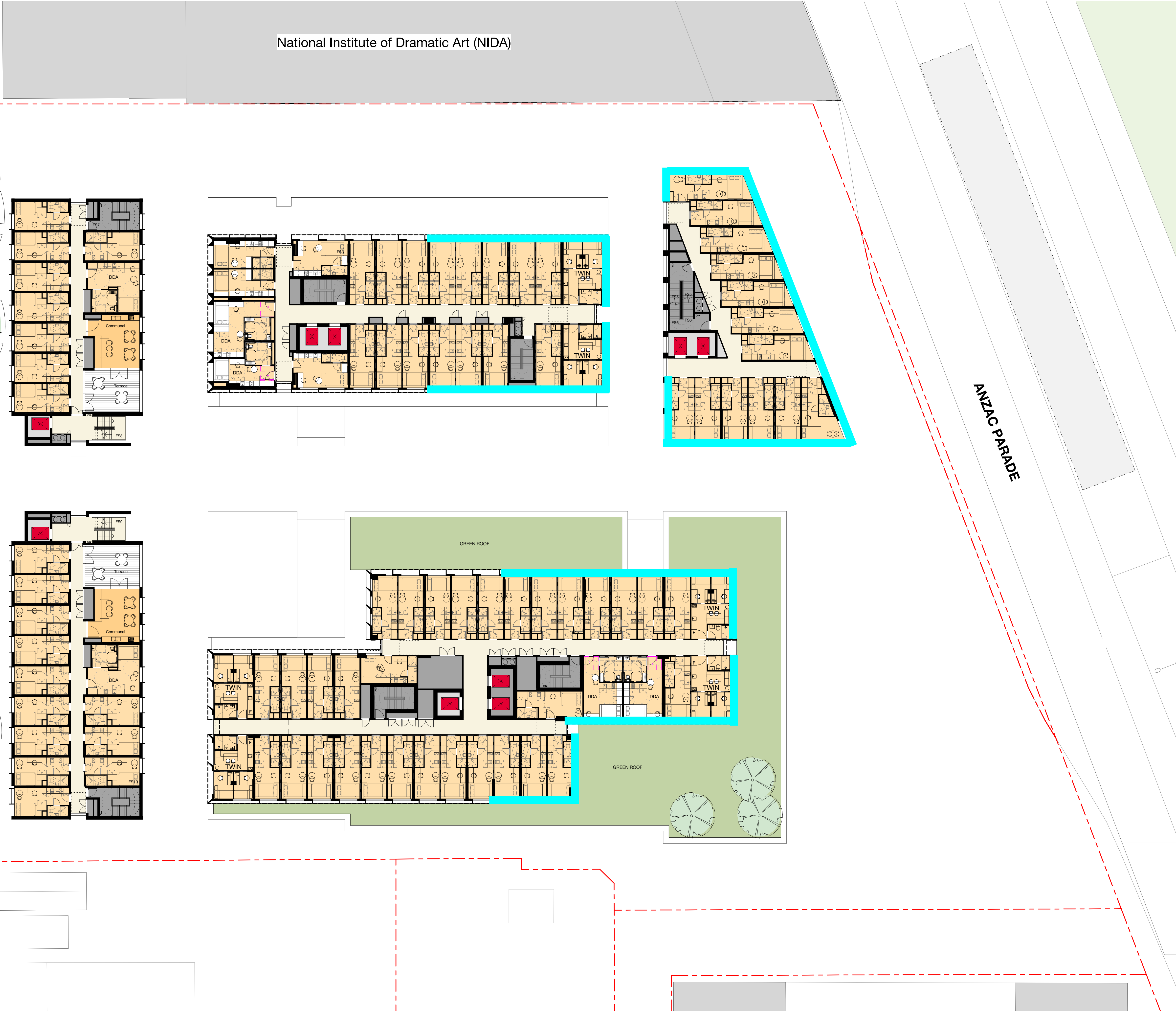
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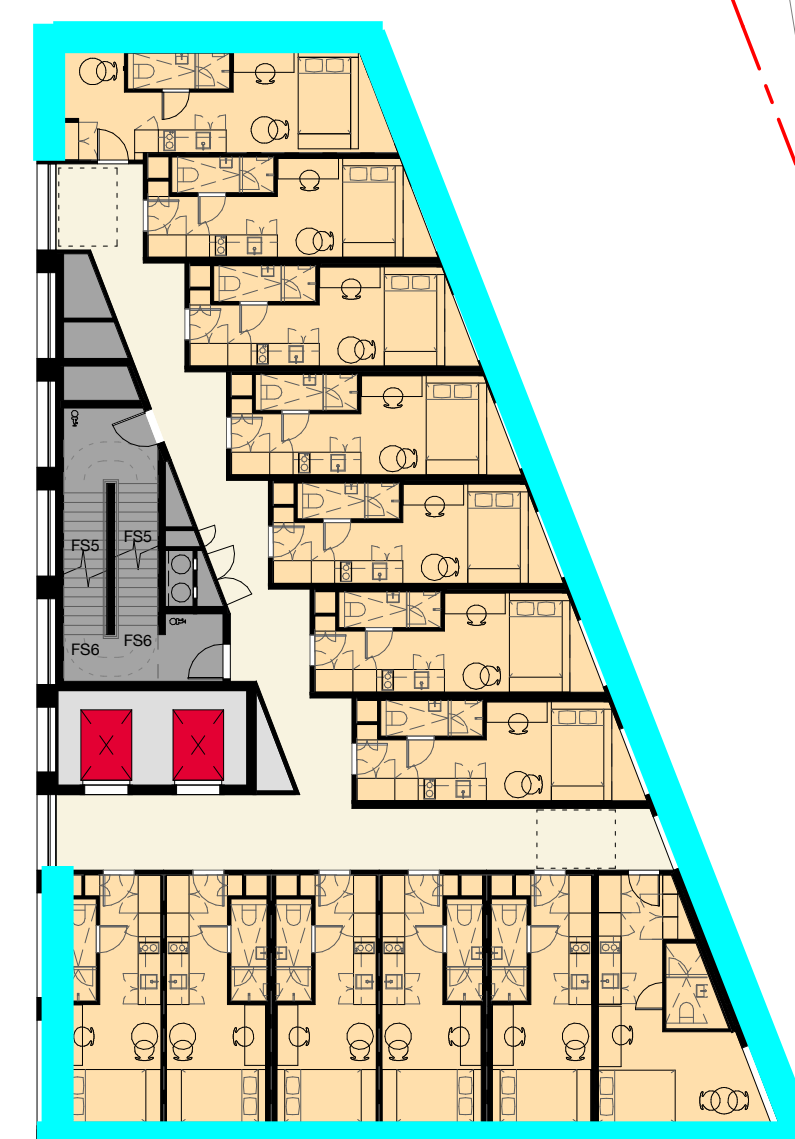
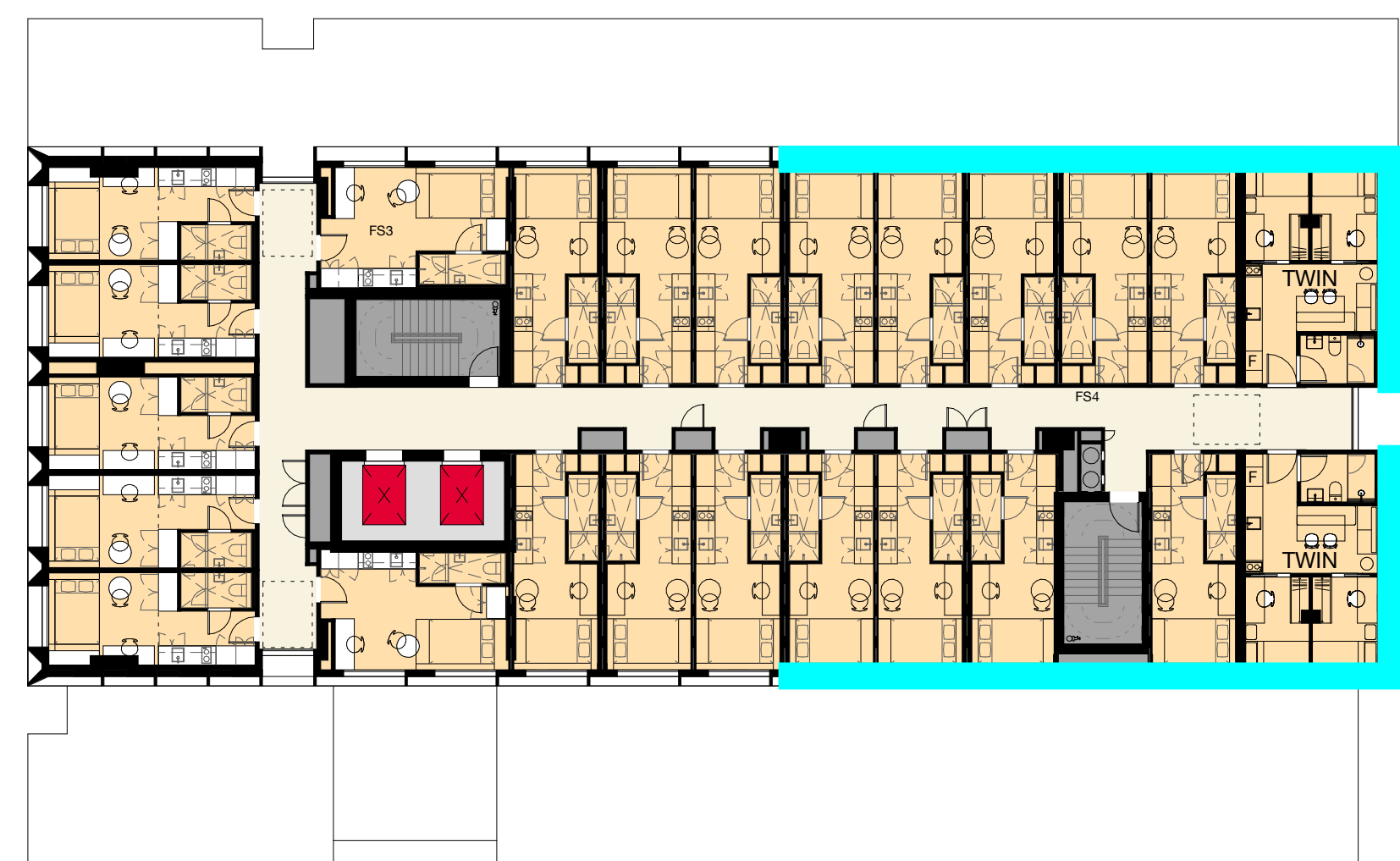
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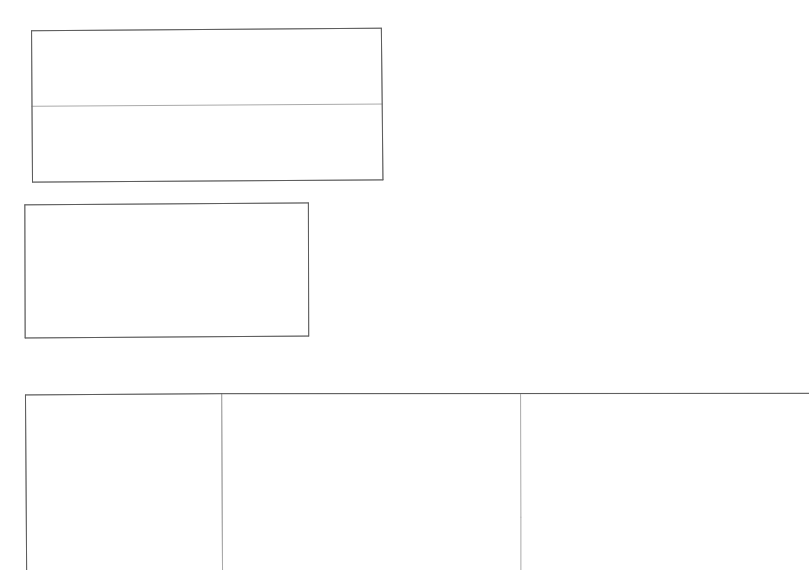
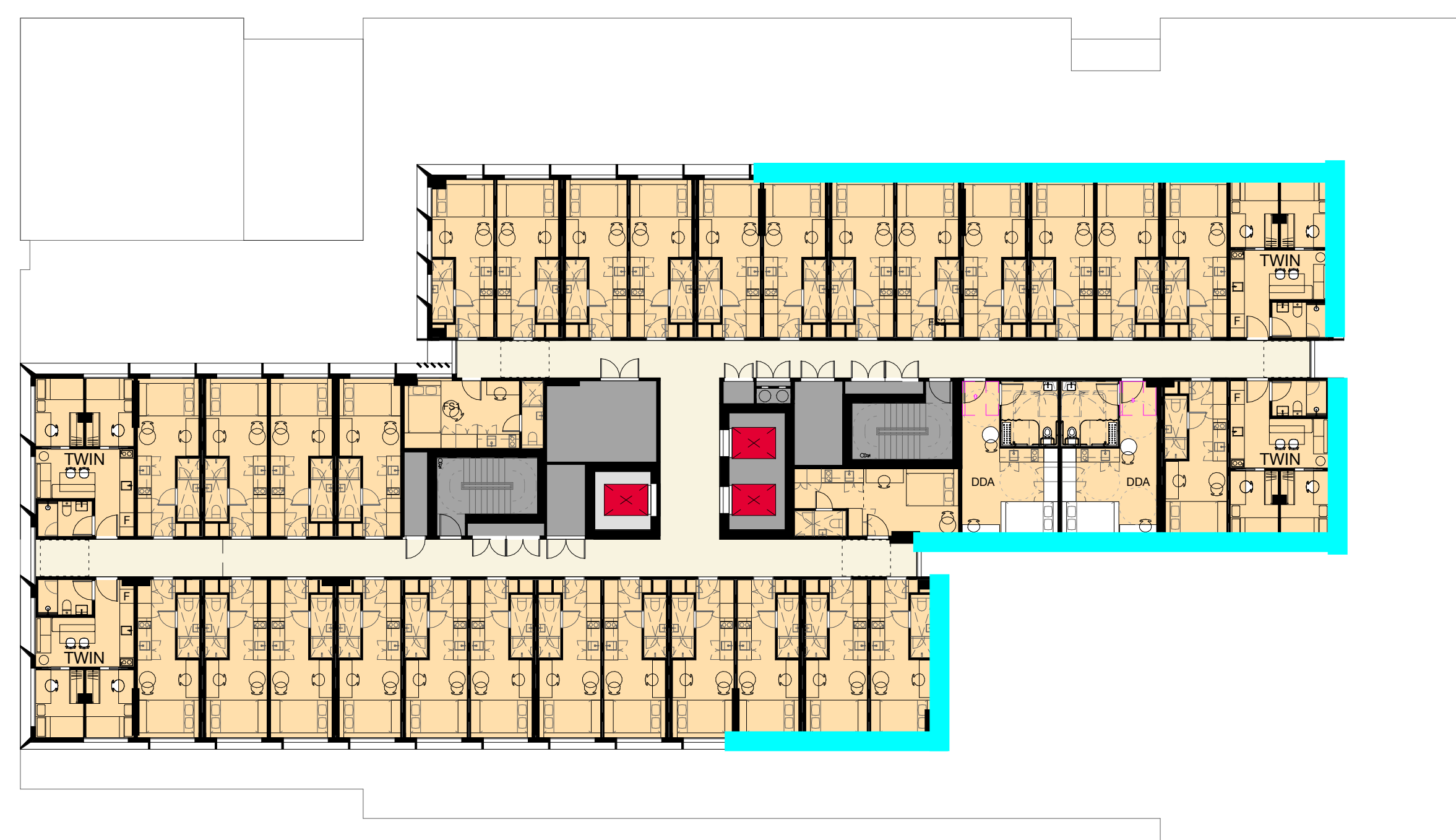
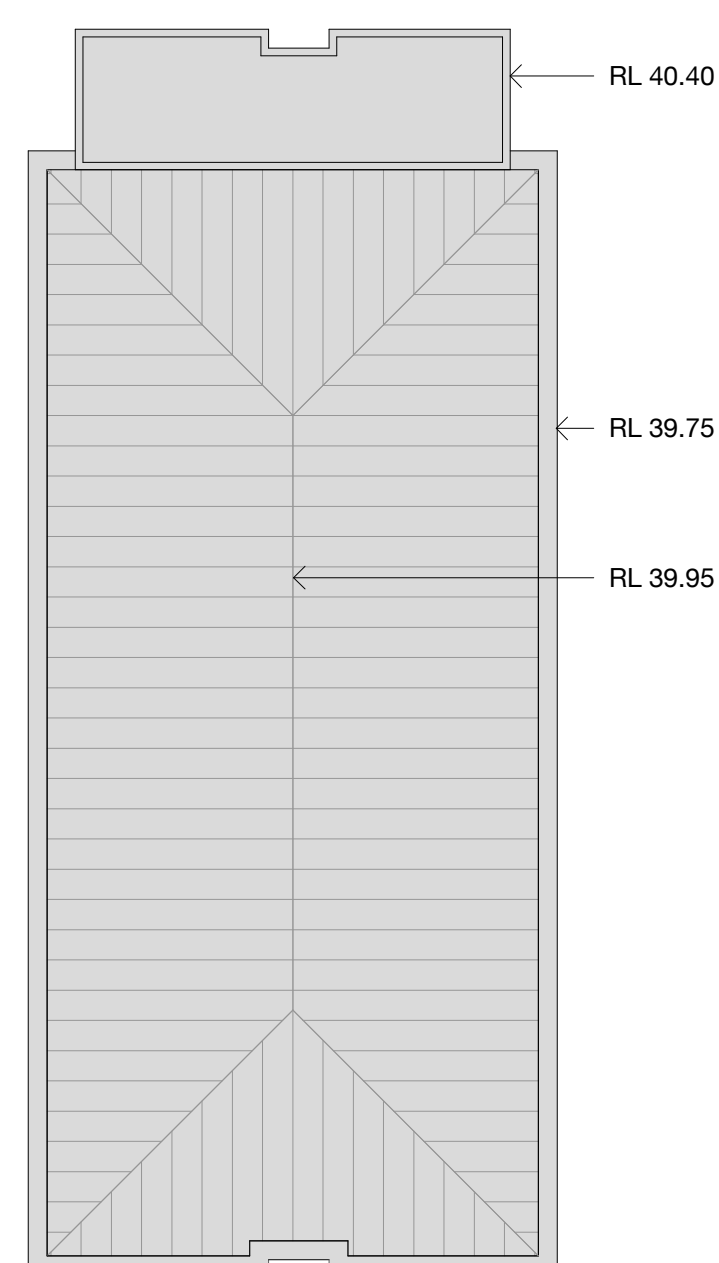


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ANZAC PARADE



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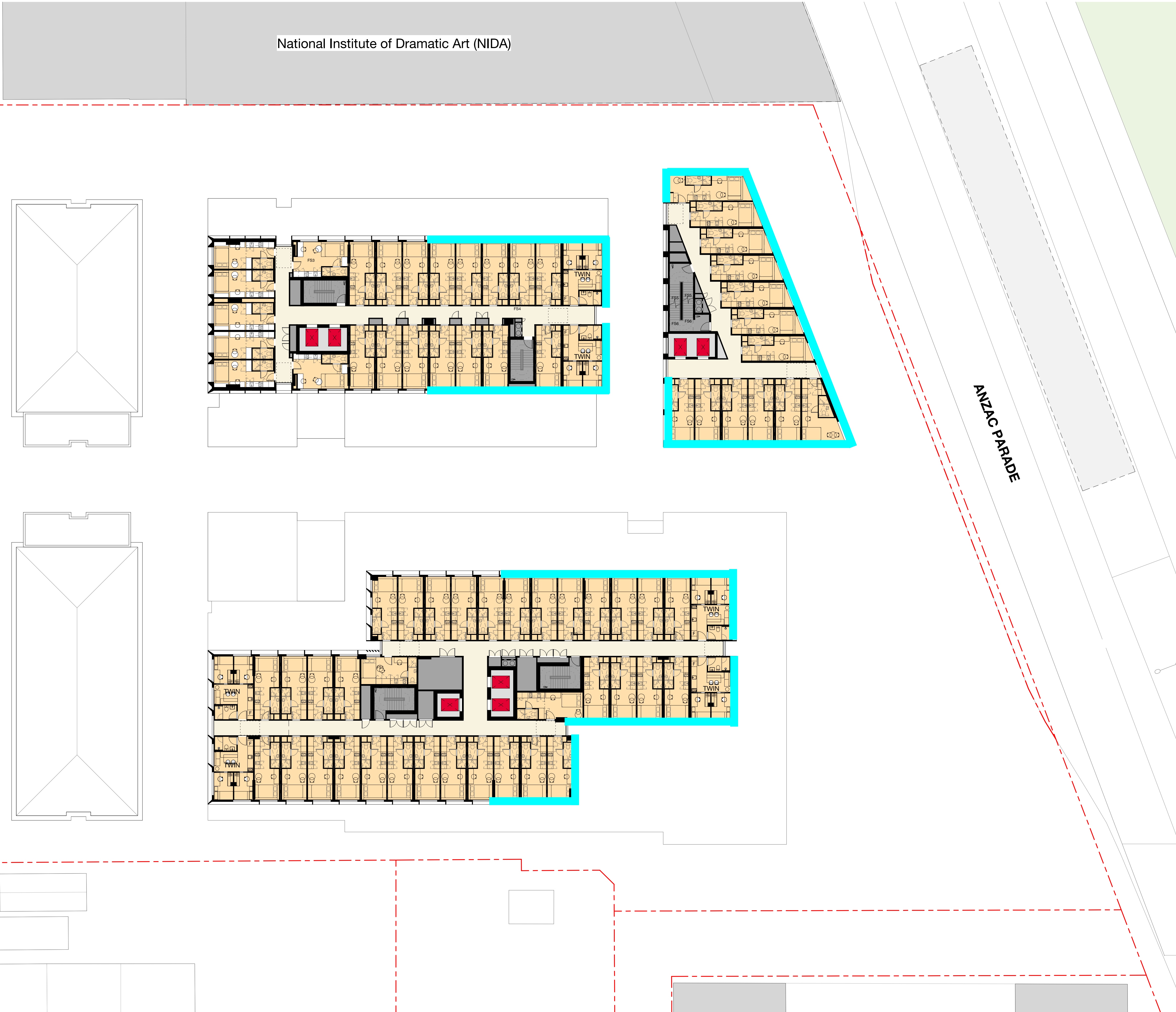
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Iglu at UNSW
215B Anzac Parade, Kensington

Level 05 Plan

Status	Development Application		
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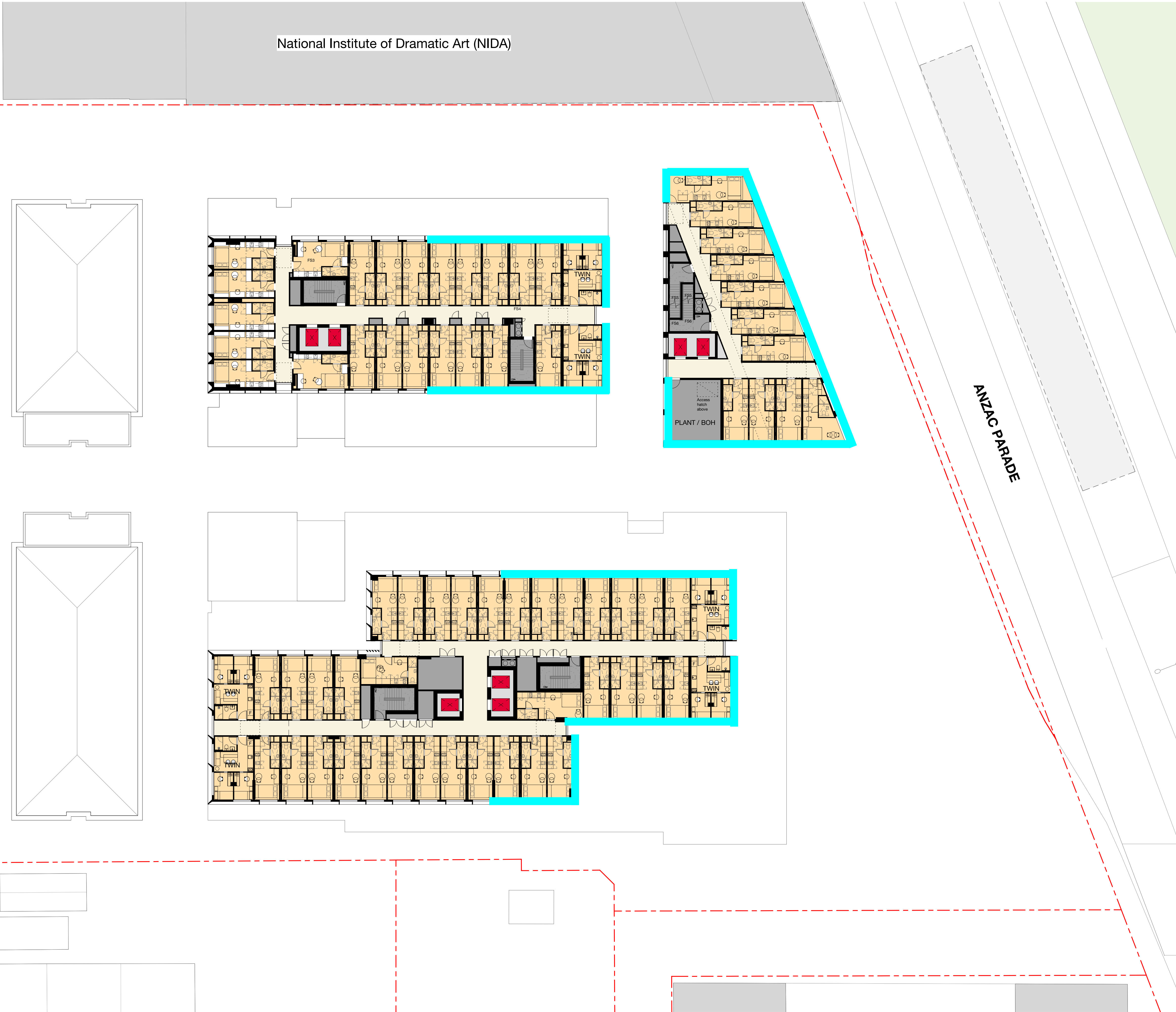
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Rev	Date	Description	Initial	Checked

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Level 06 Plan

Status	Development Application		
Scale	1 : 200	@ A1	
Drawn	WA	Checked	JC
Project No.	S12561		
Plot Date	18/04/2024 12:50:46 PM		
BIM			

Drawing no.	Revision
DA03.106	D

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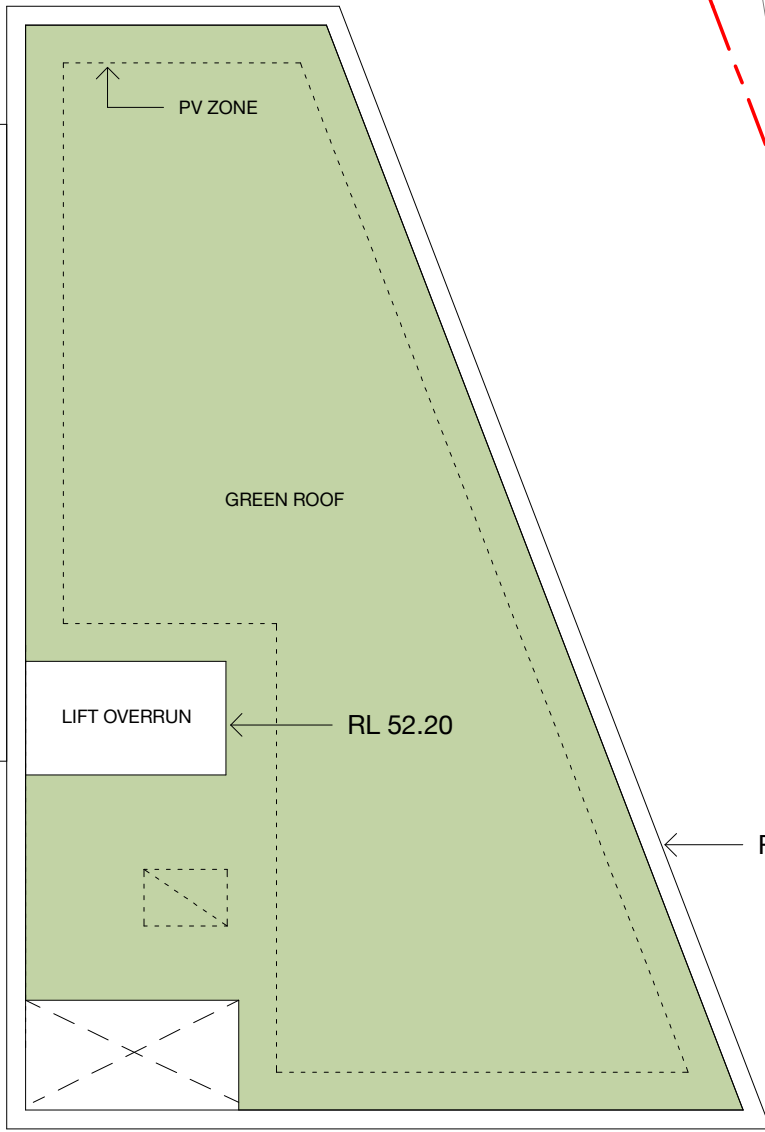
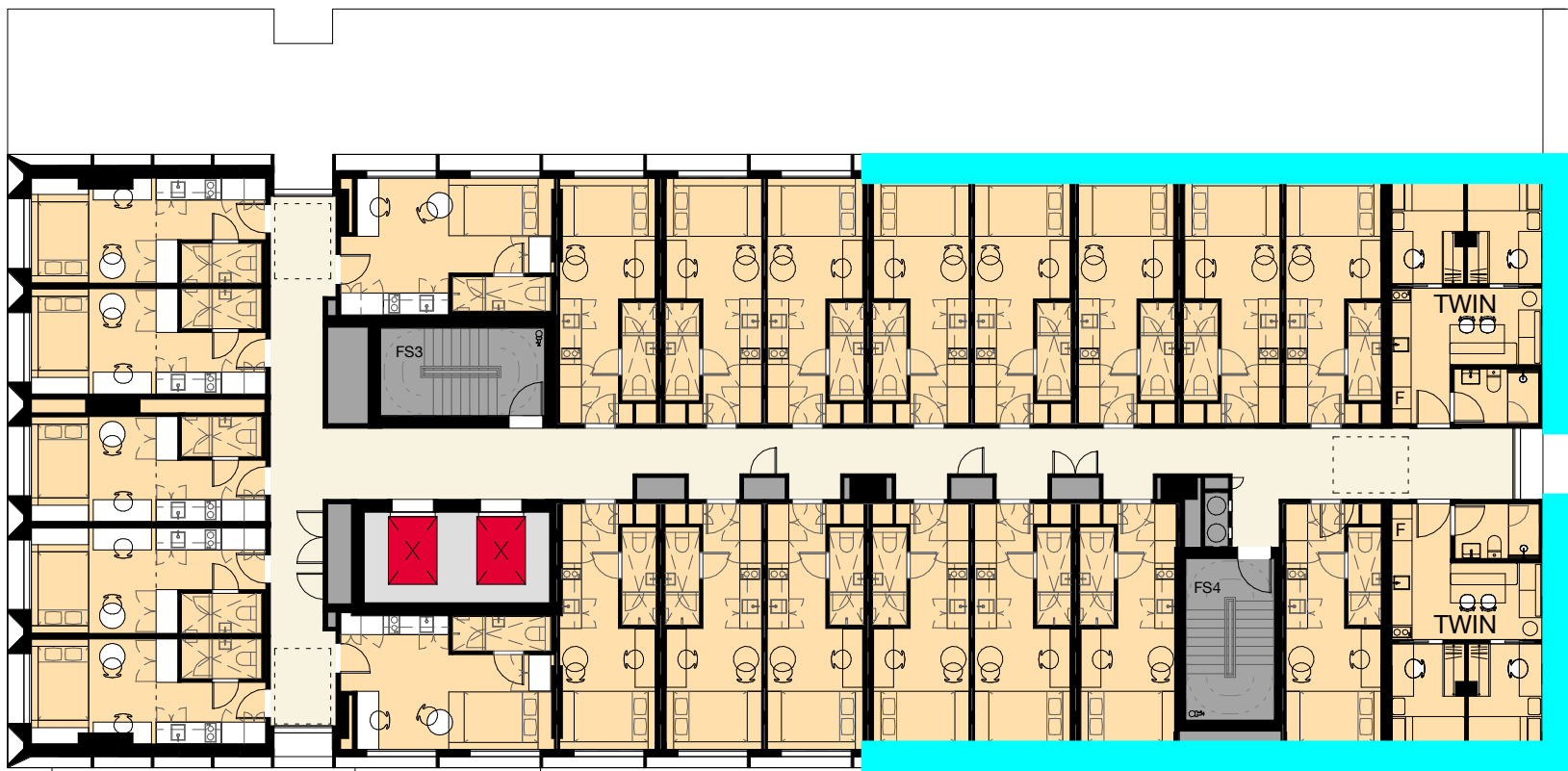
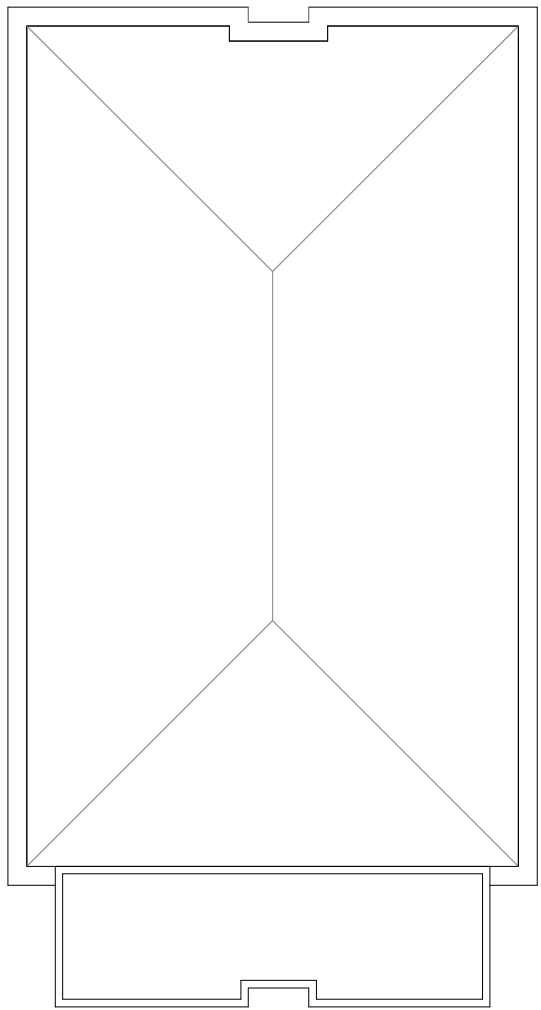
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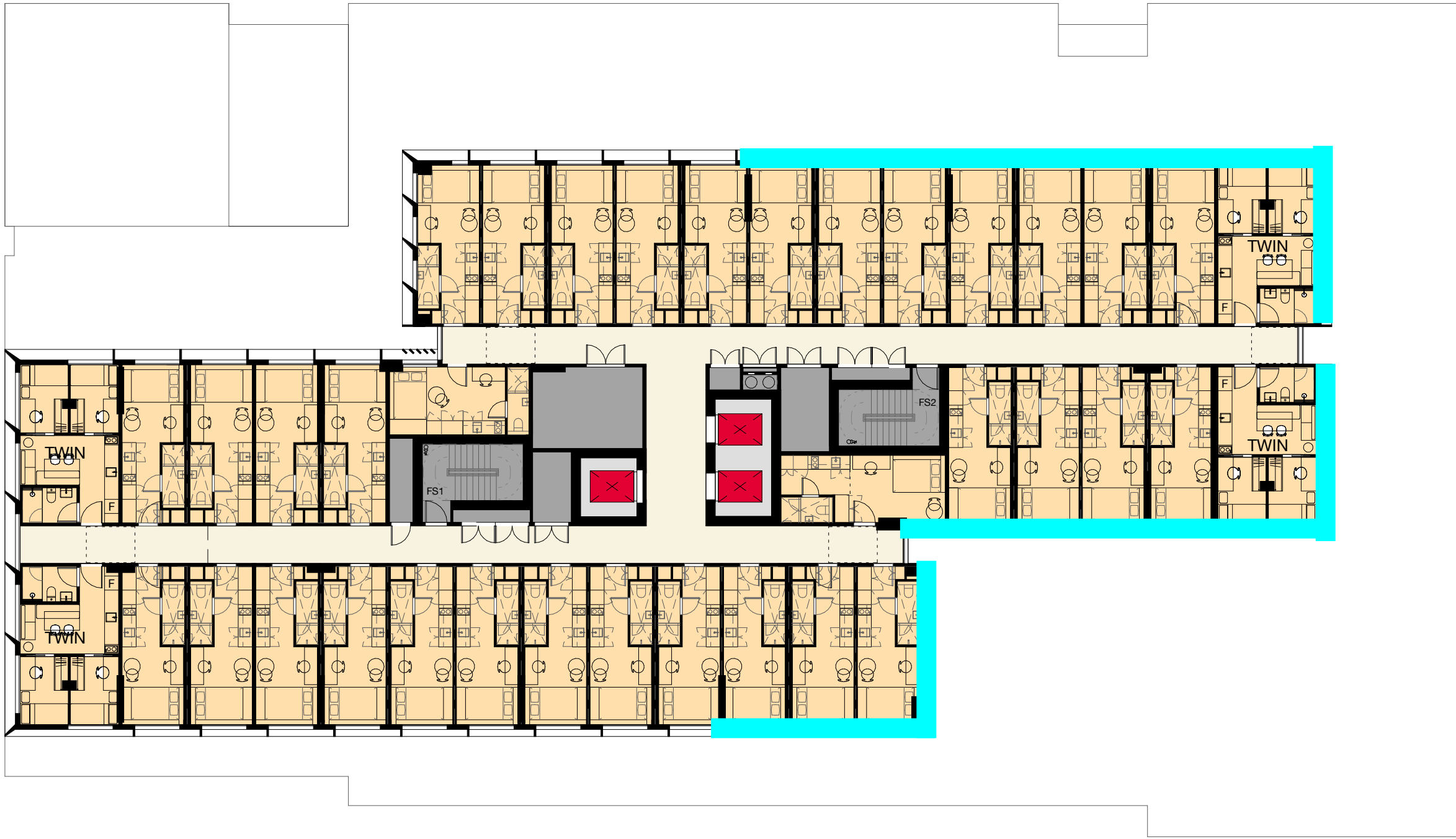
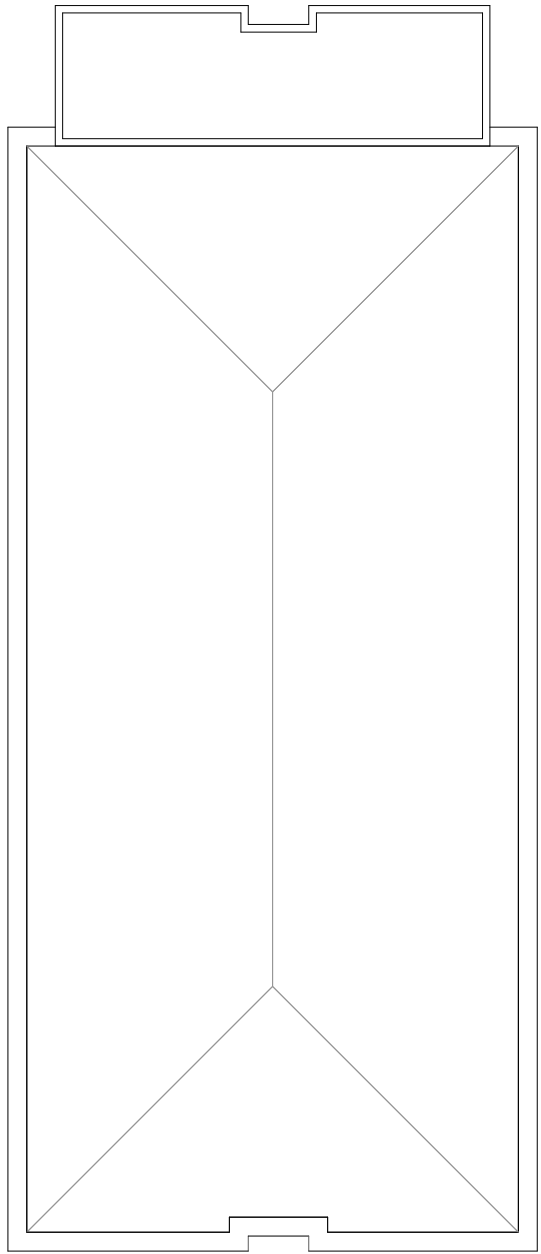
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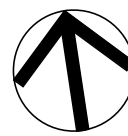
Ventilation Markup Key

Alternative Ventilation Should be Provided

D	19.04.24	REVISED DA	PB	TG
C	04.03.24	REVISED DA (DRAFT)	MH	WM
B	21.12.22	DEVELOPMENT APPLICATION	WA	JC
A	07.11.22	DEVELOPMENT APPLICATION	WA	JC
Rev	Date	Description	Initial	Checked

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215B Anzac Parade, Kensington

Level 07 Plan



Status	Development Application		
Scale	1 : 200	@ A1	
Drawn	WA	Checked	JC
Project No.	S12561		
Plot Date	18/04/2024 12:50:56 PM		
BIM			
Drawing no.	DA03.107		Revision
			D

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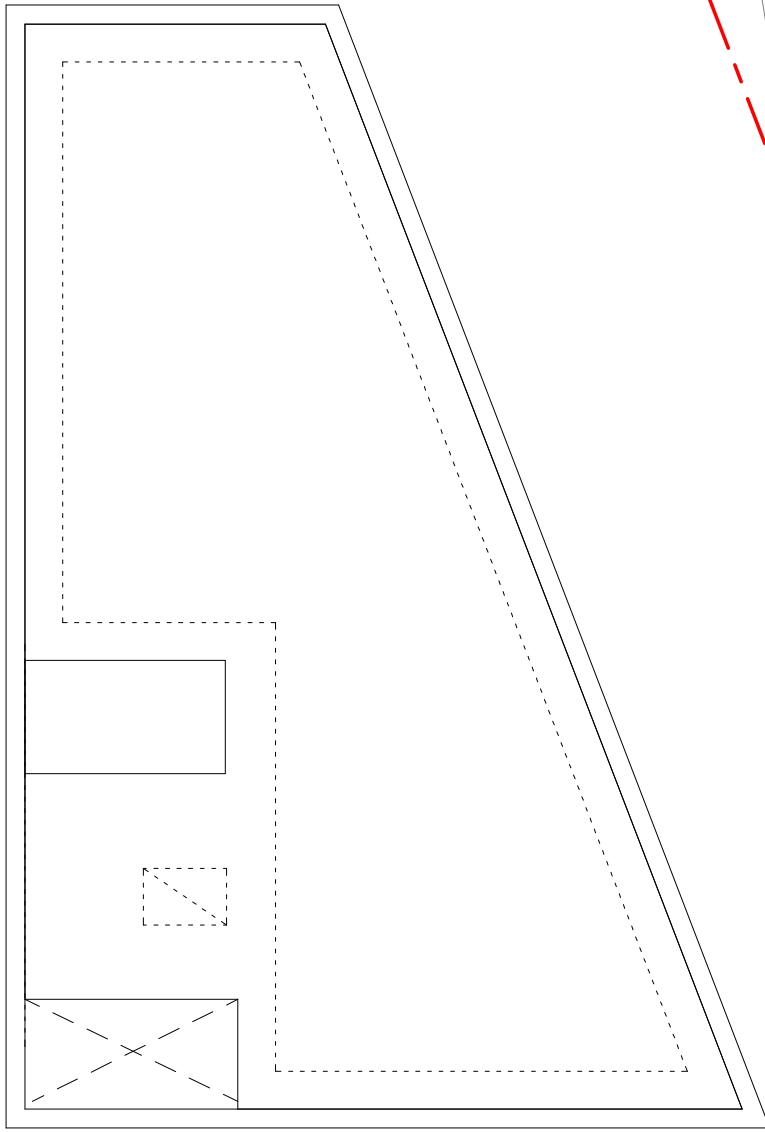
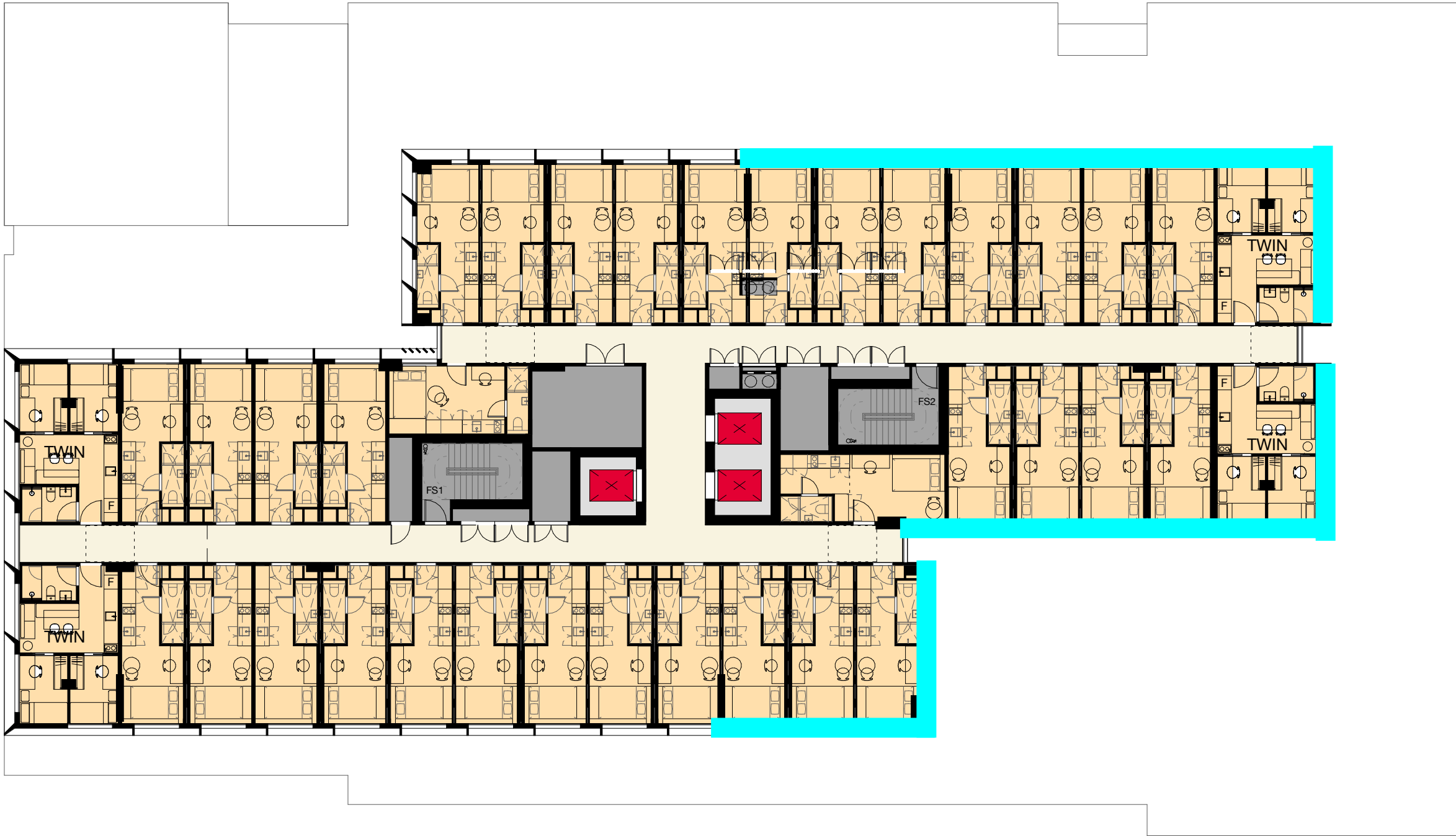
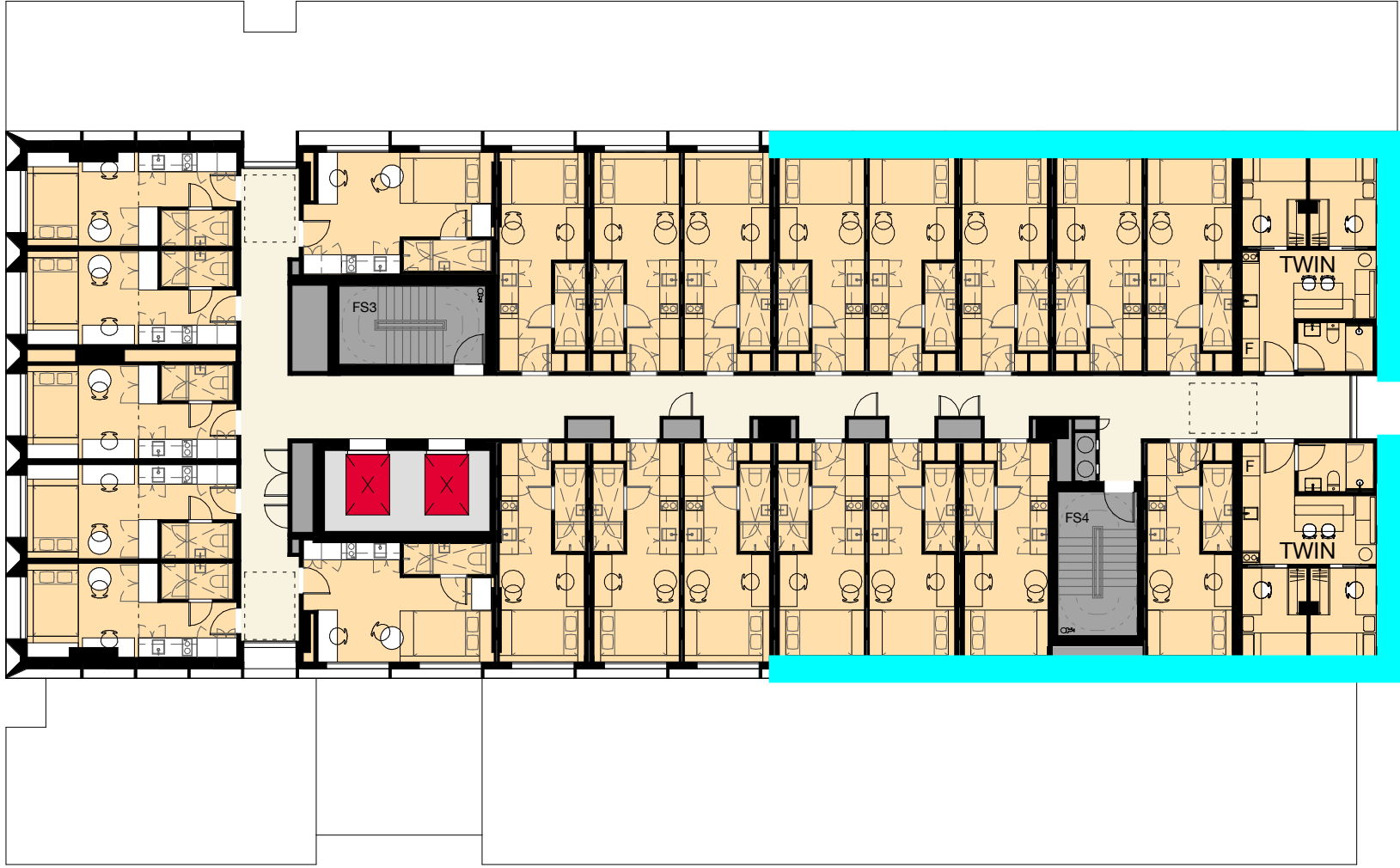
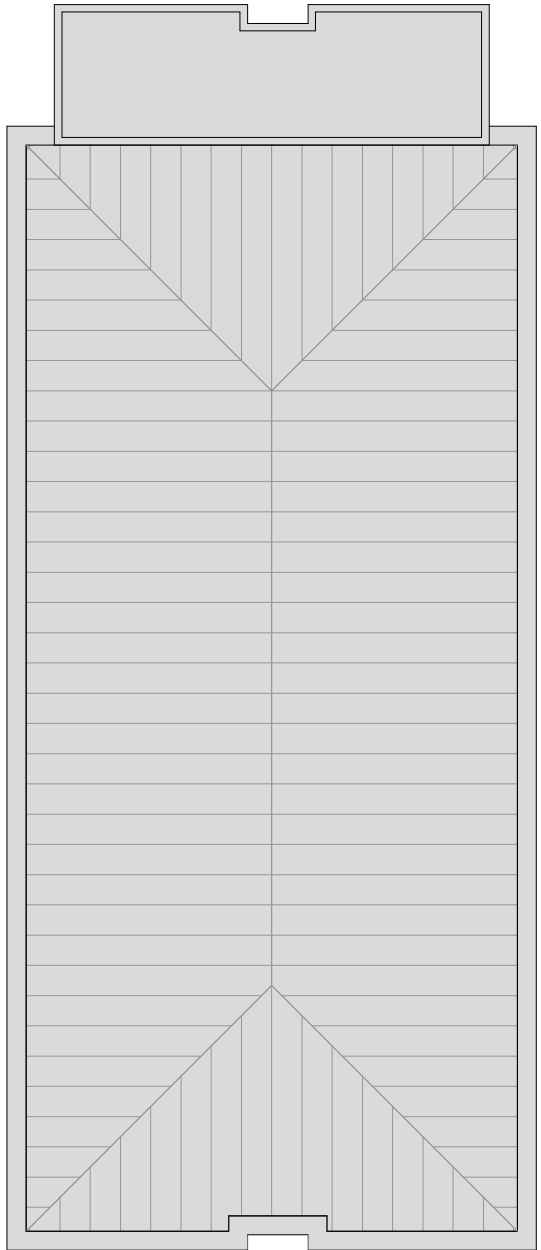
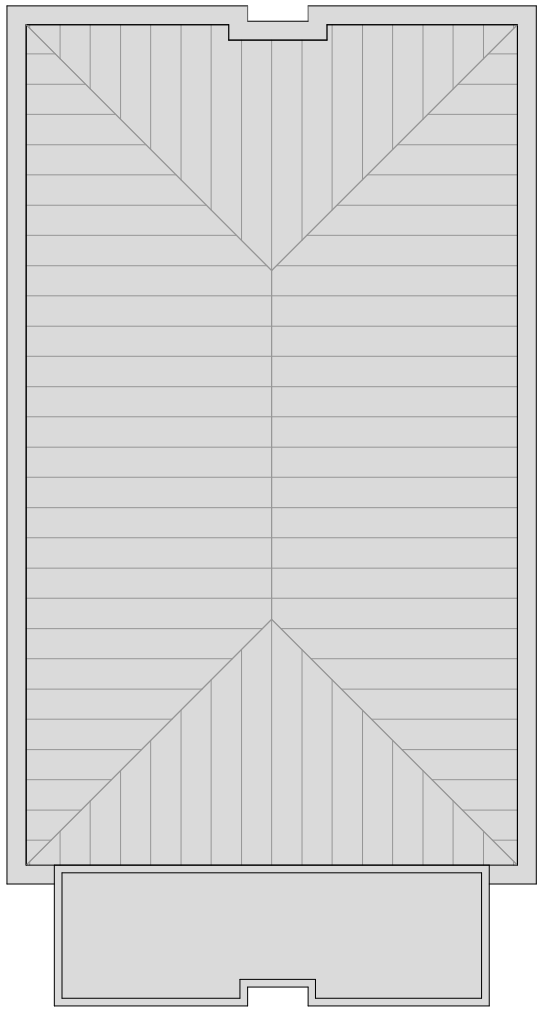
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Ventilation Markup Key

Alternative Ventilation Should be Provided

D	19.04.24	REVISED DA	PB	TG
C	04.03.24	REVISED DA (DRAFT)	MH	WM
B	21.12.22	DEVELOPMENT APPLICATION	WA	JC
A	07.11.22	DEVELOPMENT APPLICATION	WA	JC
Rev	Date	Description	Initial	Checked

Iglu at UNSW
215B Anzac Parade, Kensington

Level 08-13 Plan



Status	Development Application		
Scale	1 : 200	@	A1
Drawn	WA	Checked	JC
Project No.	S12561		
Plot Date	18/04/2024 12:51:06 PM		
BIM			
Drawing no.	DA03.108		Revision
			D

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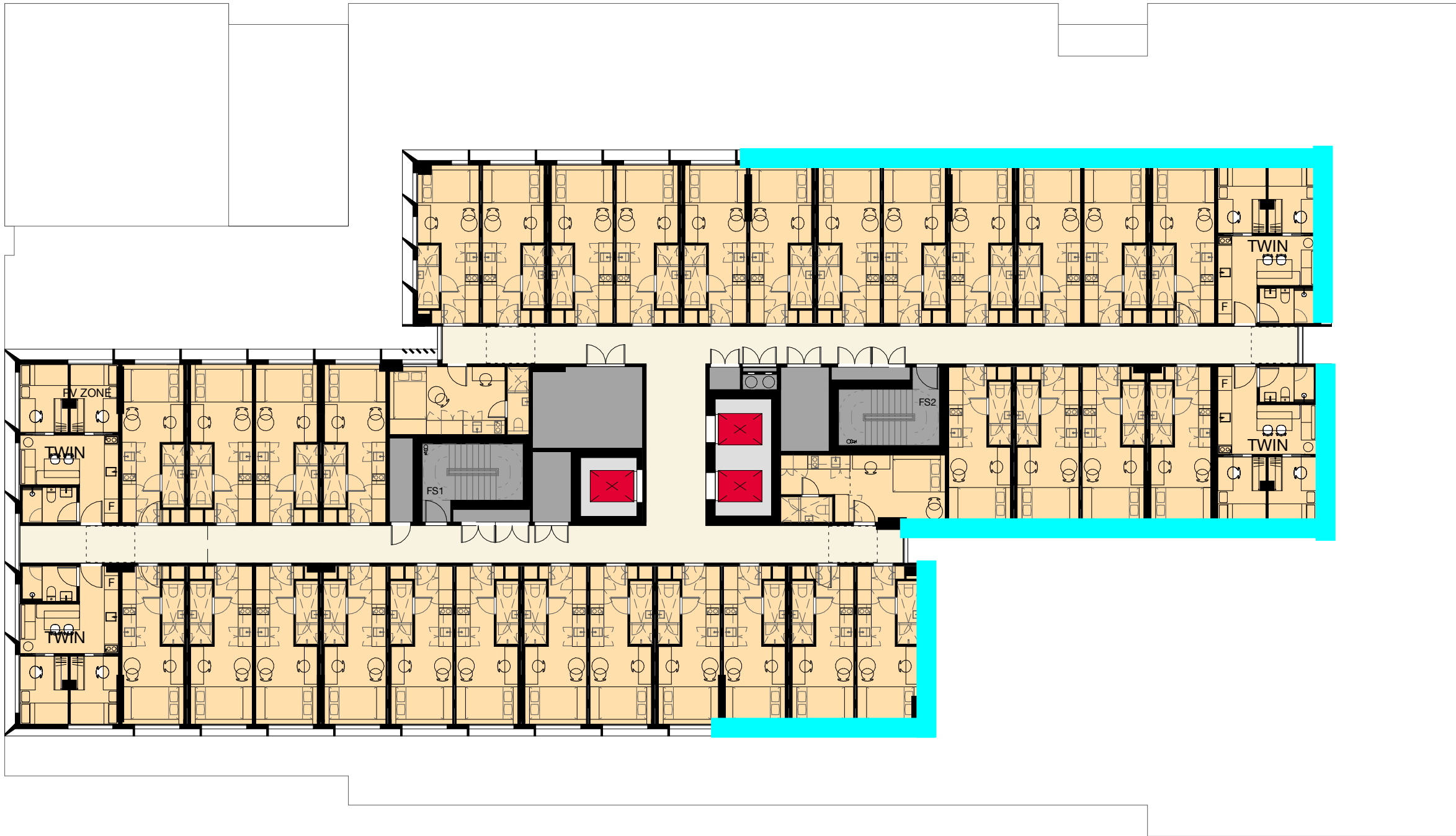
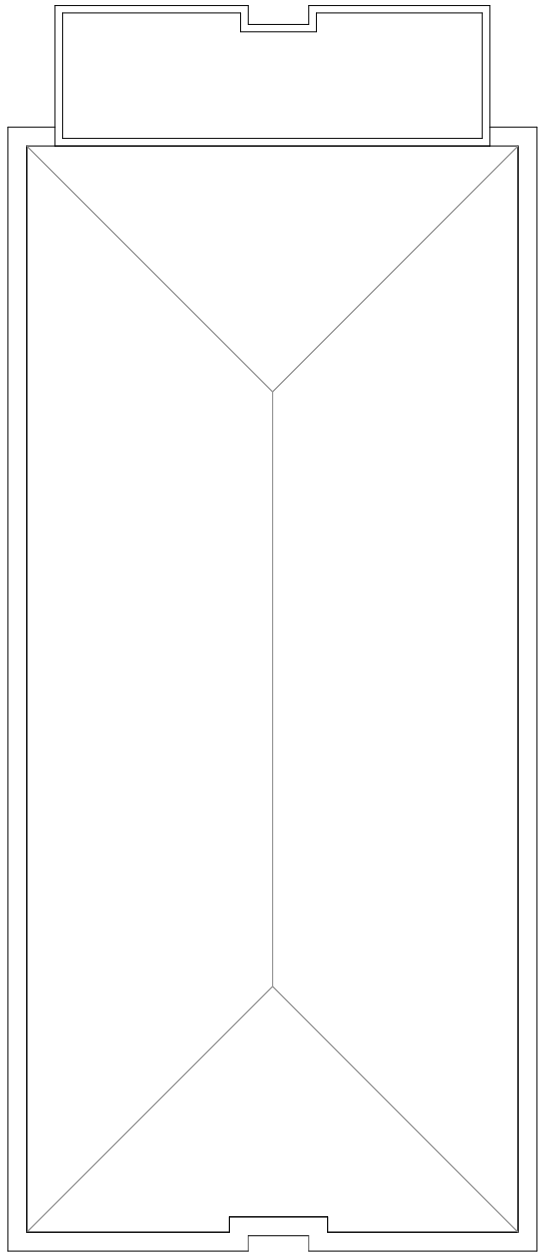
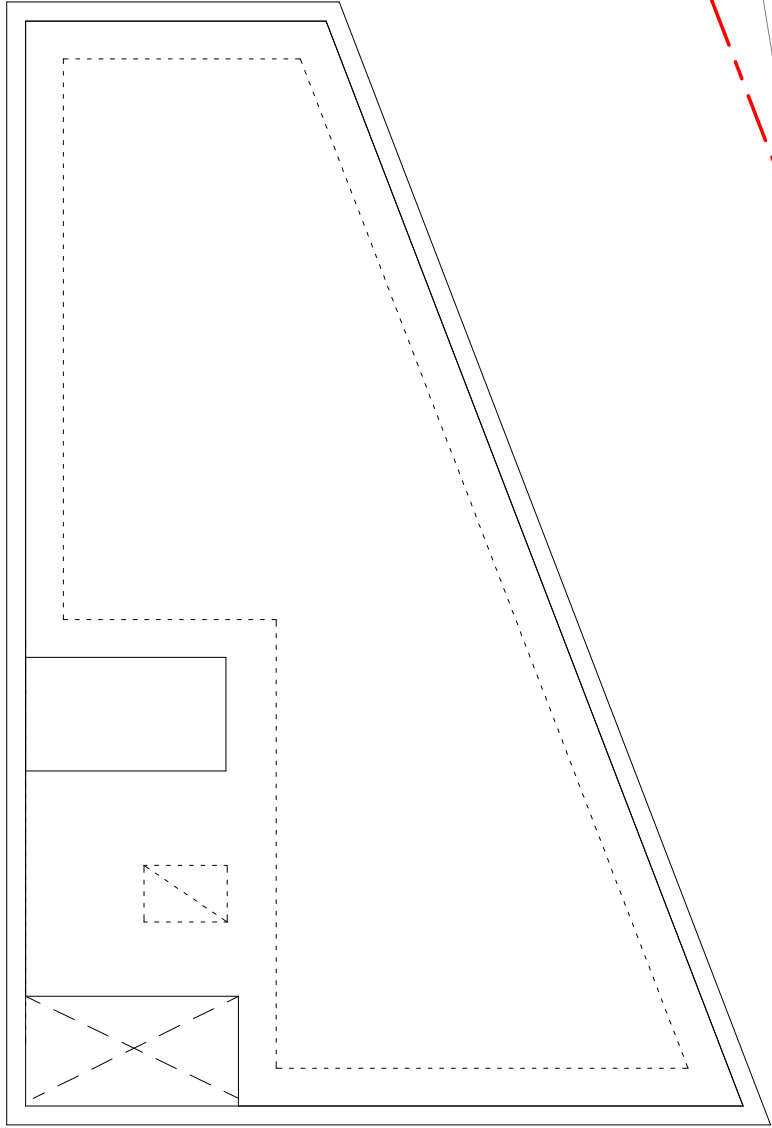
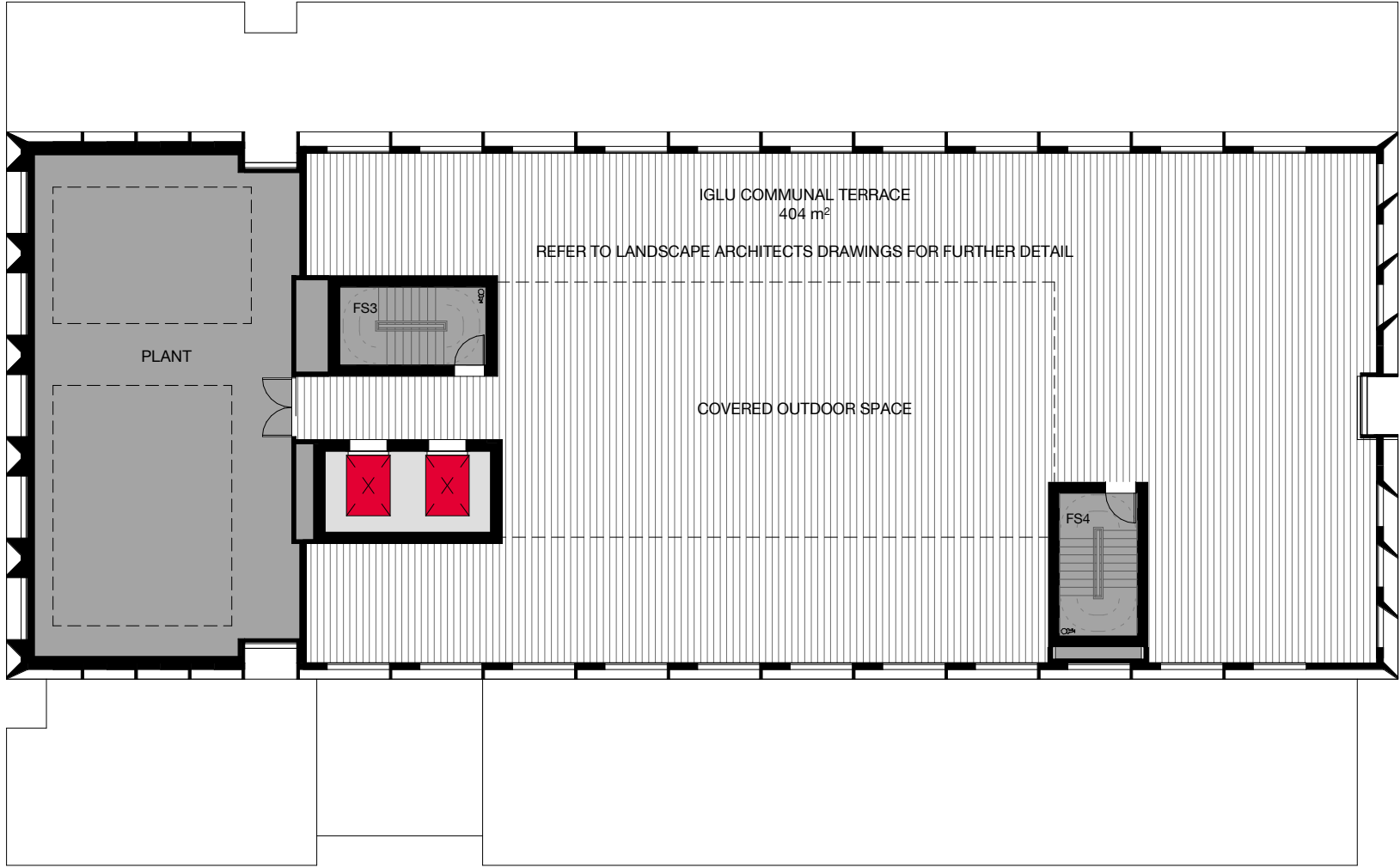
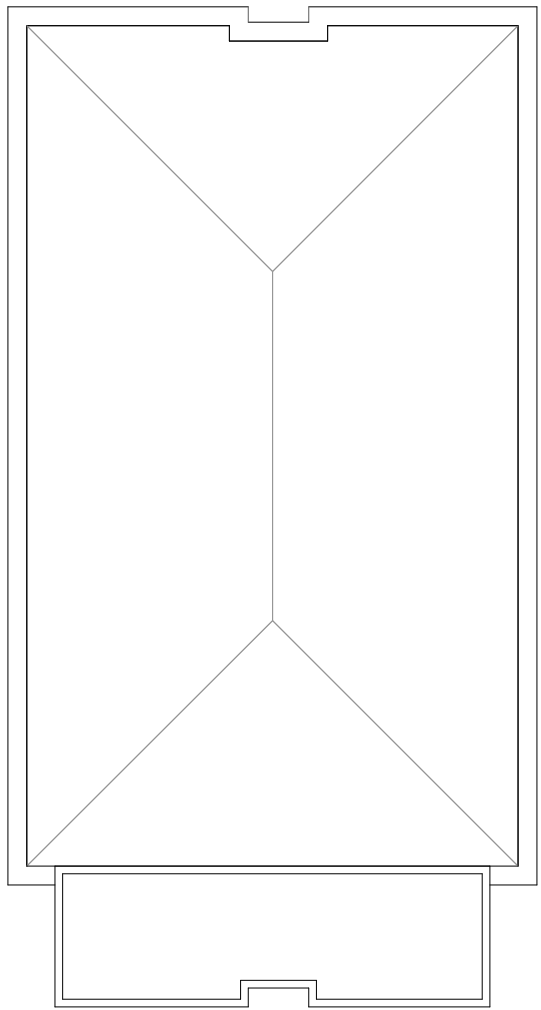
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Ventilation Markup Key

Alternative Ventilation Should be Provided

D	19.04.24	REVISED DA	PB	TG
C	04.03.24	REVISED DA (DRAFT)	MH	WM
B	21.12.22	DEVELOPMENT APPLICATION	WA	JC
A	07.11.22	DEVELOPMENT APPLICATION	WA	JC
Rev	Date	Description	Initial	Checked

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215B Anzac Parade, Kensington

Level 14 Plan



Status	Development Application		
Scale	1 : 200	@	A1
Drawn	WA	Checked	JC
Project No.	S12561		
Plot Date	18/04/2024 12:51:15 PM		
BIM			
Drawing no.	DA03.114		Revision
			D

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