66 William Street & 25 Church Street, Port Macquarie, NSW

DA Acoustic Assessment

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1 INTRODUCTION

Pulse White Noise Acoustics (PWNA) has been engaged to undertake an acoustic assessment of the proposed development at No. 66 William Street – 25 Church Street, Port Macquarie, NSW. This assessment is undertaken as part of the submission for development approval (DA) requested by the local council.

The assessment addresses the noise impact of local road traffic noise on the amenity of internal spaces and sets criteria for noise emission from the development with respect to mechanical plant, and traffic generation.

A summary of the acoustic terminology used in this report, is presented in Appendix A.

1.1 Project Description

The proposed development is located at No. 66 William Street – 25 Church Street, Port Macquarie, NSW. The development comprises the following:

- Basement Levels 1 and 2: Enclosed carpark spaces.
- Ground Level: Medical centre tenancy which includes consultation rooms, pharmacy tenancy, pathology rooms, reception, corridors, waiting areas, private offices, amenities.
- Level 1: This includes the following:
    - Commercial tenancy
    - Medical centre tenancy which includes consultation and treatment rooms
    - Staff areas which accommodate lounge room, dining room, conference room, amenities
    - Foyer space
- Level 2: Two commercial tenancies and amenities
- Level 3: Residential area which includes the following:
    - Bedrooms (three)
    - Rumpus room
    - Dining & lounge
    - Kitchen
    - Amenities
    - Outdoor area: BBQ pergola, lawn & garden, spa, pool
- Level 4: Two bedrooms, each with its own ensuite.

Architectural drawings showing layout of the proposed development, is included in Appendix C.

1.2 Site Layout

The development extends between William Street and Church Street, as shown in Figure 1. It is surrounded by the following premises:

- Residential properties immediately adjacent to eastern and western property boundaries.
- Most premises along William Street and Church Street, comprise residential properties, except for the following:
    - A hotel (i.e. Ki-ea Apartments) which is situated facing the northern property boundary, across William Street, approximately 30m from northern property boundary (i.e. 67 William Street).
    - A mixed used development (i.e. medical centre at Ground Level, and residential apartment on level above), situated on 62 William Street (approximately 20m from eastern property boundary).
    - A hotel (i.e. Beachcomber Resort), located between William Street, Lord Street and Church Street: 54 William Street (approximately 80m from eastern property boundary).
- A primary school (i.e. Port Macquarie Primary School), located in the corner of William Street and Grant Street: 1 Grant Street (approximately 95m from western property boundary)
- Telstra Exchange Building located along Grant Street, between William Street and Church Street (approximately 93m from western property boundary). This is classified as an industrial premise.

Figure 1 Site layout

2 EXISTING ACOUSTIC ENVIRONMENT

2.1 Unattended Noise Monitoring

To determine the existing noise environment, an unattended noise survey was undertaken. This unattended noise monitoring was conducted between Tuesday 11 April and Friday 21 April 2023.

For the unattended noise survey, the following instrumentation was set up within the project site as shown in Figure 1:

- Logger Location 1: Norsonic Nor139 noise logger, serial number 1393013. Noise logger deployed along northern property boundary, within line of sight of William Street..
- Logger Location 2: Rion NL-42 noise logger, serial number 00396931. Noise logger deployed along western property boundary.

Calibration of the noise loggers were checked prior to and following measurements using a Bruel & Kjaer Type 4230 sound calibrator (serial number 1275644). The calibrator emitted a calibration tone of 94 dB at 1 KHz. The drift in calibration did not exceed ±0.5 dB. All equipment carries appropriate and current NATA (or manufacturer) calibration certificates.

Charts presenting summaries of the measured daily noise data are attached in Appendix B. The charts present each 24 hour period and show the L_{A1}, L_{A10}, L_{Aeq} and L_{A90} noise levels for the corresponding 15 minute periods. This data has been filtered to remove periods affected by adverse weather conditions, based on weather information obtained from Port Macquarie Airport AWS (ID 060168).

2.2 Noise Descriptors & Terminology

Environmental noise constantly varies in level with time. Therefore, it is necessary to measure environmental noise in terms of quantifiable time periods and statistical descriptors. Typically, environmental noise is measured over 15-minute periods and relevant statistical descriptors of the fluctuating noise are determined to quantify the measured level.

Noise (or sound) consists of minute fluctuations in atmospheric pressure capable of detection by human hearing. Noise levels are expressed in terms of decibels, abbreviated as dB or dBA, the "A" indicating that the noise levels have been frequency weighted to approximate the characteristics of normal human hearing. Because noise is measured using a logarithmic scale, 'normal' arithmetic does not apply, e.g. adding two sound sources of equal values result in an increase of 3 dB (i.e. 60 dBA plus 60 dBA results in 63 dBA). A change of 1 dB or 2 dB in the sound level is difficult for most people to detect, whilst a 3 dB to 5 dB change corresponds to a small but noticeable change in loudness. A 10 dB change roughly corresponds to a doubling or halving in loudness.

The most relevant environmental noise descriptors are the L_{Aeq}, L_{A1}, L_{A10} and L_{A90} noise levels. The L_{Aeq} noise level represents the "equivalent energy average noise level". This parameter is derived by integrating the noise level measured over the measurement period. It represents the level that the fluctuating noise with the same acoustic energy would be if it were constant over the measured time period.

The L_{A1}, L_{A10} and L_{A90} levels are the levels exceeded for 1%, 10% and 90% of the sample period. These levels can be considered as the maximum noise level, the average repeatable maximum and average repeatable minimum noise levels, respectively.

Specific acoustic terminology is used in this assessment report. An explanation of common acoustic terms is included as Appendix A.

2.3 Noise Monitoring Results

The noise measurements obtained at Logger Location 1 has been used to determine existing road traffic noise levels incident onto the project site. This information has been processed into the time periods discussed in the NSW Road Noise Policy (NSW RNP). The results are presented in Table 1 below.

Table 1 Measured L_{Aeq} noise levels for assessment of noise intrusion

Period	Measured Noise Levels	
	Daytime/night-time periods	Max. 1 Hour Levels
Daytime: 7:00 am – 10:00 pm	59 dB L_{Aeq} (15 hrs)	61 dB L_{Aeq} (1 hr)
Night-time: 10:00pm – 7:00 am	52 dB L_{Aeq} (9 hrs)	56 dB L_{Aeq} (1 hr)

To determine the existing ambient noise levels at the nearest receivers, the noise measurements from logger locations 1 and 2 are used. The time periods used in this analysis, are in accordance with those recommended in the NSW Environment Protection Authority's (EPA) Noise Policy for Industry (NSW NPfI). The measurement results are presented in Table 2 below.

Table 2 Measured ambient noise levels in accordance with the NSW NPfI

Measurement Location	Daytime 7:00 am to 6:00 pm		Evening 6:00 pm to 10:00 pm		Night Time 10:00 pm to 7:00 am	
	dB L_{A90}	dB L_{Aeq}	dB L_{A90}	dB L_{Aeq}	dB L_{A90}	dB L_{Aeq}
Logger Location 1 Along northern property boundary	46	59	40	54	37	51
Logger Location 2 Along western property boundary	43	52	39	52	37	46

Notes:

1. *For Monday to Saturday, Daytime 7:00 am – 6:00 pm; Evening 6:00 pm – 10:00 pm; Night-time 10:00 pm – 7:00 am. On Sundays and Public Holidays, Daytime 8:00 am – 6:00 pm; Evening 6:00 pm – 10:00 pm; Night-time 10:00 pm – 8:00 am*
2. *The L_{A90} noise level is representative of the "average minimum background sound level" (in the absence of the source under consideration), or simply the background level*
3. *The L_{Aeq} is the energy average sound level. It is defined as the steady sound level that contains the same amount of acoustical energy as a given time-varying sound.*

3 OPERATIONAL ACOUSTIC CRITERIA

3.1 NSW Noise Policy for Industry

In NSW, the control of noise emissions is the responsibility of Local Governments and the NSW Environment Protection Authority (NSW EPA).

Consequently, the NSW EPA has prepared a document titled Noise Policy for Industry (NSW NPfI) which provides a framework and process for determining external noise criteria and subsequent assessments. The NSW NPfI criteria for industrial noise sources have two components:

- Controlling the intrusive noise impacts for residents and other noise sensitive receivers in the short term; and
- Maintaining noise level amenity of particular land uses for residents and sensitive receivers in other land uses.

3.1.1 Intrusive Noise Impacts (Residential Receivers)

The NSW NPfI states that the noise from any single source should not intrude greatly above the prevailing background noise level. Industrial noises are generally considered acceptable if the equivalent continuous (energy-average) A-weighted level of noise from the source (L_{Aeq}), measured over a 15-minute period, does not exceed the background noise level measured in the absence of the source by more than 5 dBA. This is often termed the Intrusiveness Criterion.

The 'Rating Background Level' (RBL) is the background noise level to be used for assessment purposes and is determined by the methods given in the NSW NPfI. Using the rating background noise level approach results in the intrusiveness criterion being met for 90% of the time. Adjustments are to be applied to the level of noise produced by the source that is received at the assessment point where the noise source contains annoying characteristics such as tonality or impulsiveness.

3.1.2 Protecting Noise Amenity (All Receivers)

To limit continuing increase in noise levels, the maximum ambient noise level within an area from industrial noise sources should not normally exceed the acceptable noise levels specified in Table 2.2 of the NSW NPfI. That is, the ambient L_{Aeq} noise level should not exceed the level appropriate for the particular locality and land use. This is often termed the 'Background Creep' or Amenity Criterion.

The amenity assessment is based on noise criteria specified for a particular land use and corresponding sensitivity to noise. The cumulative effect of noise from industrial sources needs to be considered in assessing the impact. These criteria relate only to other continuous industrial-type noise and do not include road, rail, or community noise. If the existing (measured) industrial-type noise level approaches the criterion value, then the NSW NPfI sets maximum noise emission levels from new sources with the objective of ensuring that the cumulative levels do not significantly exceed the criterion.

3.1.3 Area Classification

Table 2.3 of the NSW NPfI provides typical RBLs for types of residential receivers. For suburban residential receivers, the typical existing RBLs are defined as follows:

- Daytime RBL < 45 dBA
- Evening RBL <40 dBA
- Night RBL < 35 dBA

These typical RBLs generally concur with the ambient RBLs measured at Logger Locations 1 and 2 (as listed in Table 2). Furthermore, these also generally coincide with the zoning classification shown in Figure 2. In accordance with Table 2.3 of the NSW Noise Policy for Industry (NSW NPfI), the R3 zone is classified as *Suburban*, while the R4 zone is classified as *Urban*. A *Suburban* area is described as an area that has local traffic with characteristically intermittent traffic flows or with some limited commerce or industry. This area often has evening ambient noise levels defined by the natural environment and human activity.

To provide a conservative assessment, all residential receivers considered in this assessment have been categorised as suburban. Based on this information, recommended amenity noise levels are determined for the nearest affected receivers. The recommended amenity noise levels are obtained from Table 2.2 of the NSW NPfI for various types of receivers; those that are applicable to our acoustic assessment are listed in Table 3.

Where existing road traffic noise is high enough to render stationary noise sources effectively inaudible, the ANL can be modified so that the amenity criteria is not unduly stringent in an environment where road traffic noise is the dominant source of environmental noise. If all the conditions below are satisfied, the ANL becomes $L_{Aeq,\ traffic}$ minus 15 dBA. The conditions are:

- The road traffic noise is the dominant noise source.
- The existing noise is 10dBA or more above the recommended ANL for the area.
- It is highly unlikely the road traffic noise levels would reduce in the near future.

Figure 2 Zoning at and around the project site

Please note the amenity criteria for hotels is obtained by adding 5 dB to the amenity criteria for residences. Since residences are located within a suburban zone, then the amenity criteria for hotels is 5 dB higher than the amenity criteria for suburban residences.

Table 3 NSW NPfI – Recommended L_{Aeq} Noise Levels from Industrial Noise Sources

Type of Receiver	Indicative Noise Amenity Area	Time of Day[1]	Recommended Amenity Noise Level ($L_{Aeq, period}$)[2]
Residences along William Street & Church Street	Suburban	Day	55
		Evening	45
		Night	40
Hotels along William Street	Suburban	Day	60
		Evening	50
		Night	45
Commercial premises	All	Day	65
School classroom - external	All	Noisiest 1 hour period when in use	60 [3]

Note 1: For Monday to Saturday, Daytime 7:00 am – 6:00 pm; Evening 6:00 pm – 10:00 pm; Night-time 10:00 pm – 7:00 am. On Sundays and Public Holidays, Daytime 8:00 am – 6:00 pm; Evening 6:00 pm – 10:00 pm; Night-time 10:00 pm – 8:00 am

Note 2: The L_{Aeq} is the energy average sound level. It is defined as the steady sound level that contains the same amount of acoustical energy as a given time-varying sound.

Note 3: Assuming a noise reduction between internal and external noise levels of 25 dB for non-openable windows

3.1.4 Project Trigger Noise Levels

The intrusive and amenity criteria for industrial noise emissions derived from the measured data are presented in Table 4.

Table 4 External noise level criteria in accordance with the NSW NPfI

Location	Time of Day	Project Amenity Noise Level, $L_{Aeq, period}$ [1] (dBA)	Measured $L_{A90, 15\ min}$ (RBL) [2] (dBA)	Measured $L_{Aeq, period}$ Noise Level (dBA)	Intrusive $L_{Aeq, 15\ min}$ Criterion for New Sources (dBA)	Amenity $L_{Aeq, 15\ min}$ Criterion for New Sources (dBA) [4]
Residences along William Street	Day	50	46	59	**51**	53
	Evening	40	40	54	45	**43**
	Night	35	37	51	42	**38**
Residences along Church Street	Day	50	43	52	**48**	53
	Evening	40	39	52	44	**43**
	Night	35	37	46	42	**38**
Hotels along William Street	Day	55	45	59	**51**	58
	Evening	45	40	54	**45**	48
	Night	40	35	51	**42**	43
Commercial premises	When in use	60	-	59	-	63
Educational premises	When in use	55	-	59	-	58

Note 1: Project Amenity Noise Levels corresponding to "Urban" areas, equivalent to the Recommended Amenity Noise Levels minus 5 dBA

Note 2: L_{A90} Background Noise or Rating Background Level, as listed in Table 2

Note 3: Project Noise Trigger Levels are shown in bold

Note 4: This is based on the assumption that the existing noise levels are unlikely to decrease in the future

Note 5: Minimum project intrusiveness noise level as per Table 2.1 of the NSW NPfI

These criteria are nominated for the purpose of determining the operational noise limits for mechanical plant associated with the development and that can potentially affect noise sensitive receivers.

For each assessment period, the lower (i.e. the more stringent) of the amenity or intrusive criteria are adopted. These are shown in bold text in Table 4.

3.1.5 Sleep Disturbance

In accordance with the NSW NPfI, sleep disturbance is to be assesses in two stages addressing the likelihood of sleep disturbance and sleep awakening.

For the criterion addressing the likelihood of sleep disturbance, the NSW NPfI recommends that the maximum noise level event should not exceed the following:

- 40 dB $L_{Aeq,\ 15\ minutes}$ or the prevailing RBL plus 5 dB, whichever is the greater; and / or
- 52 dB L_{AFmax} or the prevailing RBL plus 15 dB, whichever is the greater

As a result, the criterion of 52 dB L_{AFmax} is adopted as the criterion for the likelihood of sleep disturbance at all residences.

Regarding sleep awakening, ongoing research is still being undertaken to quantify an appropriate criterion. The NSW Road Noise Policy (NSW RNP) provides guidelines and a summary of current research being undertaken on this topic. According to the NSW RNP, an accurate representation of sleep disturbance impacts on a community from a noise source is particularly difficult to quantify mainly due to differing responses of individuals to sleep disturbance – this is found even within a single subject monitored at different stages of a single night's sleep or during different periods of sleep.

In addition, the differing grades of sleep state make a definitive definition difficult, and even where sleep disturbance is not noted by the subject, factors such as heart rate, mood and performance can still be negatively affected.

An assessment of sleep disturbance should consider the maximum noise level or $L_{A1(1\ minute)}$, and the extent to which the maximum noise level exceeds the background level and the number of times this may happen during the night-time period. Factors that may be important in assessing the extent of impacts on sleep include:

- How often high noise events will occur;
- Time of day (normally between 10.00pm and 7.00am); and
- Whether there are times of day when there is a clear change in the existing noise environment (such as during early morning shoulder periods).

Currently the information relating to sleep disturbance impacts indicates that:

- Maximum internal noise levels below 50–55 dBA are unlikely to cause an awakening from a sleep state.
- One or two noise events per night with maximum internal noise levels of 65–70 dBA are not likely to affect health and wellbeing significantly.

As a result, the adopted sleep awakening criterion for the project is an internal noise level of 50 - 55 dB L_{AFmax}. This criterion is applicable for noise emissions generated by short term events occurring during the night time period. Therefore, allowing for a 10 dB noise reduction for open windows, it is proposed that the noise screening criterion for sleep awakening should be 60 - 65 dB L_{AFmax} external noise level at residential properties.

3.2 Noise Emissions From Carpark

As discussed in Section 1.1, the carpark spaces at Basement Levels are fully enclosed. As result, these will be served by a mechanical ventilation system.

Therefore, it is considered that the impact of carpark noise emissions will be negligible, and an assessment of such noise emissions is not required. However, external noise emissions by mechanical plant should be assessed based on the external noise level criteria discussed in Section 3.1.

3.3 Internal Noise Level Criteria (Residential Areas)

The following sub-sections address the criteria for the assessment of internal noise levels. These are summarised as follows:

- Section 3.3.1 discusses the criteria applicable to the assessment of noise intrusion generated by local road and rail traffic external to the site.
- Section 3.3.2 discusses the criteria for the assessment of noise emissions generated by steady state noise sources such as mechanical services.

For the purpose of the DA acoustic assessment, only the residential areas of the development are subject to an internal noise level assessment.

3.3.1 The State Environmental Planning Policy (Infrastructure) 2007

The State Environmental Planning Policy (Infrastructure) 2007 (Infrastructure SEPP) was introduced to assist the delivery of necessary infrastructure by improving regulatory certainty and efficiency. The Infrastructure SEPP has specific planning provisions and development controls for various types of infrastructure, and also for developments located adjacent to infrastructure. In order to provide guidelines for this type of assessment (noise intrusion from road and rail traffic noise), the Department of Planning of the NSW Government has prepared a document titled *"Developments Near Rail Corridors and Busy Roads – Interim Guideline"* (DNRC & BR-IG).

The DNRC & BR-IG applies to development adjacent to rail corridors and busy roads. It can also provide a useful guide for all development that may be impacted by, or may impact on, rail corridors or busy roads. According to this document, busy roads are defined as follows:

- Roads specified in Clause 102 of the Infrastructure SEPP: Freeway, tollway or a transitway or any other road with an average annual daily traffic (AADT) volume of more than 40,000 vehicles.
- Any other road is defined as roads with an average annual daily traffic (AADT) volume of more than 20,000 vehicles.
- Any other road with a high level of truck movements or bus traffic.

Based on "*Traffic Volume Maps for Noise Assessment for Building on Land Adjacent to Busy Roads*", the adjacent local roads have a traffic volume which is less than 20,000 AADT. Nevertheless, the DNRC & BR-IG, in Section 1.3, recommends that the noise intrusion criteria discussed in the Infrastructure SEPP, be considered as a guideline for any residential development which might be impacted road or rail traffic.

According to Clauses 87 (rail) and 102 (road) of the Infrastructure SEPP, if the development is for residential use, the consent authority must be satisfied that appropriate measures will be taken to ensure that the following L_{Aeq} levels are not exceeded (with windows and doors closed):

- In any bedroom in the building – 35 dBA $L_{Aeq(9hour)}$ between 10:00 pm and 7:00 am
- Anywhere else in the building (other than a garage, kitchen, bathroom or hallway) – 40 dBA L_{Aeq} at any time (i.e. $L_{Aeq(15hour)}$ and $L_{Aeq(9hour)}$).

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

Where windows must be kept closed, the adopted ventilation systems must meet the requirements of the national Construction Code and Australian Standard 1668 – The use of ventilation and air conditioning in buildings.

3.3.2 Standard AS/NZS 2107:2016

In relation to design internal noise levels, standard AS/NZS 2107:2016 recommends a range with lower and upper levels (rather than "satisfactory" and "maximum" internal noise levels) for building interiors based on room designation and location of the development relative to external noise sources. This change has occurred due to the fact that sound levels below 'satisfactory' could be interpreted as desirable, but the opposite may in fact be the case. Levels below those which were listed as 'satisfactory' can lead to inadequate acoustic masking resulting in loss of acoustic isolation and speech privacy.

The levels for areas relevant to this development are given in Table 5 below. In this report we will confine our recommendations to dBA levels, however, where the background noise appears to be unbalanced, standard AS/NZS 2107:2016 provides direction in terms of suitable diagnostic tools that can be used to assess the spectrum distribution of the background noise.

Section 6.18 of standard AS/NZ 2107:2016 notes that the presence of discrete frequencies or narrow band signals may cause the sound level to vary spatially within a particular area and be a source of distraction for occupants. Where this occurs, the sound level shall be determined as the highest level measured in the occupied location(s).

If tonal components are significant characteristics of the sound within a measurement time interval, an adjustment shall be applied for that time interval to the measured A-weighted sound pressure level to allow for the additional annoyance. If the background sounds include spectral imbalance, then the RC (Mark II) levels indicated in Table 5 should be referenced (see also Appendix D of AS/NZ 2107:2016 for additional guidance).

Table 5 Recommended design sound levels as per standard AS/NZS 2107:2016

Type of Occupancy/Activity	Design sound level range ($L_{Aeq,t}$)	Project Design Noise Level [2]	
		Approx. RC Mark II	dBA
Residential Buildings			
Houses and apartments in suburban areas			
Apartment common areas (e.g. foyer, lift lobby)	45 to 50	45	50
Living areas	30 to 40	35	40
Sleeping areas (night time)	30 to 35	30	35
Work areas	35 to 40	35	40
Miscellaneous areas			
Toilets	45 to 55	50	55

Generally, where the final noise levels are within +/- 2 dB of the specified level given above, the design criteria will be considered met. Both the upper and lower limits will need to be satisfied especially where privacy is important or where noise intrusion to be avoided.

3.4 Noise Impact On Local Roads

Section 2.3.1 of the NSW Road Noise Policy (NSW RNP) provides a road traffic noise criteria for residential premises affected by additional traffic on existing local roads generated by a land use development. These criteria are summarised in Table 6 below.

Table 6 Road traffic noise assessment criteria for residential land use

Road Category	Type of Project/ Land Use	Assessment Criteria dB $L_{Aeq\ (1\ hour)}$ external	
		Day (7:00 am – 10:00 pm)	Night (10:00 pm – 7:00 am)
Local roads	Existing residences affected by additional traffic on existing local roads generated by land use developments	55	50

3.5 Sound Insulation Requirements – Residential Areas

The accommodation areas are subject to the sound insulation requirements stated in the National Construction Code 2019 (NCC 2019) for class 2 or 3 accommodation. These requirements are summarised in Table 7 below.

Table 7 NCC 2019, sound insulation requirements (Class 2 and 3)

Construction	NCC 2019	
	Laboratory performance requirements	Verification method
Walls between sole occupancy units	$R_w + C_{tr}$ not < 50	$D_{nT,w} + C_{tr}$ not < 45
Walls between a bathroom, sanitary compartment, laundry or kitchen in one sole occupancy unit and a habitable room (other than a kitchen) in an adjoining unit	$R_w + C_{tr}$ not < 50 and Must have a minimum 20 mm cavity between two separate leaves	$D_{nT,w} + C_{tr}$ not < 45 "Expert Judgment" Comparison to the "Deemed to satisfy" Provisions
Walls between sole occupancy units and a plant room or lift shaft	R_w not < 50 and Must have a minimum 20 mm cavity between two separate leaves[1]	$D_{nT,w}$ not < 45
Walls between sole occupancy units and a stairway, public corridor, public lobby or the like, or parts of a different classification	R_w not < 50	$D_{nT,w}$ not < 45
Door assemblies located in a wall between a sole-occupancy unit and a stairway, public corridor, public lobby or the like	R_w not < 30 [2]	$D_{nT,w}$ not < 25
Floors between sole-occupancy units or between a sole-occupancy unit and a plant room, lift shaft, stairway, public corridor, public lobby or the like, or parts of a different classification	$R_w + C_{tr}$ not < 50 $L_{n,w}$ not > 62	$D_{nT,w} + C_{tr}$ not < 45 $L'_{nT,w}$ not > 62
Soil, waste, water supply and stormwater pipes and ductwork to habitable rooms	$R_w + C_{tr}$ not < 40	N/A

Construction	NCC 2019	
	Laboratory performance requirements	Verification method
Soil, waste, water supply and stormwater pipes and ductwork to kitchens and other rooms	$R_w + C_{tr}$ not < 25	N/A
Intra-tenancy Walls	There is no statutory requirement for airborne isolation via intra-tenancy walls.	

Note 1: A wall must be of "discontinuous construction" if it separates a sole occupancy unit from a plant room or lift shaft. Clause F5.3(c) defines "discontinuous construction" as a wall having a minimum 20 mm cavity between two separate leaves with no mechanical linkage except at the periphery.

Note 2: Clause FP5.3(b) in the 2016 BCA states that the required insulation of a floor or wall must not be compromised by a door assembly.

Note 3: Masonry walls must be laid with all joints filled solid, including those between the masonry and any adjoining construction

3.6 Vibration Criteria

Vibration effects relating specifically to the human comfort aspects of the project are taken from the guideline titled *"Assessing Vibration – A Technical Guideline"*. (AVTG) This type of impact can be further categorised and assessed using the appropriate criterion as follows:

- Continuous vibration - from uninterrupted sources (refer to Table 8).
- Impulsive vibration - up to three instances of sudden impact e.g. dropping heavy items, per monitoring period (refer to Table 9).
- Intermittent vibration - such as from drilling, compacting or activities that would result in continuous vibration if operated continuously (refer to Table 10).

Table 8 Continuous vibration acceleration criteria (m/s^2) 1 Hz-80 Hz

Location	Assessment period	Preferred Values		Maximum Values	
		z-axis	x- and y-axis	z-axis	x- and y-axis
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
		0.04	0.029	0.080	0.058
Workshops	Day or night-time	0.04	0.029	0.080	0.058

Table 9 Impulsive vibration acceleration criteria (m/s^2) 1 Hz-80 Hz

Location	Assessment period	Preferred Values		Maximum Values	
		z-axis	x- and y-axis	z-axis	x- and y-axis
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
Workshops	Day or night-time	0.64	0.46	1.28	0.92

Table 10 Intermittent vibration impacts criteria ($m/s^{1.75}$) 1 Hz-80 Hz

Location	Daytime		Night-time	
	Preferred Values	Maximum Values	Preferred Values	Maximum Values
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
Workshops	0.80	1.60	0.80	1.60

4 OPERATIONAL ACOUSTIC ASSESSMENT

4.1 Building Envelope (Residential Areas) – Noise Intrusion Treatments

As discussed in Section 2, it is considered that the most dominant external noise source is local road traffic. Therefore, preliminary calculations of noise intrusion levels from external noise sources have been undertaken at typical residential areas in the development. These calculations and their assessment outcomes are summarised in Table 11.

Table 11 Preliminary predictions of noise intrusion levels

Parameter	$L_{Aeq(15hour)}$	$L_{Aeq(9hour)}$
Measured facade incident noise levels (free-field)	59 dBA	52 dBA
Noise Criteria		
Windows closed	40 dBA (elsewhere)	35 dBA (bedrooms) 40 dBA (elsewhere)
Windows open	50 dBA (elsewhere)	45 dBA (bedrooms) 50 dBA (elsewhere)
Calculation assuming: • **Min. sound insulation performance for glazed and window / door components: Rw 33 (-1; -3) and as per Table 13** • **Min. sound insulation performance for non-glazed façade element: Rw 45**		
Typical Bedroom		
- Windows closed	40	30-33 (compliance)
- Windows open[1]	49-53	42-46 (compliance) [2]
Typical Living Room		
- Windows closed	40 (compliance)	30-33 (compliance)
- Windows open[1]	49-53 (non-compliance)	42-46 (compliance)

Note 1: The outside to inside noise levels with windows open assumes a noise reduction of 6 – 10 dB for very slightly open windows or doors

Note 2: An exceedance of 2 dB over the criterion is considered as a marginal compliance. This is considered as such since a difference of 2 dB is subjectively difficult to perceive

Table 12 Sound insulation performance for glazed façade elements

Façade Location	Overall Sound Insulation Performance Rw (C; Ctr)	Min. Sound Insulation Performance in Octave Band Centre Frequencies							
		63 Hz	125 Hz	250 Hz	500 Hz	1 KHz	2 KHz	4 KHz	8 KHz
All facades	33 (-1; -3)	19	21	25	29	34	35	41	41

From Table 11 it is noted that noise intrusion through slightly open doors and windows will not satisfy the noise intrusion criteria in the daytime period. Therefore, it is advised that provisions for mechanical ventilation should be implemented in the residential apartment areas to allow for external windows and doors to be closed. Additionally, if an outside air path is required, this should be acoustically treated with internally lined ductwork (minimum 50mm insulation), acoustic louvres and/or silencers. Details of this treatment to be confirmed at later design stages.

Furthermore, façade glazed elements such as windows, doors (including hinged and sliding doors), should achieve the minimum sound insulation performance stated in Table 12. The recommended performance is representative of laminated glass components (such as 6.38mm laminated glass). For external doors and windows, these typically should comprise:

- Laminated glass elements with sound insulation performance as mentioned above.
- Solid non-hollow frames: Either metal frames fully packed with insulation or grout; or solid timber frames.
- Rubber acoustic seals implemented to window/door frames (such as Q-Lon seals), or fin rubber seals with deep C channels as part of the window track.

Additionally, non-glazed façade elements should achieve a minimum sound insulation performance of Rw 45. This typically could comprise masonry elements. If a lightweight construction is opted, this should comprise a non-rigid, open and porous insulation such as rockwool (rigid insulation panels such as Kingspan Kooltherm are not acceptable). Number of wall cavities should also be reduced to one which is to be filled with the aforementioned insulation.

It is also recommended that the roof construction should comprise a concrete slab with 200mm minimum thickness and 2400 kg/m^3 minimum density.

4.2 NCC 2019 Requirements – Internal Architectural Elements

Internal architectural elements which are subject to the sound insulation requirements discussed in the NCC 2019 (as mentioned in Section 3.5), should be designed and constructed to achieve compliance with these requirements. These internal architectural elements comprise the following:

- Floor and partitions separating single occupancy units from areas which correspond to other classifications (other than class 2 or 3 in accordance with the NCA 2019), plant rooms, lift shafts, stair way, public corridor, public lobby, or equivalent space.
- Doors separating single occupancy units from stairway, public corridor, public lobby or equivalent space.
- Structures separating habitable rooms and other rooms within a single occupancy unit from building services (i.e. soil & waste pies, water supply pipes, stormwater pipes, ductwork).

4.3 External Noise Emissions – Mechanical Plant

At this stage, no detailed design has been developed for mechanical services. Therefore, no detailed acoustic assessment has been conducted.

Nevertheless, it is advised the mechanical plant design and equipment selection should be made so that the aggregate noise level from all external emissions, comply with the external noise level criteria discussed in Section 3.1.

This should be conducted as part of the detailed assessment of mechanical noise emissions which is required to be undertaken during the later design stages.

The following design measures could be considered as part of the detailed design stage in order to achieve compliance:

- Mechanical plant installation locations and the positioning of external air duct paths (such as inlets and outlets) near the property boundary should be limited, as far as practicable.
- Plant room walls should achieve a minimum airborne sound insulation performance of Rw 45 -50. Whenever possible, the plant rooms should only be accessible from inside the building.

- If airflow paths are required to/from outside (such as outside air, exhaust air, relief air, etc) these paths should be fully ducted and include minimum 50 mm thick internal insulation; and / or include acoustic louvres. When the extent of ductwork is not sufficient for treatment, then rectangular silencers may be required (this especially applies to fans and AHUs).

- Ornamental louvres should generally only be considered if they are blanked off with FC sheeting or plant room external walls (subject to a further detailed acoustic assessment).

- All plant room walls and roof / ceiling to be internally lined with insulation, which in combination with insulation facing, should achieve a minimum noise reduction coefficient (NRC) rating of 0.8.

- AHUs and FCUs should include return air / outside air plenums which are in internally lined with minimum 50 mm thick insulation.

- Variable speed drives should be implemented whenever possible.

- Reduce the number of operational plant items between 6:00 pm and 7:00 am (and during the night-time period generally).

- Outdoor units and other plant items to be screened from direct line of sight to the affected residences (depending on their locations).

The above recommendations should be considered as in-principle, best practice acoustic treatment that will need to be confirmed during detailed design stages.

Finally, it is recommended that mechanical services should be designed to achieve compliance with external noise level criteria discussed in Section 3.1

4.4 Internal Noise Emissions – Mechanical Services

The mechanical ventilation design is still ongoing at the time of issuing this report. Nevertheless, it is advised that this should be designed to achieve the internal noise level criteria discussed in Section 3.3.

Mechanical plant should be resiliently mounted. Vibration isolation mounts and supports should be designed to achieve compliance with vibration criteria discussed in Section 3.6.

4.5 Noise Impact On Local Roads

Traffic consultant engaged for the project has provided the following information:

- Existing traffic flows in term of Annual Average Daily Traffic (AADT) flows. These are shown in Figure 3.

- Estimated peak hour traffic flows to be generated by the development. These are shown in Figure 4 and Figure 5.

To estimate the existing peak hour traffic flows along Church Street, the traffic distribution for station counter 09126 has been used (this corresponds to Oxley Highway for year 2011). The peak hour flows along Church Street, for the times indicated in Figure 4 and Figure 5, are estimated to be 23 vehicles.

From the traffic flows generated by the development and those estimated as existing peak hour traffic flows, a road traffic noise level of 55 dB $L_{Aeq\ (1\ hour)}$ has been calculated at the nearest residences along Church Street.

Therefore, it is noted that the predicted $L_{Aeq\ (1\ hour)}$ noise level complies with the assessment criteria summarised in Table 6.

Figure 3 Existing traffic flows

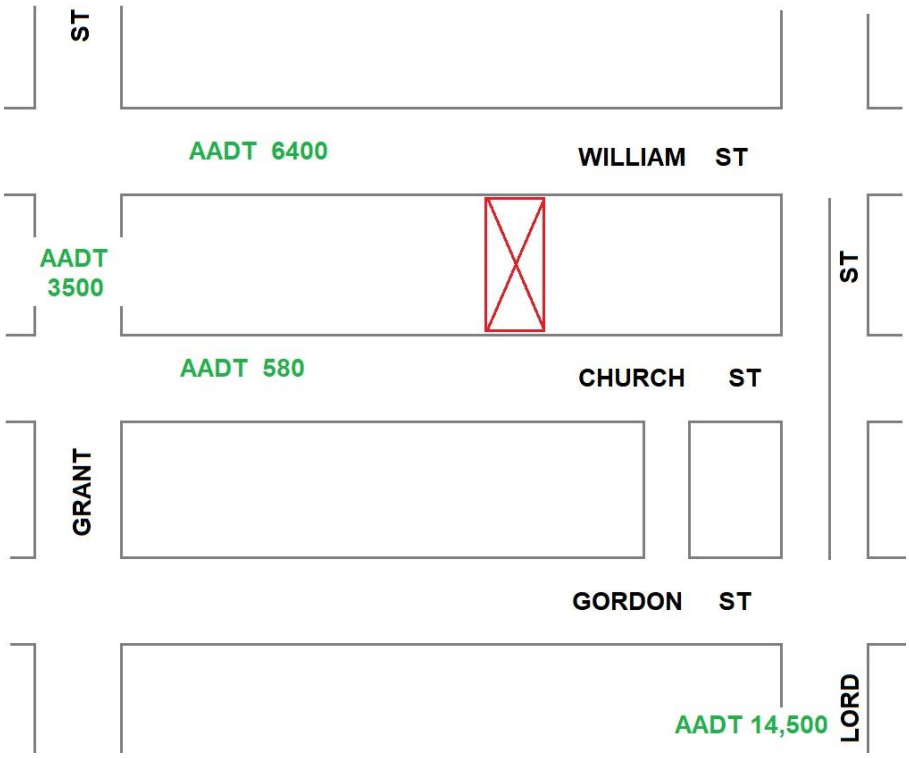


Figure 4 AM peak hour traffic flows generated by the development

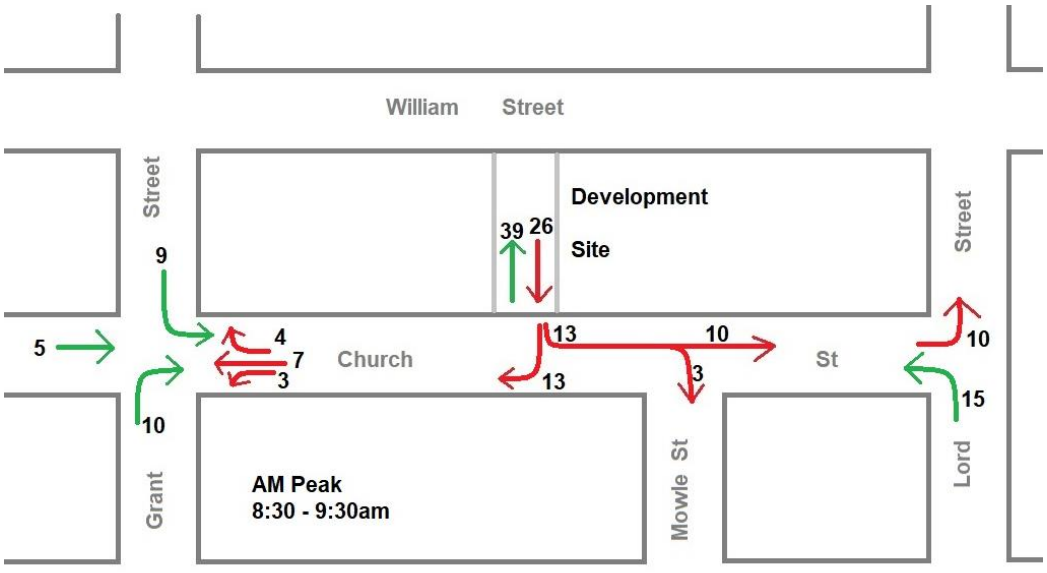
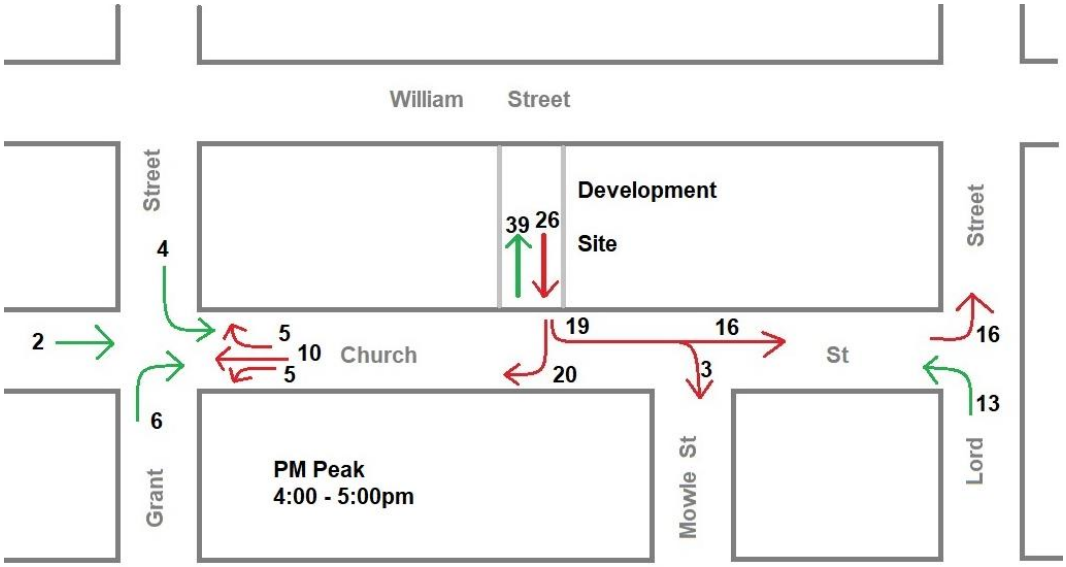


Figure 5 PM peak hour traffic flows generated by the development



4.6 Waste Collection

It is our understanding that waste collection will be undertaken from Church Street. Therefore, to minimise noise impact to local residences, it is advised that the waste collection should only be conducted between 7:00 am and 10:00 pm.

5 CONCLUSIONS

Pulse White Noise Acoustics has undertaken an acoustic assessment of the proposed mixed-use development at No. 66 William Street – 25 Church Street, Port Macquarie, NSW. This assessment is conducted as part of the submission for development approval (DA) requested by the local council.

From the operational acoustic assessment, the following has been found:

- Sound insulation performance for façade glazing elements should be as listed in Table 12. Furthermore, treatment to sliding door and windows should comprise conceptual recommendations discussed in Section 4.1.
- Sound insulation performance for non-glazed façade elements should be minimum Rw 45.
- Roof construction should comprise a concrete slab with 200mm minimum thickness and 2400 kg/m^3 minimum density.
- Internal architectural elements which are subject to the sound insulation requirements discussed in the NCC 2019 (as mentioned in Section 3.5), should be designed and constructed to achieve compliance with these requirements.
- Mechanical plant design and equipment selection should be made so that the aggregate noise level from all external emissions, comply with the external noise level criteria discussed in Section 3.1 and internal noise level criteria discussed in Section 3.3. Mechanical plant should be resiliently mounted. Vibration isolation mounts and supports should be designed to achieve compliance with vibration criteria discussed in Section 3.6.
- Commercial waste collection should only be conducted between 7:00 am and 10:00 pm.
- Since the carpark will be fully enclosed and mechanically ventilated, it is expected that noise impact from the car park will be negligible.
- It is also expected that road traffic noise levels on local roads, which are related to the development, will also be compliant with the relevant criteria.

Based on the findings from the acoustic assessment, it is our opinion that the proposed development can achieve compliance with the operational acoustic criteria required by local authorities, provided the conceptual recommendations discussed herein are implemented and further developed at the later detailed design stages.

APPENDIX A: ACOUSTIC TERMINOLOGY

The following is a brief description of the acoustic terminology used in this report.

Sound power level	The total sound emitted by a source
Sound pressure level	The amount of sound at a specified point
Decibel [dB]	The measurement unit of sound
A Weighted decibels [dB(A])	The A weighting is a frequency filter applied to measured noise levels to represent how humans hear sounds. The A-weighting filter emphasises frequencies in the speech range (between 1kHz and 4 kHz) which the human ear is most sensitive to, and places less emphasis on low frequencies at which the human ear is not so sensitive. When an overall sound level is A-weighted it is expressed in units of dB(A).
Decibel scale	The decibel scale is logarithmic in order to produce a better representation of the response of the human ear. A 3 dB increase in the sound pressure level corresponds to a doubling in the sound energy. A 10 dB increase in the sound pressure level corresponds to a perceived doubling in volume. Examples of decibel levels of common sounds are as follows:

0dB(A)	Threshold of human hearing
30dB(A)	A quiet country park
40dB(A)	Whisper in a library
50dB(A)	Open office space
70dB(A)	Inside a car on a freeway
80dB(A)	Outboard motor
90dB(A)	Heavy truck pass-by
100dB(A)	Jackhammer/Subway train
110 dB(A)	Rock Concert
115dB(A)	Limit of sound permitted in industry
120dB(A)	747 take off at 250 metres

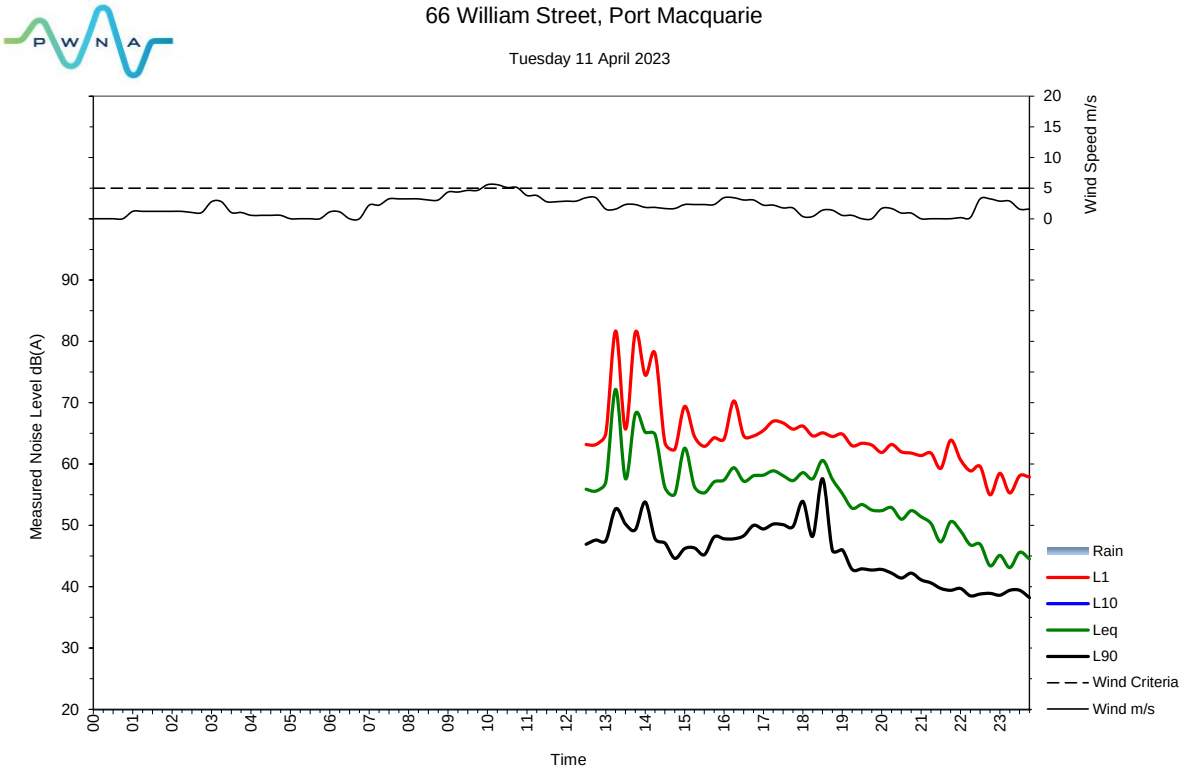
Frequency [f]	The repetition rate of the cycle measured in Hertz (Hz). The frequency corresponds to the pitch of the sound. A high frequency corresponds to a high pitched sound and a low frequency to a low pitched sound.
Ambient sound	The all-encompassing sound at a point composed of sound from all sources near and far.
Equivalent continuous sound level [L_{eq}]	The constant sound level which, when occurring over the same period of time, would result in the receiver experiencing the same amount of sound energy.
Reverberation	The persistence of sound in a space after the source of that sound has been stopped (the reverberation time is the time taken for a reverberant sound field to decrease by 60 dB)
Air-borne sound	The sound emitted directly from a source into the surrounding air, such as speech, television or music
Impact sound	The sound emitted from force of one object hitting another such as footfalls and slamming cupboards.
Air-borne sound isolation	The reduction of airborne sound between two rooms.
Sound Reduction Index [R] (Sound Transmission Loss)	The ratio the sound incident on a partition to the sound transmitted by the partition.
Weighted sound reduction index [R_w]	A single figure representation of the air-borne sound insulation of a partition based upon the R values for each frequency measured in a laboratory environment.
Level difference [D]	The difference in sound pressure level between two rooms.

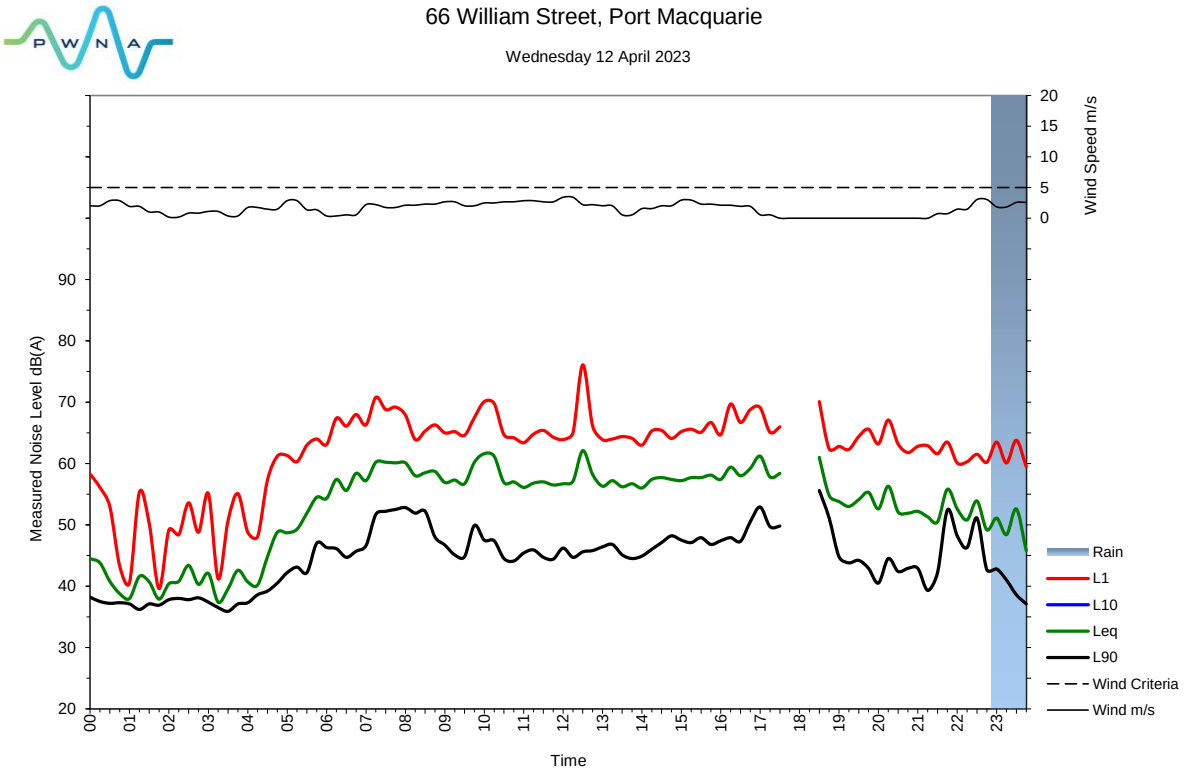
Normalised level difference [D_n]	The difference in sound pressure level between two rooms normalised for the absorption area of the receiving room.
Standardised level difference [D_{nT}]	The difference in sound pressure level between two rooms normalised for the reverberation time of the receiving room.
Weighted standardised level difference [$D_{nT,w}$]	A single figure representation of the air-borne sound insulation of a partition based upon the level difference. Generally used to present the performance of a partition when measured in situ on site.
C_{tr}	A value added to an R_w or $D_{nT,w}$ value to account for variations in the spectrum.
Impact sound isolation	The resistance of a floor or wall to transmit impact sound.
Impact sound pressure level [L_i]	The sound pressure level in the receiving room produced by impacts subjected to the adjacent floor or wall by a tapping machine.
Normalised impact sound pressure level [L_n]	The impact sound pressure level normalised for the absorption area of the receiving room.
Weighted normalised impact sound pressure level [$L_{n,w}$]	A single figure representation of the impact sound insulation of a floor or wall based upon the impact sound pressure level measured in a laboratory.
Weighted standardised impact sound pressure level [$L'_{nT,w}$]	A single figure representation of the impact sound insulation of a floor or wall based upon the impact sound pressure level measured in situ on site.
C_I	A value added to an L_{nW} or $L'_{nT,w}$ value to account for variations in the spectrum.
Energy Equivalent Sound Pressure Level [$L_{A,eq,T}$]	'A' weighted, energy averaged sound pressure level over the measurement period T.
Percentile Sound Pressure Level [$L_{Ax,T}$]	'A' weighted, sound pressure that is exceeded for percentile x of the measurement period T.

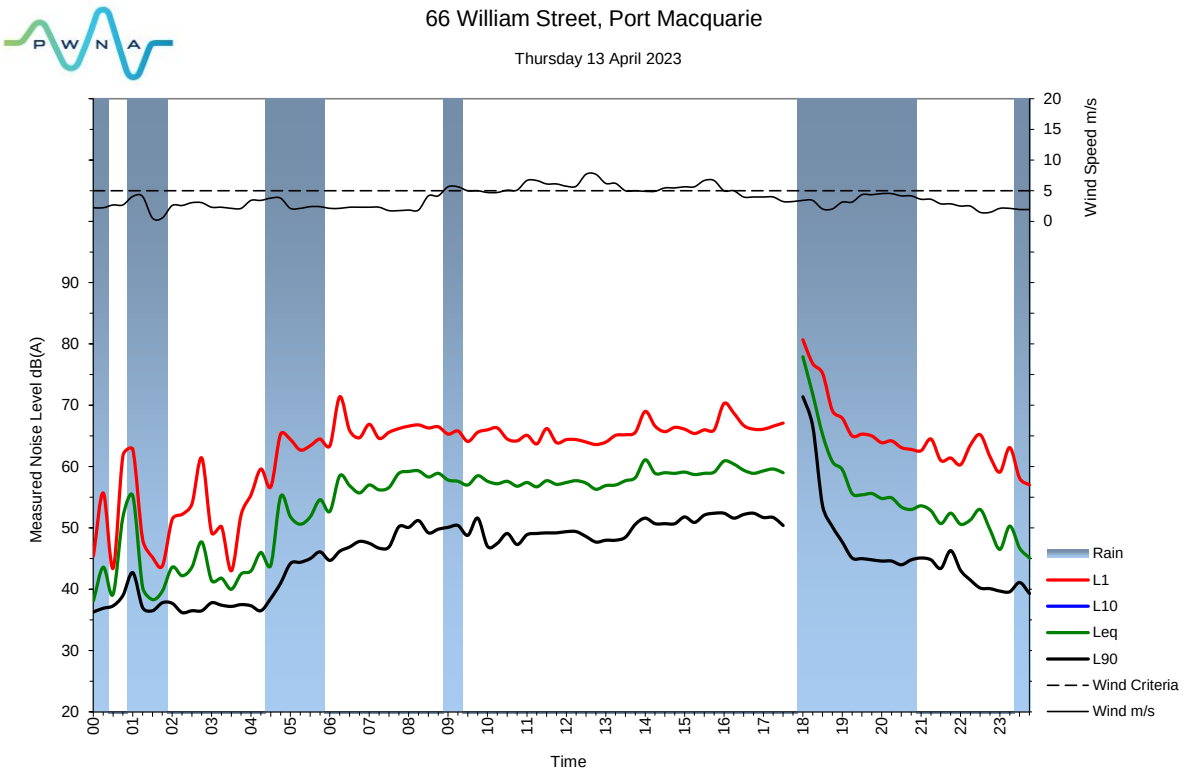
*Definitions of a number of terms have been adapted from Australian Standard AS1633:1985 *"Acoustics – Glossary of terms and related symbols"*

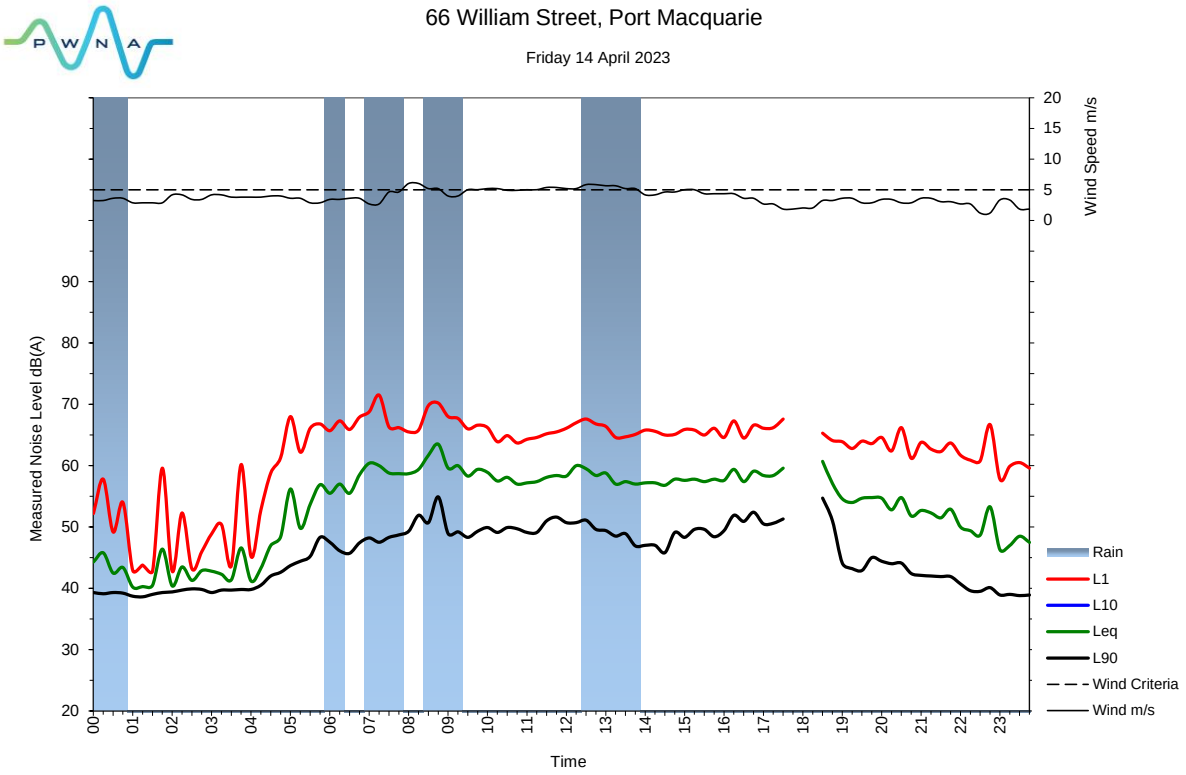
APPENDIX B: UNATTENDED NOISE MEASUREMENTS

Logger Location 1 – Along Northern Property Boundary






66 William Street, Port Macquarie
Thursday 13 April 2023
Measured Noise Level dB(A)
Wind Speed m/s
Time
Rain
L1
L10
Leq
L90
Wind Criteria
Wind m/s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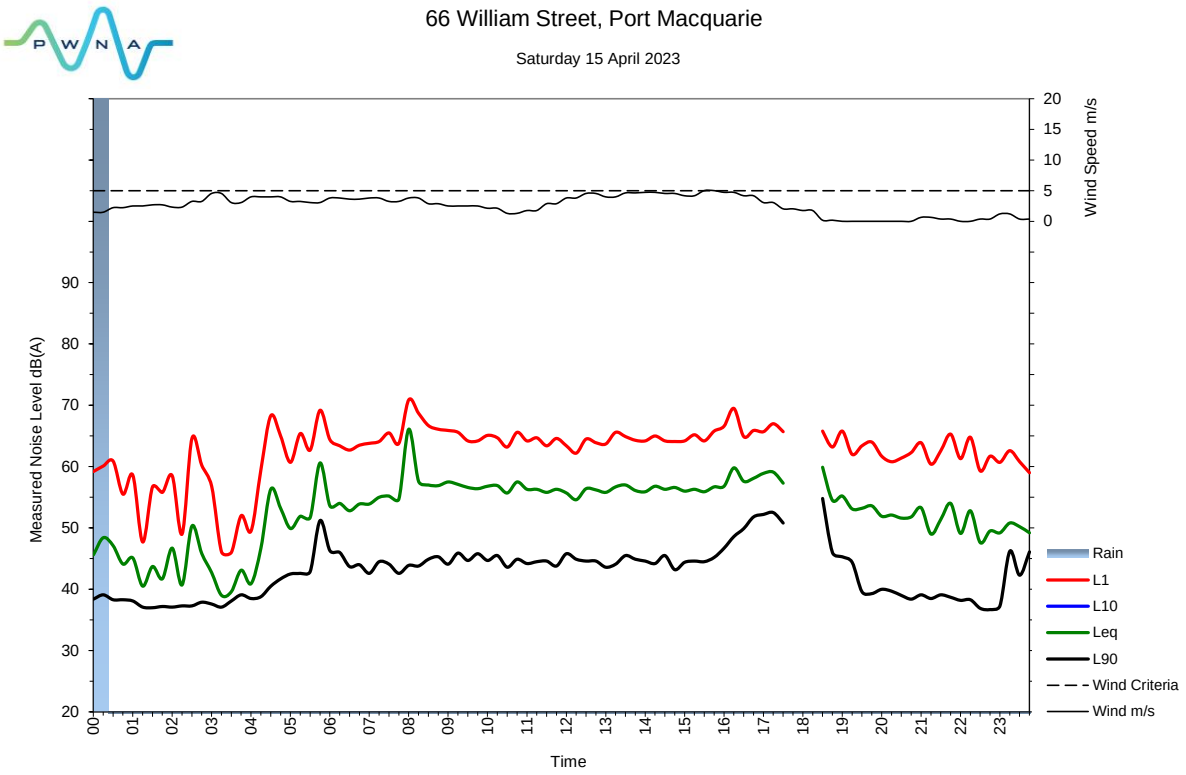
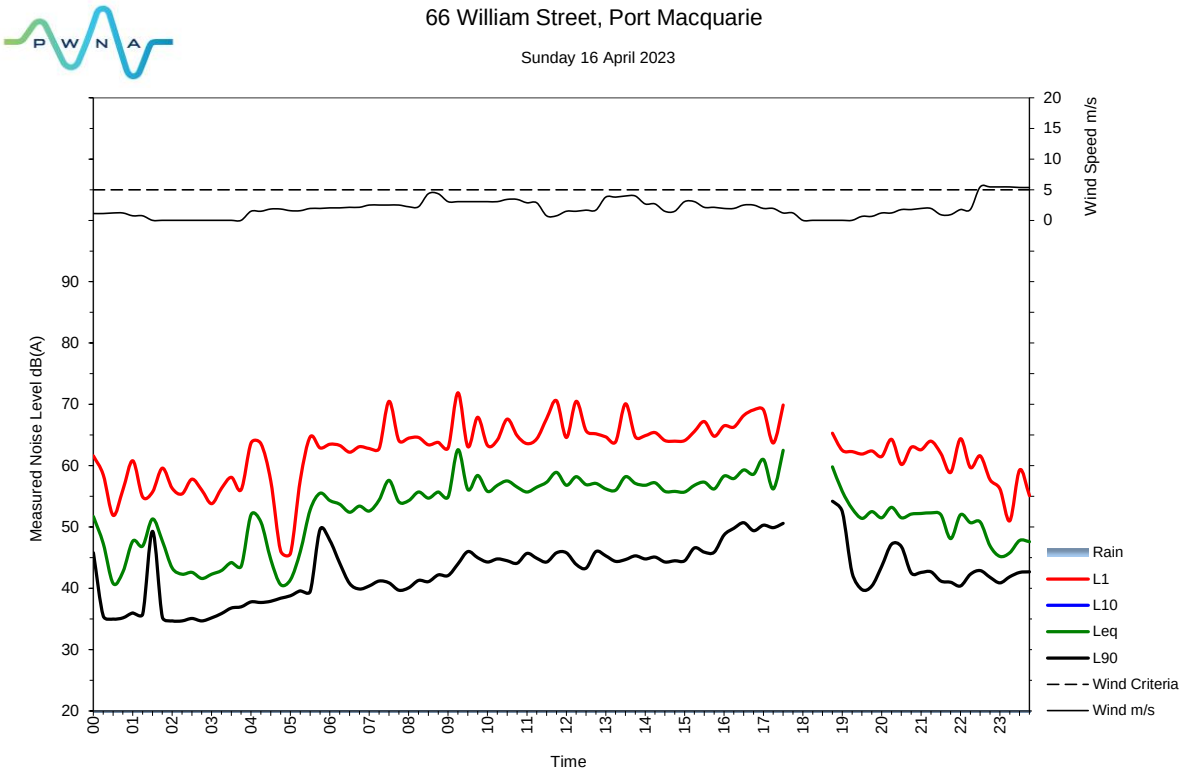
Measured Noise Level dB(A)
Wind Speed m/s
Time
Rain
L1
L10
Leq
L90
Wind Criteria
Wind m/s


66 William Street, Port Macquarie
Saturday 15 April 2023
Measured Noise Level dB(A)
Wind Speed m/s
Time
Rain
L1
L10
Leq
L90
Wind Criteria
Wind m/s


66 William Street, Port Macquarie
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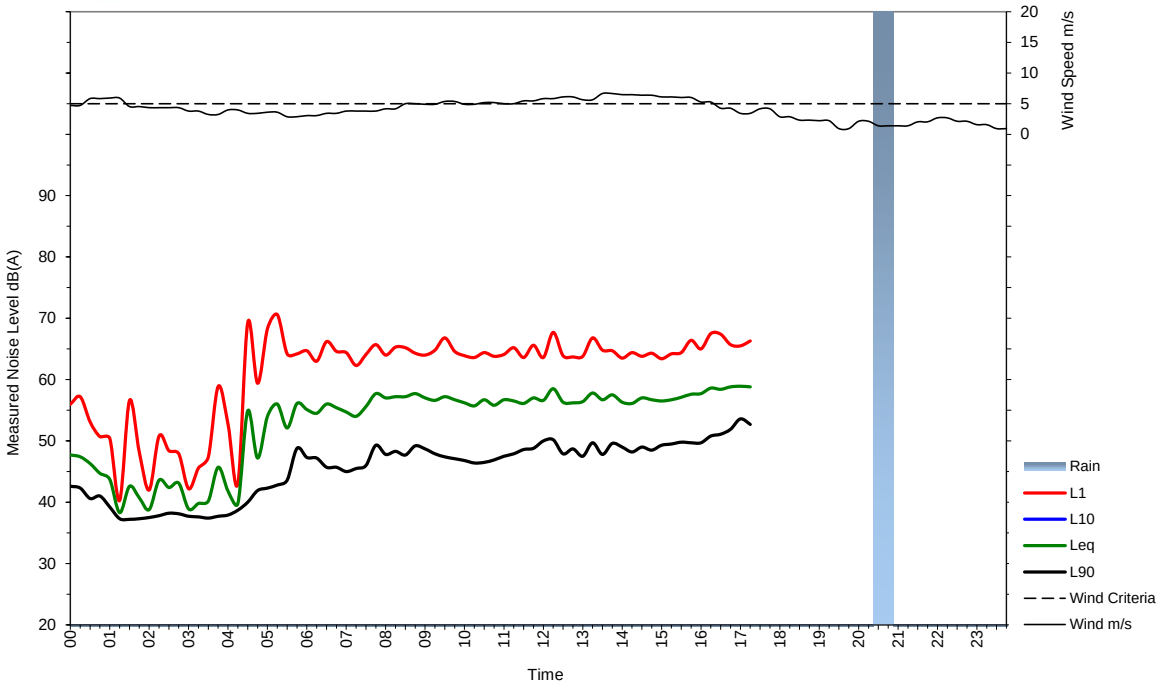
Measured Noise Level dB(A)
Wind Speed m/s
Time
Rain
L1
L10
Leq
L90
Wind Criteria
Wind m/s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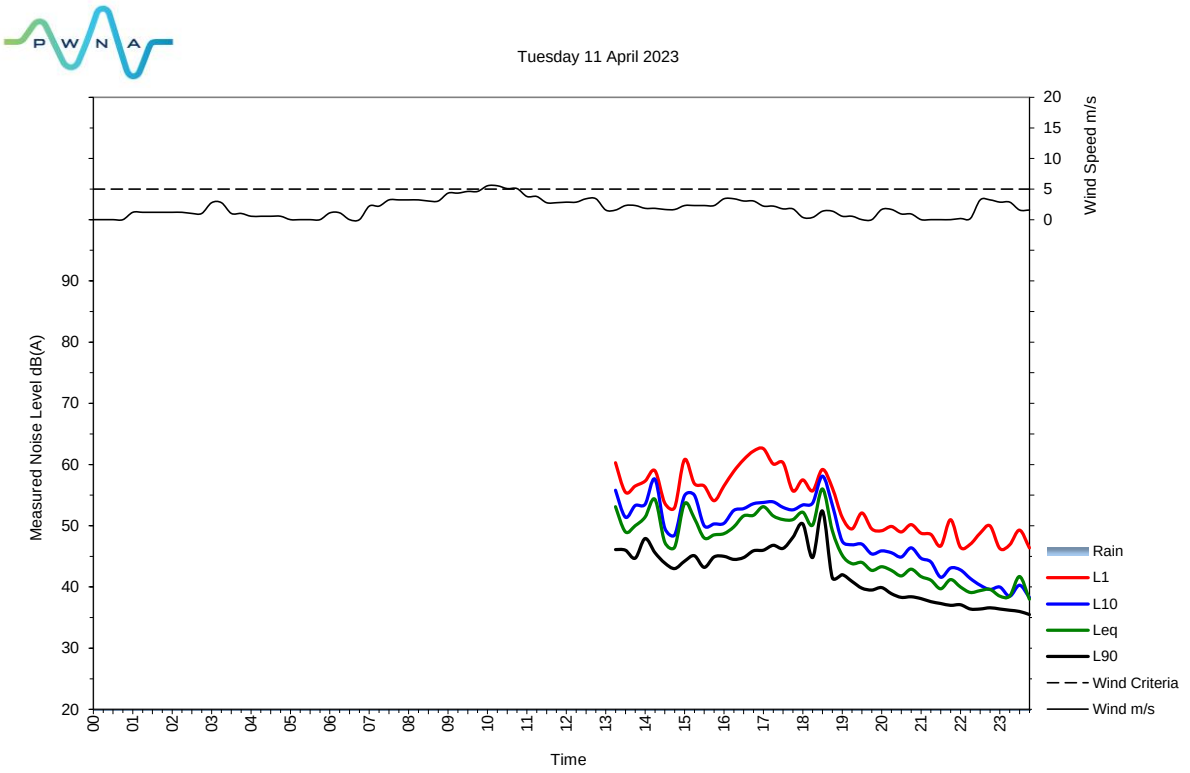
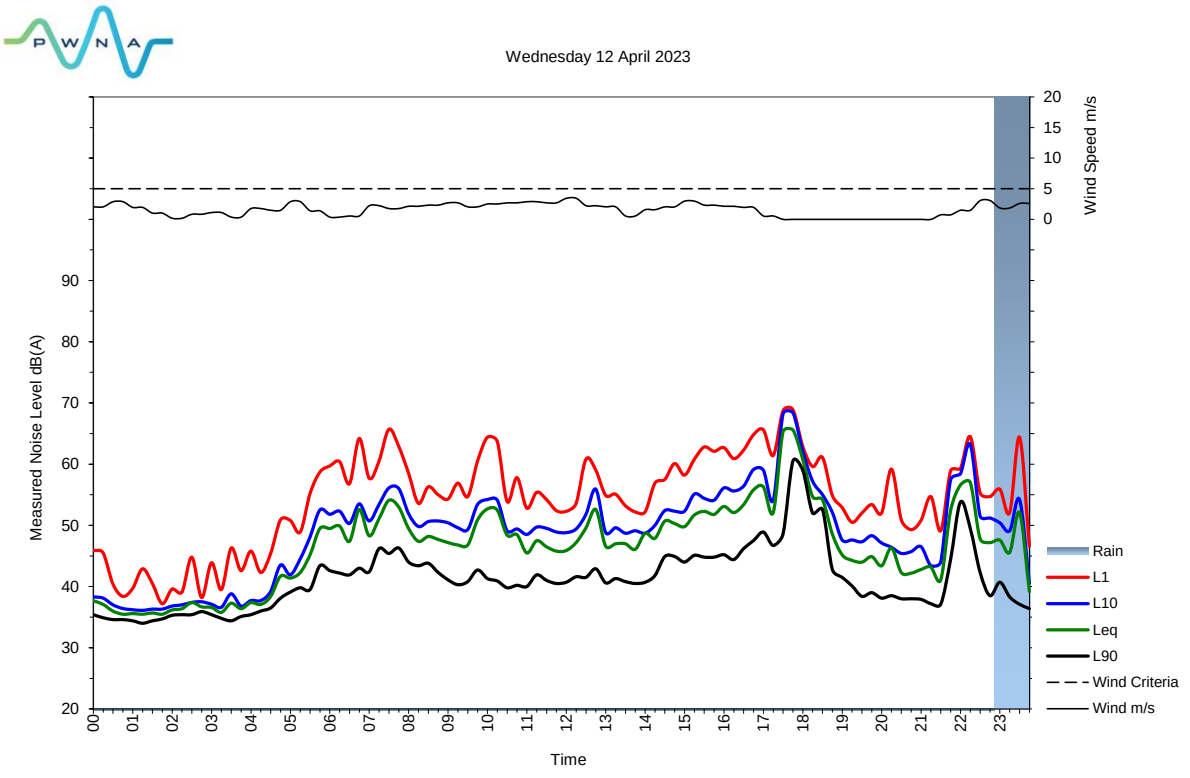
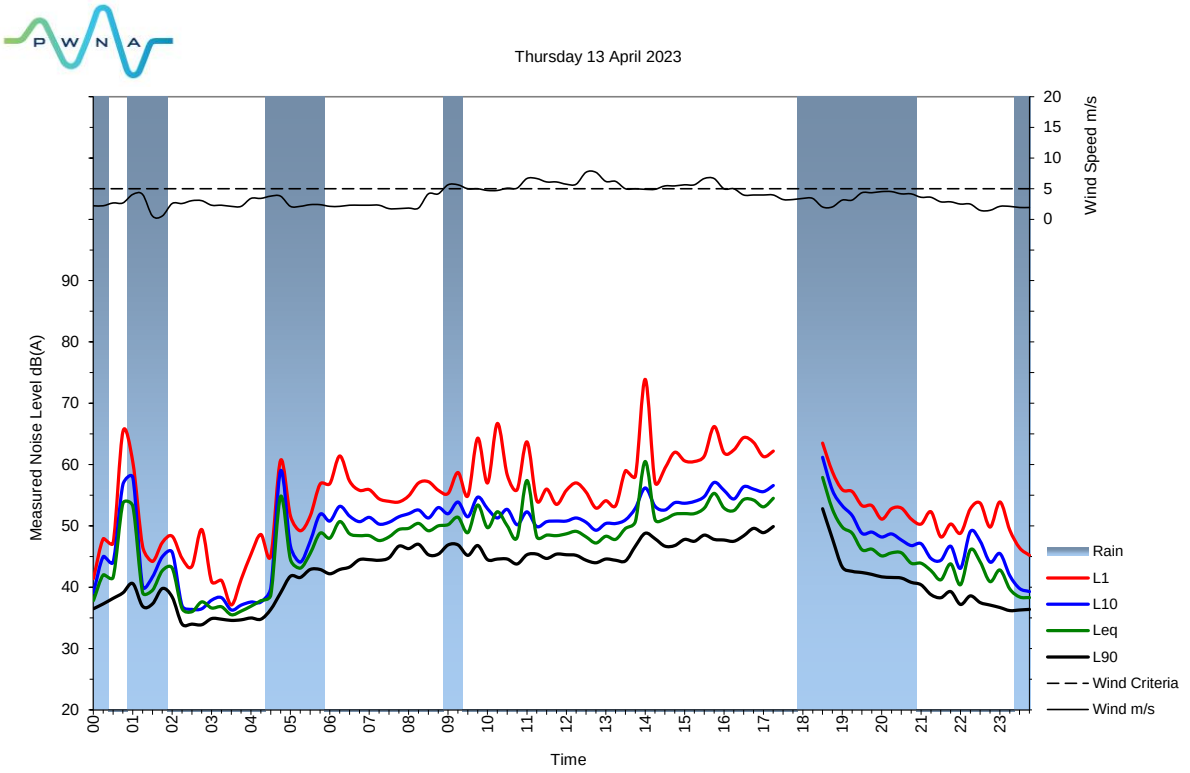
Monday 17 April 2023
Measured Noise Level dB(A)
Wind Speed m/s
Time
Rain
L1
L10
Leq
L90
Wind Criteria
Wind m/s

Logger Location 2 – Along Western Property Boundary



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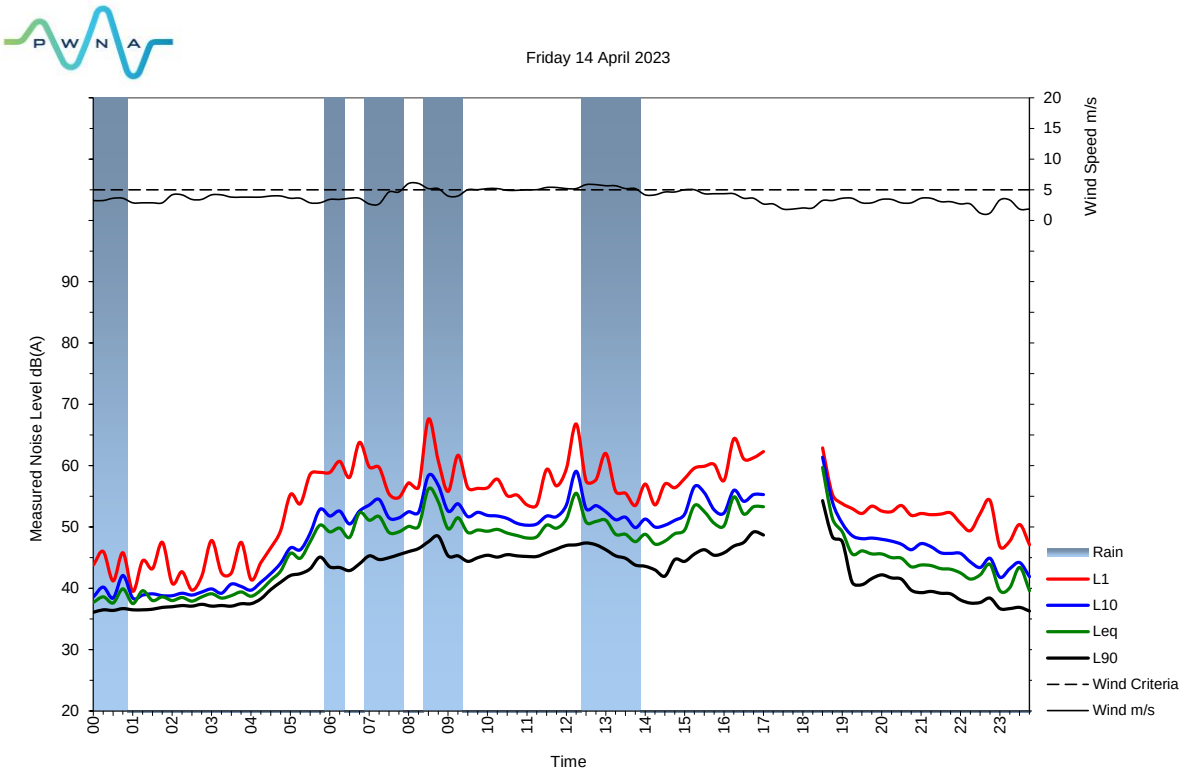
Wind Speed m/s
Time
Rain
L1
L10
Leq
L90
Wind Criteria
Wind m/s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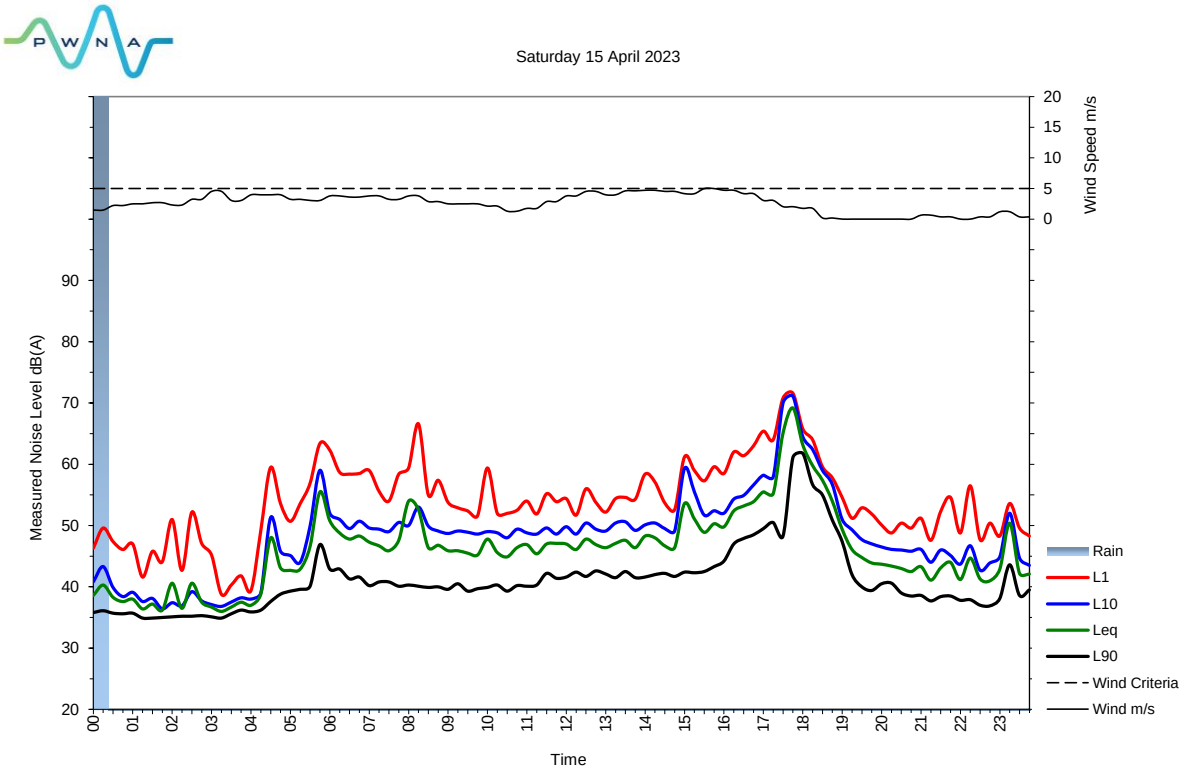
Wind Speed m/s
Time
Rain
L1
L10
Leq
L90
Wind Criteria
Wind m/s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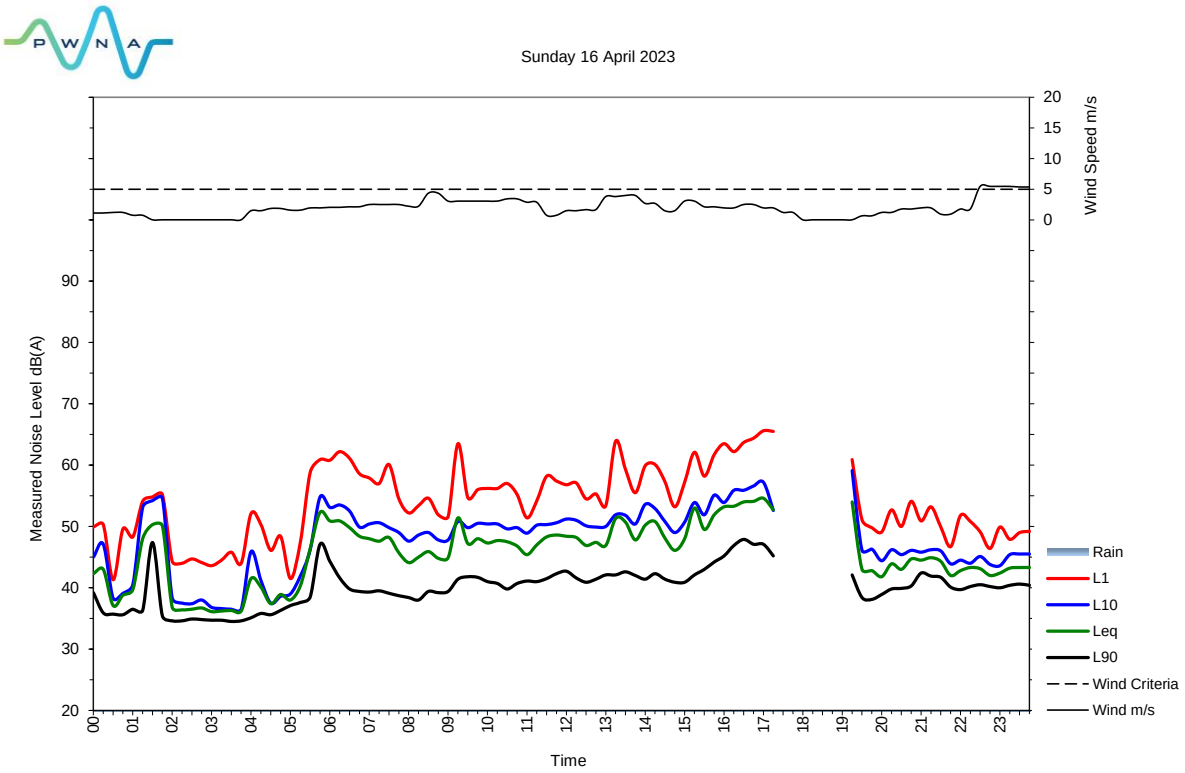
Wind Speed m/s
Time
Rain
L1
L10
Leq
L90
Wind Criteria
Wind m/s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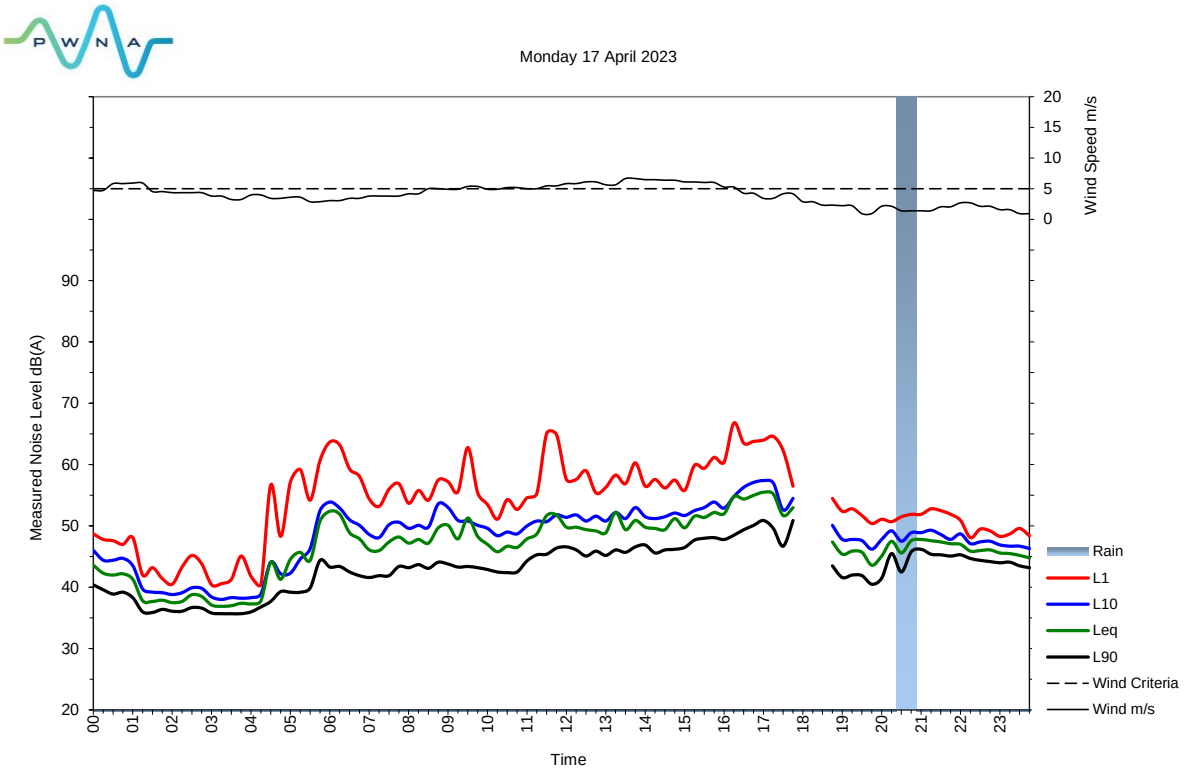
Wind Speed m/s
Time
Rain
L1
L10
Leq
L90
Wind Criteria
Wind m/s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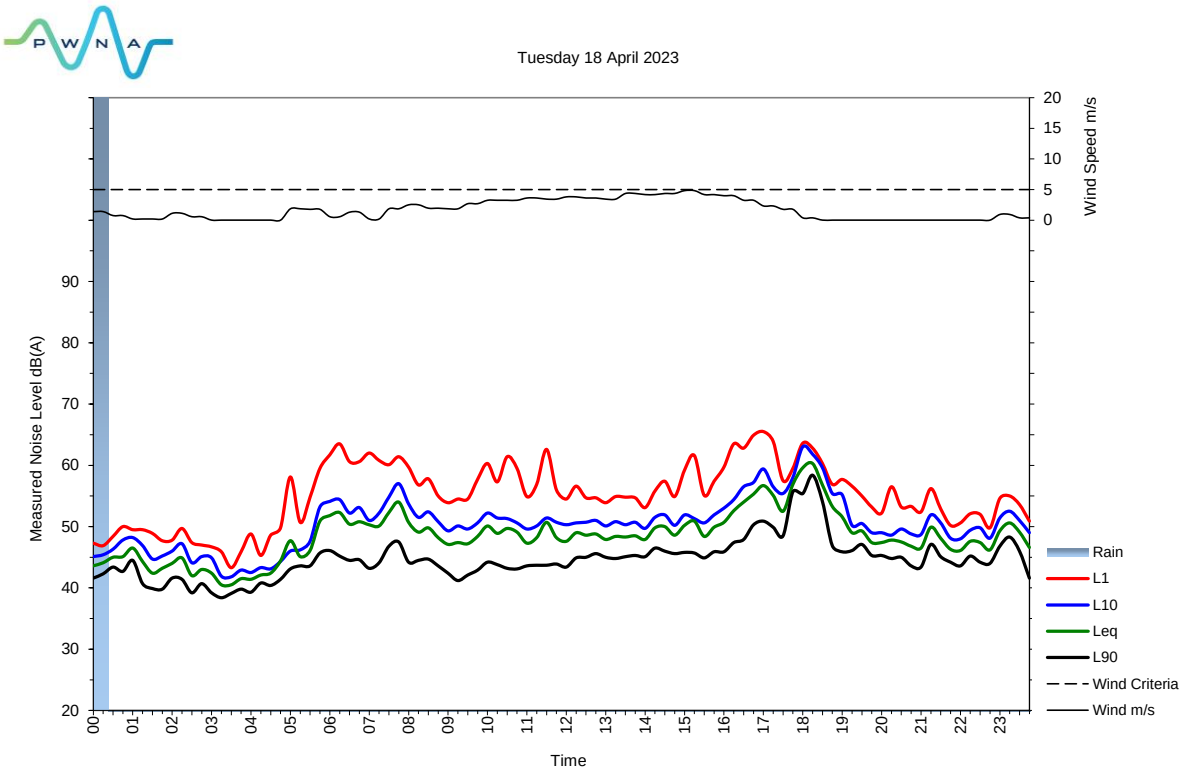
Wind Speed m/s
Time
Rain
L1
L10
Leq
L90
Wind Criteria
Wind m/s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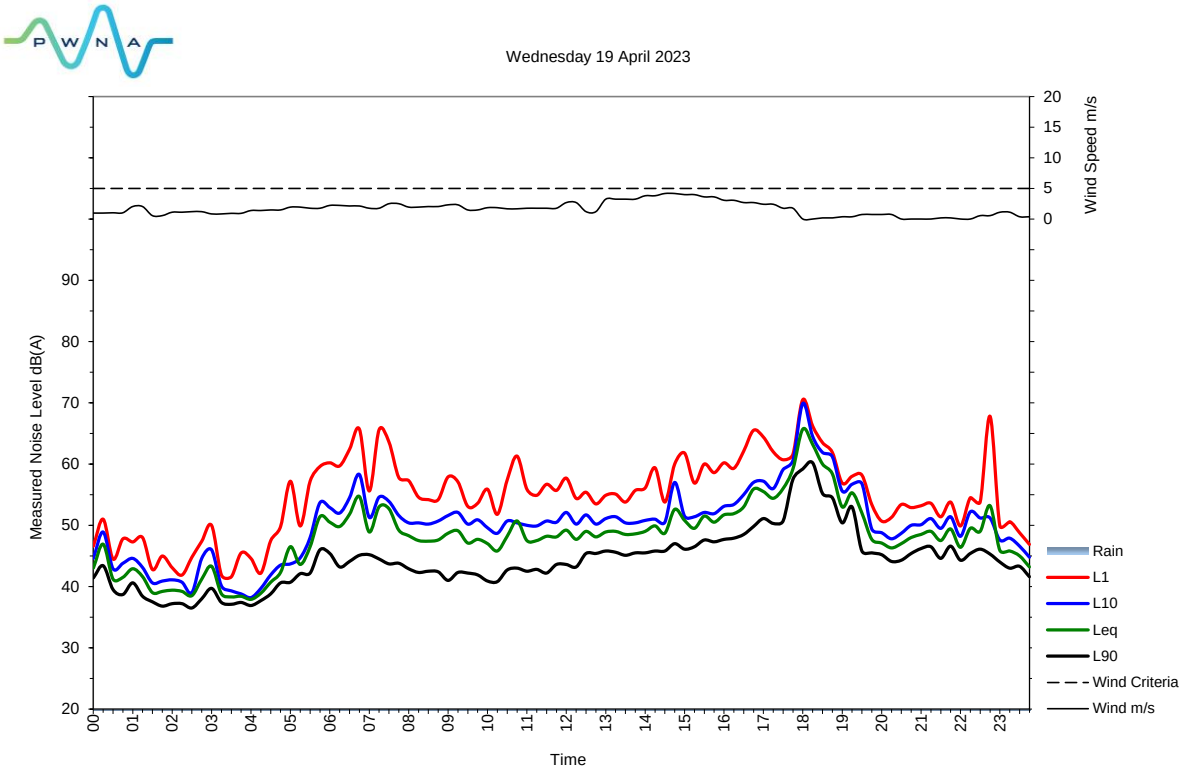
Wind Speed m/s
Time
Rain
L1
L10
Leq
L90
Wind Criteria
Wind m/s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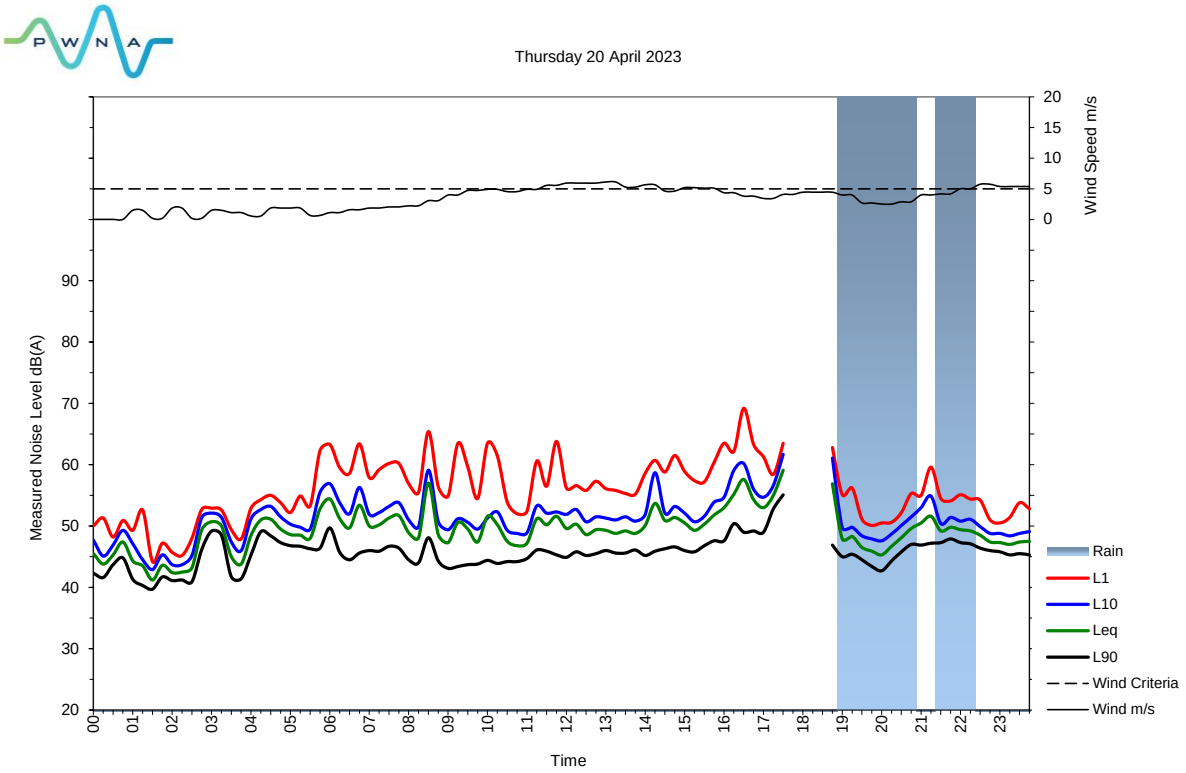
Measured Noise Level dB(A)
Wind Speed m/s
Time
Rain
L1
L10
Leq
L90
Wind Criteria
Wind m/s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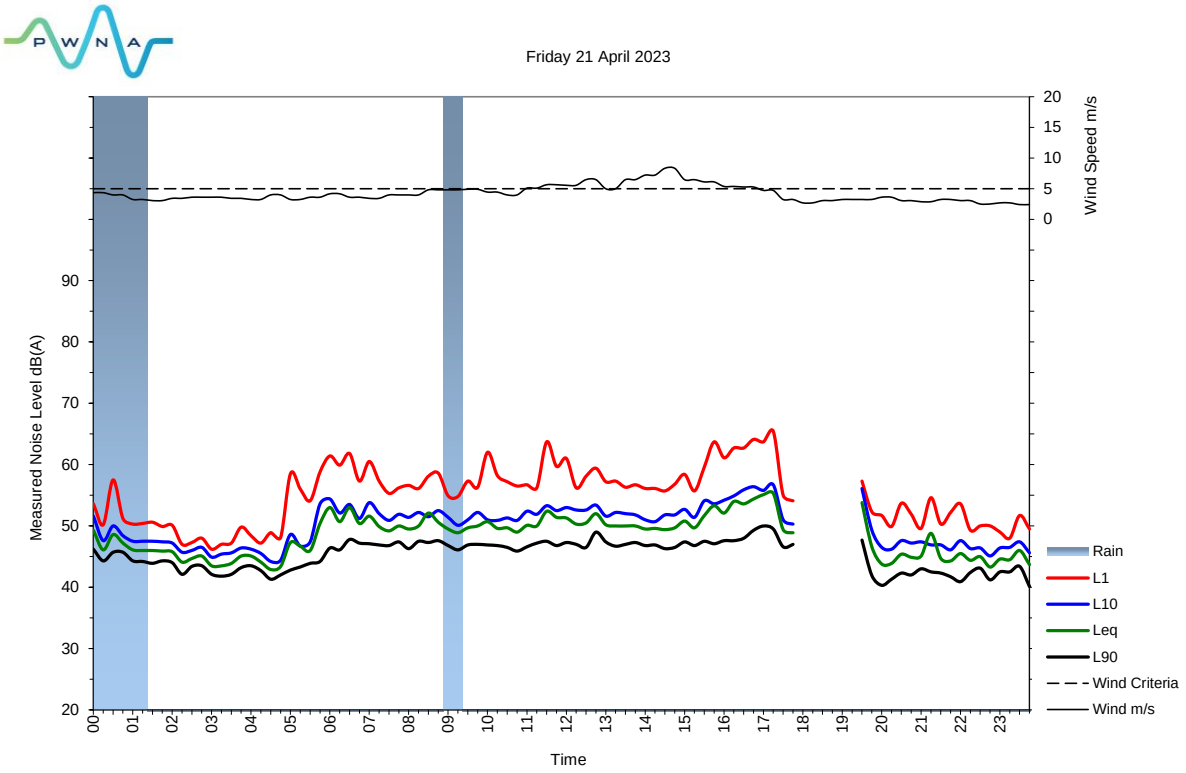
Wind Speed m/s
Time
Rain
L1
L10
Leq
L90
Wind Criteria
Wind m/s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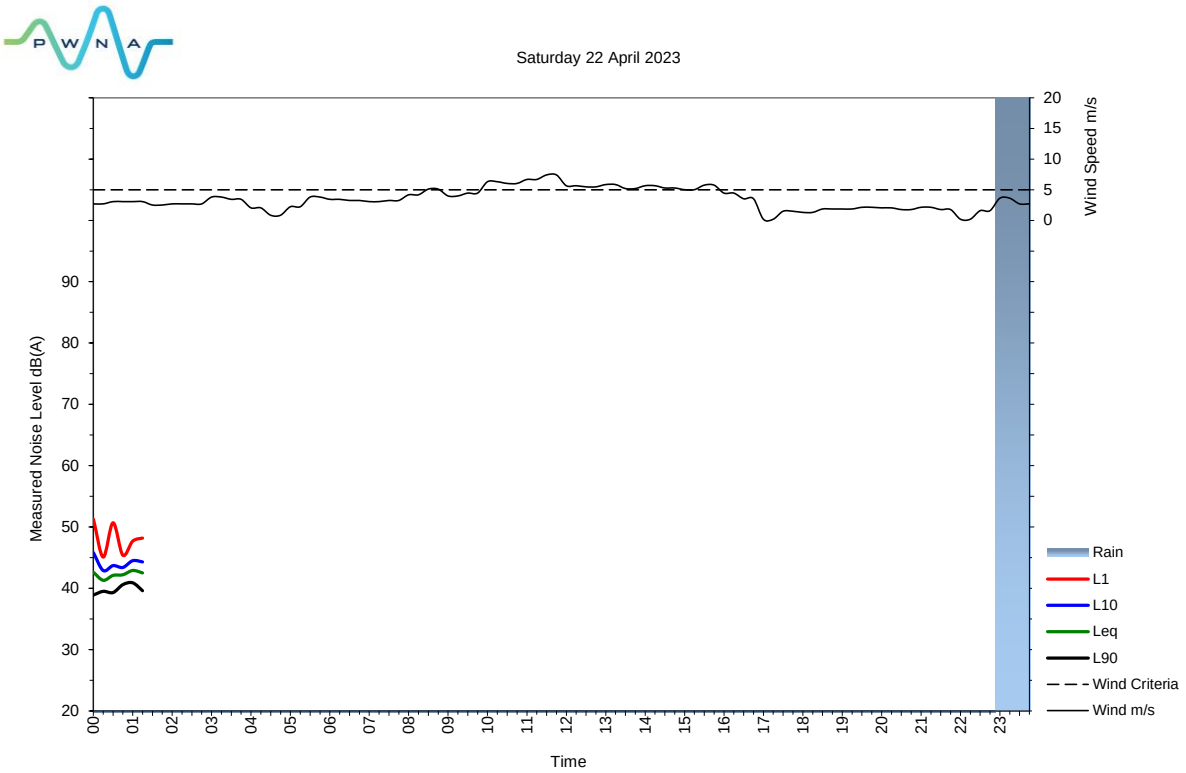
Time
Rain
L1
L10
Leq
L90
Wind Criteria
Wind m/s


Saturday 22 April 2023
Measured Noise Level dB(A)
Wind Speed m/s
Time
Rain
L1
L10
Leq
L90
Wind Criteria
Wind m/s

APPENDIX C: ARCHITECTURAL DRAWINGS

PROPOSED MIXED USE DEVELOPMENT AT
66 WILLIAM STREET & 25 CHURCH STREET, PORT MACQUARIE

PROPOSAL INCLUDES:

CAR PARKING	TWO LEVELS + STREET PARKING ON WILLIAM STREET
COMMERCIAL	THREE LEVELS OF COMMERCIAL
RESIDENCE	SINGLE TWO STOREY RESIDENCE

PRELIMINARY DA

D R A W I N G T R A N S M I T T A L :

Drawing No:	Description	Issue / Revision	25.11.22	03/02/23	10/02/23	14/02/23	28/02/23	16/03/23			04/04/23
DA01-C	COVER PAGE		SK-A	SK-B	SK-C	SK-D		A			C
DA02-C	LOCATION PLAN STREET SECTIONS							A			C
DA03-C	SITE PLAN							A			C
DA04-C	BASEMENT LEVELS		SK-A	SK-B	SK-C	SK-D	SK-E	A			C
DA05-C	GROUND AND FIRST FLOORS		SK-A	SK-B	SK-C	SK-D	SK-E	A	B		C
DA06-C	SECOND AND THIRD FLOORS		SK-A	SK-B	SK-C	SK-D	SK-E	A	B		C
DA07-C	FOURTH FLOORS AND ROOF		SK-A	SK-B	SK-C	SK-D	SK-E	A			C
DA09-C	ELEVATIONS 01							A			C
DA10-C	ELEVATIONS 02		SK-A	SK-B	SK-C	SK-D		A			C
DA11-C	ELEVATIONS 03		SK-A	SK-B	SK-C	SK-D		A			C
DA12-A	MATERIALS							A			
DA13-A	WILLIAM STREET PEDESTRIAN							A			
DA14-A	CHURCH STREET PEDESTRAIN							A			
DA15-C	SECTIONS		SK-A	SK-B	SK-C	SK-D	SK-E	A			C
DA16-C	SECTIONS (INLC RAMPS)						SK-E	A			C
DA17-C	HEIGHT AND PRIVACY DIAGRAMS							A		B	C
DA18	PERSPECTIVE 01							A			
DA19-C	BASIX PLANS AND WINDOW SCHEDULE							A			C
DA20	BASIX INFORMATION SHEET										

T R A N S M I T T A L S H E E T / R E C O R D :

STATUS: C = CONSTRUCTION: CC = CONSTRUCTION CERTIFICATE: CDC = COMPLYING DEVELOPMENT CERTIF.
DA = DEVELOPMENT APPLICATION: FA = FOR APPROVAL: P = PRELIMINARY: S68 = S68 SUBMISSION:
S96 = SECTION 96: T = TENDER

REVISION:	DATE:	STATUS:	TO:
REVISION A	16.03.23	P	CONSULTANT ISSUE FOR DA CO-ORDINATION
REVISION C	16.03.23	P	CONSULTANT ISSUE FOR INCLUDING IN REPORTS

PLACE HOLDER FOR ARTIST IMPRESSION

FSR TABLE

	WILLIAM	CHURCH ST	TOTAL
GROUND LEVEL	341.00	351.15	692.15
FIRST FLOOR (GP)	306.57	315.58	622.15
SECOND FLOOR (T)	306.32	319.57	625.89
THIRD FLOOR (R)	219.81		219.82
FOURTH FLOOR (R)	83.31		83.32
	1,257.01 m²	986.32 m²	2,243.33 m²
SITE AREA	615.04	606.13	2273.97
FSR PROPOSED	2.06	1.65	615.04
FSR ALLOWED	2	1.5	615.04
AREA ALLOWED	1230.08	909.2	2139.28
OVERRUN sq m	**26.93**	**77.12**	**104.05 = 4.9%**

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PAULASTONE**ARCHITECT**
B.Arch. NSW Reg No.**10047** **e** paula@stone architect.com.au **t** 0412 485 893

Rev:	Date:	Description
SK-A	25.11.22	TO DESIGN TEAM FOLLOWING KICK OFF MEETING
SK-B	03.02.23	WORK IN PROGRESS ISSUE PROPOSED AMENDMENTS
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C	04.04.23	CONSULTANT ISSUE FOR DA REPORTS

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CHECKED BY:
OWNERS SIGNATURE:

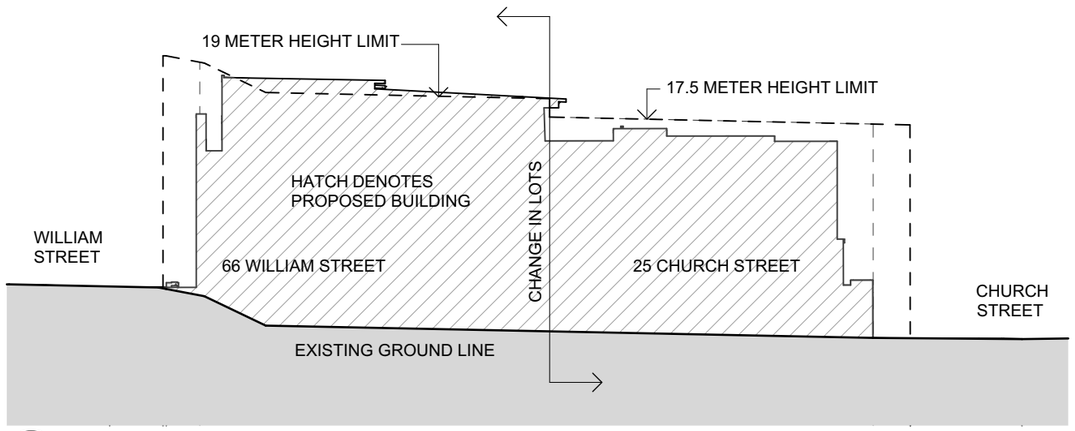
Project Details: **MIXED USE DEVELOPMENT**
66 WILLIAM STREET +
25 CHURCH STREET

Client: **DR. J. HEISE**
PRELIMINARY DA

Drawing Title: **COVER PAGE**

Date Created: JAN 2015 | Scale @ A3: 1:1.04, 1:1, 1:1.31

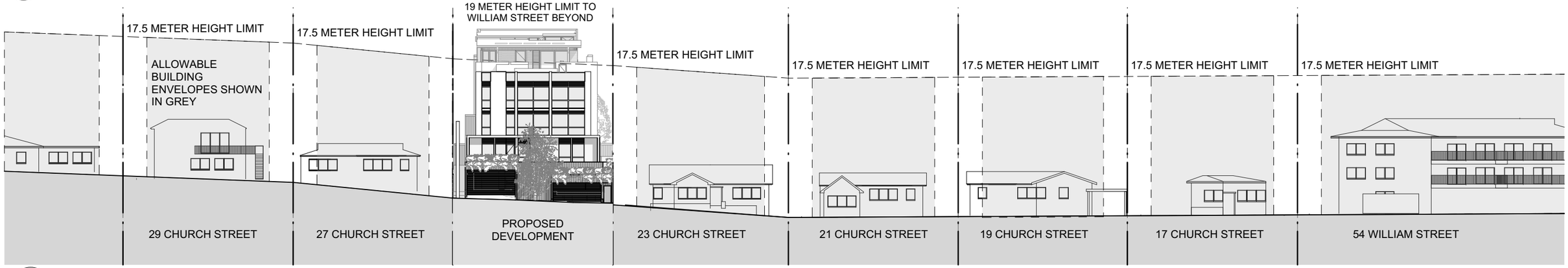
Plot Date:	Project No.	Drawing No.	Rev.	
4/04/2023	**2006**	**DA01-C**		**A3**



5 - SITE FALL SECTION DIAGRAM
1:500

AERIAL LOCATION PLAN SITE HIGHLIGHTED IN YELLOW

1 - WILLLIAM STREET ELEVATION
1:500



2 - CHURCH STREET ELEVATION
1:500

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Project Details: **MIXED USE DEVELOPMENT**
66 WILLIAM STREET +
25 CHURCH STREET

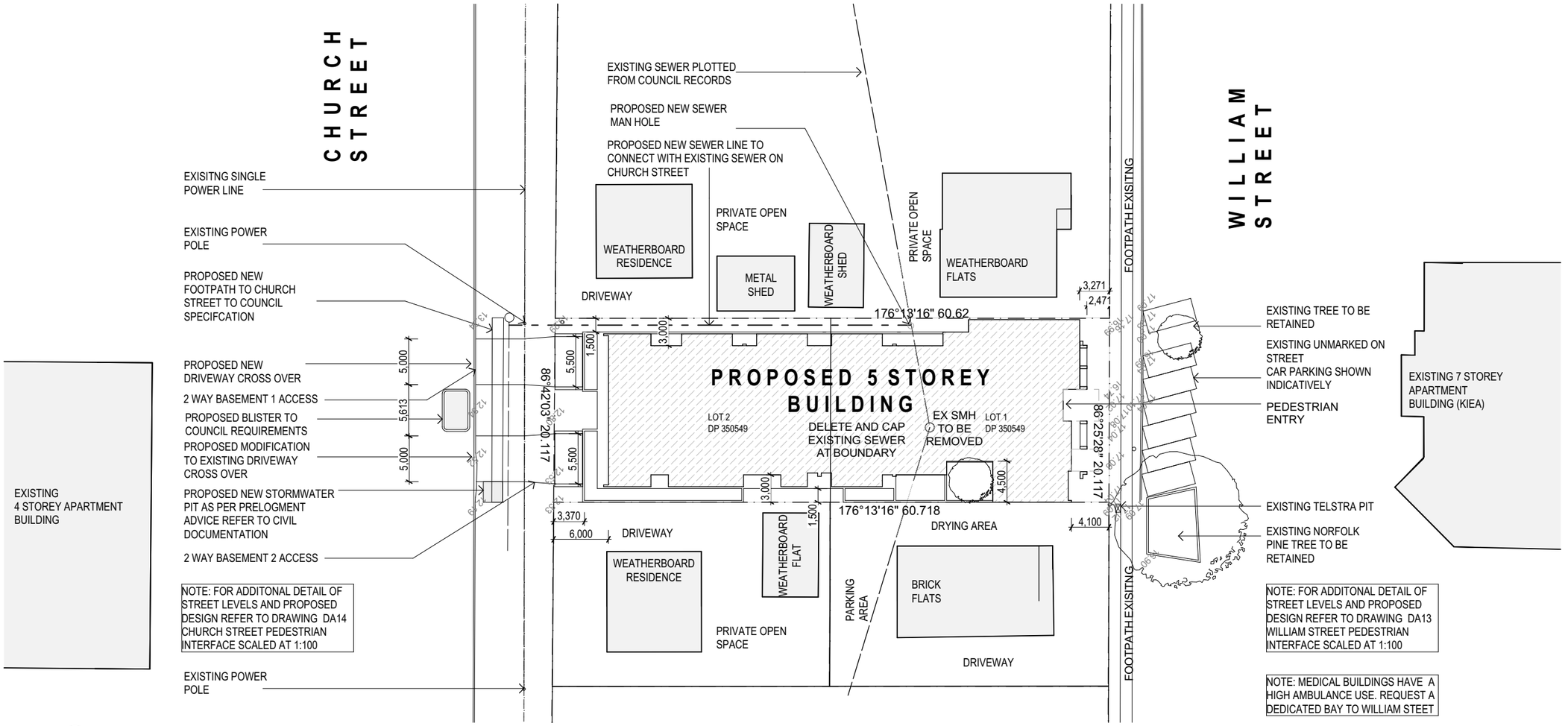
Client: **DR. J. HEISE**

PRELIMINARY DA

Drawing Title: **LOCATION PLAN**
STREET SECTIONS

Date Created: JAN 2015 | Scale @ A3: 1:500

Plot Date: 4/04/2023 | Project No. 2006 | Drawing No. DA02-C | Rev. | **A3**



1 / - SITE PLAN
1:500

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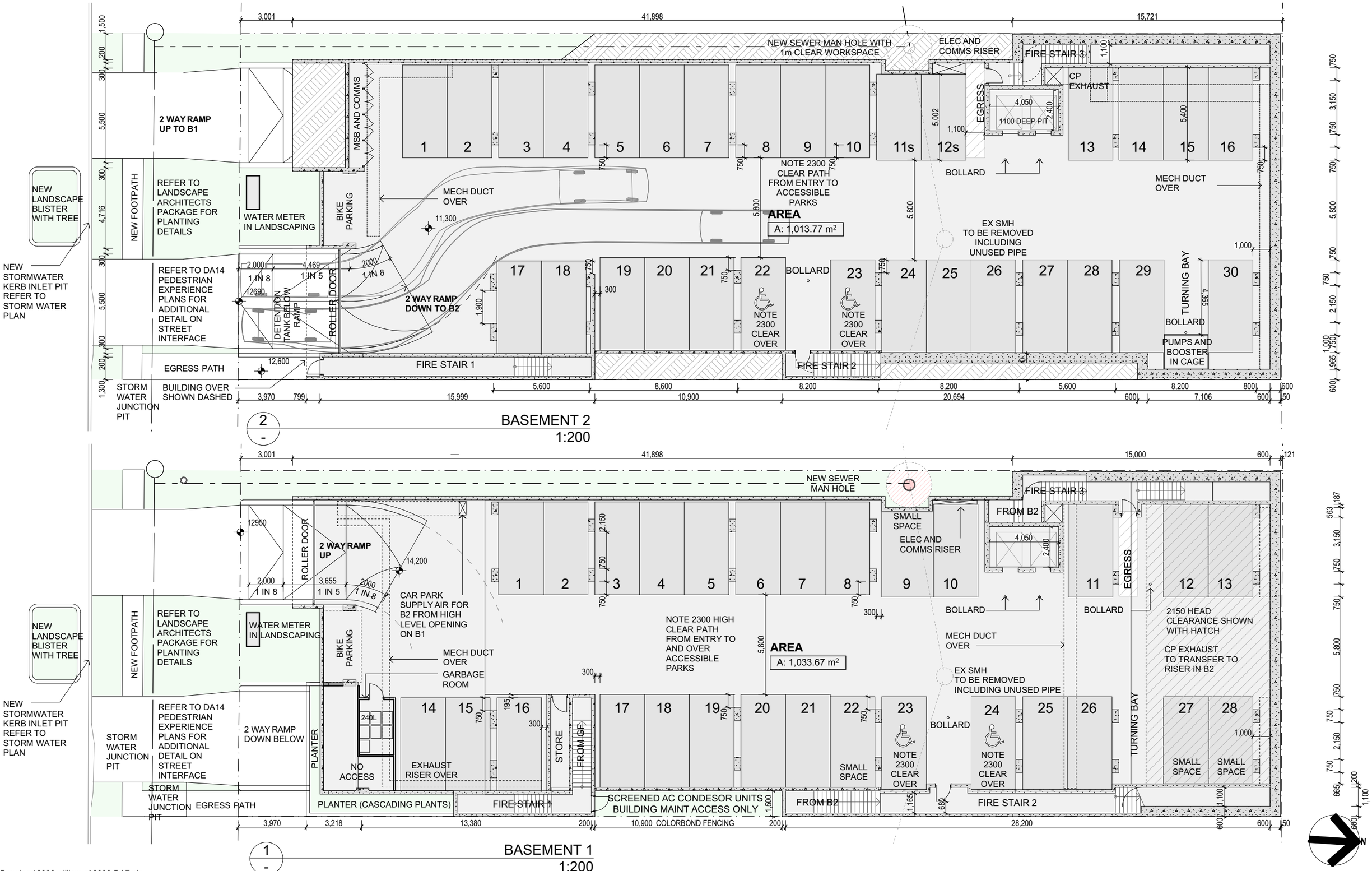
Project Details:
MIXED USE DEVELOPMENT
66 WILLIAM STREET + 25 CHURCH STREET

Client:
DR. J. HEISE
PRELIMINARY DA

Drawing Title: **SITE PLAN**
Date Created: JAN 2015 | Scale @ A3: 1:500
Plot Date: 4/04/2023 | Project No. 2006 | Drawing No. DA03-C | Rev. C | **A3**



2
-

BASEMENT 2
1:200

1
-

BASEMENT 1
1:200

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MIXED USE DEVELOPMENT
66 WILLIAM STREET +
25 CHURCH STREET

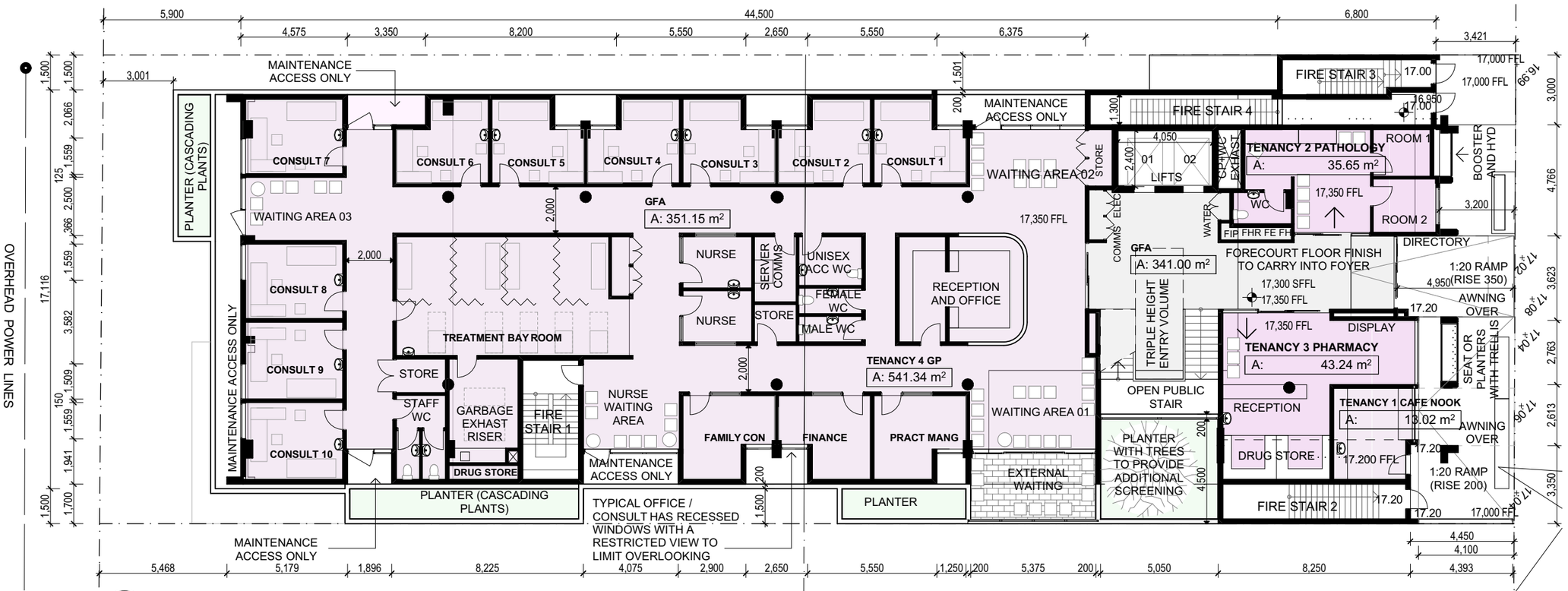
Client:
DR. J. HEISE

PRELIMINARY DA

Drawing Title:
BASEMENT LEVELS

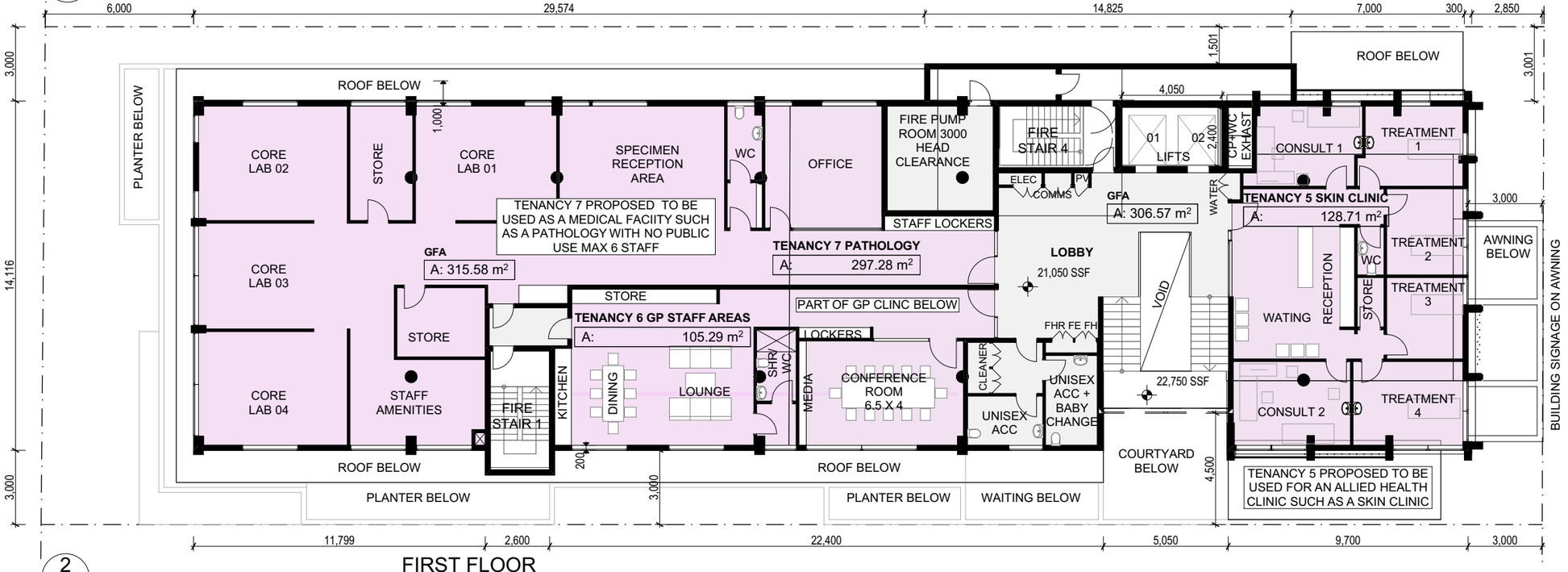
Date Created: JAN 2015 | Scale @ A3: 1:200

Plot Date: 4/04/2023 | Project No. 2006 | Drawing No. DA04-C | Rev. | **A3**



1 / - GROUND FLOOR 1:200

GROUND FLOOR NET AREAS	
TENANCY 1 CAFE NOOK	13.02
TENANCY 2 PATHOLOGY	35.65
TENANCY 3 PHARMACY	43.24
TENANCY 4 GP	541.34
	633.25 m²



2 / - FIRST FLOOR 1:200

AREA NET BY LEVEL 1	
TENANCY 5 SKIN CLINIC	128.71
TENANCY 6 GP STAFF AREAS	105.29
TENANCY 7 PATHOLOGY	297.28
	531.28 m²

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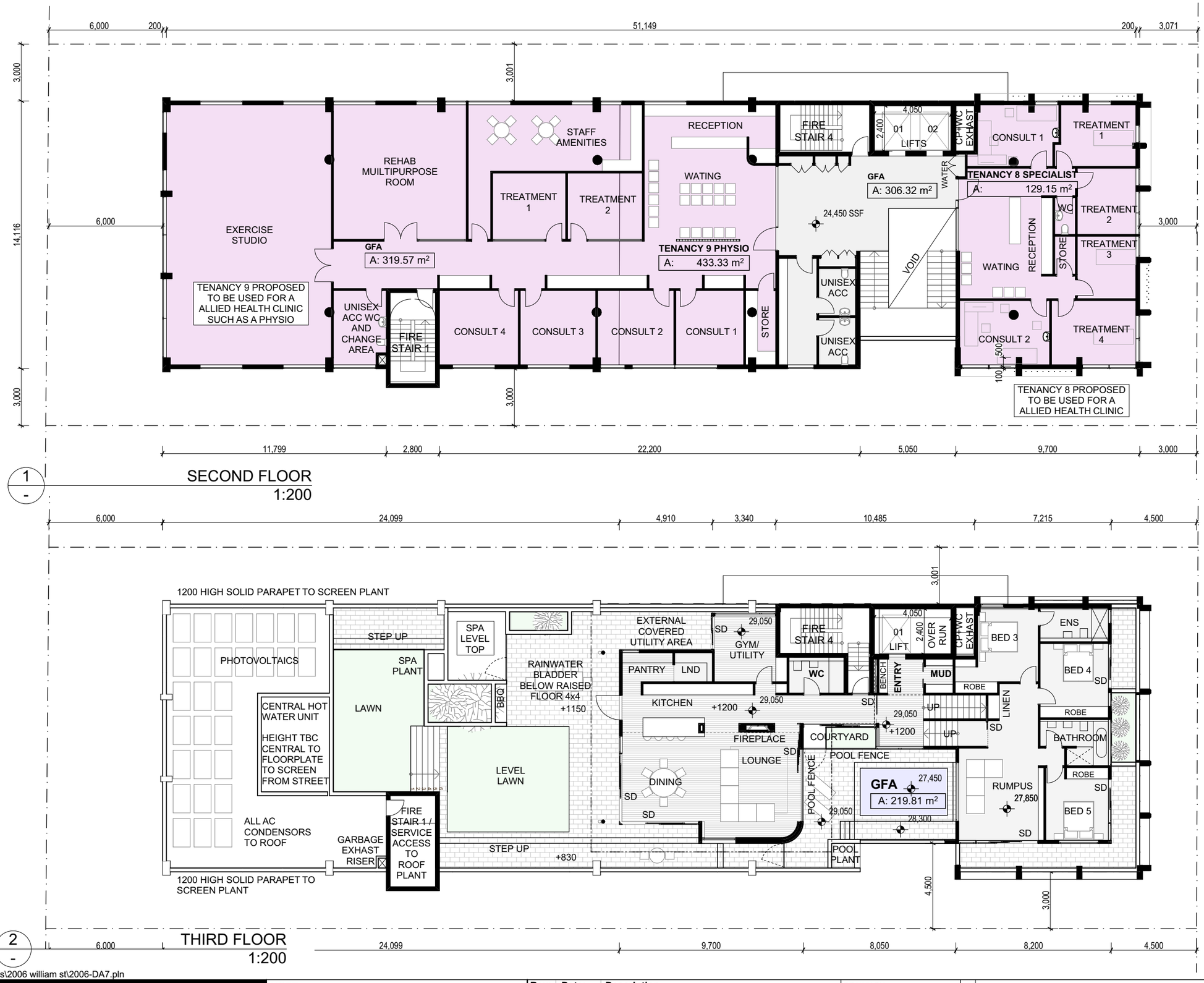
Project Details: **MIXED USE DEVELOPMENT**
66 WILLIAM STREET + 25 CHURCH STREET

Client: **DR. J. HEISE**
PRELIMINARY DA

Drawing Title: **GROUND AND FIRST FLOORS**
Date Created: JAN 2015 | Scale @ A3: 1:200, 1:1
Plot Date: 4/04/2023 | Project No. 2006 | Drawing No. DA05-C | Rev. | A3



AREA NET BY LEVEL 2	
TENANCY 8 SPECIALIST	129.15
TENANCY 9 PHYSIO	433.33
	562.48 m²

1 / - SECOND FLOOR 1:200

2 / - THIRD FLOOR 1:200

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Project Details: **MIXED USE DEVELOPMENT**
66 WILLIAM STREET + 25 CHURCH STREET

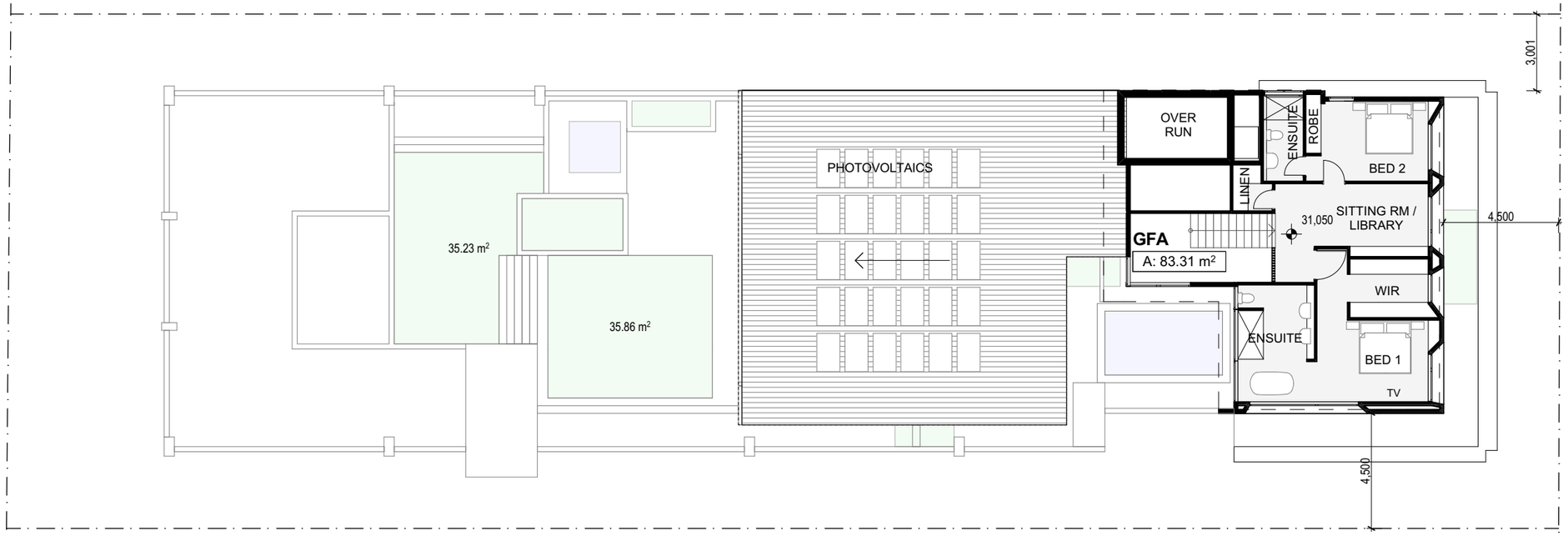
Client: **DR. J. HEISE**

PRELIMINARY DA

Drawing Title: **SECOND AND THIRD FLOORS**

Date Created: JAN 2015 | Scale @ A3: 1:200, 1:1

Plot Date:	Project No.	Drawing No.	Rev.	
4/04/2023	**2006**	**DA06-C**		**A3**



1
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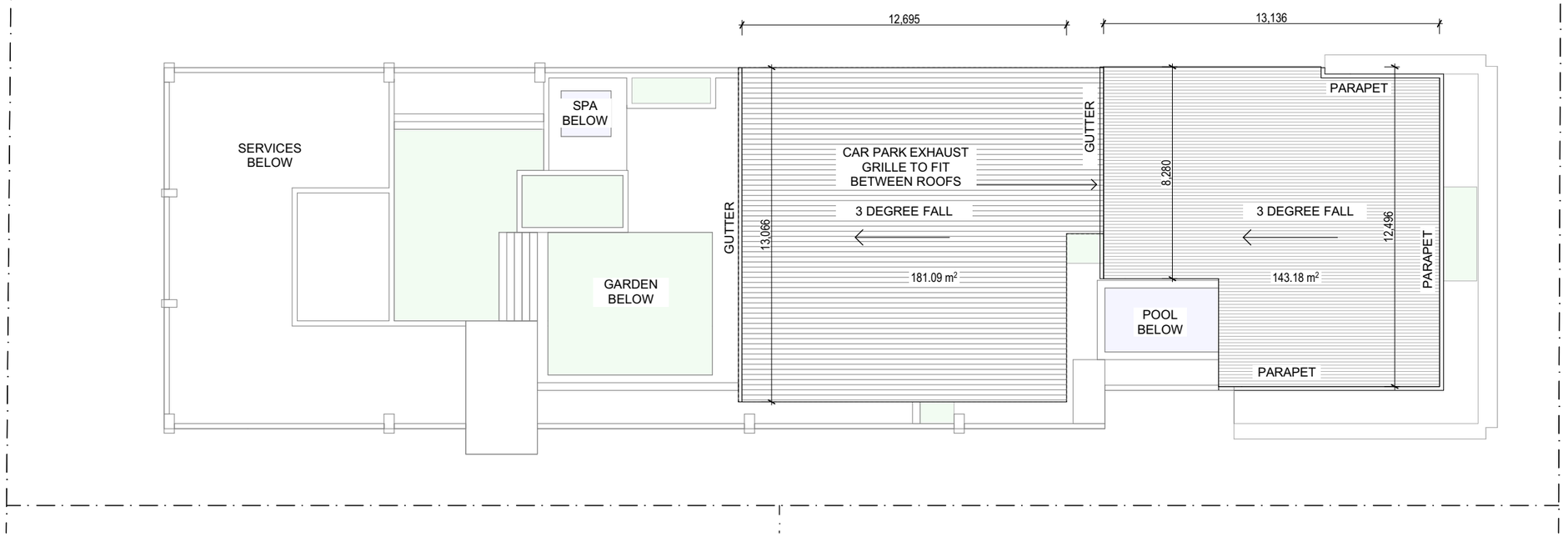
FOURTH FLOOR
1:200



1
-

ROOF
1:200

N

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MIXED USE DEVELOPMENT
66 WILLIAM STREET + 25 CHURCH STREET

Client:

DR. J. HEISE

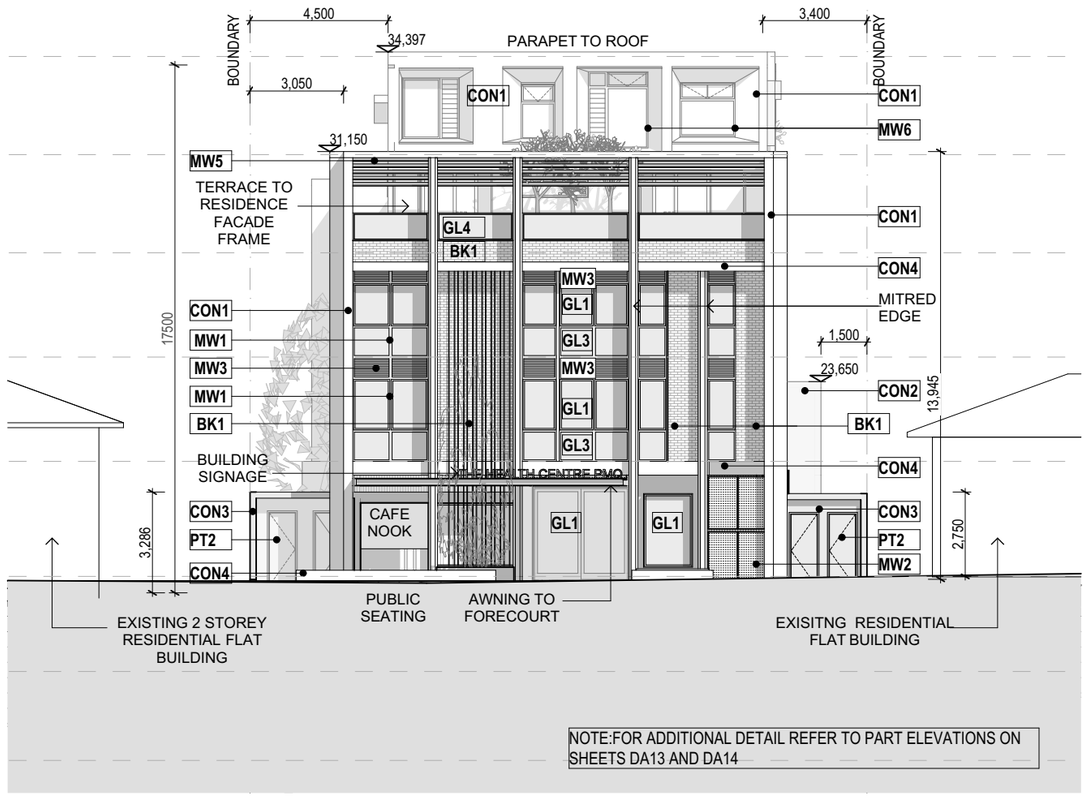
PRELIMINARY DA

Drawing Title: **FOURTH FLOORS AND ROOF**

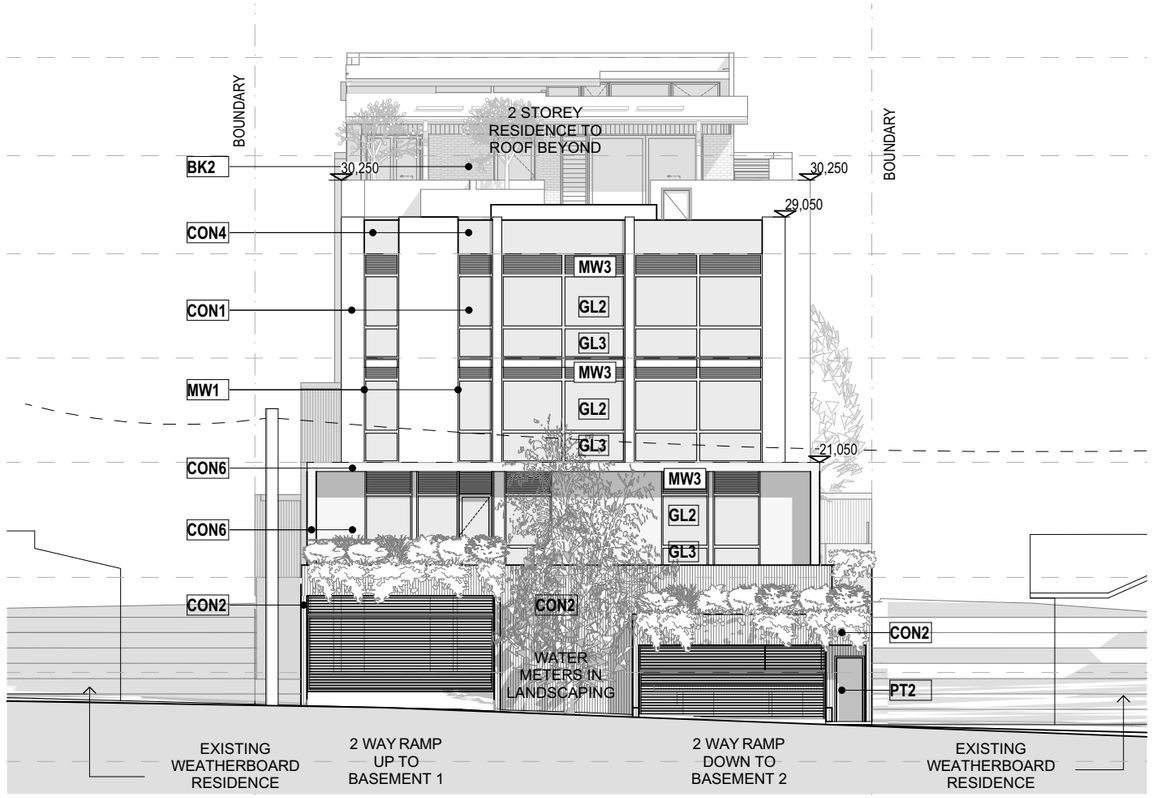
Date Created: JAN 2015 | Scale @ A3: 1:200

Plot Date: 4/04/2023 | Project No. **2006** | Drawing No. **DA07-C** | Rev. | **A3**

ELEVATIONS MATERIAL KEY			
CON1	CLASS 2 WHITE 'BRIGHTONLITE' PRECAST PANELS	**MW4**	VERT PLANTER TRELLIS STAINLESS STEEL
		MW5	FIXED TIMBER LOOK ALUMINIUM LOVURES
CON2	DARK GREY STAINED AND TEXTURED PRECAST PANEL EXAMPLE RECKLI PROFILE 1/37B RIB TYPE J	**MW6**	POWDERCOAT TO METAL WORK WHITE FINISH. WINDOW FRAMES, SPANDREL PANEL TRIMS AND CAPPINGS (RESIDENCE)
CON3	DARK GREY PRECAST PANEL STAIN OR PAINT FINISH	**MW7**	BLACK PAINT TO EXPOSED STEELWORK TO AWNING
CON4	INSITU CONCRETE TO MATCH CON1 FINISH	**CP1**	NAT FINISH TIMBER TO SOFFIT (AWNING)
CON5	STRUCTURAL GREY CONCRETE NEVER EXPOSED EXTERNALLY	**CP2**	PAINT FINISH VERT BATTENS TO SOFFIT (RES)
		GL1	CLEAR SHOP FRONT GLASS
CON3	LIGHT GREY PRECAST PANEL PAINT FINISH	**GL2**	GREY TINT GLASS GENERALLY UNO
BK1	FACE BRICK WALLS - MEDIUM GREY	**GL3**	SPANDREL PANEL GLASS TO MATCH GL2
BK2	FACE BRICK WALLS - BLONDE (RESIDENCE)	**GL4**	BALUSTRADE GLASS TO MATCH GL2
MW1	POWDERCOAT TO METALWORK BLACK FINISH. WINDOW FRAMES, SPANDREL PANEL TRIMS AND CAPPINGS	**GL5**	TRANSLUCENT/OBSCURE PRIVACY GLASS
		PT1	FEATURE COLOUR PAINT FINISH (ORANGE)
MW2	PERF SERVICE SCREEN TO MATCH MW1	**PT2**	PAINT FINISH TO MATCH CON3
MW3	INTERGRATED MECH VENT TO MATCH MW1	**CT1**	FORECOURT PAVER



1 - NORTH ELEVATION
1:200



2 - SOUTH ELEVATION
1:200

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Project Details:
MIXED USE DEVELOPMENT
66 WILLIAM STREET +
25 CHURCH STREET

Client:
DR. J. HEISE
PRELIMINARY DA

Drawing Title: **ELEVATIONS 01**

Date Created: JAN 2015 | Scale @ A3: 1:200, 1:2.94, 1:2.63, 1:2

Plot Date: 4/04/2023 | Project No. 2006 | Drawing No. DA09-C | Rev. C | **A3**

ELEVATIONS MATERIAL KEY			
CON1	CLASS 2 WHITE 'BRIGHTONLITE' PRECAST PANELS	**MW4**	VERT PLANTER TRELLIS STAINLESS STEEL
		MW5	FIXED TIMBER LOOK ALUMINIUM LOVURES
CON2	DARK GREY STAINED AND TEXTURED PRECAST PANEL EXAMPLE RECKLI PROFILE 1/37B RIB TYPE J	**MW6**	POWDERCOAT TO METAL WORK WHITE FINISH. WINDOW FRAMES, SPANDREL PANEL TRIMS AND CAPPINGS (RESIDENCE)
CON3	DARK GREY PRECAST PANEL STAIN OR PAINT FINISH	**MW7**	BLACK PAINT TO EXPOSED STEELWORK TO AWNING
CON4	INSITU CONCRETE TO MATCH CON1 FINISH	**CP1**	NAT FINISH TIMBER TO SOFFIT (AWNING)
CON5	STRUCTURAL GREY CONCRETE NEVER EXPOSED EXTERNALLY	**CP2**	PAINT FINISH VERT BATTENS TO SOFFIT (RES)
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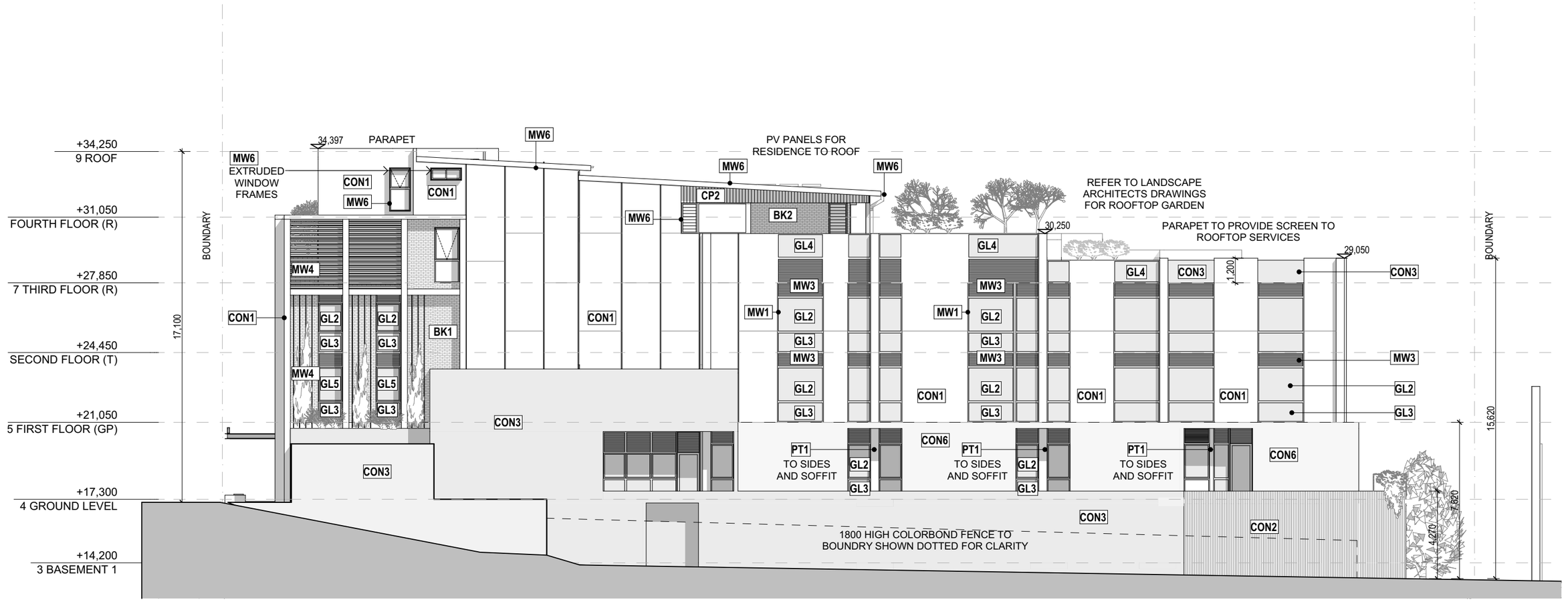
CON3	LIGHT GREY PRECAST PANEL PAINT FINISH	**GL2**	GREY TINT GLASS GENERALLY UNO
BK1	FACE BRICK WALLS - MEDIUM GREY	**GL3**	SPANDREL PANEL GLASS TO MATCH GL2
BK2	FACE BRICK WALLS - BLONDE (RESIDENCE)	**GL4**	BALUSTRADE GLASS TO MATCH GL2
MW1	POWDERCOAT TO METALWORK BLACK FINISH. WINDOW FRAMES, SPANDREL PANEL TRIMS AND CAPPINGS	**GL5**	TRANSLUCENT/OBSCURE PRIVACY GLASS
		PT1	FEATURE COLOUR PAINT FINISH (ORANGE)
MW2	PERF SERVICE SCREEN TO MATCH MW1	**PT2**	PAINT FINISH TO MATCH CON3
MW3	INTERGRATED MECH VENT TO MATCH MW1	**CT1**	FORECOURT PAVER



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Project Details:

MIXED USE DEVELOPMENT
66 WILLIAM STREET + 25 CHURCH STREET

Client:

DR. J. HEISE

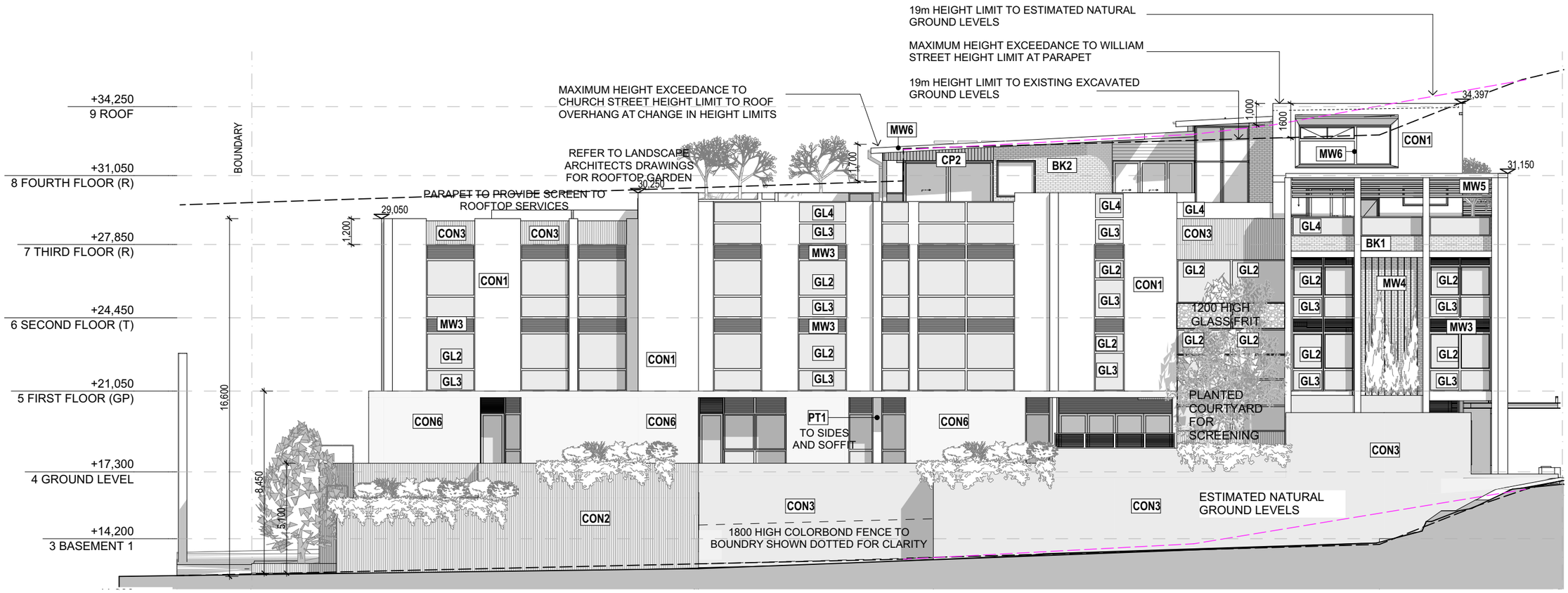
PRELIMINARY DA

Drawing Title: **ELEVATIONS 02**

Date Created: JAN 2015 | Scale @ A3: 1:200

Plot Date: 4/04/2023 | Project No. 2006 | Drawing No. DA10-C | Rev. | **A3**

ELEVATIONS MATERIAL KEY			
CON1	CLASS 2 WHITE 'BRIGHTONLITE' PRECAST PANELS	**MW4**	VERT PLANTER TRELLIS STAINLESS STEEL
		MW5	FIXED TIMBER LOOK ALUMINIUM LOVURES
CON2	DARK GREY STAINED AND TEXTURED PRECAST PANEL EXAMPLE RECKLI PROFILE 1/37B RIB TYPE J	**MW6**	POWDERCOAT TO METAL WORK WHITE FINISH. WINDOW FRAMES, SPANDREL PANEL TRIMS AND CAPPINGS (RESIDENCE)
CON3	DARK GREY PRECAST PANEL STAIN OR PAINT FINISH	**MW7**	BLACK PAINT TO EXPOSED STEELWORK TO AWNING
CON4	INSITU CONCRETE TO MATCH CON1 FINISH	**CP1**	NAT FINISH TIMBER TO SOFFIT (AWNING)
CON5	STRUCTURAL GREY CONCRETE NEVER EXPOSED EXTERNALLY	**CP2**	PAINT FINISH VERT BATTENS TO SOFFIT (RES)
		GL1	CLEAR SHOP FRONT GLASS
CON3	LIGHT GREY PRECAST PANEL PAINT FINISH	**GL2**	GREY TINT GLASS GENERALLY UNO
BK1	FACE BRICK WALLS - MEDIUM GREY	**GL3**	SPANDREL PANEL GLASS TO MATCH GL2
BK2	FACE BRICK WALLS - BLONDE (RESIDENCE)	**GL4**	BALUSTRADE GLASS TO MATCH GL2
MW1	POWDERCOAT TO METALWORK BLACK FINISH. WINDOW FRAMES, SPANDREL PANEL TRIMS AND CAPPINGS	**GL5**	TRANSLUCENT/OBSCURE PRIVACY GLASS
		PT1	FEATURE COLOUR PAINT FINISH (ORANGE)
MW2	PERF SERVICE SCREEN TO MATCH MW1	**PT2**	PAINT FINISH TO MATCH CON3
MW3	INTERGRATED MECH VENT TO MATCH MW1	**CT1**	FORECOURT PAVER



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B.Arch. NSW Reg No.**10047** **e** paula@stone architect.com.au **t** 0412 485 893

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CHECKED BY:
OWNERS SIGNATURE:

Project Details:
MIXED USE DEVELOPMENT
66 WILLIAM STREET + 25 CHURCH STREET

Client:
DR. J. HEISE

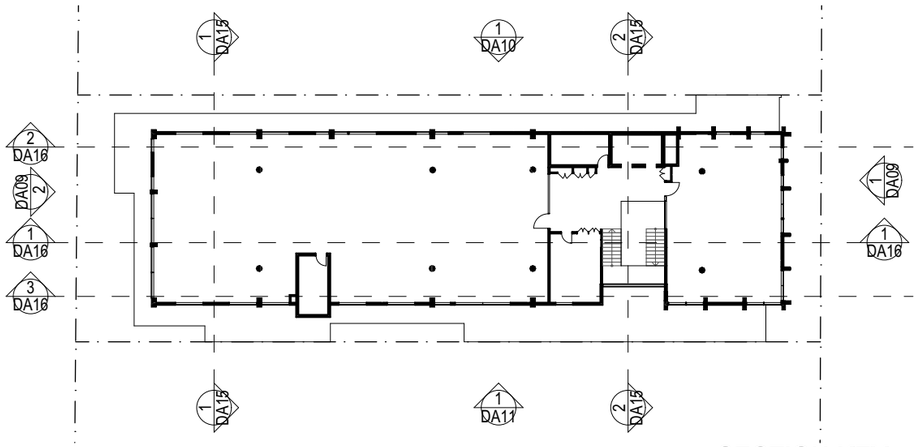
PRELIMINARY DA

Drawing Title:
ELEVATIONS 03

Date Created: JAN 2015 | Scale @ A3: 1:200

Plot Date: 4/04/2023 | Project No. 2006 | Drawing No. DA11-C | Rev. C

A3



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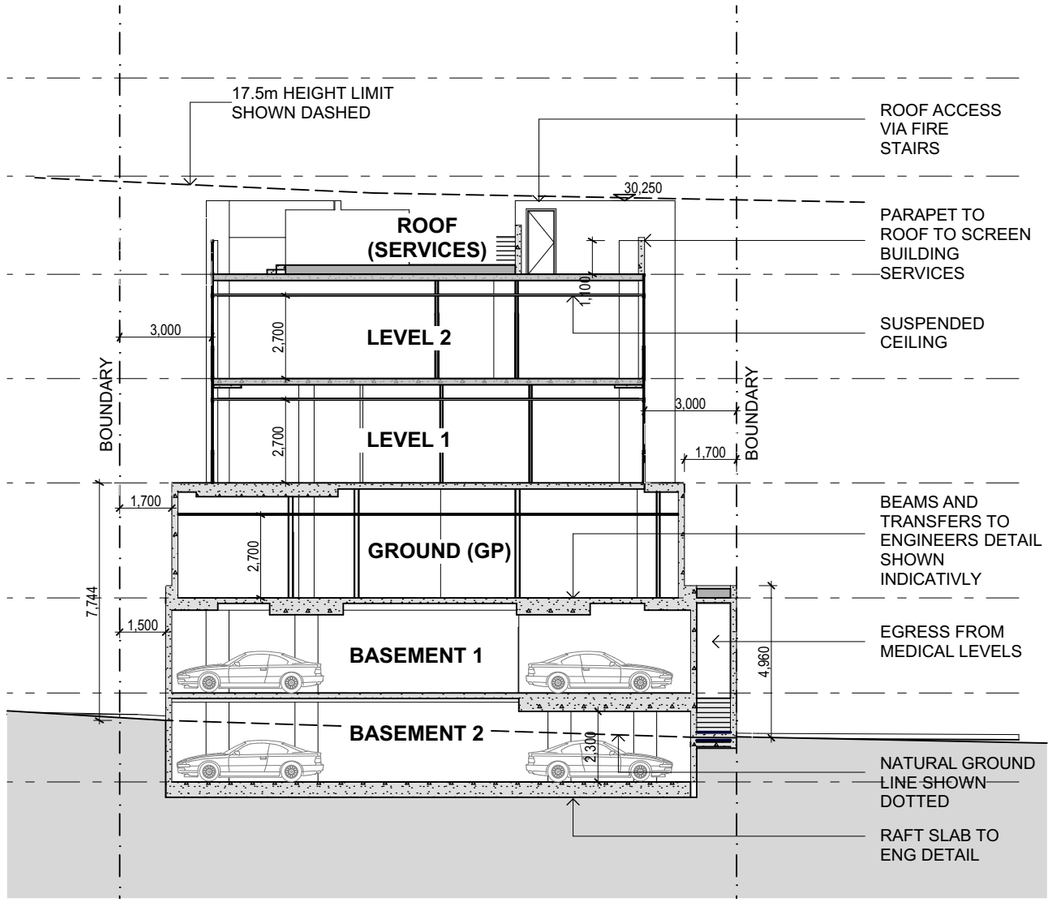
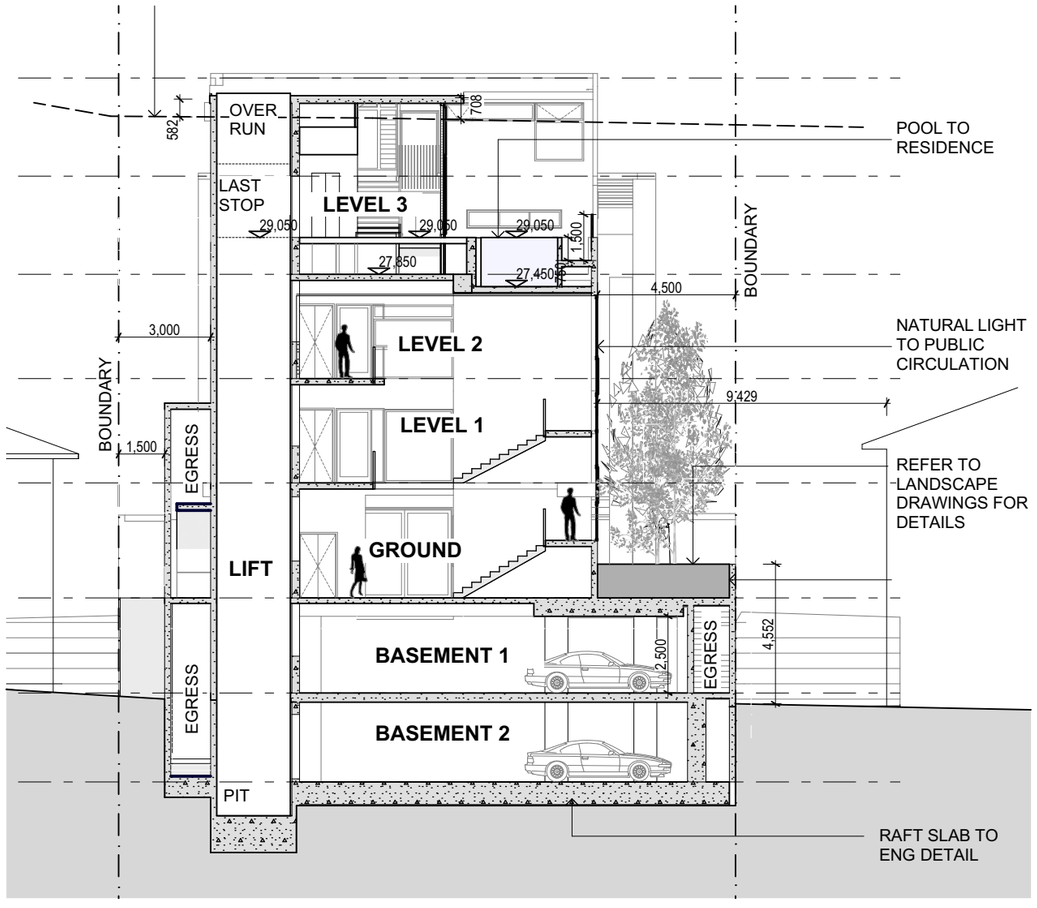


1 / - SECTION 1:200



2 / - SECTION 1:200

S:\Drawings\2006 william st\2006-DA7.pln

PAULASTONE**ARCHITECT**

B.Arch. NSW Reg No.**10047** **e** paula@stone architect.com.au **t** 0412 485 893

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0 10 20 30 40 50 = Full Size mm

Rev:	Date:	Description
SK-A	25.11.22	TO DESIGN TEAM FOLLOWING KICK OFF MEETING
SK-B	03.02.23	WORK IN PROGRESS ISSUE PROPOSED AMENDMENTS
SK-C	10.02.23	WORK IN PROGRESS FOR CLIENT INFO
SK-D	14.02.23	WORK IN PROGRESS FOR CONSULTANT REVIEW
SK-E	28.02.23	WORK IN PROGRESS FOLLOWING STRUC MEETING
A	16.03.23	CONSULTANT ISSUE FOR DA CO-ORDINATION
C	04.04.23	CONSULTANT ISSUE FOR DA REPORTS

DRAWN BY:
CHECKED BY:
OWNERS SIGNATURE:

Project Details:

MIXED USE DEVELOPMENT
66 WILLIAM STREET +
25 CHURCH STREET

Client:

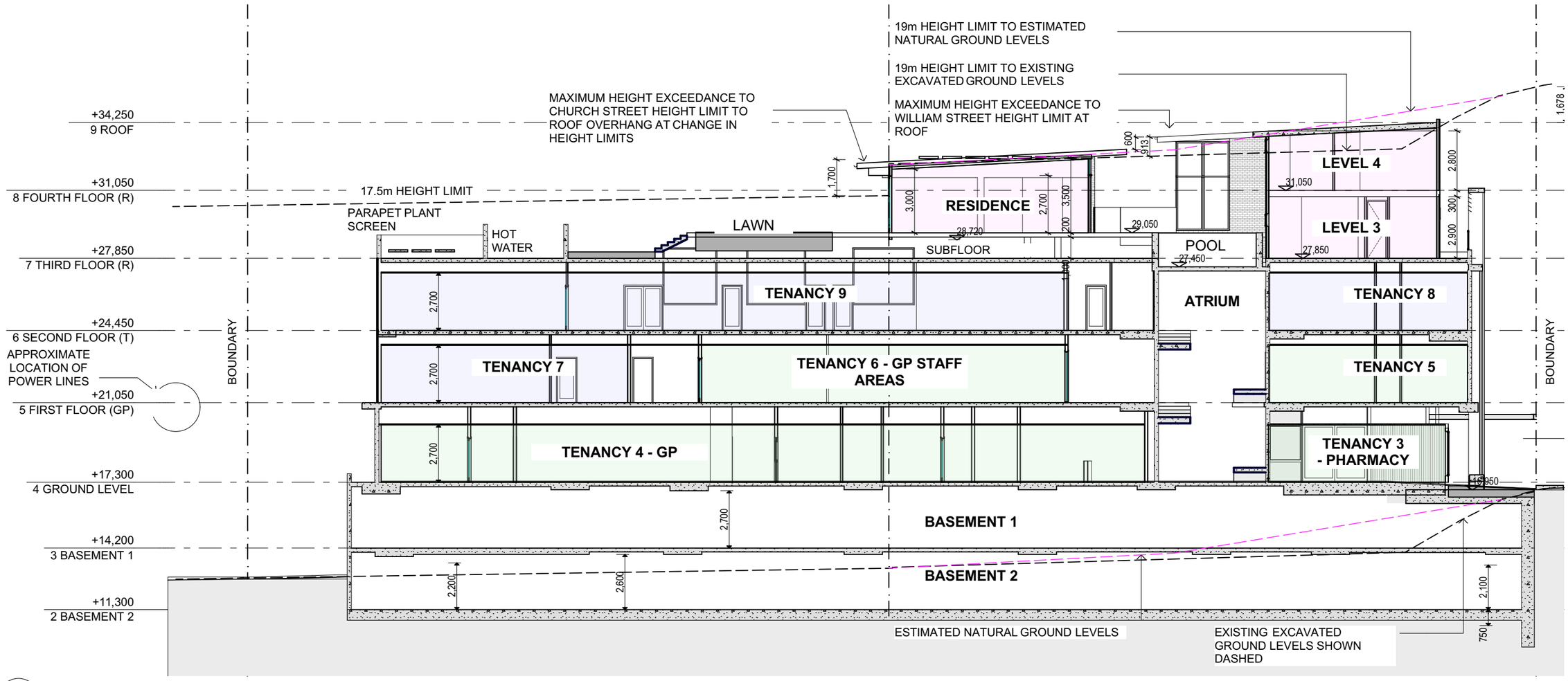
DR. J. HEISE

PRELIMINARY DA

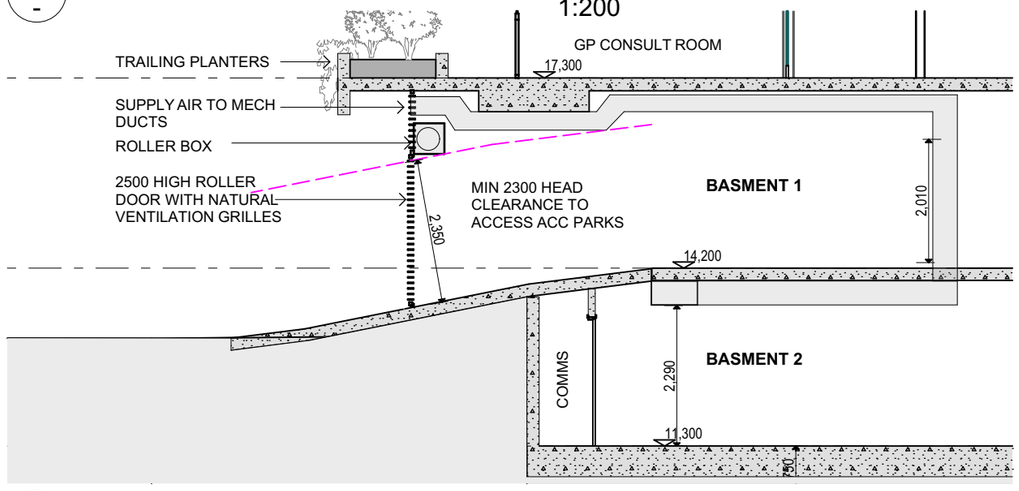
Drawing Title: **SECTIONS**

Date Created: JAN 2015 | Scale @ A3: 1:200, 1:500

Plot Date: 4/04/2023 | Project No. **2006** | Drawing No. **DA15-C** | Rev. | **A3**

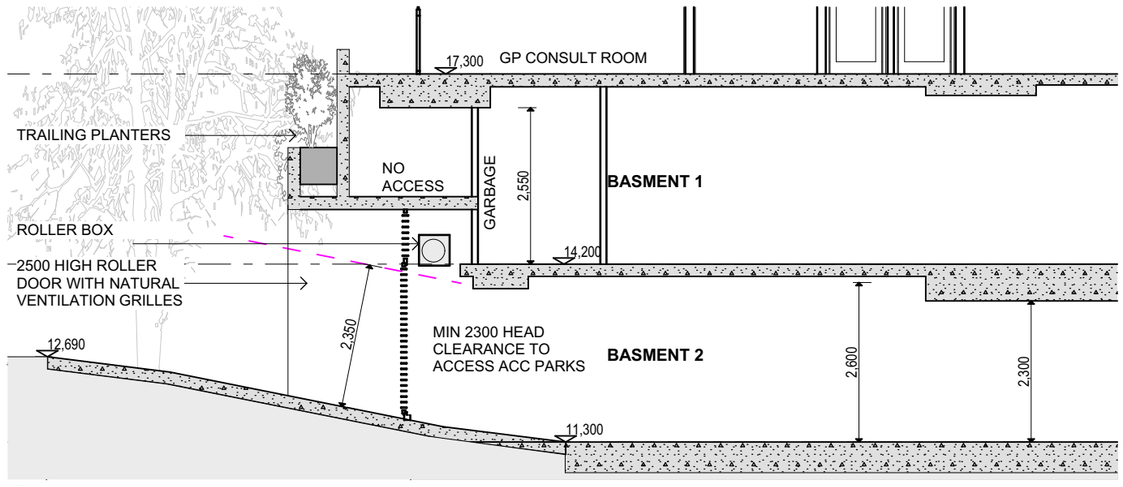


1 - LONG SECTION 1:200



2 - B1 RAMP SECTION 1:100

3 - B2 RAMP SECTION 1:100



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B.Arch. NSW Reg No.**10047** **e** paula@stone architect.com.au **t** 0412 485 893

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0 10 20 30 40 50 = Full Size mm

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SK-E	28.02.23	WORK IN PROGRESS FOLLOWING STRUC MEETING
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C	04.04.23	CONSULTANT ISSUE FOR DA REPORTS

DRAWN BY:
CHECKED BY:
OWNERS SIGNATURE:

Project Details:

MIXED USE DEVELOPMENT
66 WILLIAM STREET + 25 CHURCH STREET

Client:

DR. J. HEISE

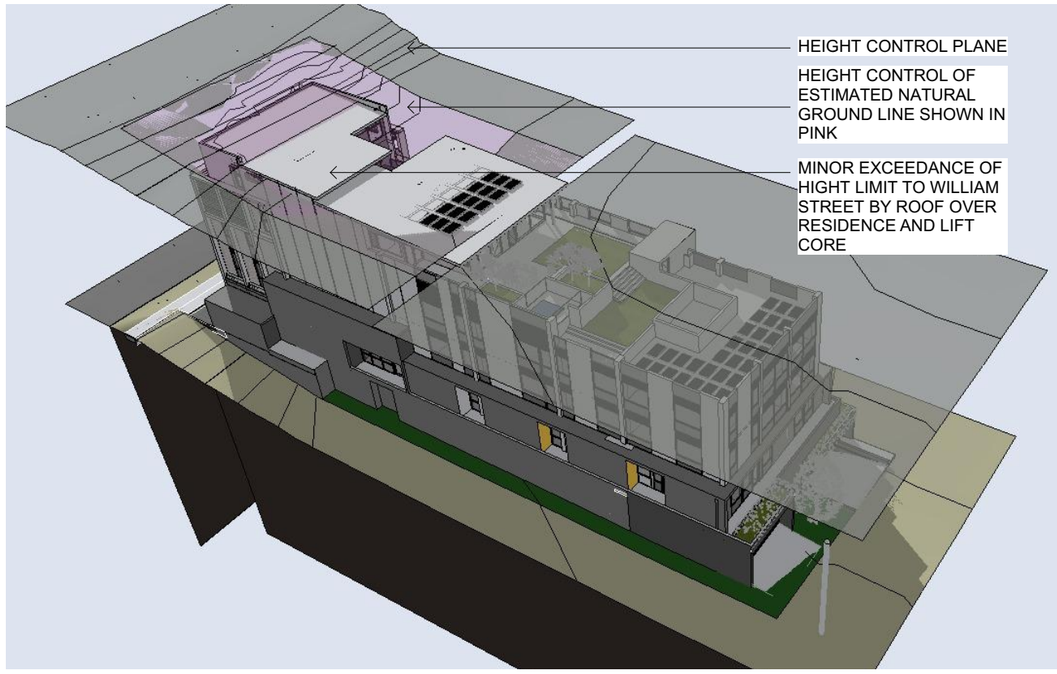
PRELIMINARY DA

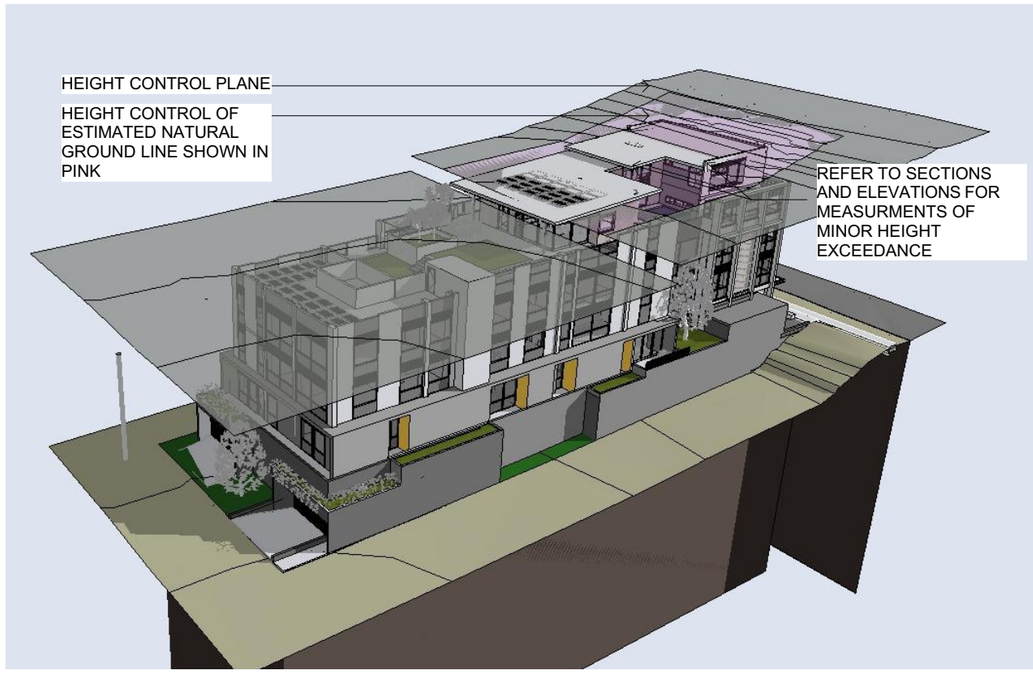
Drawing Title:

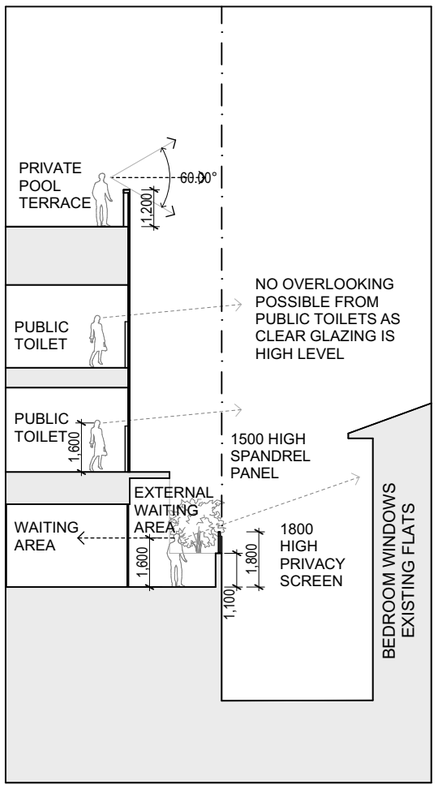
SECTIONS (INLC RAMPS)

Date Created: JAN 2015 | Scale @ A3: 1:200, 1:100

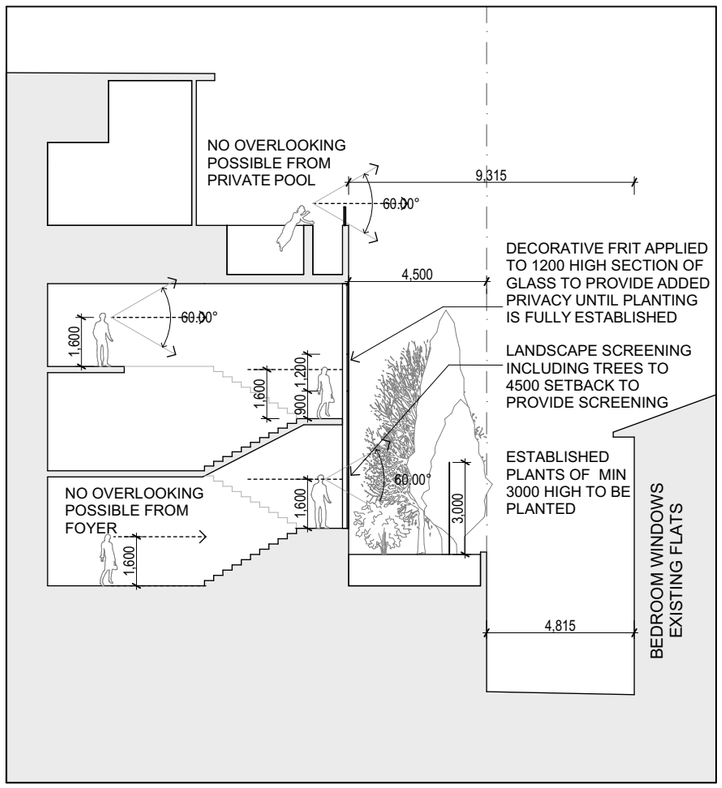
Plot Date: 4/04/2023 | Project No. 2006 | Drawing No. DA16-C | Rev. | **A3**



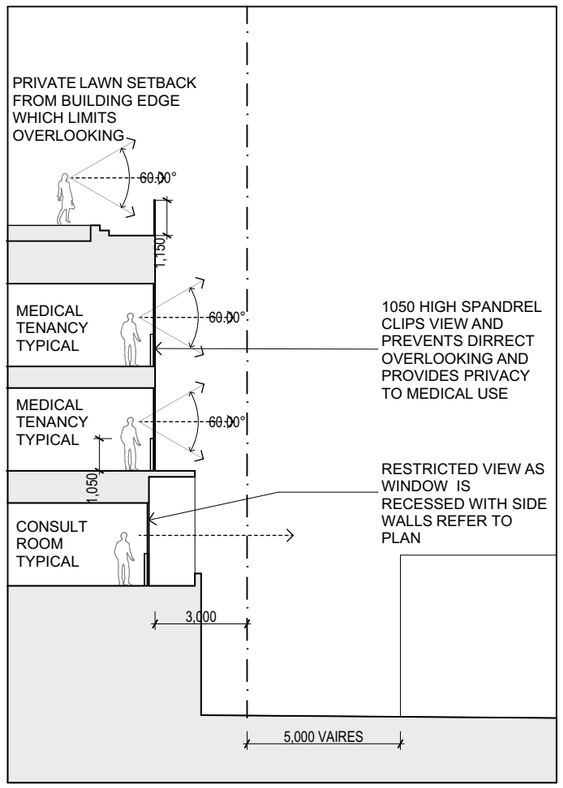




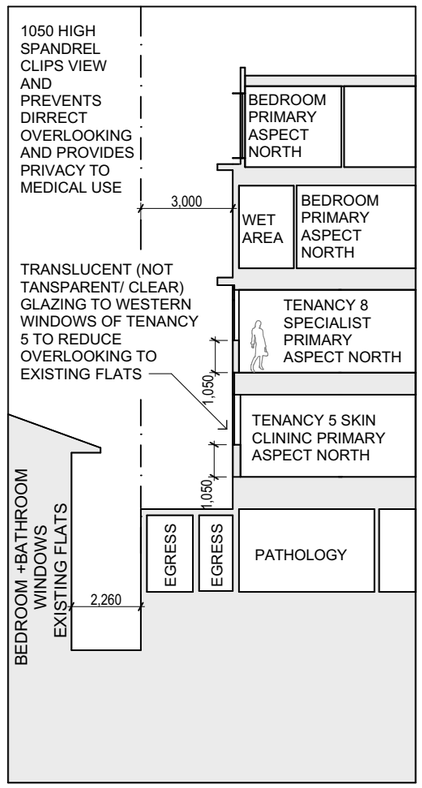
GP EXTERNAL WAITING AREA OVERLOOKING DIAGRAM



FOYER OVERLOOKING DIAGRAM



TYPICAL CONSULT AND TENANCY OVERLOOKING



TYPICAL TREATMENT ROOM WILLIAM STREET

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PAULASTONE**ARCHITECT**
B.Arch. NSW Reg No.**10047** **e** paula@stone architect.com.au **t** 0412 485 893

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A	16.03.23	CONSULTANT ISSUE FOR DA CO-ORDINATION
B	29.03.23	TENANCY LAYOUTS TO TOWN PLANNER
C	04.04.23	CONSULTANT ISSUE FOR DA REPORTS

DRAWN BY:
CHECKED BY:
OWNERS SIGNATURE:

Project Details: **MIXED USE DEVELOPMENT**
66 WILLIAM STREET +
25 CHURCH STREET

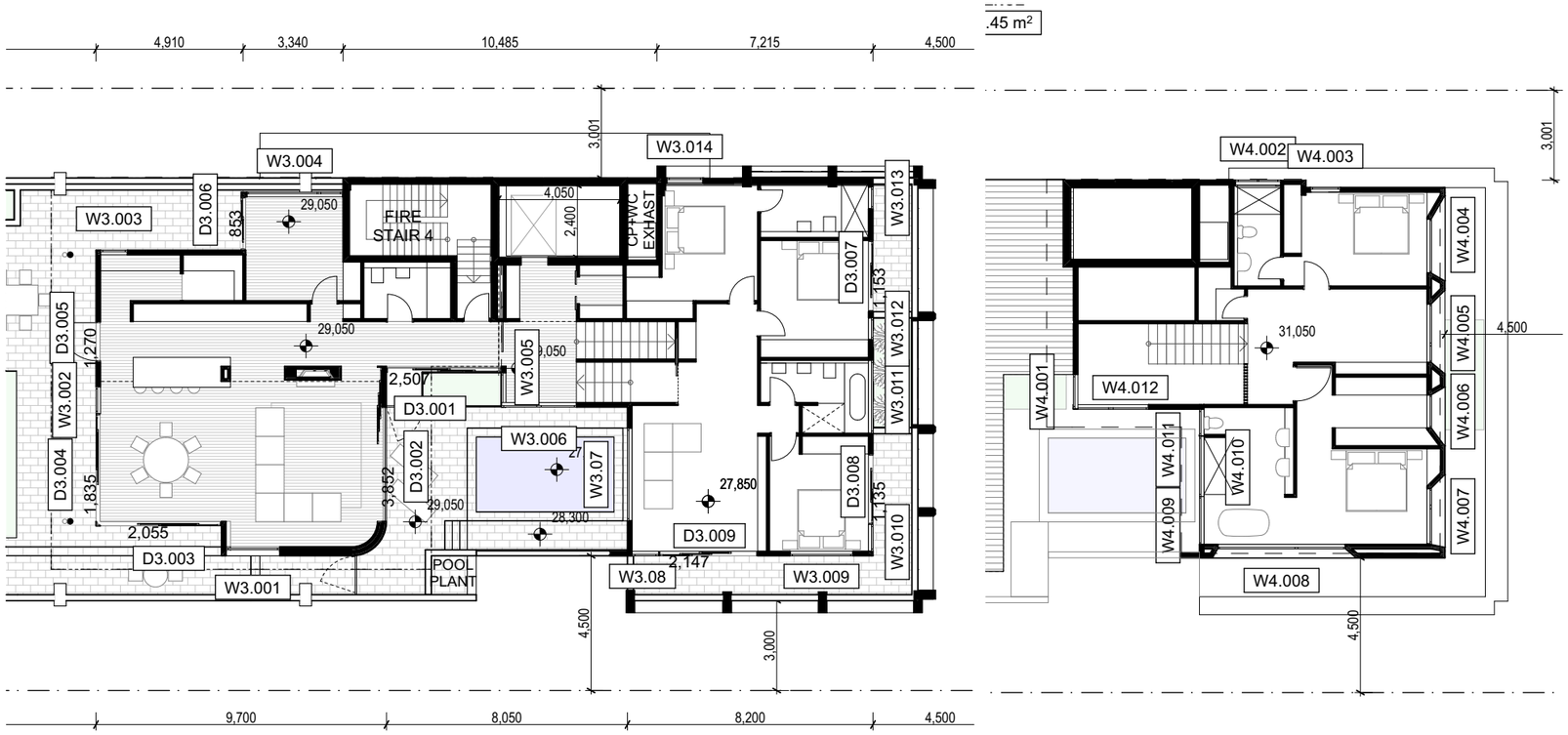
Client: **DR. J. HEISE**

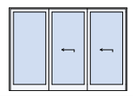
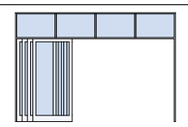
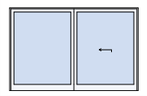
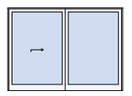
PRELIMINARY DA

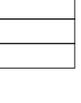
Drawing Title: **HEIGHT AND PRIVACY DIAGRAMS**

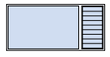
Date Created: JAN 2015 | Scale @ A3: 1:222.22, 1:200

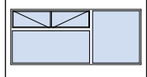
Plot Date: 4/04/2023 | Project No. 2006 | Drawing No. DA17-C | Rev. C | **A3**



DOOR LIST				
ID	D3.001	D3.002	D3.003	D3.004
Orientation	E	N	E	S
Height	2,700	3,550	2,700	2,700
Width	3,840	5,216	4,190	3,750
Door Elevation				
Frame Type				
Glazing	LIGHT TINT	LIGHT TINT	LIGHT TINT	LIGHT TINT
Notes		TOP HUNG AWNING WINDOWS OVER		
Locks				

DOOR LIST					
ID	D3.005	D3.006	D3.007	D3.008	D3.009
Orientation	S	S	N	N	E
Height	2,700	2,700	2,700	2,700	2,700
Width	1,350	1,785	2,386	2,350	3,300
Door Elevation					
Frame Type					
Glazing	LIGHT TINT	LIGHT TINT	LIGHT TINT	LIGHT TINT	LIGHT TINT
Notes					
Locks					

WINDOW LIST														
ID	W3.001	W3.002	W3.003	W3.004	W3.005	W3.006	W3.07	W3.08	W3.009	W3.010	W3.011	W3.012	W3.013	W3.014
Orientation														
Height	1,700	2,700	1,800	1,500	2,600	2,600	600	2,700	900	2,700	600	1,452	1,452	2,700
Width	1,800	900	900	3,200	1,150	2,510	3,100	900	2,100	900	2,440	730	730	1,200
Elevation														
Glass Type														
Frame Type														
Notes:														

WINDOW LIST												
ID	W4.001	W4.002	W4.003	W4.004	W4.005	W4.006	W4.007	W4.008	W4.009	W4.010	W4.011	W4.012
Orientation												
Height	1,700	600	2,100	1,750	2,500	1,800	2,000	1,800	1,900	600	600	1,700
Width	1,150	1,518	1,000	1,800	1,950	1,100	1,850	4,250	1,600	2,022	896	2,510
Elevation												
Glass Type												
Frame Type												
Notes:												

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CHECKED BY:
OWNERS SIGNATURE:

Project Details:

MIXED USE DEVELOPMENT
66 WILLIAM STREET + 25 CHURCH STREET

Client:

DR. J. HEISE

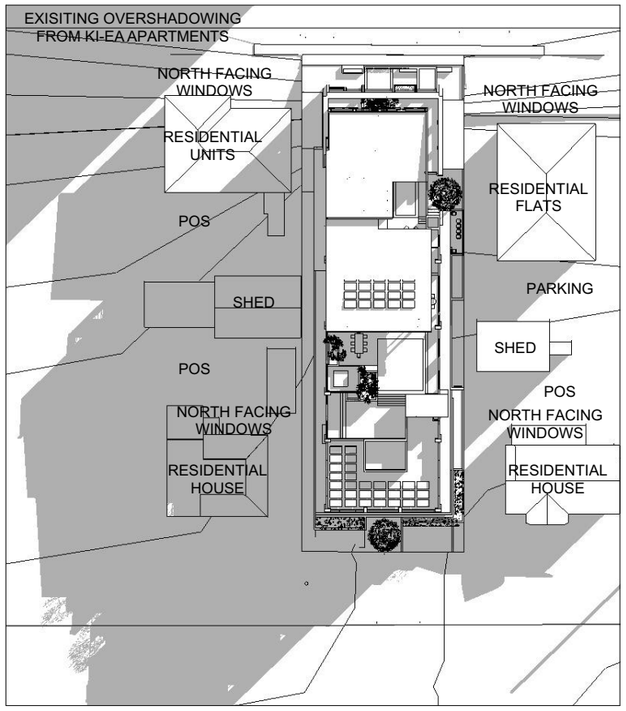
PRELIMINARY DA

Drawing Title:

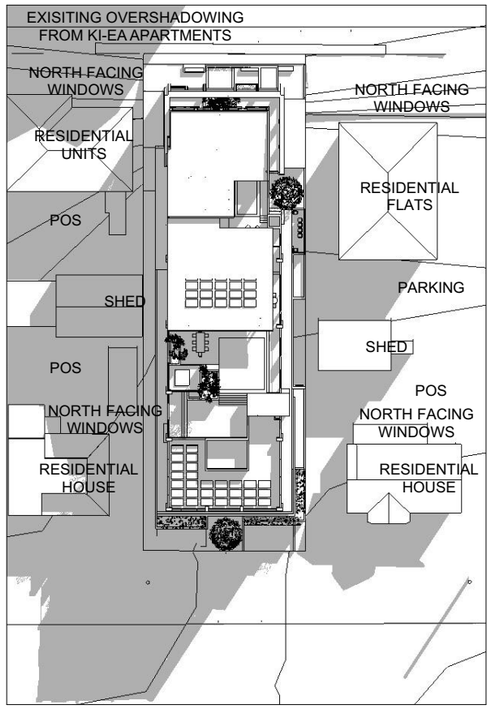
BASIX PLANS AND WINDOW SCHEDULE

Date Created: JAN 2015 | Scale @ A3: 1:200, 1:1

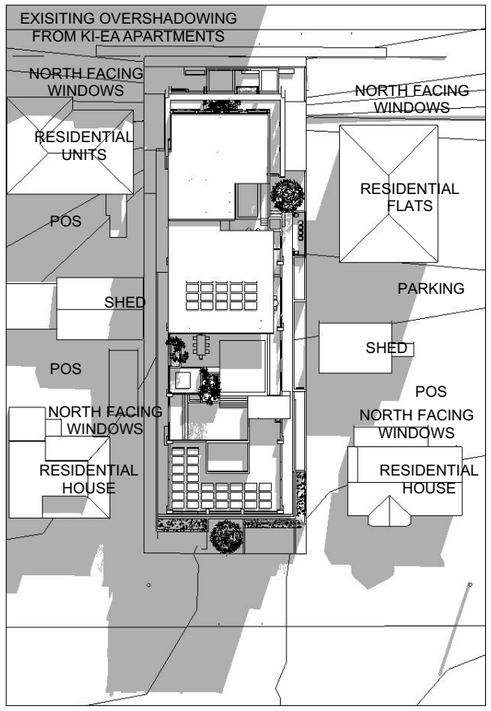
Plot Date: 4/04/2023 | Project No. 2006 | Drawing No. DA19-C | Rev. | A3



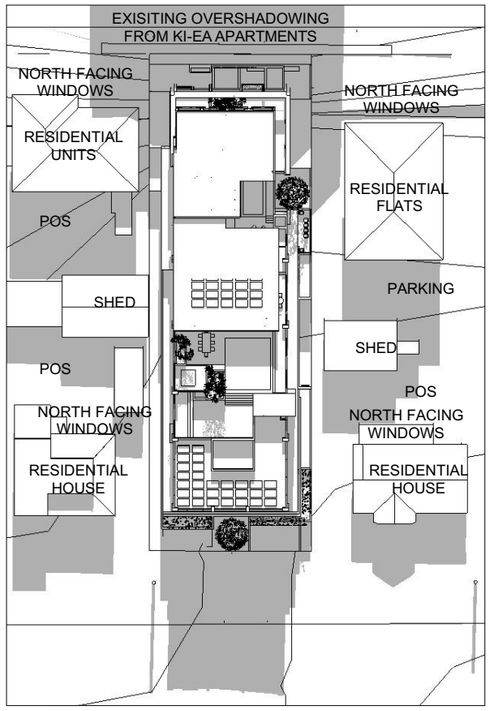
1 - JUNE 22 9AM



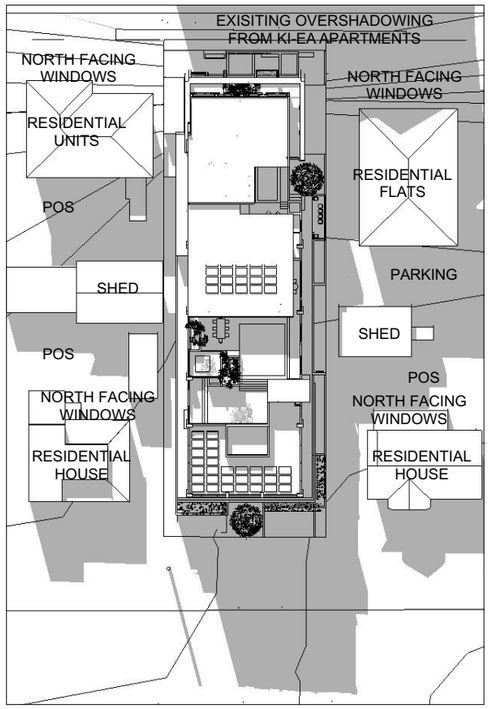
2 - JUNE 22 10 AM



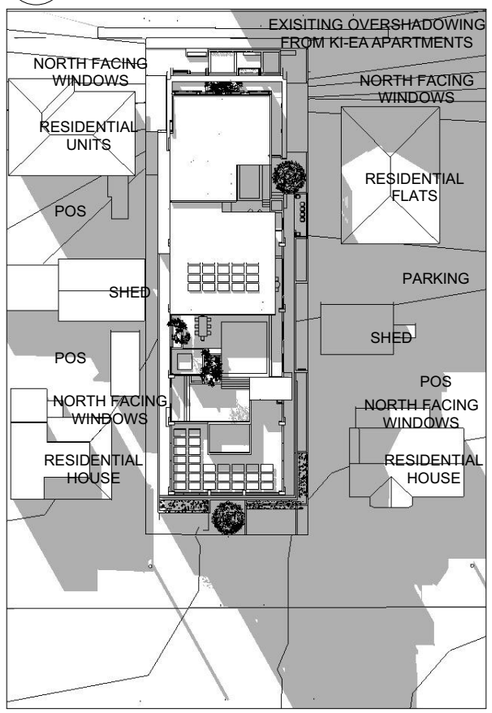
3 - JUNE 22 11 AM



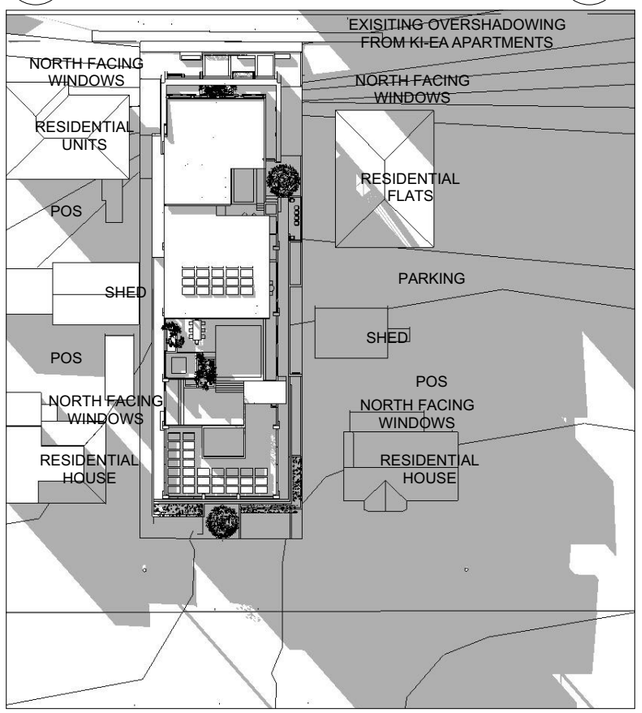
4 - JUNE 22 12 AM



5 - JUNE 22 1PM



6 - JUNE 22 2PM



7 - JUNE 22 3PM

SHADOW DIAGRAMS ANALYSIS

The June 22 shadow diagrams show that the proposed building does not reduce sunlight to the existing private open space of the adjoining residential properties to less than 3 hours. The proposed building does not reduce sunlight to the north facing living room windows to the adjoining residential properties to less than 3 hours.

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CHECKED BY:
OWNERS SIGNATURE:

Project Details:
MIXED USE DEVELOPMENT
66 WILLIAM STREET +
25 CHURCH STREET

Client:
DR. J. HEISE

PRELIMINARY DA

Drawing Title: **SHADOWS DIAGRAMS**

Date Created: JAN 2015 | Scale @ A3: 1:1428.57

Plot Date: 4/04/2023 | Project No. **2006** | Drawing No. **DA21-C** | Rev. | **A3**