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675 Victoria Street, Abbotsford

Town Planning Assessment

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1 INTRODUCTION

Acoustic Logic (AL) have been engaged to undertake an acoustic assessment of the proposed mixed-use development located at 675 Victoria Street, Abbotsford. This report addresses noise intrusion from surrounding noise sources into the proposed development as well as operation noise emission from site.

The following documentation have been referenced in the acoustic assessment.

Table 1 – Referenced Documents

Company	Document	Reference	Date
SJB Architects	EG Abbotsford 675 Victoria Street Abbotsford	SD02 Floor Plans	4 October 2024
Victorian Planning Provisions	Clause 58.04-3	-	2017
Victoria Department of Environment, Land Water and Planning	Planning Practice Note 83		August 2017
-	Australian Standard AS/NZS 2107:2016	-	2016
EPA Victoria	Noise Limit and Assessment Protocol (Noise Protocol)	Publication 1826.4	2021

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2 SITE DESCRIPTION

The proposed development is located at 675 Victoria Street, Abbotsford. The development consists of 2 basement levels of carparking, common residential amenities, approximately 287m² cold shell commercial space with 13 levels of residential apartments and private terrace/balconies. The existing commercial office development at site is proposed to be demolished.

The site is bounded by Victoria Street to the south which has an annual average daily traffic (AADT) volume of 23,000¹ vehicles and carries the No. 109 and 12 tram routes. The latter of which terminates at this location.

Bounding the project site to the east is the Haven residential development; Acacia being the nearest of 3 buildings. Across Victoria Street and to the south lies Victoria Gardens Shopping Centre and future residences at 10 and 20 River Boulevard.

Figure 1 below shows the subject site, surrounds and noise monitoring locations.

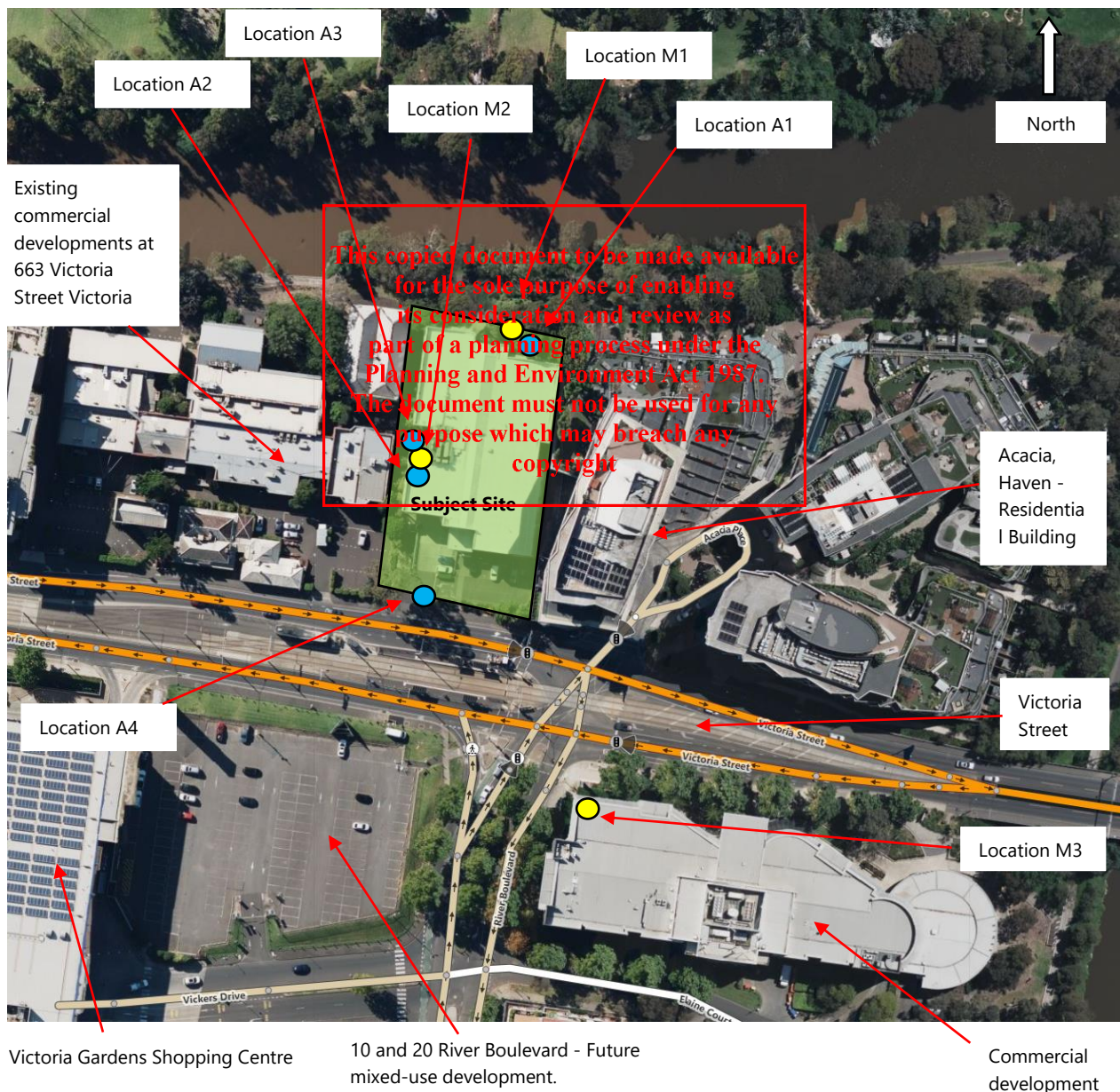


Figure 1: Site Map and surrounding area (Source: Bing Maps™)

¹ Source Department of Transport Open Data Hub

2.1 LOCAL NOISE SOURCES

At the time of the site inspection, the following was noted;

1. Noise from road traffic and tram movements along Victoria Street dominated the ambient noise environment.
2. Rooftop plant associated with 663 Victoria Street commercial developments was not audible from the western most boundary.

3 ENVIRONMENTAL NOISE DESCRIPTORS

Environmental noise constantly varies in level, due to fluctuations in local noise sources including road traffic. Accordingly, a 15-minute measurement interval is normally utilised. Over this period, noise levels are monitored on a continuous basis and statistical and integrating techniques are used to determine noise description parameters.

In the case of environmental noise, three principal measurement parameters are used, namely L_{10} , L_{90} and L_{eq} .

The L_{10} and L_{90} measurement parameters are statistical levels that represent the average maximum and average minimum noise levels respectively, over the measurement intervals.

The L_{10} parameter is commonly used to measure noise produced by a particular intrusive noise source since it represents the average of the loudest noise levels produced by the source.

Conversely, the L_{90} level (which is commonly referred to as the background noise level) represents the noise level heard in the quieter periods during a measurement interval. The L_{90} parameter is used to set the allowable noise level for new, potentially intrusive noise sources since the disturbance caused by the new source depends on how audible it is above the pre-existing noise environment, particularly during quiet periods, as represented by the L_{90} level.

The L_{eq} parameter 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 traffic noise impact as it closely corresponds with human perception of a changing noise environment; such is the character of industrial noise.

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4 NOISE LEVEL MEASUREMENTS

4.1 MEASUREMENT LOCATION

Traffic noise level measurements were conducted in the following locations:

- **Location M1** – Unattended noise monitoring location at approximately 1.5m above grade to the rear of site. This monitor was screened from view of Victoria Street and was installed away from mechanical plant. This monitor is representative of the lowest ambient noise at the site.
- **Location M2** – Unattended noise monitoring location at roof level at the western ridge line. This monitor had partial view of Victoria Street and overlooked mechanical plant associated with 663 Victoria Street commercial developments. Noise levels during the day were generally impacted by mechanical plant serving the existing 675 development.
- **Location M3** – Unattended noise monitoring previously undertaken by this office. The monitor was installed at on top of existing commercial building located at 678 Victoria Street. The noise monitor was approximately 1m from the edge of the building as indicated in Figure 1.
- **Location A1** – Attended noise measurements were conducted at 1.5m above grade at the location of noise monitor M1.
- **Location A2** – Attended noise measurements were conducted at rooftop level in line with the noise monitor M2. Measurement conditions are consistent with those described for the unattended monitor.
- **Location A3** – Attended noise measurements were conducted externally at level 1 of the western façade of the current development. The handheld noise monitor had partial view of 633 rooftop plant and was shielded from 675 Victoria Street rooftop plant. The ambient noise environment was dominated by road traffic noise from Victoria Street.
- **Location A4** – Attended traffic noise measurements were conducted at approximately 1.5m above grade and 4.5m from the roadside curb. This handheld noise monitor had 180-degree view of Victoria Street.

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In all cases, measurements were conducted in free field conditions.

4.1.1 Measurement Date, Time and Equipment

Noise measurements presented below were undertaken in the following manner:

- Attended noise level measurements were conducted using a Norsonic N-140 Type 1 sound level meter. Measurements were taken on "A" frequency weighting and fast time response.
 - Measurements at locations A1 to A4 were conducted between 12:30pm-1:30pm on 22nd November 2022.
 - Measurements were undertaken at location A4 between 5:30pm-6:30pm on 30th November 2022 during a representative peak hour of traffic.
 - Additional measurements were undertaken at location A4 between 4:15pm and 5:30pm on 15th October 2024 and between 7:45am and 8:30am on 17th October 2024.
- Unattended noise monitoring at locations M1 and M2 were conducted with Rion NL42 noise monitors between 22nd November to 28th November 2022.
- Previous unattended noise monitoring was undertaken at location M3 using An Acoustic Research Laboratories Pty Ltd Ngara noise monitor between 14th December to 21st December 2016.

Equipment was calibrated at the beginning and end of the measurements using a Rion NC-74 calibrator; no significant drift was detected.

4.1.2 Measured Traffic/Train Noise Levels

The tables below detail the measured traffic noise levels.

Table 2 – Measured Traffic Noise Levels (Attended Measurements)

Measurement Location	Date and Time of Measurements	Measured Noise Levels dB(A) $L_{eq,15min}$
Location A4 ¹	22/11/2022 (1:00pm – 1:30pm)	67
	30/11/2022 (5:00pm – 5:30pm)	69
	15/05/2024 (4:15pm – 4:30pm)	68
	15/05/2024 (4:30pm – 4:45pm)	68
	15/05/2024 (4:45pm – 5:00pm)	67
	15/05/2024 (5:00pm – 5:15pm)	68
	15/05/2024 (5:15pm – 5:30pm)	70
	17/05/2024 (7:45am – 8:00am)	70
	17/05/2024 (8:00am – 8:15am)	67
	17/05/2024 (8:15am – 8:30am)	67

Table 3 – Measured Traffic Noise Levels (Unattended Monitoring)

Measurement Location	Measurement Date	Measurement Period	Measured Noise Levels dB(A)
Location M3 ¹	14/11/2016 – 21/11/2016	Day (6:00am – 10:00pm)	65 L_{eq16hr}
			67 $L_{eq 1hr}$
		Night (10:00pm – 6:00am)	61 L_{eq8hr}
			65 $L_{eq 1hr}$

Table 4 – Measured Tram Max Noise Levels (Attended Measurements)

Measurement Location	Date of Measurements	Tram Direction	Measured Noise Levels dB(A) L_{Max}
Location A4 ¹	30/11/2022 (5:00pm – 5:30pm)	West	67
		East	70
		East	70
		East	65

Note 1 – Refer Figure 1 for measurement locations.

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4.1.3 Measured Background Noise Levels

Background noise measurements were undertaken at Location M1 (refer to Figure 1).

Unattended noise monitoring was conducted using Rion NL42 noise monitors. The noise monitor was programmed to store 15-minute statistical noise levels through the monitoring period. Equipment was calibrated at the beginning and the end of the measurements using a Rion NC-74 calibrator; no significant drift was detected. All measurements were taken on fast response mode.

Table 5 – Measured Ambient Noise Levels

Period	Time	Measured Background L _{90,Period} dB(A)
Day	7am – 6pm (Mon – Sat)	42
Evening	6pm – 10pm (Mon – Sat) 7am – 10pm (Sun)	38
Night	10pm – 7am	36

Background noise levels determined at this location are considered conservative given the screened location of the installed monitor. These noise levels are representative of the quietest locations for site and surrounds.

4.2 PLANT EQUIPMENT NOISE MEASUREMENTS

Noise measurements were taken on the roof top of the existing 675 Victoria Street development to determine mechanical plant equipment noise from adjacent 663 commercial tenancies.

Attended measurements were conducted on the 22 November 2021 between 12:30pm – 1:30pm at locations A2 & A3, whilst unattended noise monitoring was undertaken in location M2 (refer to Figure 1 & Section 4). It was observed during this time:

- Surrounding plant on the 663 Victoria Street buildings comprised primarily of PAC units and smaller condensing units.
- Mechanical plant was generally in operation during this time.

4.2.1 Measurement Results

Measured plant equipment noise levels are detailed below.

Table 6 – Plant Equipment Measured Noise Levels

Location	Measured Noise Level dB(A) _{L_{eq}}	Comments
A2 – Western façade, roof top 675 Victoria Street	64	<ul style="list-style-type: none"> • 663 Victoria Street commercial plant inaudible. • Dominant noise source noted as existing CUs serving 675 Victoria Street commercial tenancies.

Location	Measured Noise Level dB(A) _{Leq}	Comments
A3 – Western façade, level 1 675 Victoria Street	54	<ul style="list-style-type: none"> 663 Victoria Street commercial plant inaudible. Dominant noise source noted as road traffic from Victoria Street.
M2 - Western façade, roof top 675 Victoria Street	Day - 64 Evening - 55 Night - 55	Daytime noise levels dominated by existing 675 Victoria Street commercial CUs.

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5 ASSESSMENT CRITERIA

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5.1 STANDARD D16 AT CLAUSE 58.04-3

Standard D16 of Clause 58.04-3 of the Planning Scheme notes the following which reflects the requirements of the Better Apartment Design Standards:

Standard D16

Noise sources, such as mechanical plants should not be located near bedrooms of immediately adjacent existing dwellings.

The layout of new dwellings and buildings should minimise noise transmission within the site.

Noise sensitive rooms (such as living areas and bedrooms) should be located to avoid noise impacts from mechanical plants, lifts, building services, non-residential uses, car parking, communal areas and other dwellings.

New dwellings should be designed and constructed to include acoustic attenuation measures to reduce noise levels from off-site noise sources.

Buildings within a noise influence area specified in Table D3 should be designed and constructed to achieve the following noise levels:

- Not greater than 35dB(A) for bedrooms, assessed as an LAeq,8h from 10pm to 6am.
- Not greater than 40dB(A) for living areas, assessed LAeq,16h from 6am to 10pm.

Buildings, or part of a building screened from a noise source by an existing solid structure, or the natural topography of the land, do not need to meet the specified noise level requirements.

Noise levels should be assessed in living areas with a finished floor and the windows closed.

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Noise Source	Noise influence area
Zone interface	
Industry	300 metres from the industrial 1, 2 and 3 zone boundaries
Roads	
Freeways, tollways and other roads carrying 40,000 Annual Average Daily Traffic Volume	300 metres from the nearest trafficable lane
Railways	
Railway servicing passengers in Victoria	80 metres from the centre of the nearest track
Railway servicing freight outside Metropolitan Melbourne	80 metres from the centre of the nearest track
Railway servicing freight in Metropolitan Melbourne	135 metres from the centre of the nearest track

Note: The noise influence area should be measured from the closest part of the building to the noise source.

Decision guidelines

Before deciding on an application, the responsible authority must consider:

- The design response.
- Whether it can be demonstrated that the design treatment incorporated into the development meets the specified noise levels or an acoustic report by a suitably qualified consultant submitted with the application.
- Whether the impact of potential noise sources within a development have been mitigated through design, location and siting.
- Whether the layout of rooms within a dwelling mitigates noise transfer within and between dwellings.
- Whether an alternative design meets the relevant objectives having regard to the amenity of the dwelling and the site context.

Based on these conditions, the subject site has been reviewed as follows:

1. The development is not within 300m of an industrial zone.
2. The development is not within 300m of a freeway or road carrying an AADT >40,000.
 - Victoria Street has an AADT volume of approximately 12,000 vehicles according to Vic Roads.
3. The development is not within 80m of railway servicing passengers.
4. The development not within 80m of nearest rail track.

Based on the above, the noise levels specified in Standard D16 at Clause 58.04-3 is not applicable.

5.2 TRAFFIC NOISE CRITERIA

Traffic noise associated with vehicle and tram movements along Victoria Street will be assessed to internal noise criteria based on AS2107:2016 requirements.

Internal noise level criteria for external noise intrusion from traffic has been developed in accordance with Australian Standard AS/NZS 2107:2016 "Recommended Design Sound Levels and Reverberation Times for Building Interiors". AS/NZS 2107:2016 sets out recommended design sound levels for residential developments depending on locality to minor or major roads. Table 7 below details the criteria adopted for the proposed development located on Victoria Street, which is defined as an arterial road.

Table 7 – Internal Noise Level Criteria from Traffic

Location	Design Internal Noise Level ²	
	Day dB(A) $L_{eq,1hr}$ (7am – 10pm)	Night dB(A) $L_{eq,1hr}$ (10pm – 7am)
Bedrooms	45 ¹	40
Living rooms	45	N/A

Note 1: Bedrooms are assessed as living areas outside the night-time period of 10pm to 7am.

Note 2: Assessment is based on apartments suitably furnished ready for occupation with façade (external windows and doors) closed.

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5.3 PLANT EQUIPMENT - NOISE INTRUSION

Noise from surrounding mechanical plant on existing developments is assessed to the following criteria, which is based on the Design Sound Level requirements of AS2107 with windows closed.

Given that noise from plant is more likely to generate occupant complaint than traffic noise, the lower range of AS2107 has been adopted as a conservative measure

Table 8 – Internal Noise Level Criteria from Warehouse Developments

Location	Design Internal Noise Level ²	
	Day dB(A) $L_{eq,1hr}$ (7am – 10pm)	Night dB(A) $L_{eq,1hr}$ (10pm – 7am)
Bedrooms	35 ¹	30
Living rooms	35	N/A

Note 1: Bedrooms are assessed as living areas outside the night-time period of 10pm to 7am.

Note 2: Assessment is based on apartments suitably furnished ready for occupation with façade (external windows and doors) closed.

5.4 PLANT EQUIPMENT - NOISE EMISSIONS

To ensure that noise emissions from the site do not impact adversely on the amenity of the proposed development residents and surrounding noise sensitive areas, the proposed development should be designed to comply with the EPA Noise Protocol – Part 1.

5.4.1 Zoning Level

The 'Zoning' level is determined by the Influencing Factor (IF) and is calculated by the formula and the 'Zoning Level versus Influencing Factor' graph nominated in Section 1.1 of the EPA Noise Protocol and VicPlan Mapping. The IF is calculated from the proportion of industrial and commercial land around noise sensitive areas. Review of the surrounding area indicates an IF of approximately 0.28 which results in the zoning limits detailed in Table 9 below.

Table 9 - Zoning Levels

Period	Zoning Level dB(A)
Day	55
Evening	49
Night	44

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5.4.2 EPA Noise Protocol – Part 1

Table 10 below details the assessment criteria based on both the zoning levels and the measured background noise levels.

Table 10 – Noise Limits

Period	Background dB(A) $L_{90, \text{Period}}$	Zoning limit	Classification	Project Noise Limits dB(A) L_{eq}
Day Monday – Saturday (7am – 6pm)	42	55	Low	53
Evening Monday – Saturday (6pm – 10pm) Sunday (7am – 10pm)	38	49	Low	46
Night Monday – Friday (10pm – 7am)	36	44	Neutral	44

5.4.3 Fixed domestic plant

Part 1 of the EPA Noise Control Guidelines (Publication 1254, October 2008) require the following for noise associated from domestic air conditioning units impacting on adjoining residents of another SOU:

1. Fixed Domestic Plant and Home Occupation Noise

(such as domestic air conditioners, swimming pool equipment, spas, ducted heating, internal vacuum systems and home occupation noise)

Night operation

Noise from any fixed domestic plant must not be audible within a habitable room of any other residence (regardless of whether any door or window giving access to the room is open) during prohibited hours prescribed by the Environment Protection (Residential Noise) Regulations 2008.

The following prohibited hours apply to air conditioners, swimming pool and spa pumps, ducted heating systems and the like:

- 10 pm - 7 am Monday-Friday.
- 10 pm - 9 am weekends & public holidays.

Day/evening operation (non-prohibited times)

Where noise from any fixed domestic plant is audible beyond the boundary of the residential premises on which the plant is situated, the intrusive noise shall not exceed the background noise level by more than 5 dB at the measurement position.

Noise assessment must be made in accordance with noise assessment techniques listed in section 17 of these guidelines. Adjustment for tonality and/or impulsiveness must be included if applicable.

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The criteria for noise emission from domestic plant has been summarized in the Table 11 below.

Table 11 – EPA criteria for Fixed Domestic Plant

Noise Source	Period	Criteria
Domestic air conditioning unit including apartment condenser units located on balconies	Daytime/Evening	43 L _{eq} dB(A) ¹
	Night	Inaudible within adjoining residence. This may require air-conditioning units to be switched off.

Note 1 – Background noise level as determined in section 4.1.3 +5dB(A).

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6 EVALUATION OF EXTERNAL NOISE INTRUSION

6.1 EXTERNAL MECHANICAL PLANT NOISE

For roof top mechanical plant servicing the adjacent 663 Victoria Street commercial tenancies, we note:

- Analysis of unattended noise monitoring data obtained from then M2 rooftop location indicates that rooftop **mechanical plant does not contribute** to the overall ambient noise level outside of normal business hours (i.e. 9am-5pm)
- The treatments required at this facade to comply with internal traffic noise criteria will adequately address what is required to mitigate mechanical plant noise.

For mechanical plant serving the Acacia, Haven residential development (to the east), we make the following comments:

- No major plant or exhaust louvre locations are observed at the western building façade during site visits for monitor installation and retrieval.
- Individual occupancy condensing units are located on residential balconies facing the proposed development. At the time of monitor installation, noise from residential CUs was inaudible at the eastern most roof location.
- Major exhaust plant servicing the Acacia building is located at roof level. This is determined based on aerial map views and tender stage drawings of the development available to us.
- Access to the Acacia building has been requested through building management to measure and quantify plant noise levels at this location. At the time of preparing this report, no access has been granted to AL.
- As such, a desktop assessment of likely plant noise has been undertaken.

6.1.1 Mechanical Plant Assessment, Acacia, Haven

Mechanical plant noise levels emitted from the adjacent development are assessed based on tender stage layouts and selections made available to this office. From this it is determined

- Individual residential condensing units located on balconies facing the proposed development are typically Daikin RMXS 160 EV1A. These units are 53dB(A) sound pressure level measured at 1m horizontal distance in an anechoic chamber.
- Major rooftop plant is limited to the following:
- Main Corridor Pressurisation Fan (1CSF – R/1) – Fantech AP0804CA9/28 – Inlet SPL 73dB(A) at 3m
- Smoke Exhaust Fan (1SEF-R/1) – Fantech AP0502AA5/18 – Exhaust SPL 73dB(A) at 3m
- Stair Pressurisation Fan (1SPF-R/1) – Fantech AP0805GA6/23 – Inlet SPL 69dB(A) at 3m
- Garbage Room Exhaust Fans (1EF-R/1 & R/2) – AP0312AA5/10 – Exhaust SPL 61 dB(A) at 3m

It is assumed:

- 1CSF-R/1 and garbage room exhaust fans are in use during in normal operation mode, lined ductwork is as indicated on drawings and is minimum 50mm thick perforated foil faced insulation.
- 1SEF-R/1 and 1SPF-R/1 are only used in emergency fire mode only.

Based on the above information, plant noise levels from normal mode have been calculated at the potentially worst affected areas across the 675 Victoria Street development façade. Noise levels have been adjusted for attenuation over distance, directivity and barrier screening as applicable.

Calculated **cumulative noise levels at potentially worst affected receiver locations are 46dB(A) L_{eq}** . Noise emissions comply during the day and evening period. less than the applicable zoning limit during typical peak plant operation. This level is expected to be lower during the night-time period (44 dB(A) project noise limit) as given the reduced load capacity and demand during this period. In any case, internal noise levels with windows and doors closed are predicted to be less than 25 dB(A) based on the proposed façade build-ups and those required to comply with traffic noise criteria. As such, plant noise levels are considered **acceptable for future residents within the development**.

6.2 EXTERNAL TRAFFIC NOISE

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6.2.1 SoundPLAN™ model

The measurements detailed in section 4.1.2 were used to create a SoundPLAN™ model to calculate noise levels from road traffic and tram movements to areas across the development façade.

Noise levels at the receiver façades have been predicted using the above model implementing the ISO 9613-2:1996 "Acoustics – Attenuation of Sound During Propagation Outdoors – Part 2: General Method of Calculation" noise propagation standard.

The predicted noise levels at the façade is presented in Appendix 2: SoundPLAN Façade Noise Maps.

6.3 RECOMMENDED ACOUSTIC TREATMENT

Internal noise levels will primarily be as a result of noise transfer through the windows, doors and roof as these are relatively light building elements that offer less resistance to the transmission of sound. Walls that are proposed to be heavy masonry elements will not require upgrading. The predicted noise levels through the windows, doors and roof are discussed below. The predicted noise levels have been based on the expected level and spectral characteristics of the external noise, the area of building elements exposed to external noise, the absorption characteristics of the rooms used for noise reduction performance of the building elements.

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Glazing / façade treatment was determined based on the following:

- Traffic noise levels measured around the subject site.
- Transmission loss of façade element.
- Noise correction based on the distance between the noise source and the nearest façade of subject development.

The constructions set out below are necessary for the satisfactory control of external noise and to achieve compliance with the internal noise level criteria set out in Section 5.2.

6.3.1 Façade Glazing

The glass thicknesses shown in the schedule do not take into account thermal, structural, safety or any other requirements other than acoustic requirements and thus may require upgrading in some instances. In these instances, increasing the glass thickness beyond the acoustic requirement will be acceptable. Where the glazing thickness has not been specified, standard glazing will be acceptable.

The table below details the minimum performance requirements for the glazing assembly installed. Where open-able windows or sliding glass doors are installed, the total R_w performance of the system shall not be lower than the values listed. It is noted that the system supplied shall meet the overall minimum R_w ratings nominated. If an alternative system is proposed the system shall be reviewed and will require approval by a

suitably qualified acoustic consultant to ensure that the proposed system is acceptable and will ensure compliance with the nominated internal noise design criteria.

Table 12 - Minimum External Glazing Requirements / Performance

Location	Glazing Construction ¹	Minimum R _w of Installed System	Acoustic Seals
Refer to <i>Appendix 1 – Acoustic Markup</i>	6mm or 6/12/6mm IGU	29	Yes
	6.38mm laminated or 6/12/6.38mm IGU	31	Yes
	10.38mm laminated or 6/12/10.38mm IGU	35	Yes

Notes 1 - Or alternative as approved by a suitably qualified acoustic consultant

6.3.2 Roof/Ceiling

Concrete roof construction does not require further upgrade acoustically. Any lightweight element shall be reviewed by a suitably qualified acoustic consultant to ensure compliance with the established internal noise level criteria is achieved.

Penetrations in ceilings (such as for light fittings etc.) must be sealed gap free with a flexible sealant. Any ventilation openings in the ceilings would need to be acoustically treated to maintain the acoustic performance of the ceiling construction.

6.3.3 External Walls

Concrete or masonry external walls will not require upgrading acoustically. Any lightweight element shall be reviewed by a suitably qualified acoustic consultant to ensure compliance with the established internal noise level criteria is achieved during the detailed design stage of the project.

Penetrations in walls must be sealed gap free with a flexible sealant. Any ventilation openings in the walls would need to be acoustically treated to maintain the acoustic performance of the wall construction.

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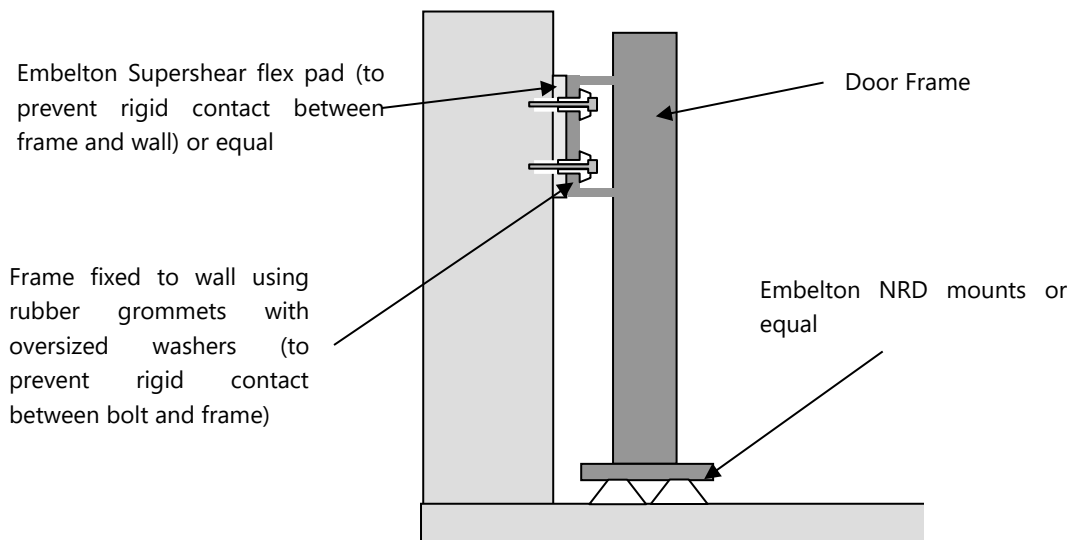
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7 VEHICULAR ACCESS DOORS

The following recommendations are provided to address carpark entry and exit:

1. It is recommended that the noise levels from the entry gate/door to not exceed 65 dB(A) L_{max} outside openable windows of bedrooms to the apartments above.
2. Loading dock entry doors shall be vibration isolated from the building generally in accordance with the details below.
3. Doors shall be quiet in operation.
4. Loading bay entry and exit access doors are to be imperforate, and closed outside the hours of 7am-10pm
5. Teflon guides shall be installed in all rails.
6. Ensure that door panels do not rattle, and the operation of any door guides, rollers, etc. is smooth.
7. Door guides should be fitted with vibration isolated fixings where required. Refer below.
8. Door motors shall be fitted with a soft start/stop controller to minimise noise.
9. The door shall be stopped approximately 5mm from the slab/ground to ensure the base of the door does not contact the concrete surface.
10. Operation of the door shall comply with Noise Protocol – Part 1.

Isolation of the door structure is shown in the schematic below -



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8 MECHANICAL PLANT AND EQUIPMENT SERVING PROPOSED DEVELOPMENT

It is noted that plant and equipment selections/design have not yet been finalised. To ensure amenity for future residents and nearby noise sensitive receivers is preserved, mechanical plant and equipment shall be designed to comply with the EPA Noise Protocol – Part 1 and reviewed during the detail design stage by a suitable qualified acoustic consultant. This will be achieved through standard acoustic treatment such as internally lined ductwork, acoustic louvres, acoustic attenuators, variable speed drives, and vibration isolation mounts.

Notwithstanding the above, it is recommended that a solid imperforate screen be installed to at least the height of the plant and equipment located in the roof top plant room above level 13 as indicated in the figure below. Suitable screen materials include minimum 6mm FC sheet, 0.8mm sheet metal or alternative as approved and confirmed during the detailed design stage of the development by a suitably qualified acoustic consultant.

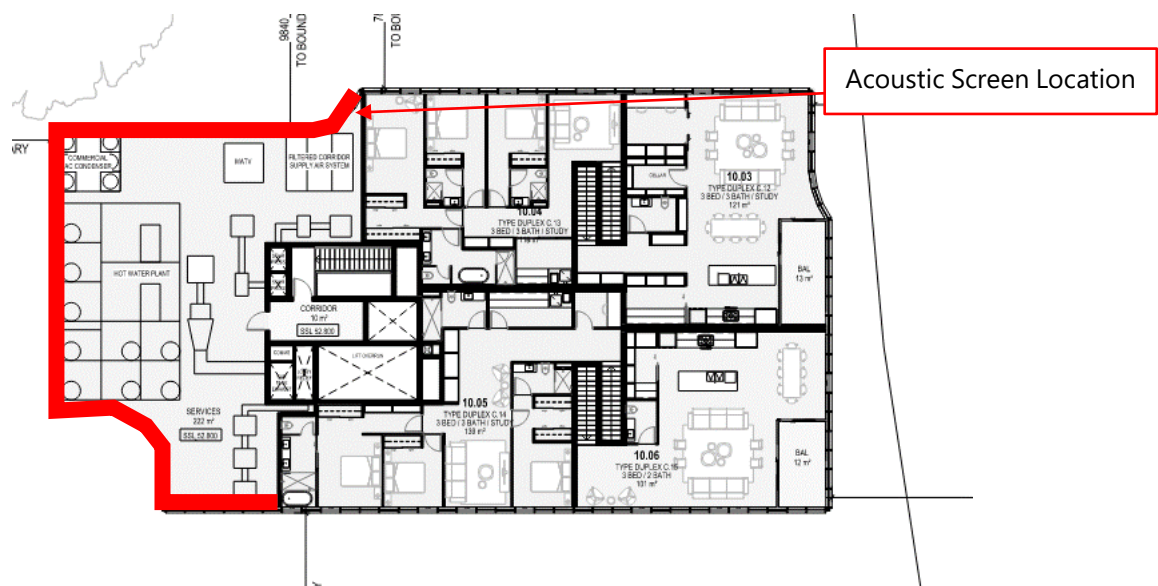


Figure 2 - Indicative location of acoustic screen

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9 COLD-SHELL COMMERCIAL/OFFICE TENANCY

The ground floor commercial tenancy is to be cold shell fit out for future office tenant occupation. The specific nature of the operation is, at this stage, unknown. The following general requirements are to be adhered to:

- Any amplified music associated with the tenancies will be limited by the operator to ensure that they comply with the EPA Noise Protocol – Part 2 requirements.
- All mechanical plant and equipment associated with future tenants must comply with the EPA Noise Protocol – Part 1.
- The collection of waste and recycling must only occur during the hours of garbage collection for the remainder of the development.
- Acoustic advice from an appropriately qualified person must be sought prior to the installation of any of any plant that is either located externally or ducted to an external louvre not specifically addressed in this report. This would include, but may not necessarily be limited to:
 - Exhaust Fans (as they are ducted to external areas).
 - Air-conditioning condensers.
 - Refrigeration plant (if external).

Any acoustic treatment must take into account:

- The location of noise sensitive properties
- Ambient noise levels at the nearest potentially affected property (determined by on-site measurement).
- The noise level from the plant item proposed to be installed (based on acoustic data sheets from manufacturer).
- The proposed time at which the plant will be used/operational.
- Allowable noise level based on typical Council acoustic requirements and/or conditions of consent.

Written advice regarding what acoustic treatments, if any must be provided. This advice must be sought prior to the installation of any plant.

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10 LITTLE B.I.G FOUNDATION

The lower ground floor Little B.I.G. Foundation tenancy is to be used as a community facility that will be accessible by the public and residents within the development. The following general requirements are to be adhered to:

- Any amplified music associated with the tenancy will be limited to background level music and controlled by the operator to ensure that they comply with the EPA Noise Protocol – Part 2 requirements. No music is to be played externally.
- Speakers isolated are to be on vibration isolation mounts equal to Embelton NRD mounts.
- All mechanical plant and equipment associated with future tenants must comply with the EPA Noise Protocol – Part 1.
- The collection of waste and recycling must only occur during the hours of garbage collection for the remainder of the development.
- External doors are to be kept closed during events or when in use.
- The facility shall be managed by the operator to ensure that noise generated is controlled so that adjoining resident's amenity is maintained.
- It is recommended hours of use be limited to between 7am to 10pm.
- The ceiling to the space is to be constructed from 2 layers of 13mm plasterboard installed on resilient mounts equal to Rondo STSU mounts with 75mm thick 11kg/m3 glasswool insulation within cavity.

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11 GYMNASIUM

Review of the development indicates that the gymnasium has been located above the carpark to improve acoustic amenity for surrounding residents. In addition, the following recommendations are provided to improve amenity for future residents:

1. Hours of use of the gymnasium be limited to 7am to 10pm.
2. The floor separating the gym from adjoining residential apartments should be designed to ensure compliance with the Building Code of Australia for acoustic separation. As a minimum the floor shall be designed to provide a minimum airborne separation rating of $R_w + C_{tr} 50$.
3. Equipment and activities held within the gym shall be limited to non-impact activities such as rowing machines, and exercise bikes. Exercise equipment installed within the room (e.g. exercise bikes/rowing machines etc) shall be installed on individual vibration isolation pads/mounts.
4. Music played within the gymnasium shall be limited by use of a headphones or played through sound reinforcement system at normal conversation level only.
5. The floor finish generally within the gymnasium shall be carpet, Regupol Everroll or similar.
6. Free weights or machine weights should not be used within the gymnasium.
7. Signs shall be installed at the entry and exit to the gymnasium reminding people to minimise noise at all times.
8. The entry door into the gym shall be fitted with a soft closer if incorporating a hinged door.

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12 CONCLUSION

This report details an acoustic assessment for external noise intrusion to the proposed development at 675 Victoria Street, Abbotsford as well as and noise emitted from the use of site. Provided the acoustic treatment recommendations detailed in this report are implemented, compliance with the established criteria will be achieved.

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

Yours faithfully,



Acoustic Logic Pty Ltd
Sotirios Giannikopoulos

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APPENDIX 1 – FAÇADE MARKUP

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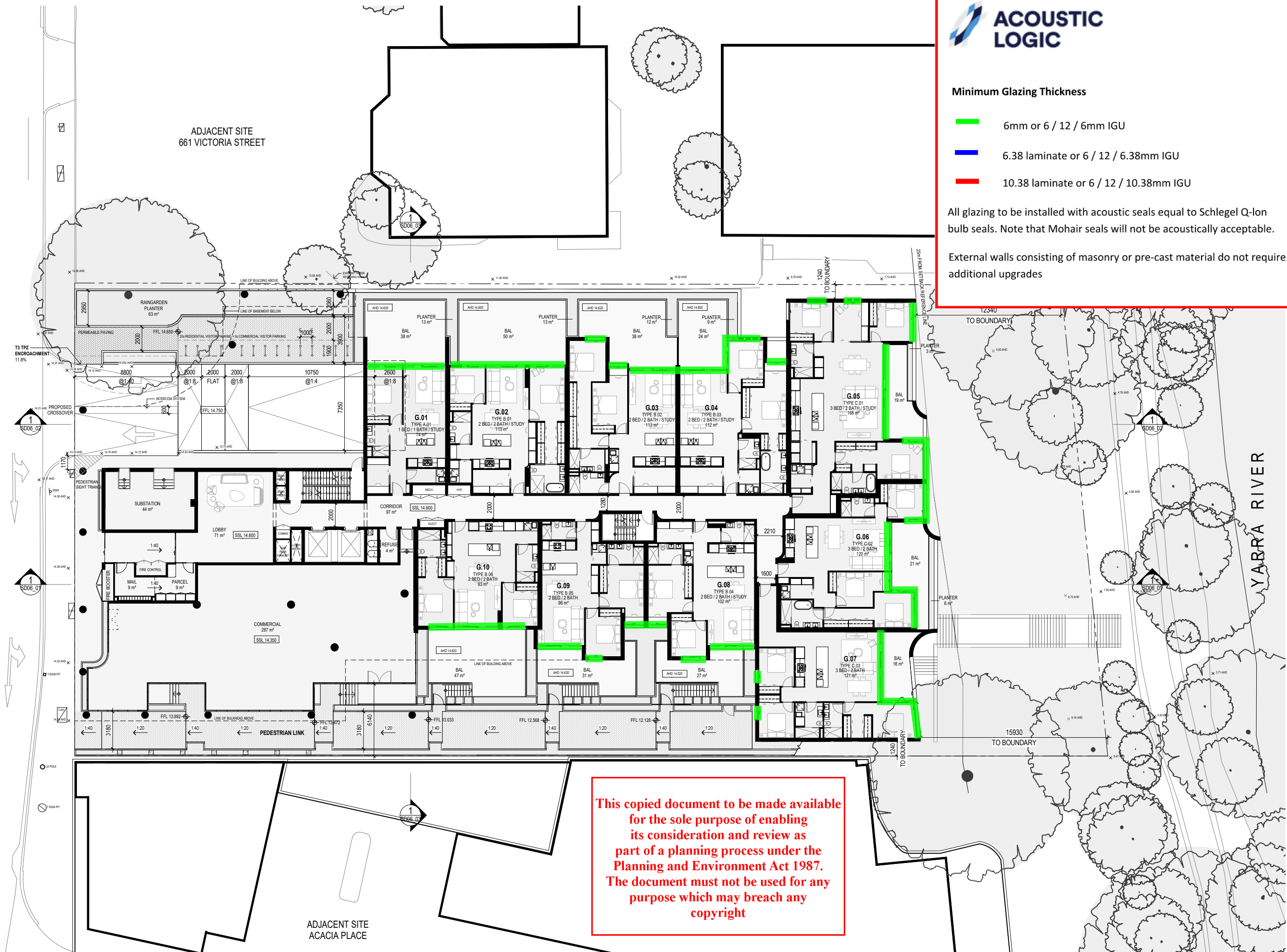
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Minimum Glazing Thickness

- 6mm or 6 / 12 / 6mm IGU
- 6.38 laminate or 6 / 12 / 6.38mm IGU
- 10.38 laminate or 6 / 12 / 10.38mm IGU

All glazing to be installed with acoustic seals equal to Schlegel Q-lon bulb seals. Note that Mohair seals will not be acoustically acceptable.

External walls consisting of masonry or pre-cast material do not require additional upgrades



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ADJACENT SITE
661 VICTORIA STREET



Minimum Glazing Thickness

- 6mm or 6 / 12 / 6mm IGU
- 6.38 laminate or 6 / 12 / 6.38mm IGU
- 10.38 laminate or 6 / 12 / 10.38mm IGU

All glazing to be installed with acoustic seals equal to Schlegel Q-lon bulb seals. Note that Mohair seals will not be acoustically acceptable.

External walls consisting of masonry or pre-cast material do not require additional upgrades

VICTORIA STREET

YARRA RIVER

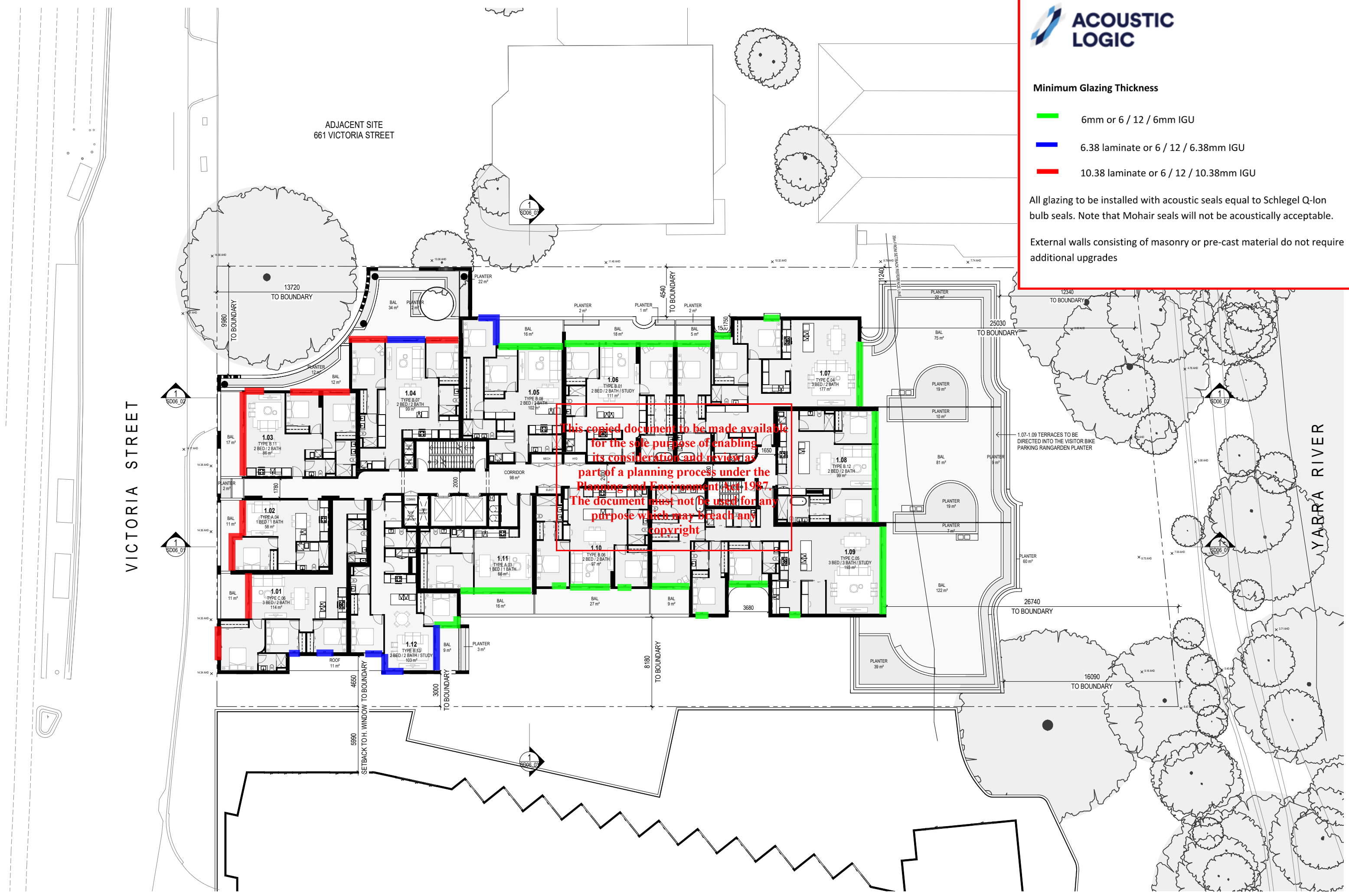
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Minimum Glazing Thickness

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All glazing to be installed with acoustic seals equal to Schlegel Q-lon bulb seals. Note that Mohair seals will not be acoustically acceptable.

External walls consisting of masonry or pre-cast material do not require additional upgrades

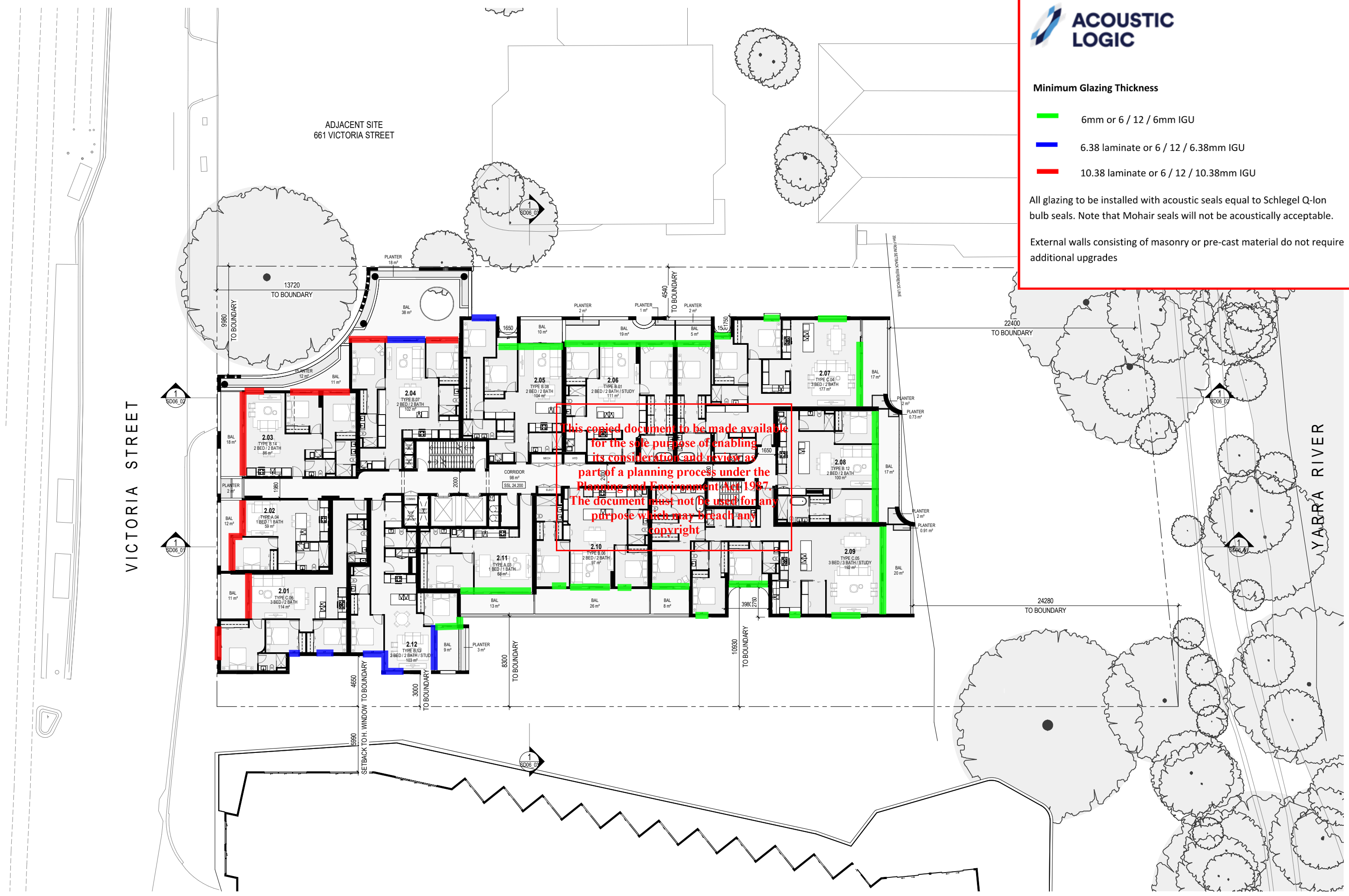


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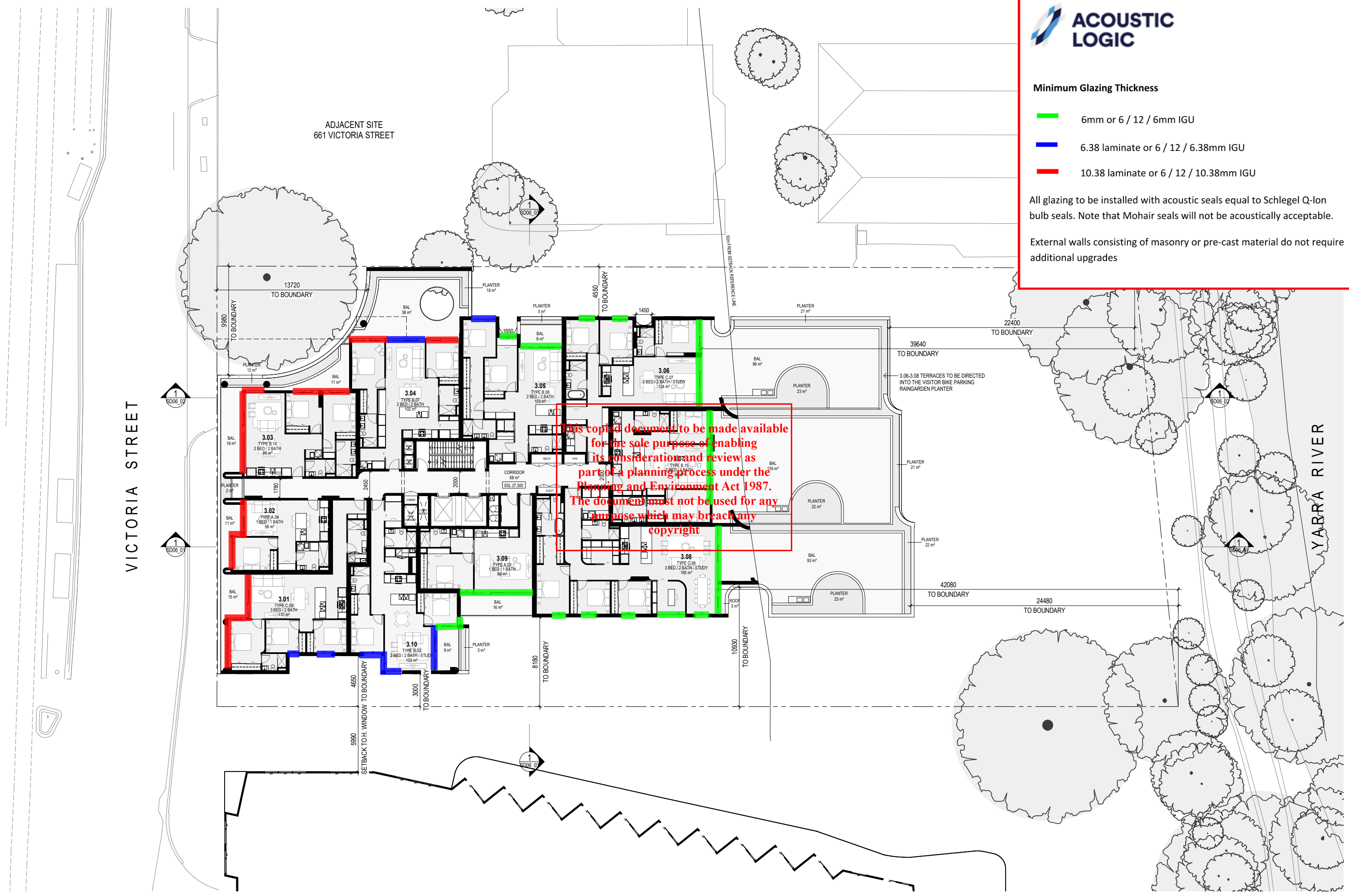
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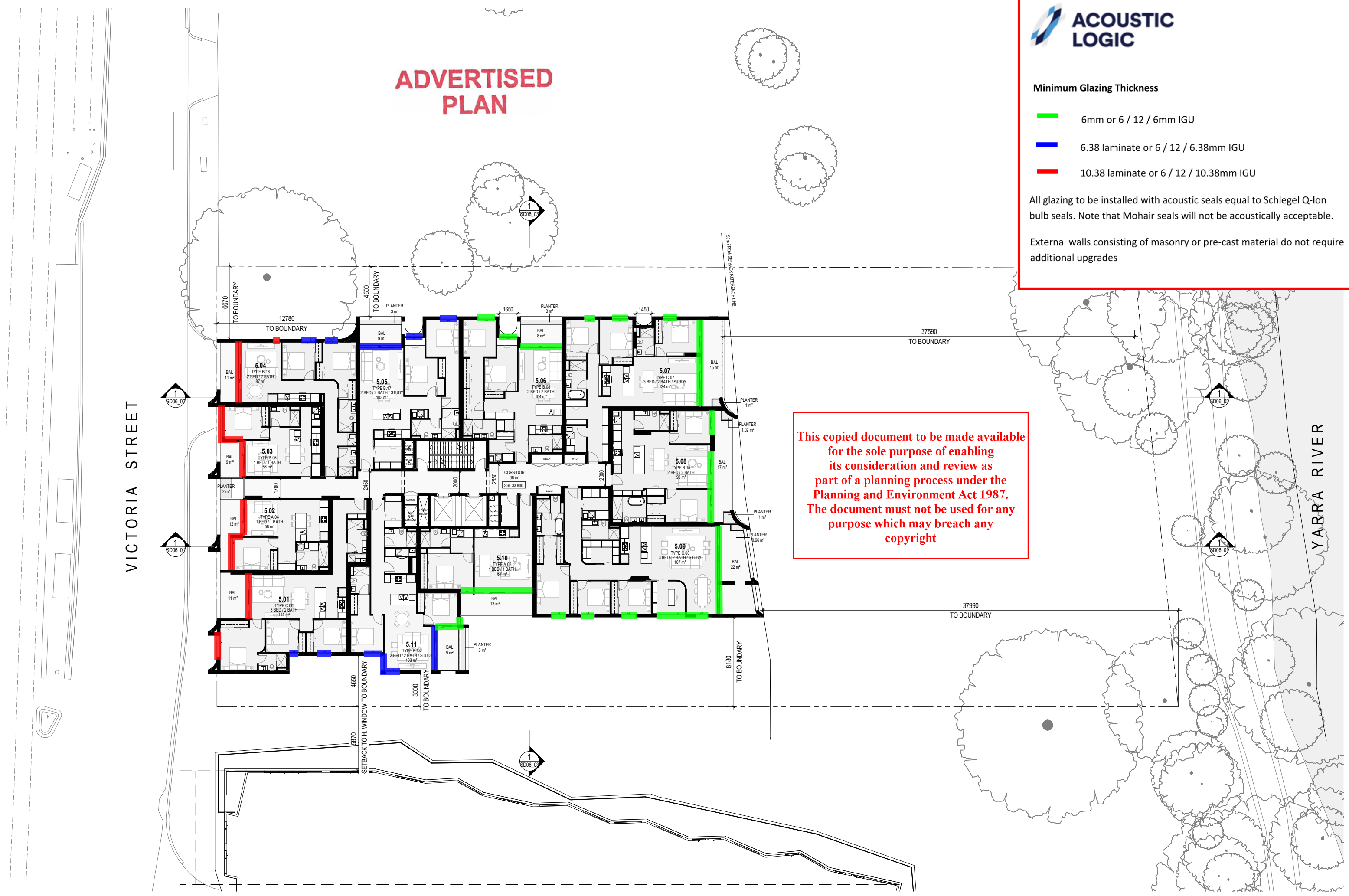
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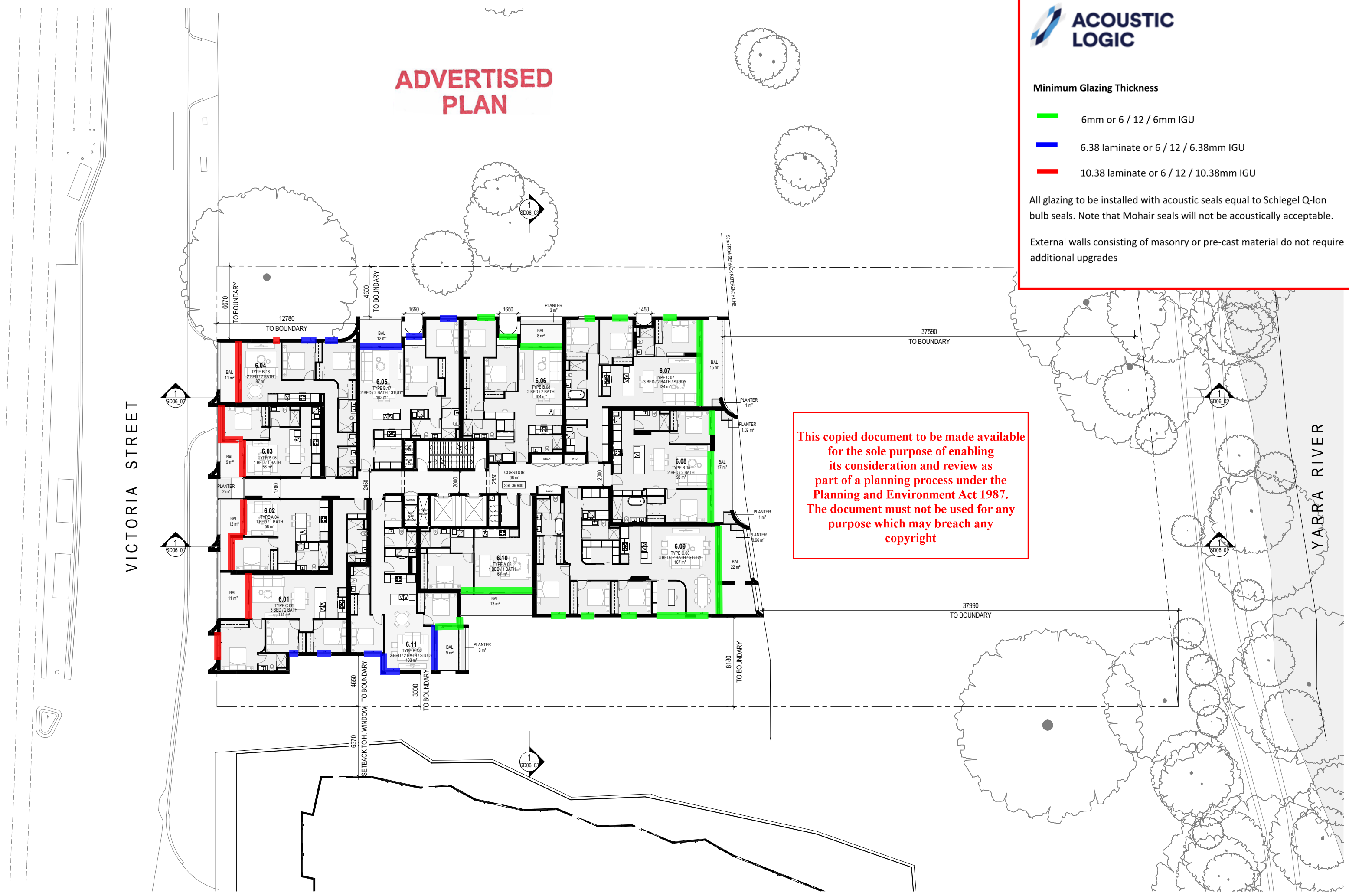
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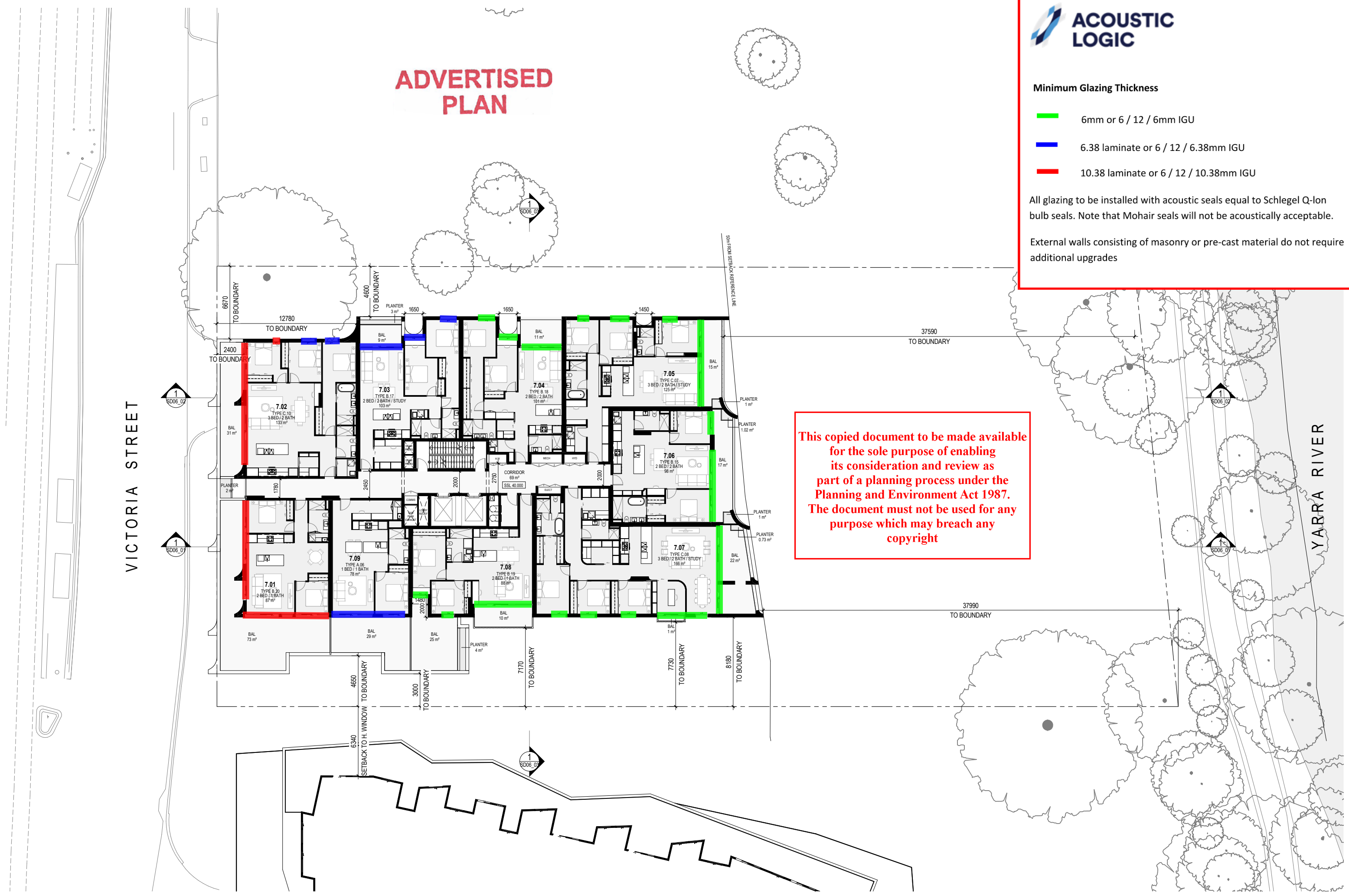
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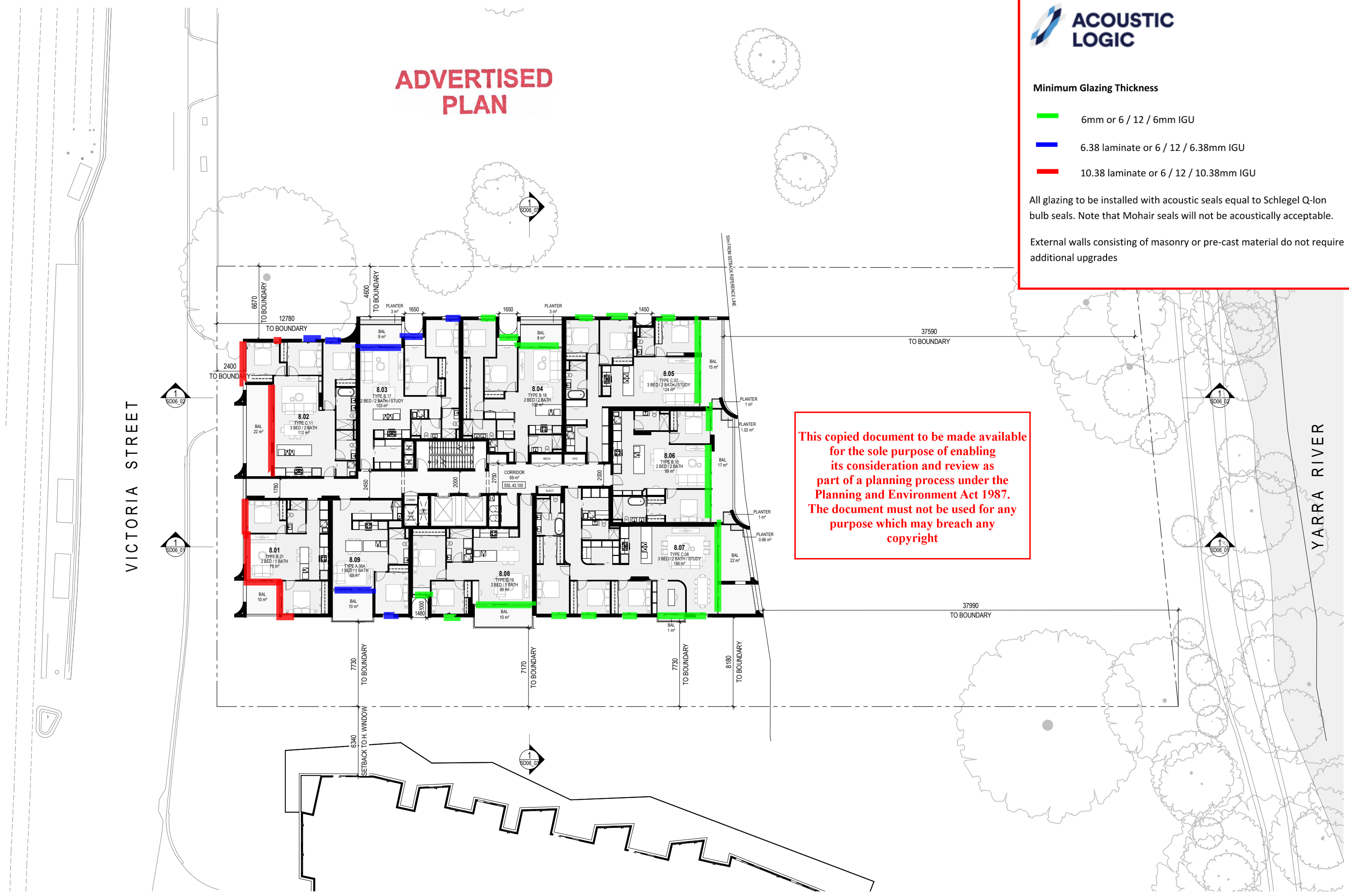
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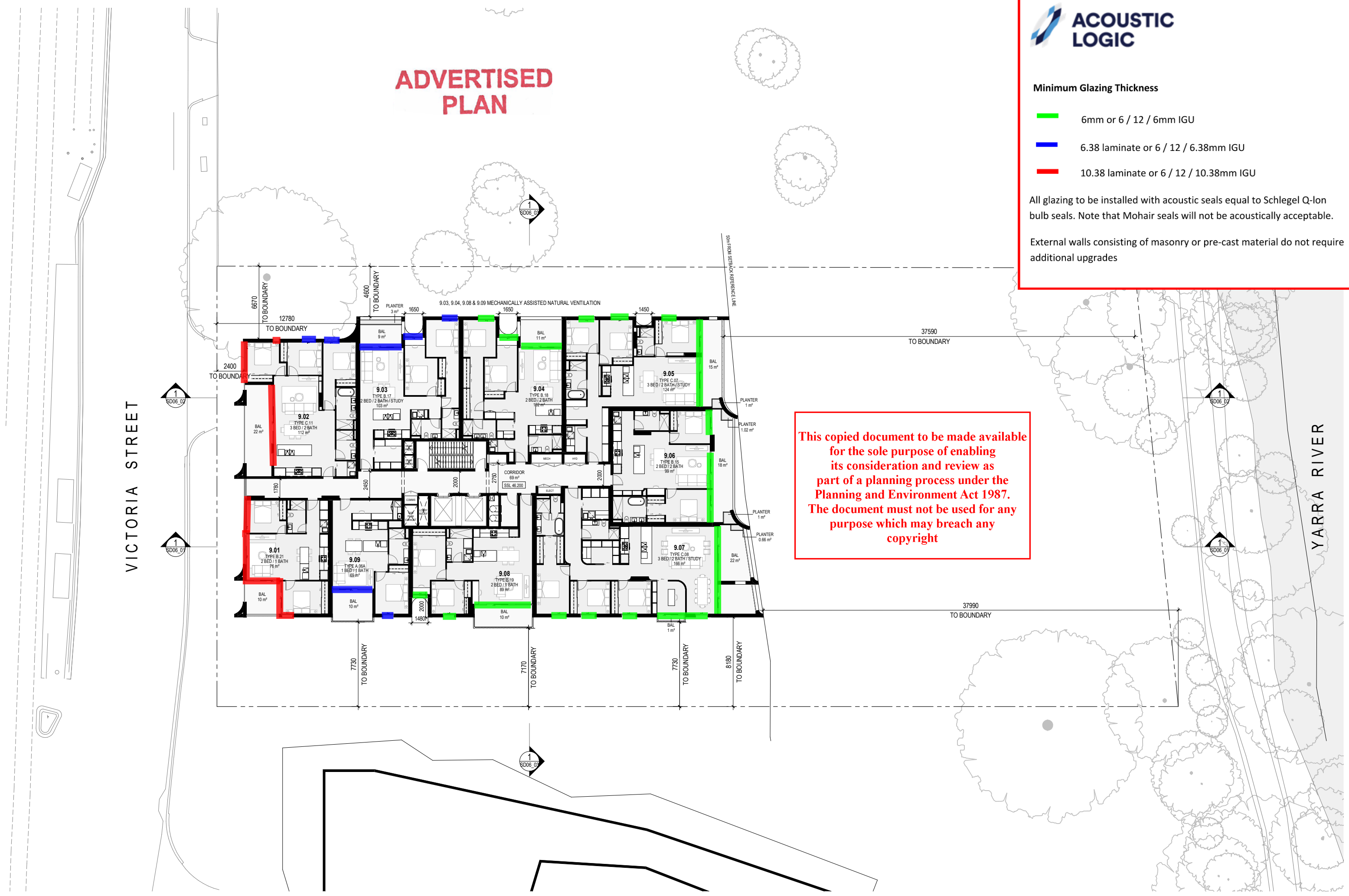
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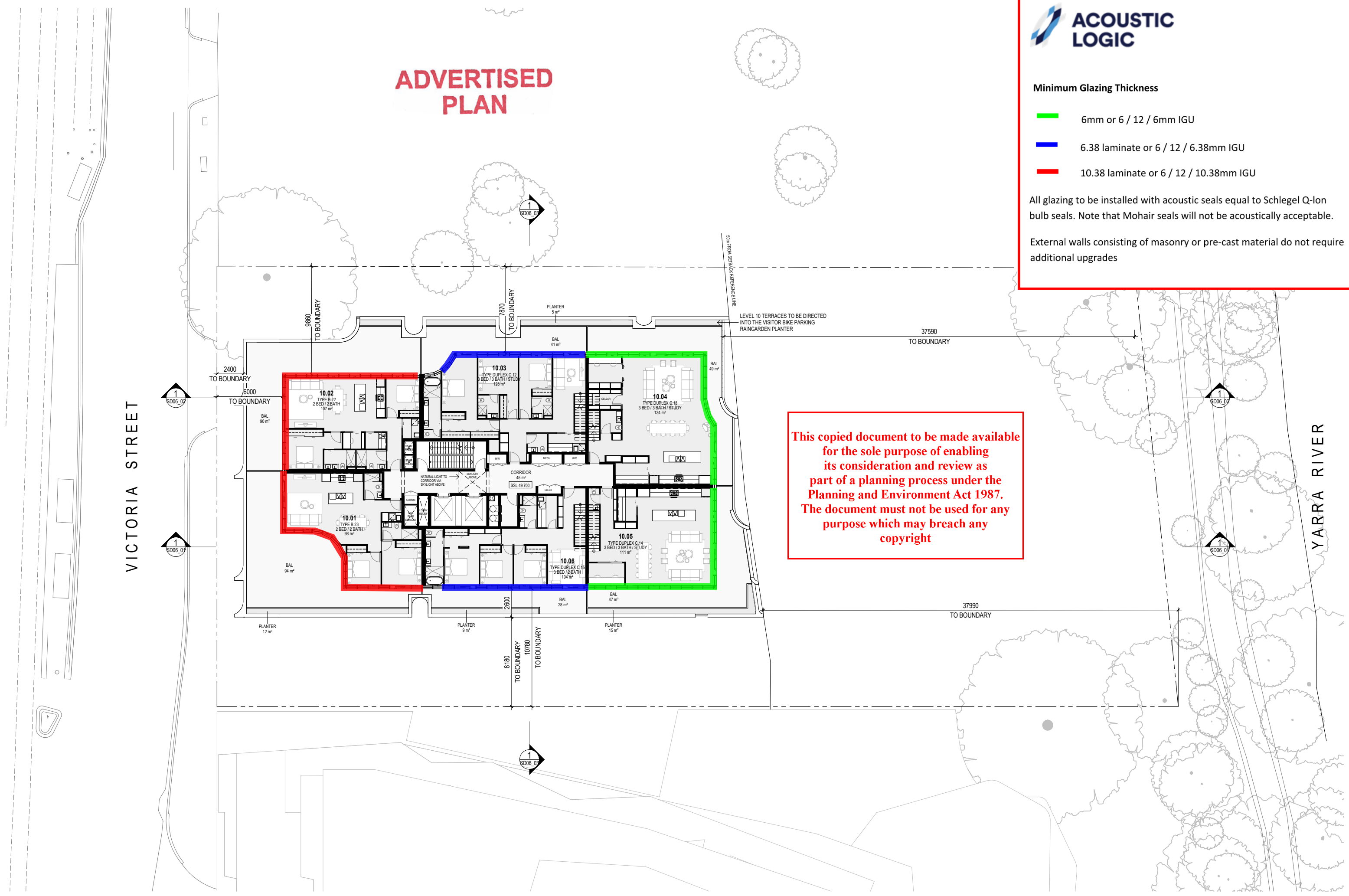
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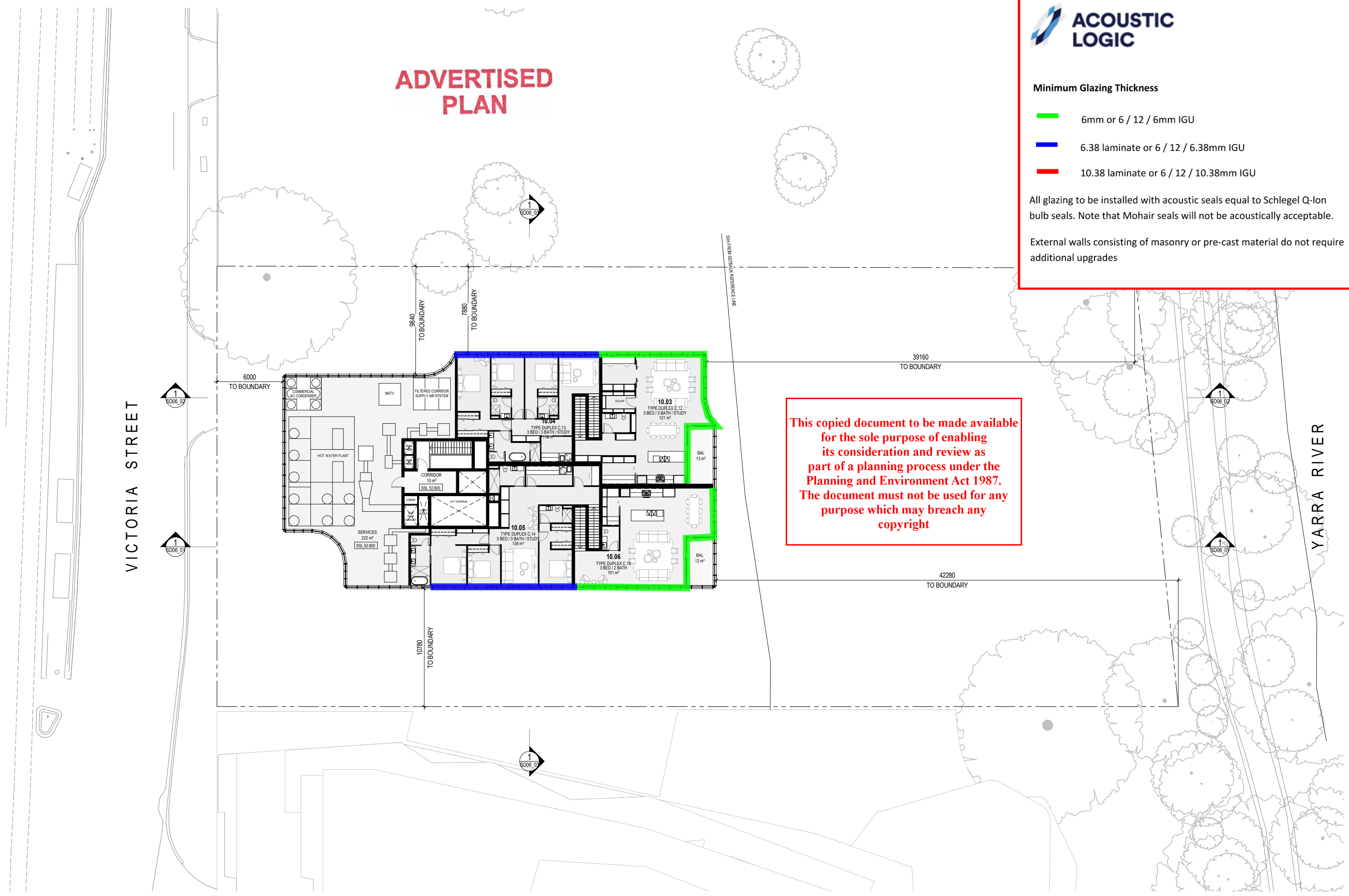
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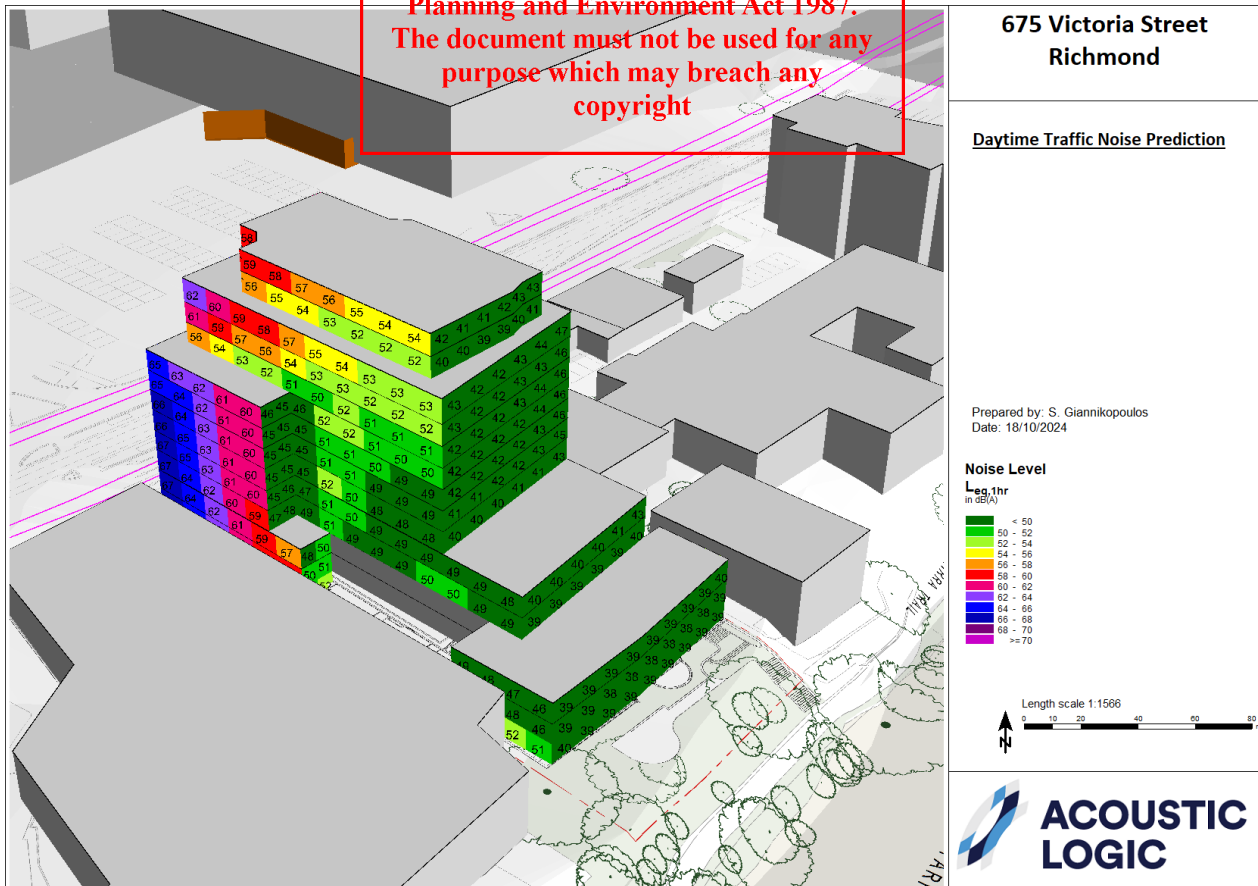
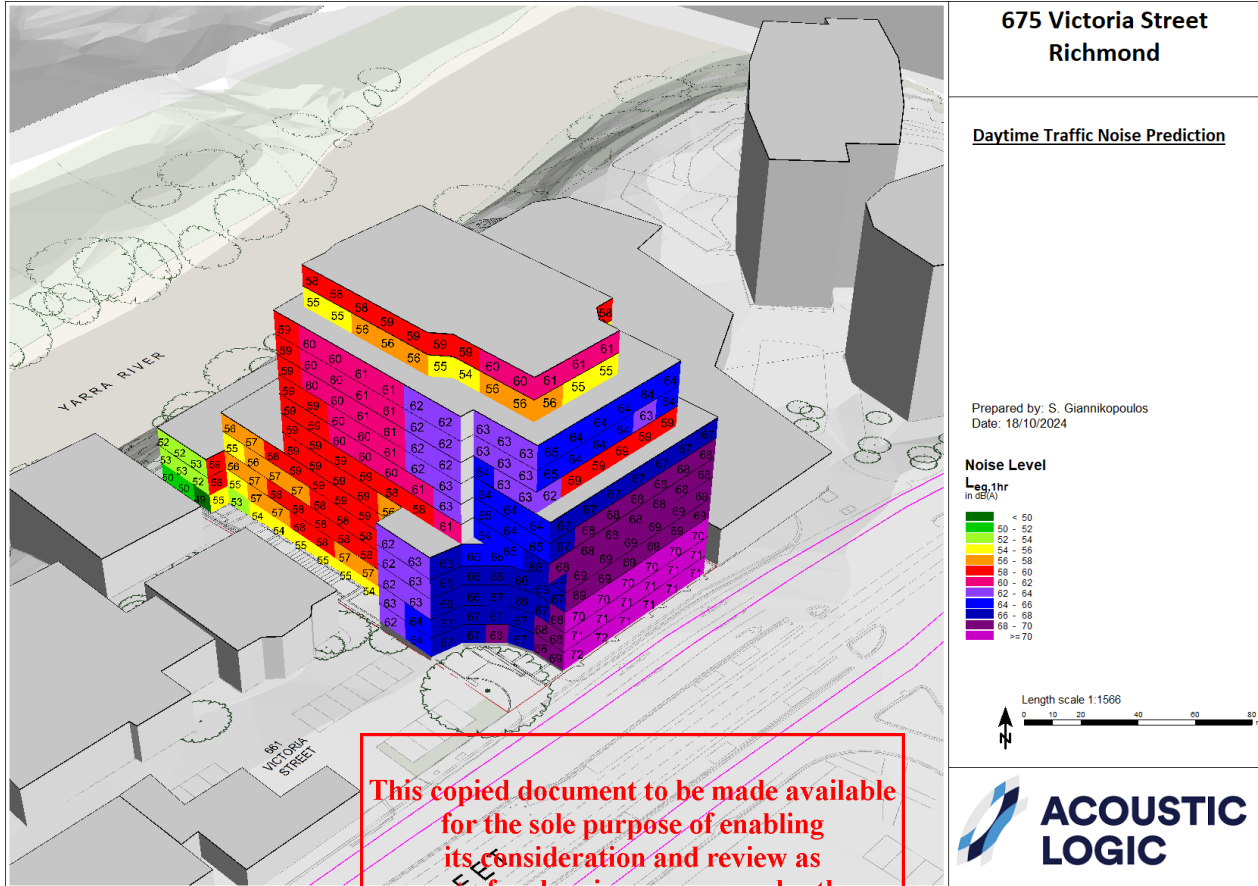
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APPENDIX 2 – SOUNDPLAN FAÇADE NOISE MAPS



APPENDIX 3 – UNATTENDED NOISE MONITORING DATA

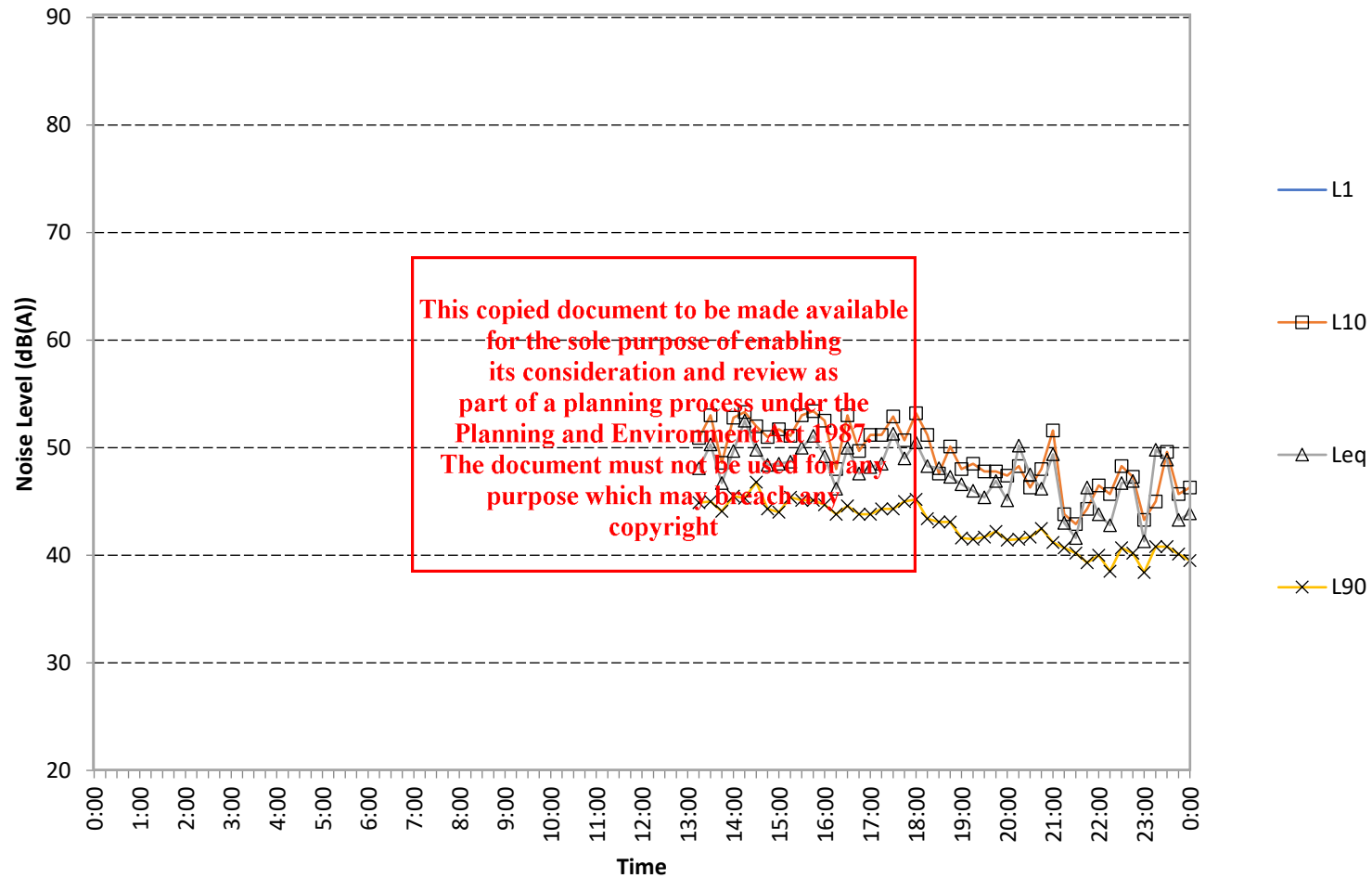
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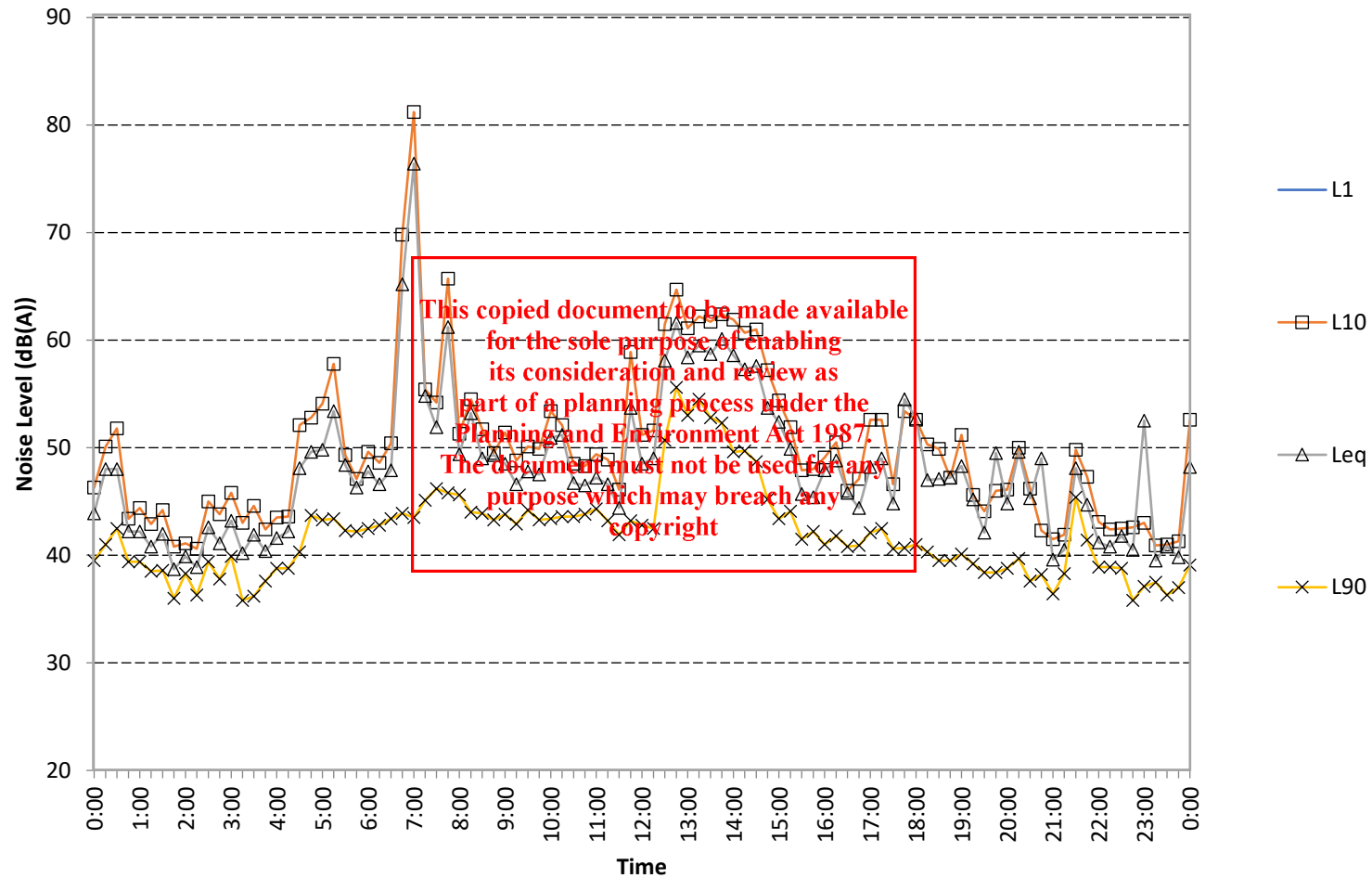
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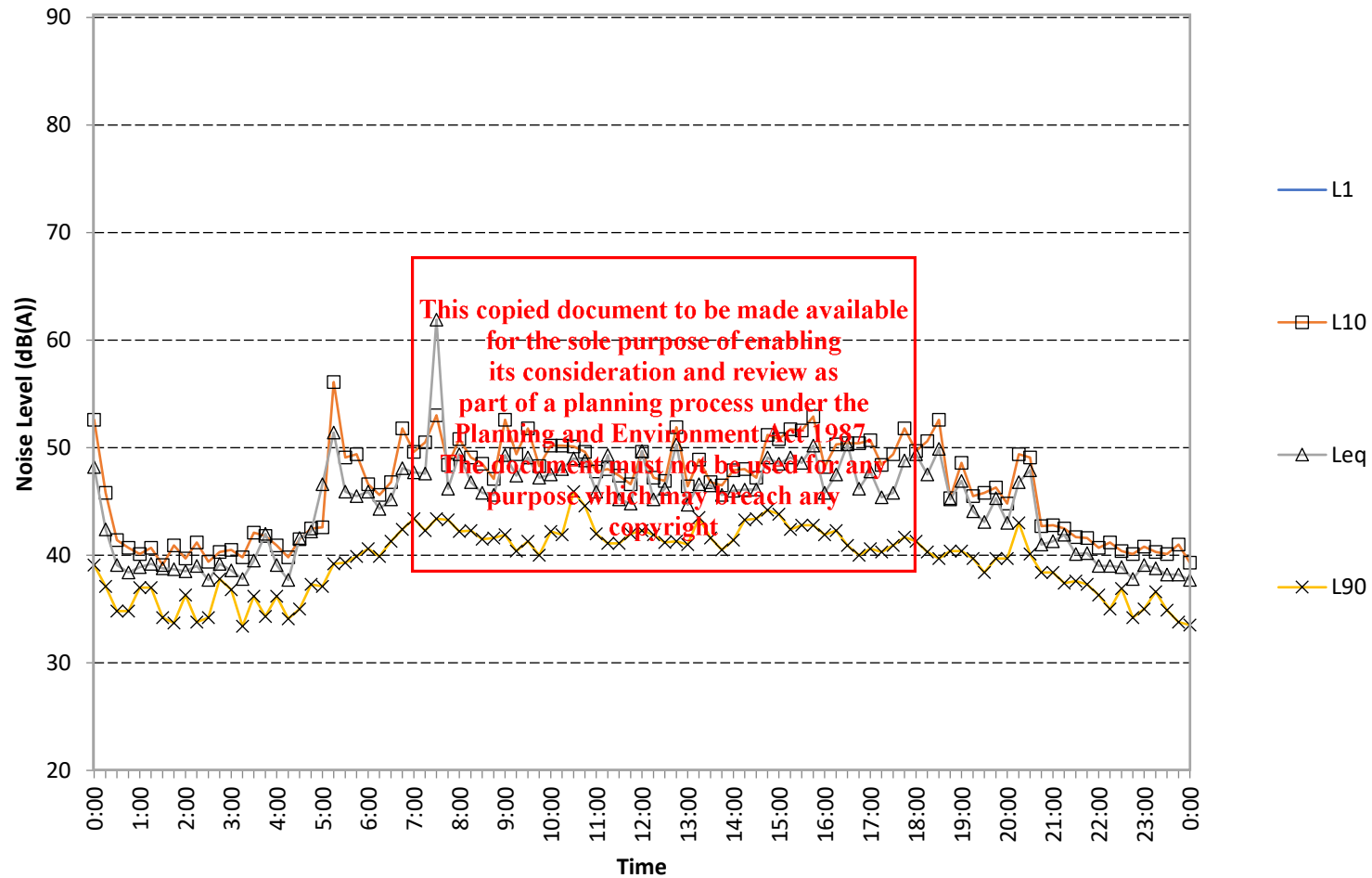
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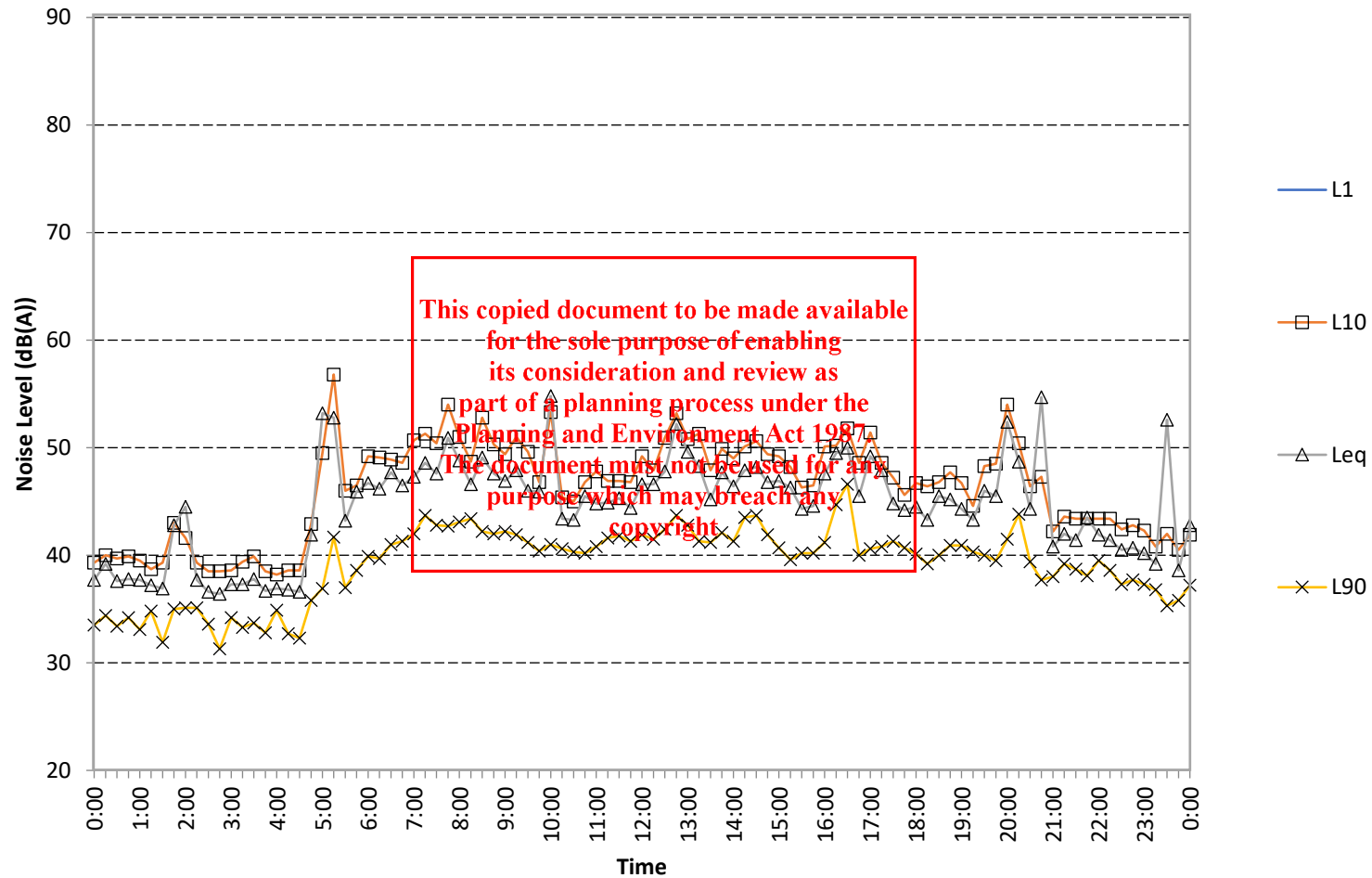
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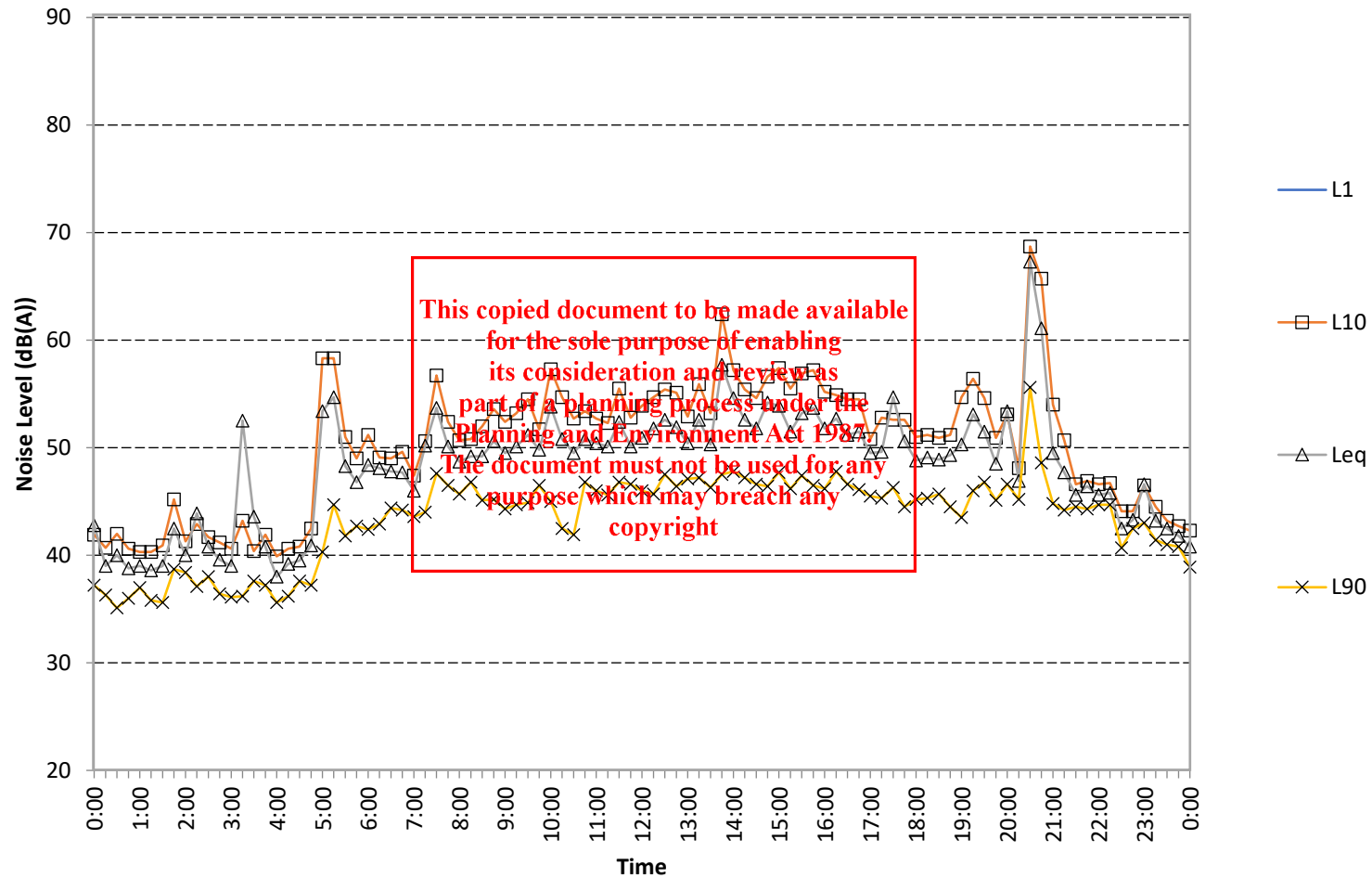
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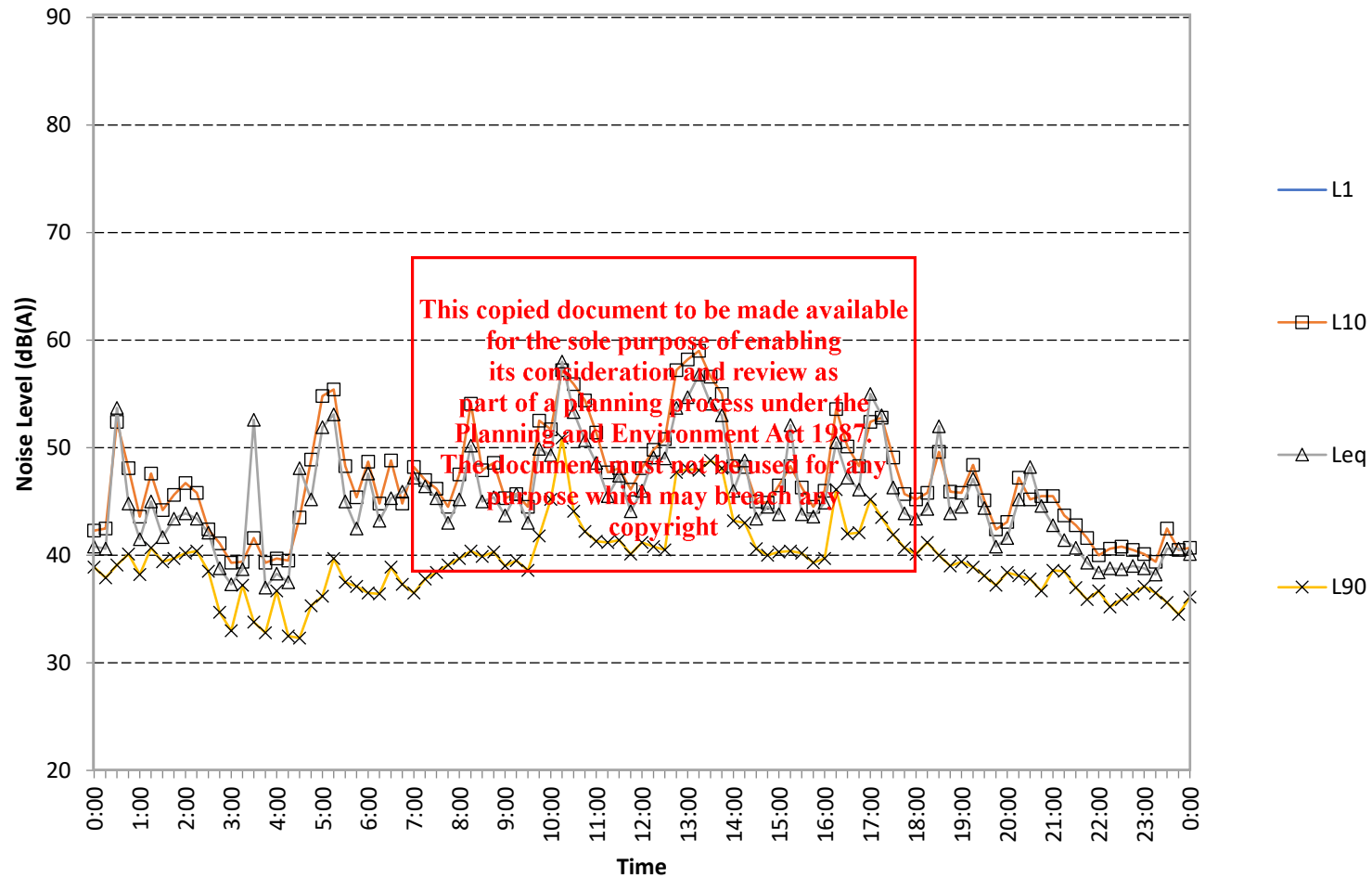
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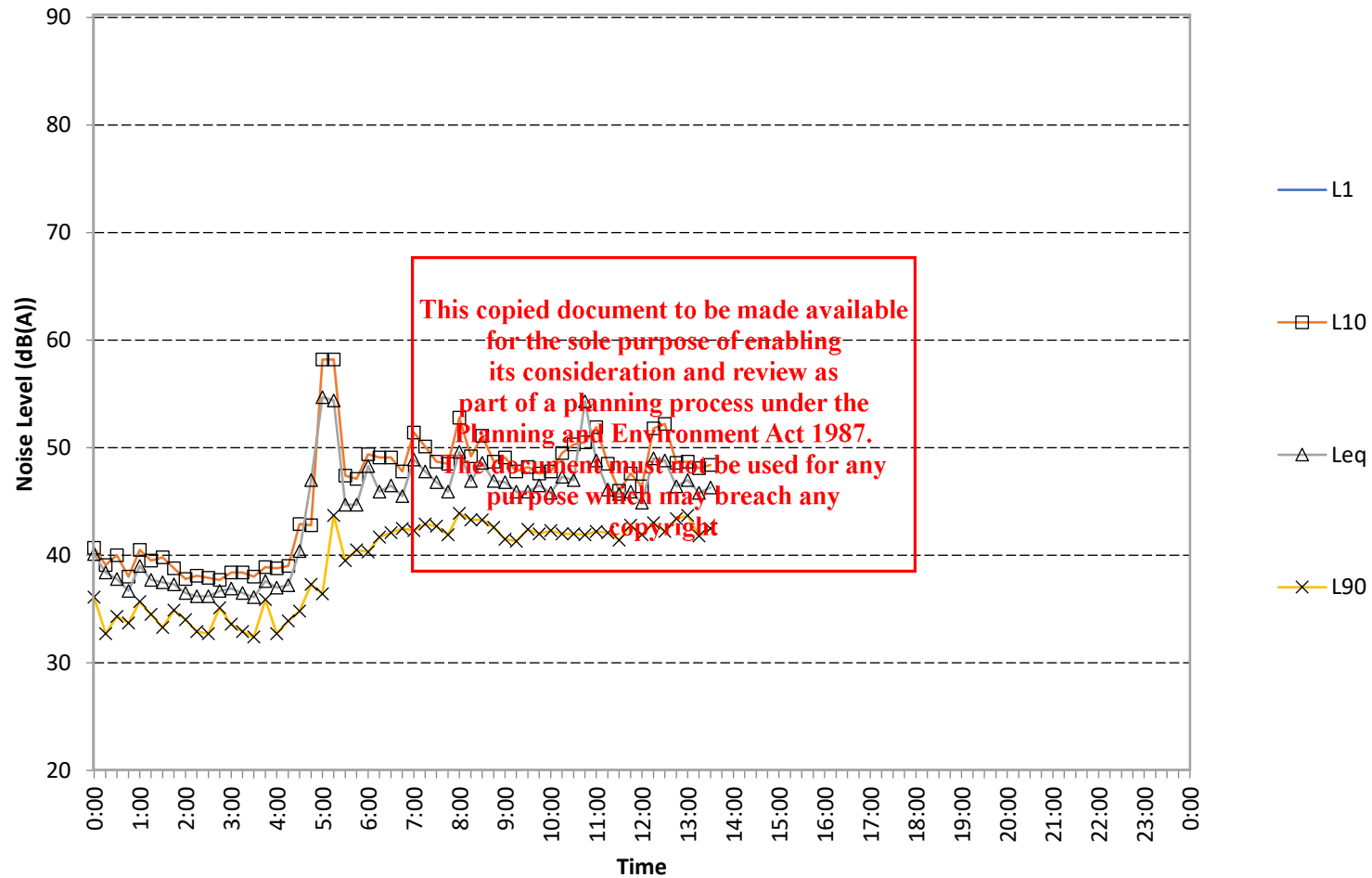
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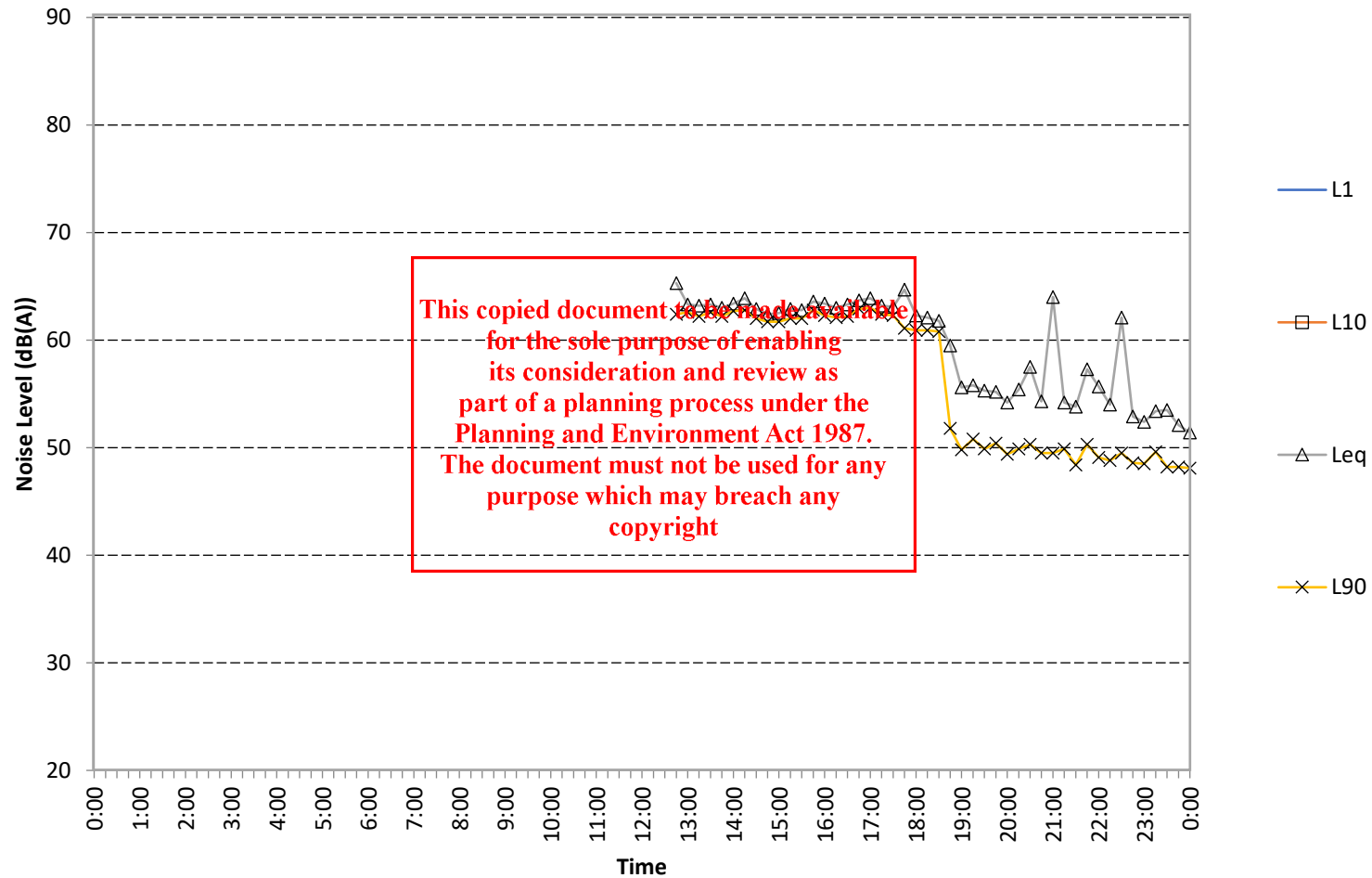
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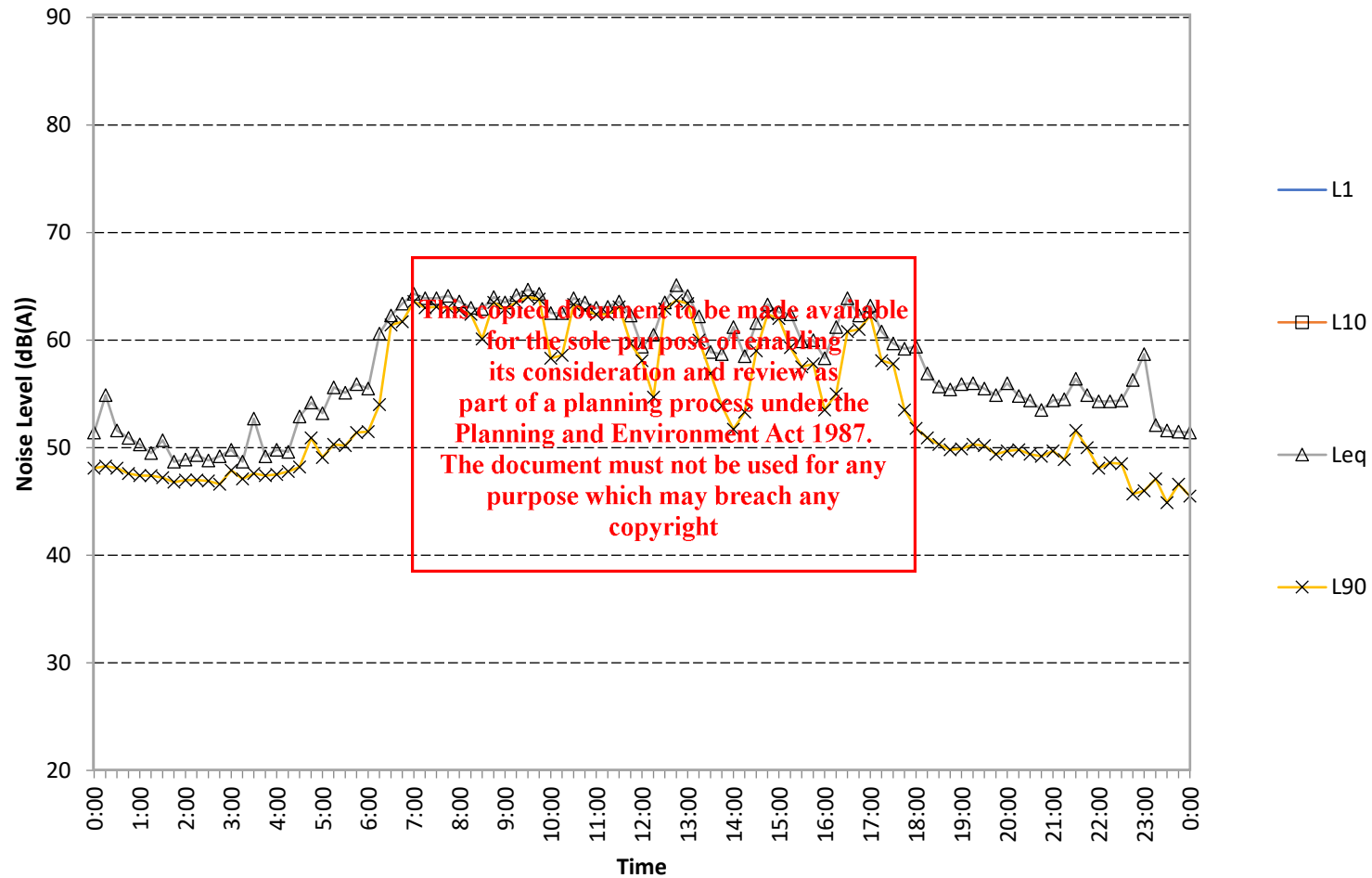
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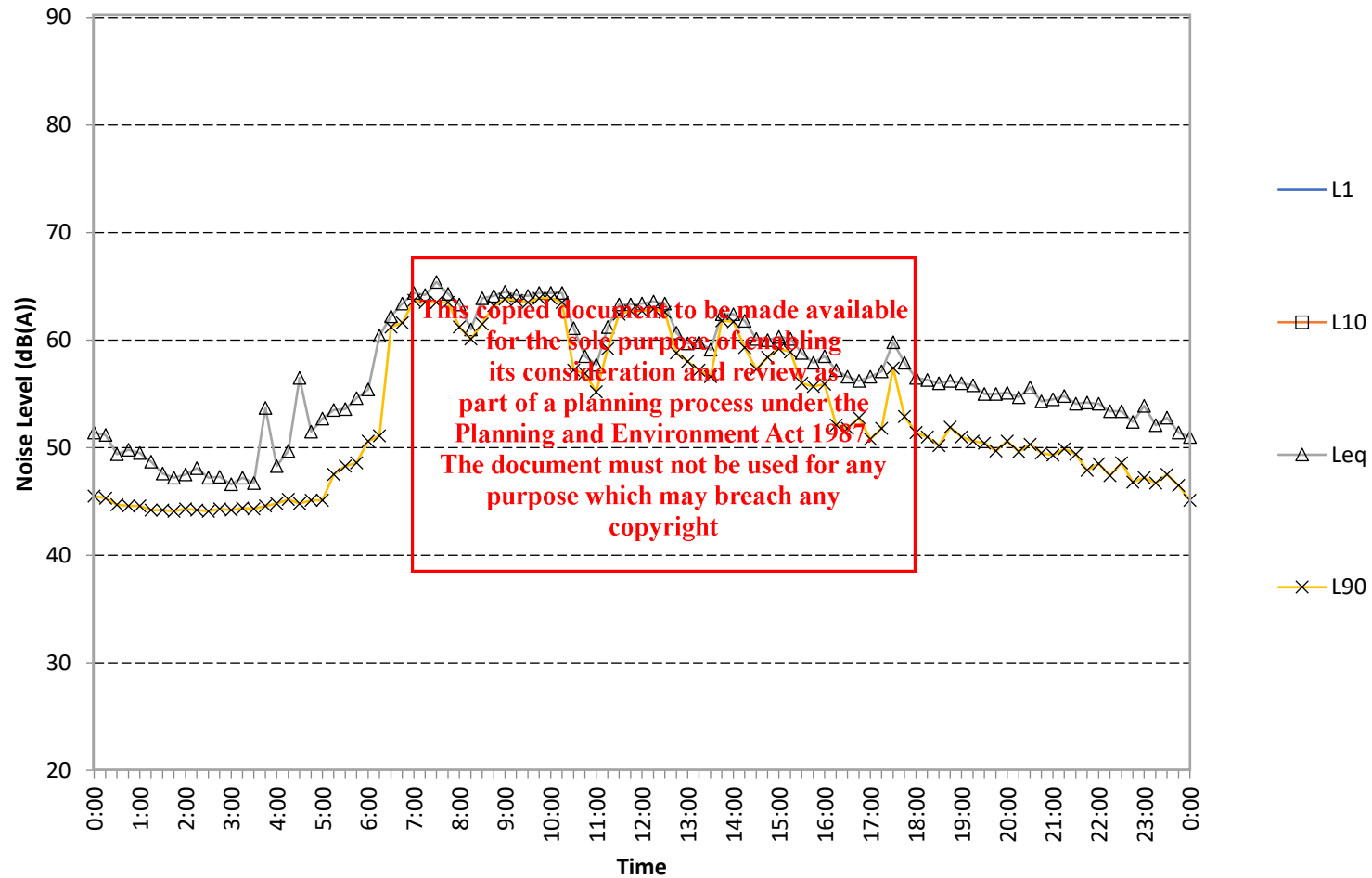
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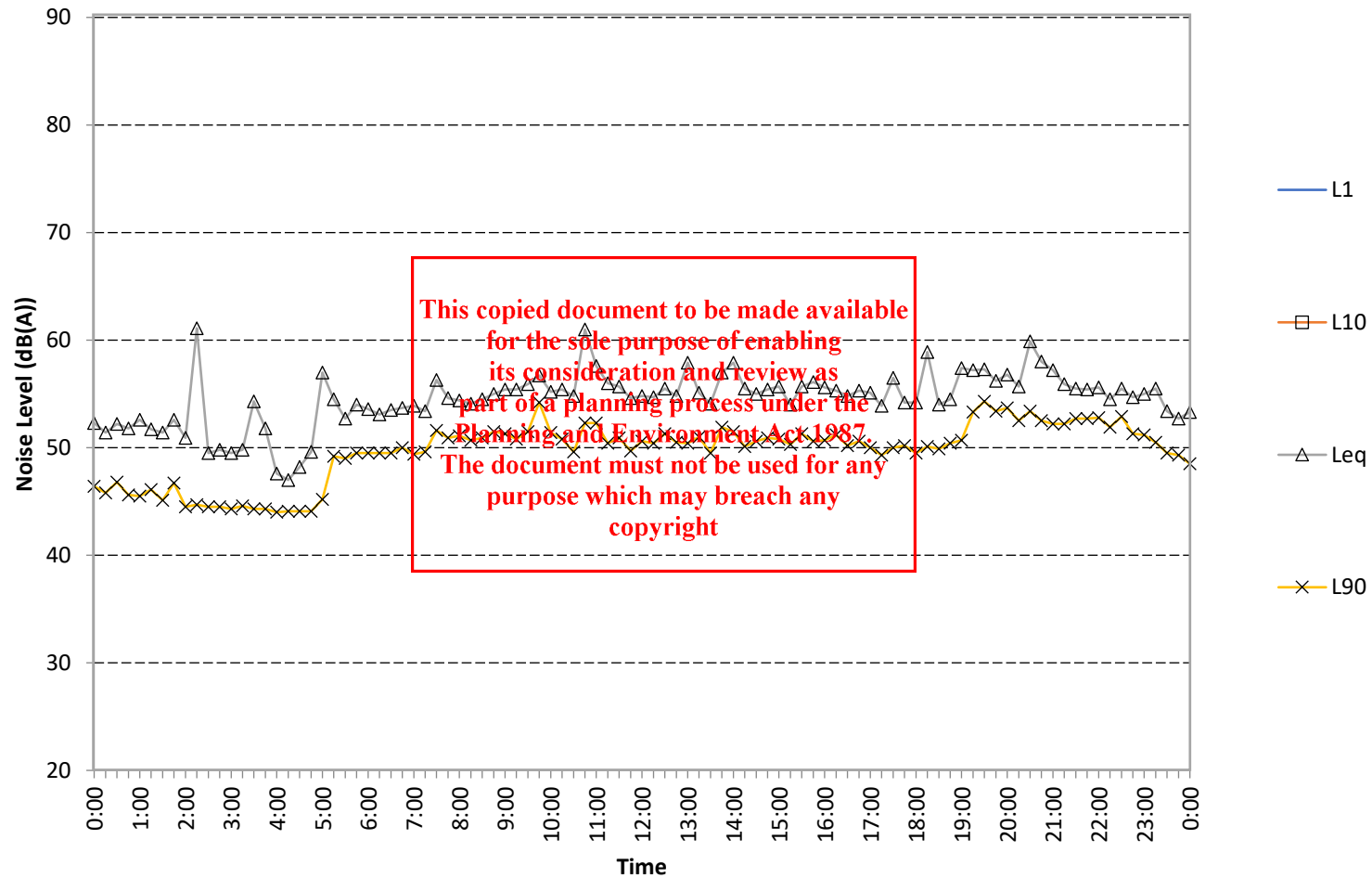
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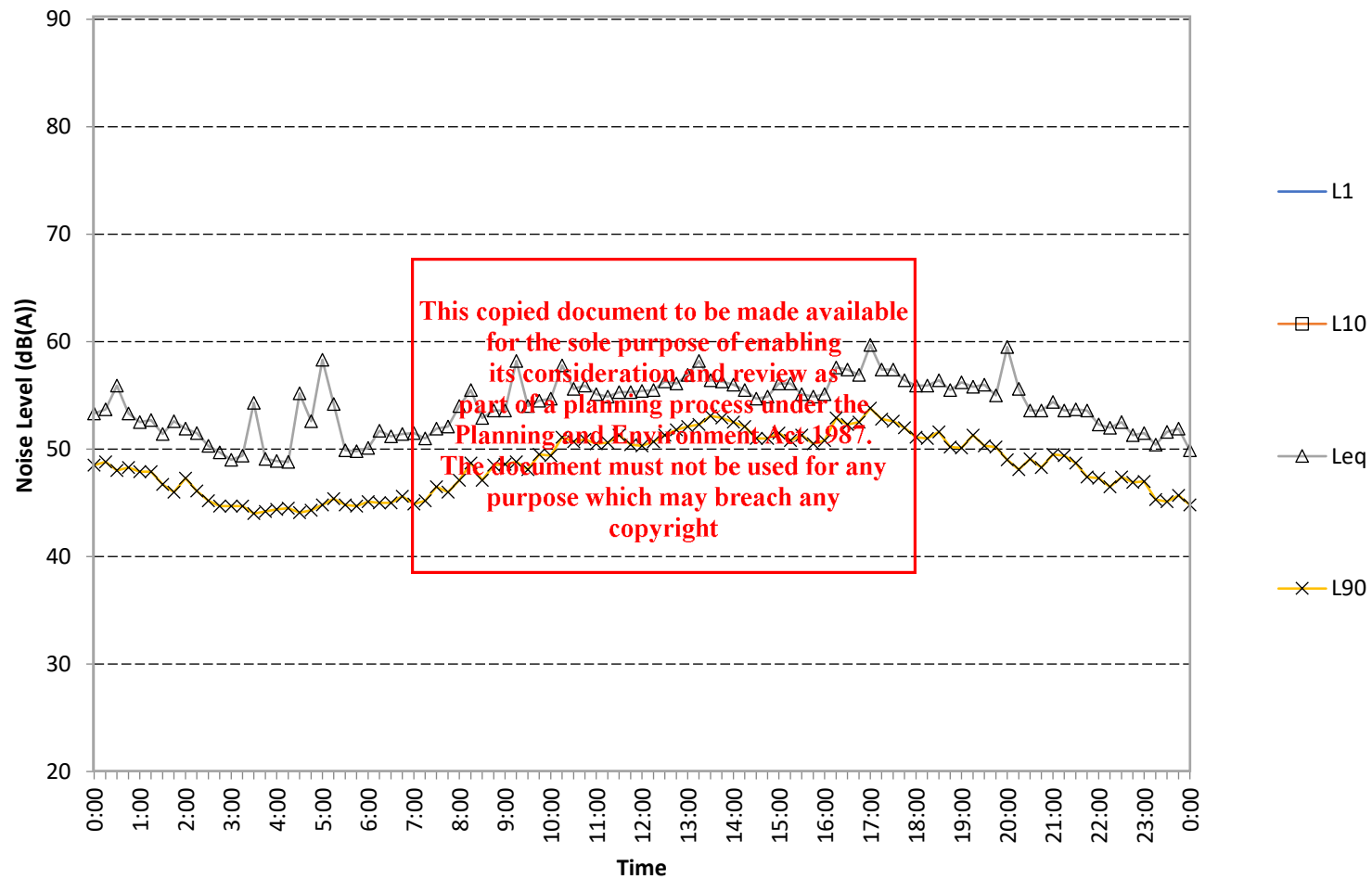
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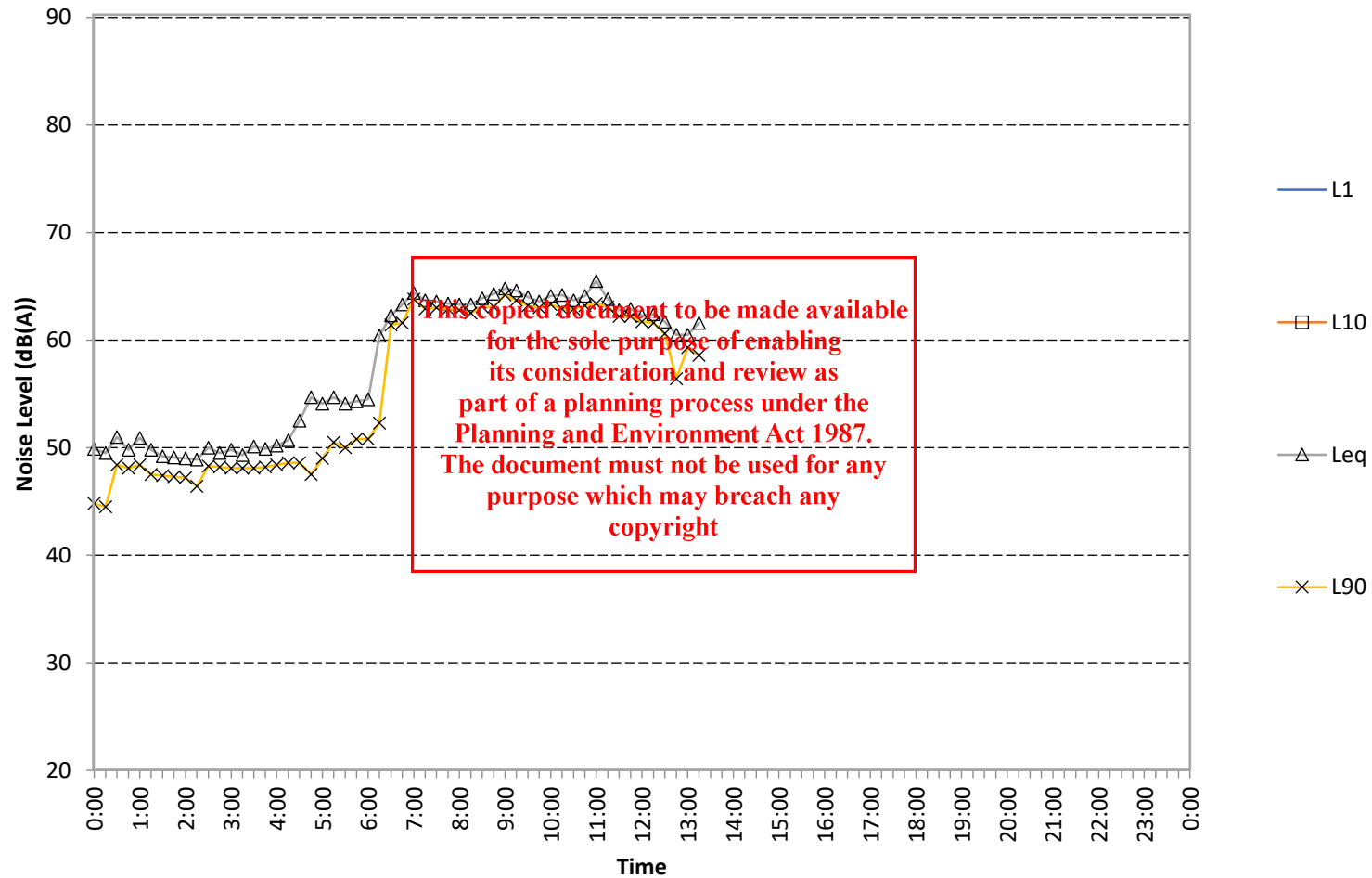
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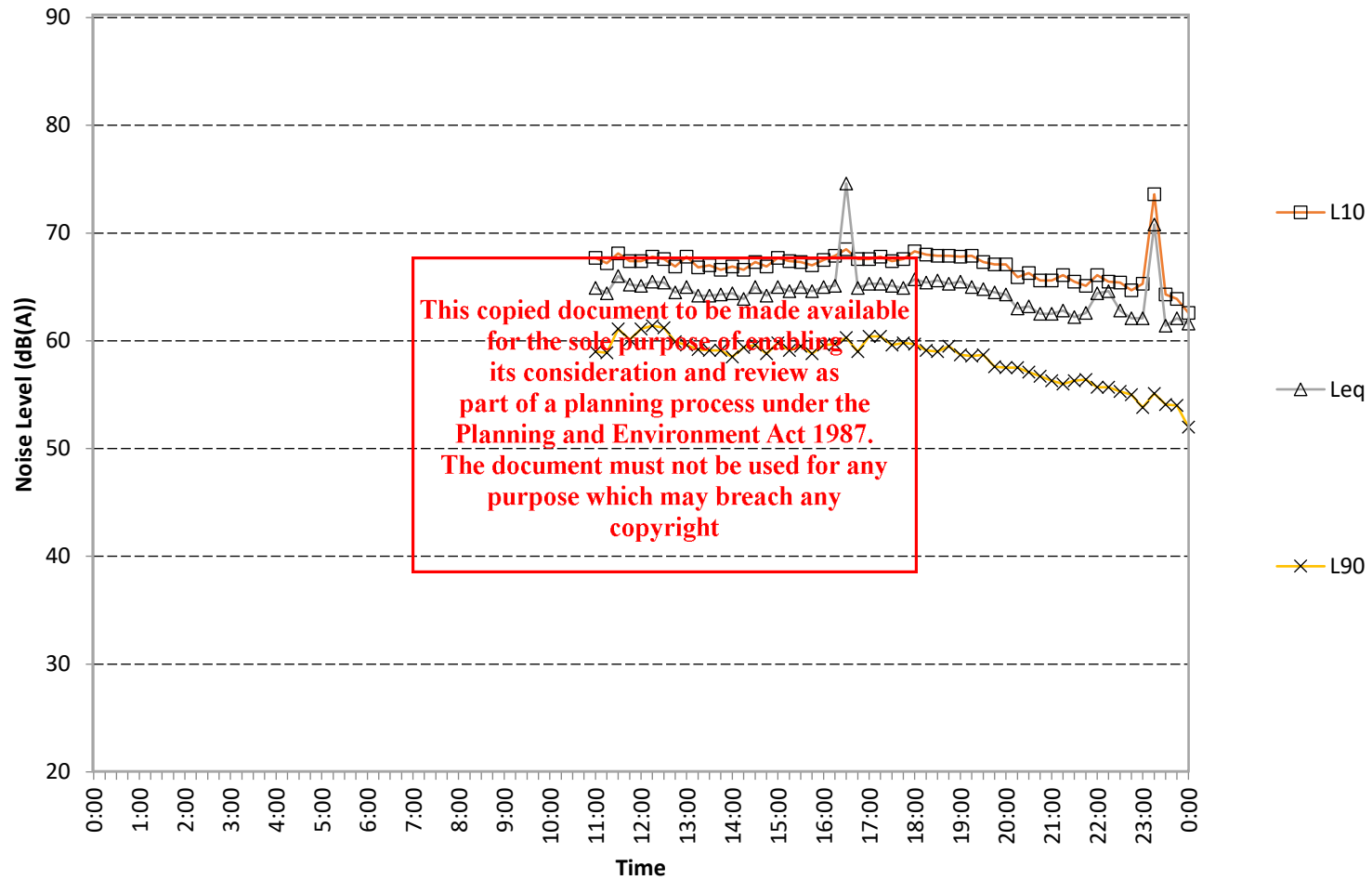
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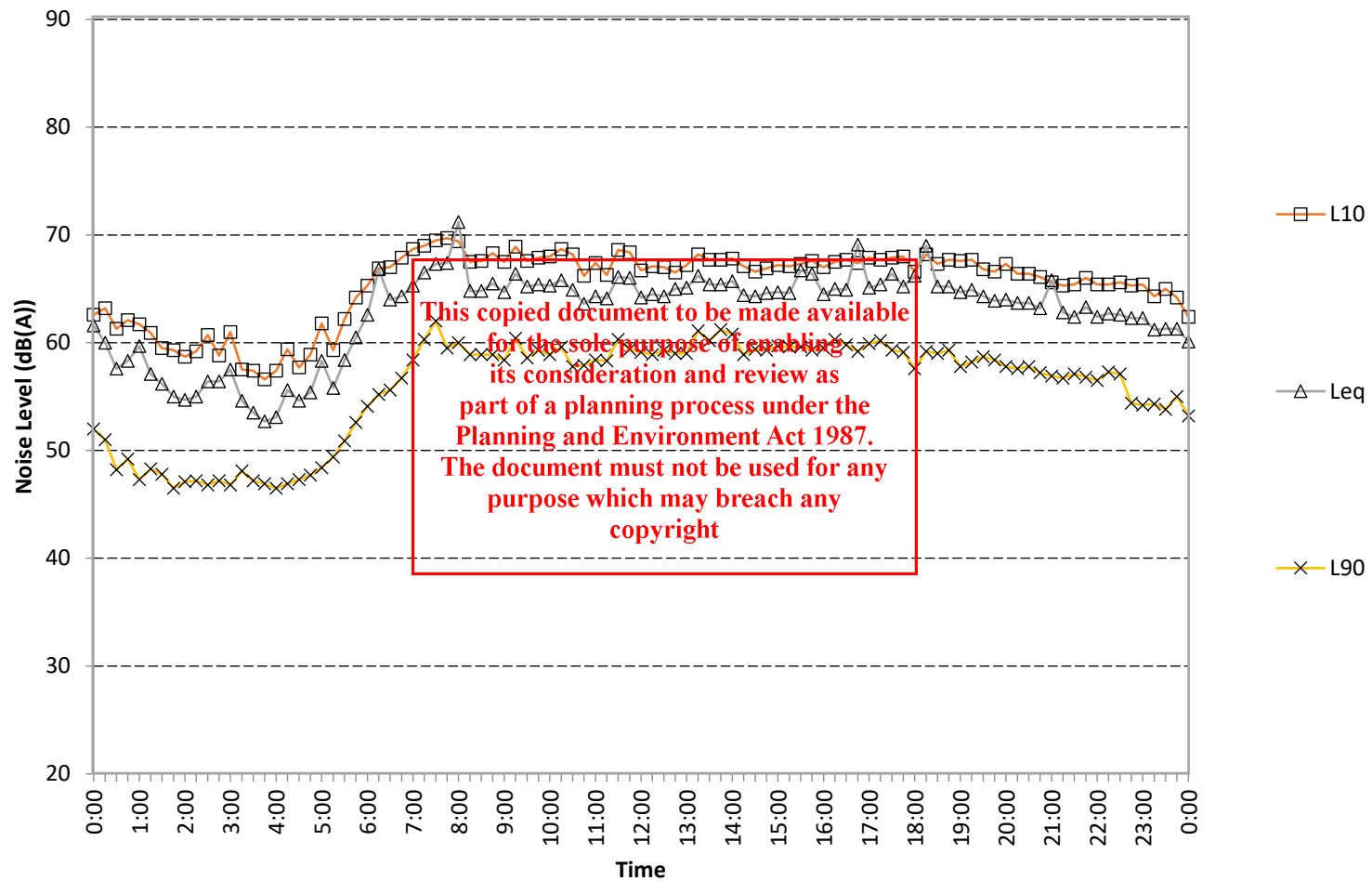
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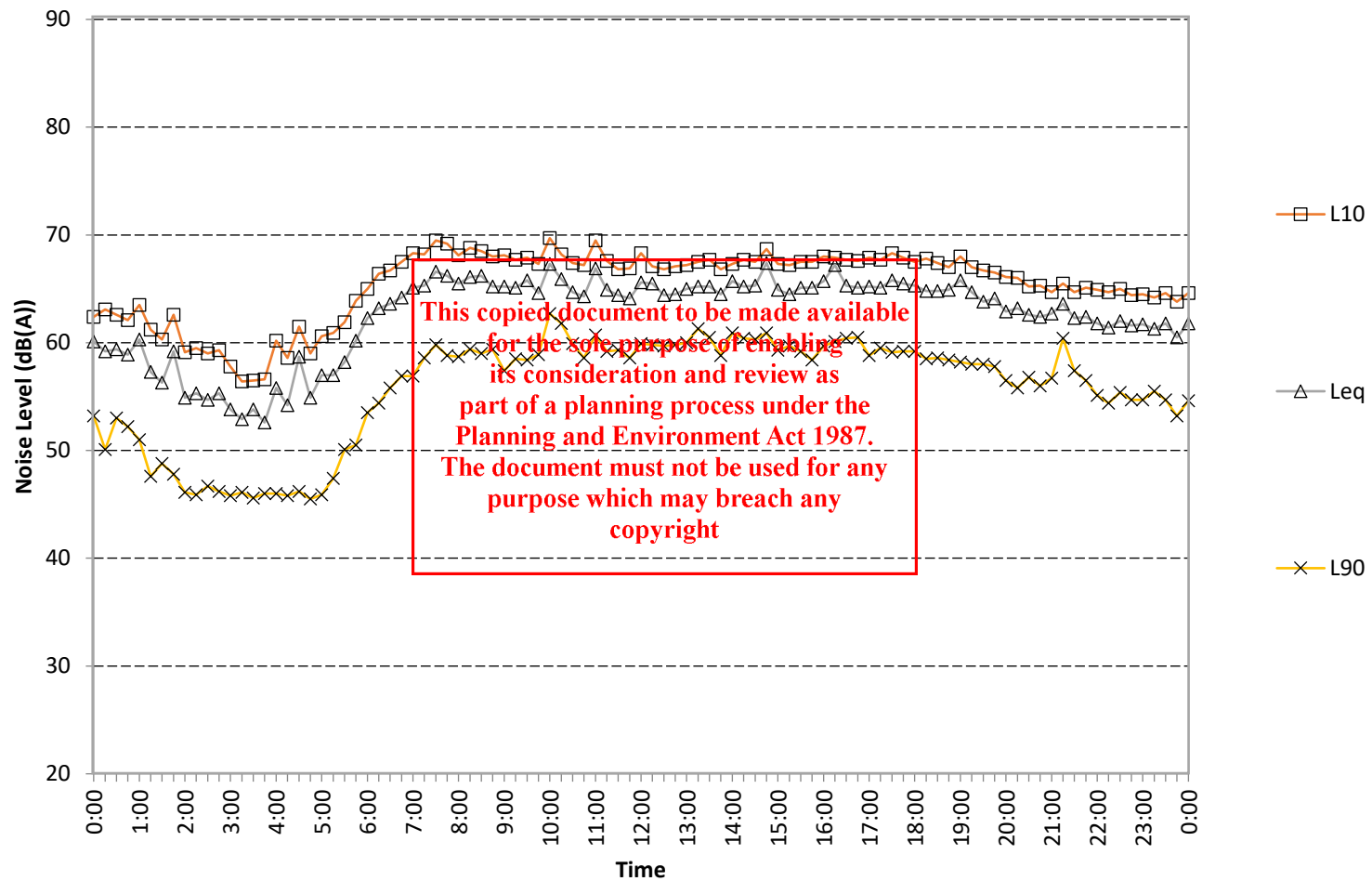
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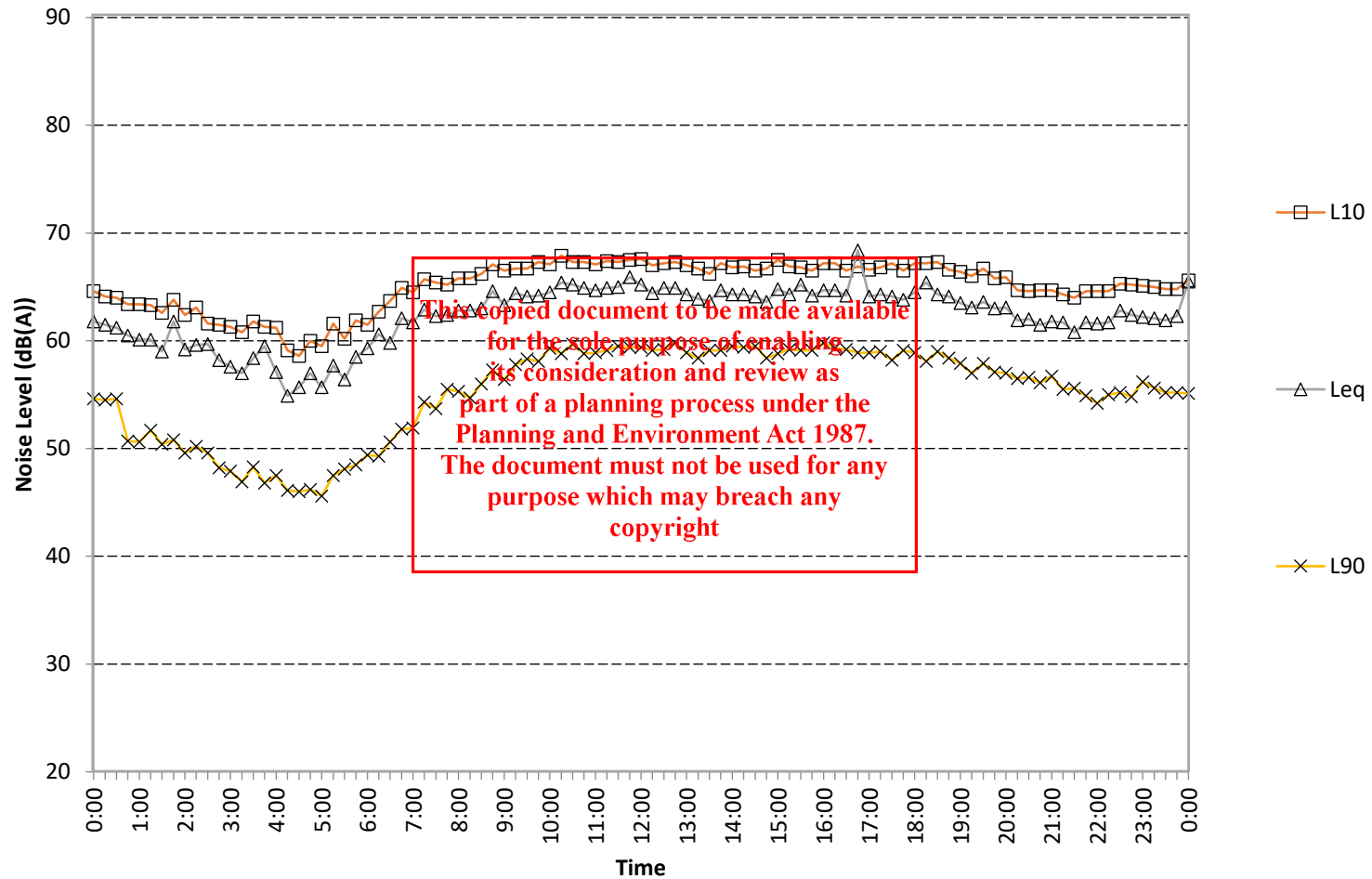
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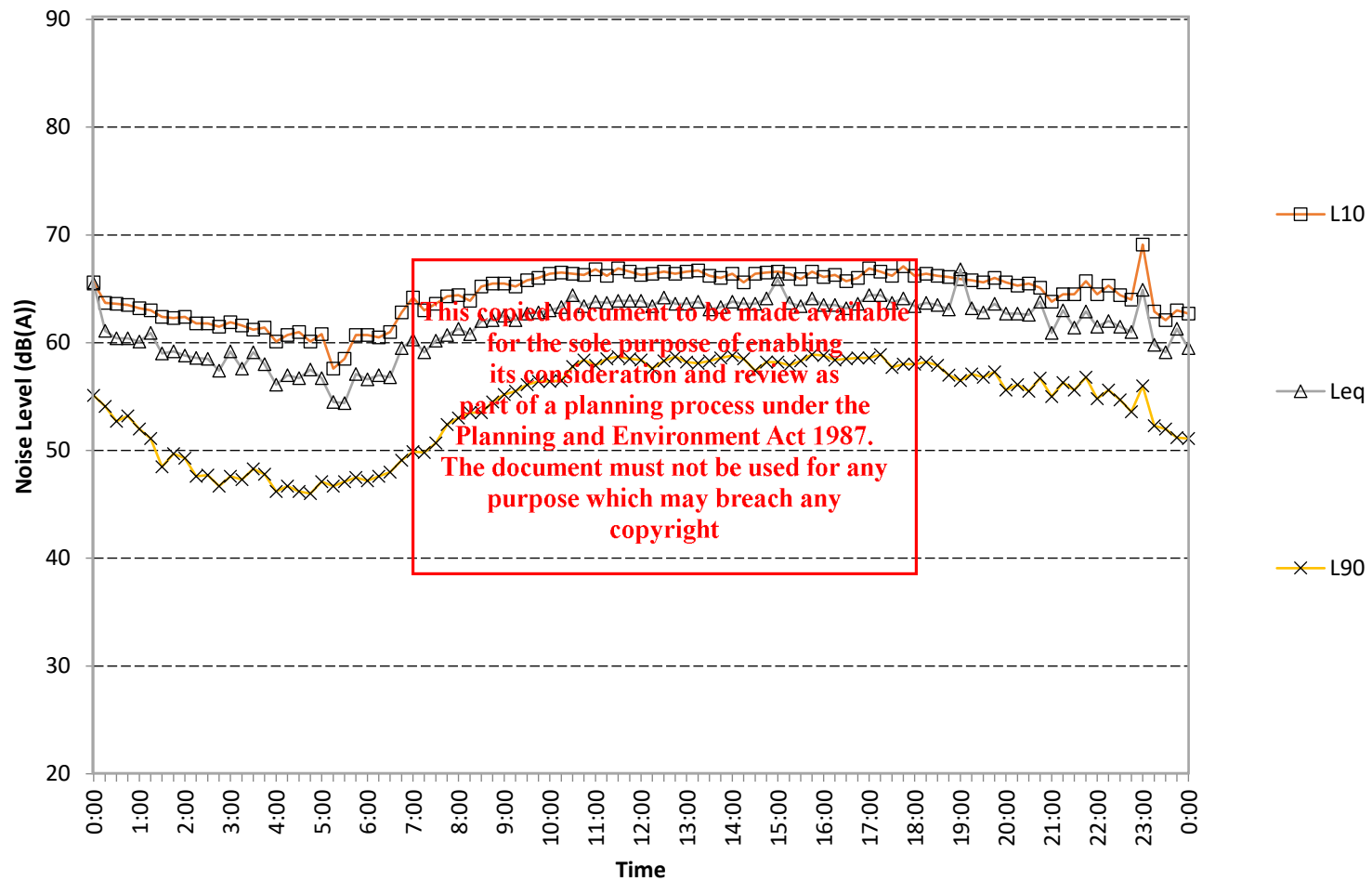
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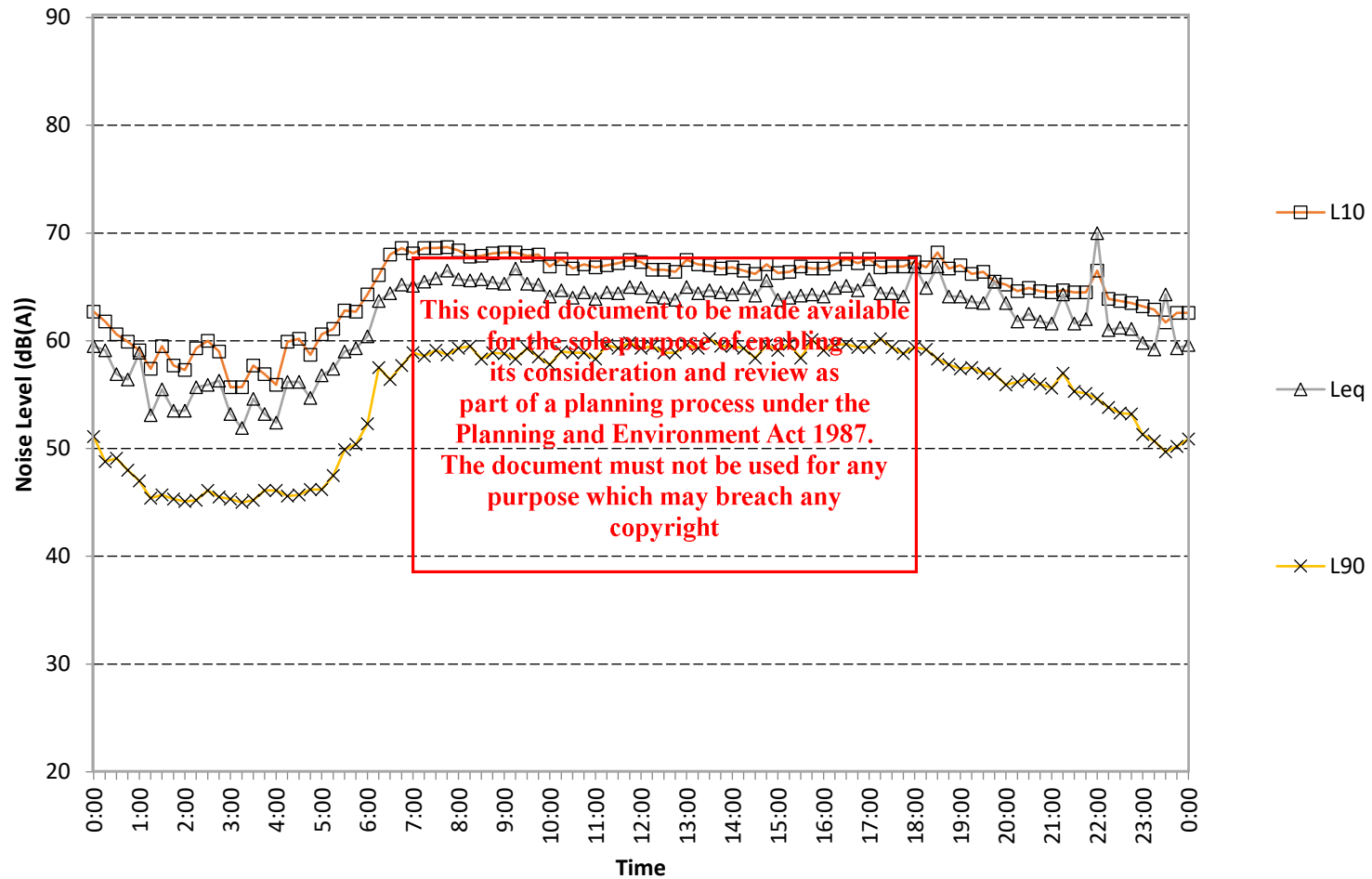
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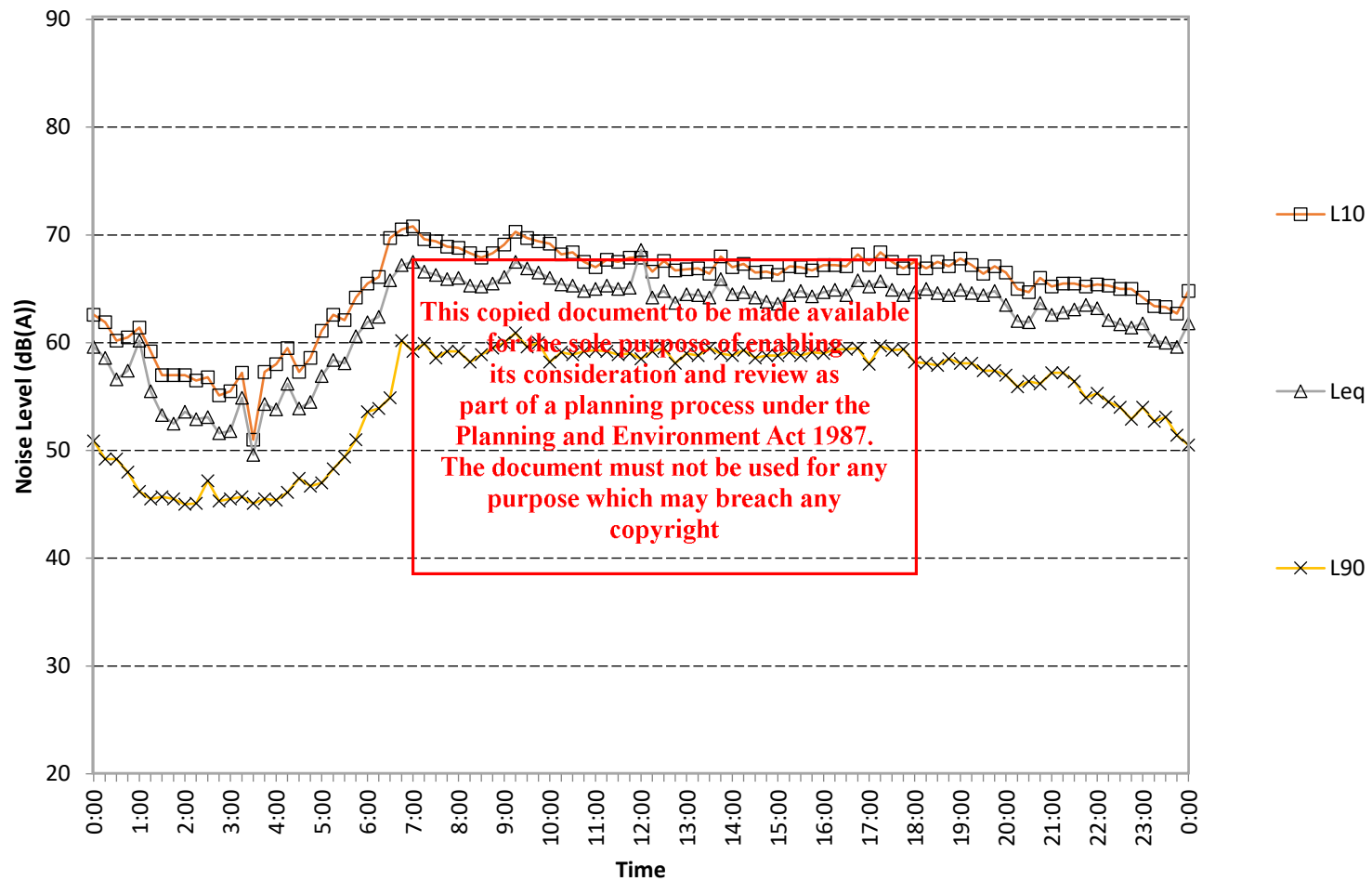
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