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Prepared for: Meriton Apartments Pty Ltd

ASSESSMENT OF ENVIRONMENTAL NOISE IMPACT
FOR
132-138 KILLEATON STREET, ST IVES

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TABLE OF CONTENTS

1. INTRODUCTION	3
2. SITE DESCRIPTION	3
3. TRAFFIC NOISE	4
3.1 ASSESSMENT CRITERIA	4
3.2 NOISE DESCRIPTORS	5
3.3 NOISE MONITORING	6
3.3.1 Unattended long term noise monitoring	6
3.3.2 Attended noise monitoring	6
3.4 EVALUATION OF NOISE INTRUSION	7
3.4.1 Roof/ ceiling constructions	8
3.4.2 Walls	8
4. CONCLUSION	9

1. INTRODUCTION

This report presents our assessment of the potential traffic noise impacts on the amenity of future occupants of the residential development located on the northern side of the 132-138 Killeaton Street site development.

Acoustic treatments for the control of external noise will be determined in order to comply with City of Ku-ring-gai Council guidelines for residential areas of the development and Australian Standard 2107:2000 for commercial areas.

This report has been prepared based on architectural drawings DA00 to DA89 provided by Meriton Apartments Pty. Ltd. and dated 17 May 2010.

2. SITE DESCRIPTION

The subject site is located at 132-138 Killeaton Street, St Ives. The site is bounded to the north by Killeaton Street, to the east and west by existing residential housing, and to the south by Masada College High School.

Killeaton Street carries low volumes of traffic and is mainly used by residents accessing local roads. To the west of the subject site is Mona Vale Rd. Mona Vale Rd is a busy major road and carries high volumes of traffic.

Figure 1 details the proposed development, existing development and noise measurement positions.

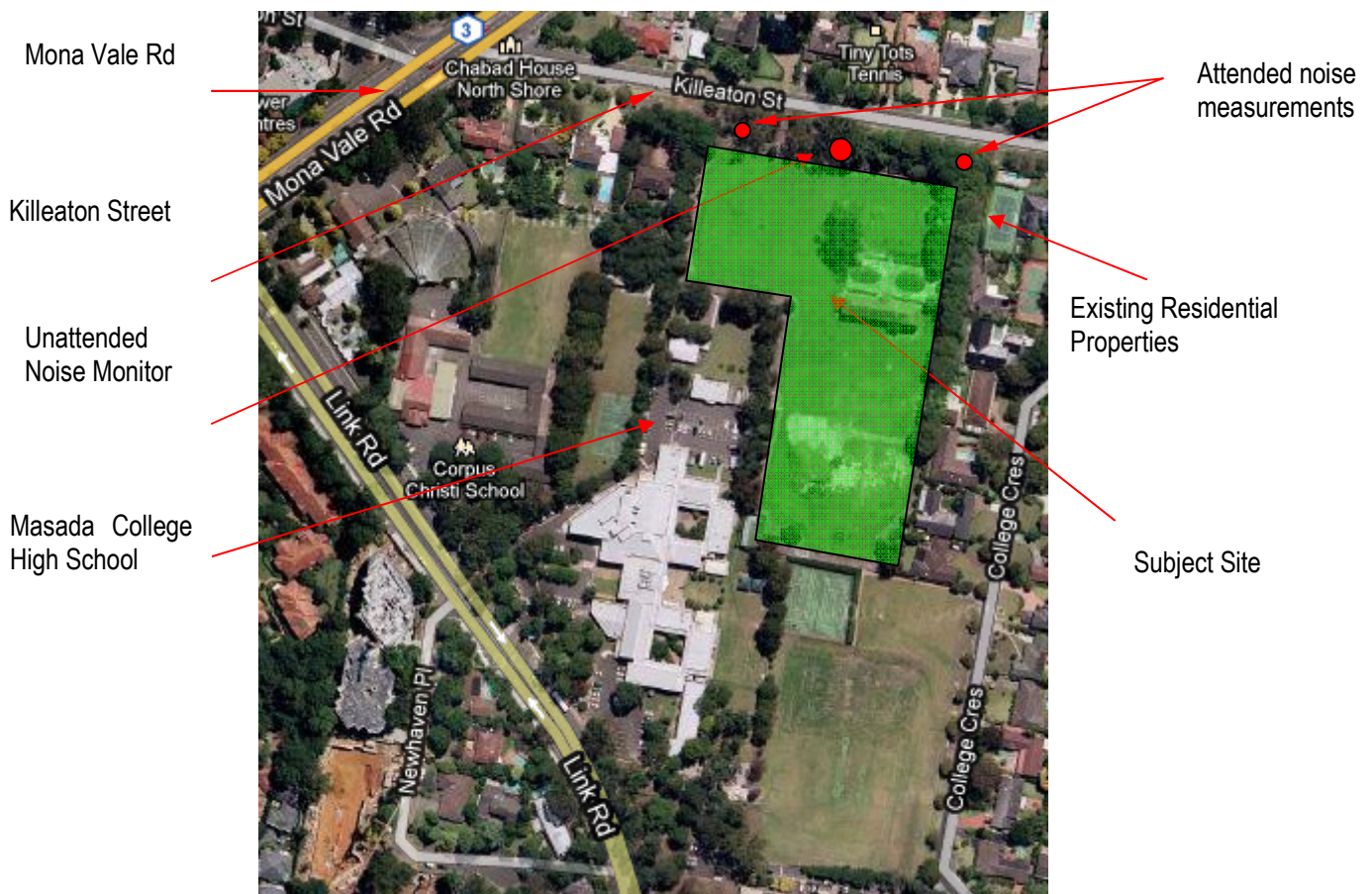


Figure 1: Site Map & Measurement Positions (Imaged sourced from Google)

3. TRAFFIC NOISE

3.1 ASSESSMENT CRITERIA

The Director General's Requirement number 4 for Application Number (MP 10_0057) states that:

"The EA must address solar access, acoustic privacy, visual privacy and view loss and identify mitigation measures necessary to achieve a high level of environmental and residential amenity."

Appendix A of the Director General's Requirements for Application Number (MP 10_0057) nominates the State Environmental Planning Policy (Infrastructure) 2007 as a policy that should be addressed as part of the assessment of the site. The State Environmental Planning Policy (Infrastructure) 2007 (the 'Infrastructure SEPP') presents internal noise criteria for developments with the potential to be impacted by traffic or rail noise and vibration.

The Infrastructure SEPP defines busy roads that are subject to an acoustic assessment as:

"Roads specified in Clause 102 of the Infrastructure SEPP: a freeway, tollway or a transitway or any other road with an average annual traffic (AADT) volume of more than 40,000 vehicles (based on the traffic volume data provided on the website of the RTA).

Any other road – with an average annual daily traffic (AADT) volume of more than 20,000 vehicles (based on the traffic volume data published on the website of the RTA).

Any other road – with a high level of truck movements or bus traffic."

The Infrastructure SEPP sets out the following criteria for internal noise levels from airborne rail and traffic noise:

"For Clauses 87 (Rail) and 102 (Road):

"If the development is for the purpose of a building for residential use, the consent authority must be satisfied that appropriate measures will be taken to ensure that the following LAeq levels are not exceeded:

in any bedroom in the building : 35dB(A) at any time 10pm–7am

anywhere else in the building (other than a garage, kitchen, bathroom or hallway): 40dB(A) at any time."

As the proposed development is not located directly adjacent to a roadway which carries more than 20,000 cars or a railway line, assessment with the SEPP requirements is not strictly required. Notwithstanding this assessment has been conducted to ensure internal noise levels comply with the requirements of the SEPP which are detailed in this section of the report.

It is noted that the requirements of the SEPP, which have been used as the basis of the internal noise assessment, will also result in compliance with the recommended internal noise levels within the Australind Standard AS2107:2000.

Pursuant to this, the following assessment criteria would apply to the proposed development for traffic noise intrusion.

Table 1 – Traffic & Train Noise Criteria for All Spaces

Space/Activity Type	Noise Level dB(A) L_{eq}
Bedrooms	35 (9 hour)
Living Areas	40 (15 hour)

3.2 NOISE DESCRIPTORS

Traffic noise constantly varies in level, due to fluctuations in traffic speed, vehicle types, road conditions and traffic densities. Accordingly, it is not possible to accurately determine prevailing traffic noise conditions by measuring a single, instantaneous noise level. To accurately determine the effects of traffic noise a 15-20 minute measurement interval is utilised. Over this period, noise levels are monitored on a continuous basis and statistical and integrating techniques are used to determine noise description parameters. These parameters are used to measure how much annoyance would be caused by a particular noise source.

In the case of environmental noise three principle 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 interval.

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 will depend 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 traffic noise.

Current practice favours the L_{eq} parameter as a means of measuring traffic noise, whereas the L_{10} parameter has been used in the past and is still incorporated in some codes. For the reasons outlined above, the L_{90} parameter is not used to assess traffic noise intrusion.

3.3 NOISE MONITORING

3.3.1 Unattended long term noise monitoring

Unattended ambient noise level measurements were conducted in the location shown in Figure 1 above and are provided in Appendix 1. Inspection on site indicated that the main environmental noises at the site are that of transportation noise associated with the Killeaton St and Mona Vale Rd.

Unattended noise monitoring was conducted using an Acoustic Research Laboratories Pty Ltd noise monitor. The monitor was programmed to store 15-minute statistical noise levels throughout the monitoring period. The noise monitors were calibrated at the beginning and the end of the measurement using a Rion NC-73 calibrator; no significant drift was detected. Measurements were taken on A-frequency weighting and fast time weighting.

Unattended noise monitoring was conducted on street level at the north of the property approximately 10m from the roadside of Killeaton St. The monitoring period was conducted between June 18 and June 23 2010.

The unattended noise monitoring graphs are provided in Appendix 1.

3.3.2 Attended noise monitoring

Attended monitoring was conducted at the positions nominated in Figure 1 in order to obtain a traffic noise spectrum for the purposes of assessment. Noise measurements were obtained using a Norsonic 140 Sound Level Analyser, set to A-weighted fast response. The sound level meter was calibrated before and after the measurements using a Norsonic 1251 Sound Level Calibrator. No significant drift was recorded. Attended measurements were conducted on 18 June 2010.

The table below presents the measured noise levels.

Table 2 - Measured Noise Levels

Location	Time	dB(A) $L_{Aeq}(\text{Period})$
132 -138 Killeaton Street, St Ives	Day (7am to 10pm)	57 dB(A) $L_{Aeq}(15 \text{ hour})$
	Night (10pm to 7am)	52 dB(A) $L_{Aeq}(9 \text{ hour})$

3.4 EVALUATION OF NOISE INTRUSION

Noise intrusion into the residential units was assessed using the predicted external noise levels determined in Section 3.3 as the basis. Calculations were performed taking into account the orientation of windows, barrier effects (where applicable), the total area of glazing, facade transmission loss and room sound absorption characteristics. In this way the likely interior noise levels can be predicted.

Table 3 indicates the glazing types that will be required to achieve the recommended internal noise levels. It is noted that the façade is proposed to be of masonry construction and as such will not require upgrading. Where light weight roofing is used upgraded ceiling construction will be required.

Table 3 – Glazing Requirements

Block	Room	Level	Glazing requirements	Acoustic Seals
A, B and C	Bedrooms	Ground, 1, 2 and 3	4mm float / toughened	Yes
	Bedrooms	4	6mm float / toughened	Yes
	Living	Ground, 1, 2 and 3	4mm float / toughened	Yes
	Living	4	6mm float / toughened	Yes
D and E	Bedrooms	All	4mm float / toughened	Yes
	Living	All	4mm float / toughened	Yes

In addition to complying with the minimum scheduled glazing thickness, the STC rating of the glazing fitted into openable frames and fixed into the building opening should not be lower than the values listed in Table 4 for all rooms. Where nominated, this will require the use of acoustic seals around the full perimeter of openable frames and the frame will need to be sealed into the building opening using a flexible sealant. **Mohair seals in windows and doors are not acceptable where acoustic seals are required.** Where acoustic seals are required, then seals shall be equal to Schlegel Q-Ion.

Table 3 – Minimum STC of Glazing (with Acoustic Seals)

Glazing Assembly	Minimum STC of Installed Window
4mm float	27
6mm float	29

3.4.1 Roof/ ceiling constructions

The roof consists of a concrete slab with insulation underneath and will not require any upgrading to meet internal acoustic objectives.

3.4.2 Walls

External walls consist of heavy masonry elements and will not require upgrading in order to achieve the internal noise level objectives.

4. CONCLUSION

This report presents an assessment of potential environmental noise impact from the proposed residential development at 132-138 Killeaton Street, St Ives. Assessment included:

- Potential noise impact associated with the surrounding streets.
- Noise emanating from plant and equipment. Noise from proposed plant and equipment associated with the development has not been assessed as a detailed plant design on which to base an assessment is not available. For this reason noise limits should comply with Council requirements and be tested when constructed.

Potential noise impact from these sources was conducted. Provided the recommendations in the report are implemented then potential adverse impact will be ameliorated and as such the development will be acceptable acoustically.

Report prepared by

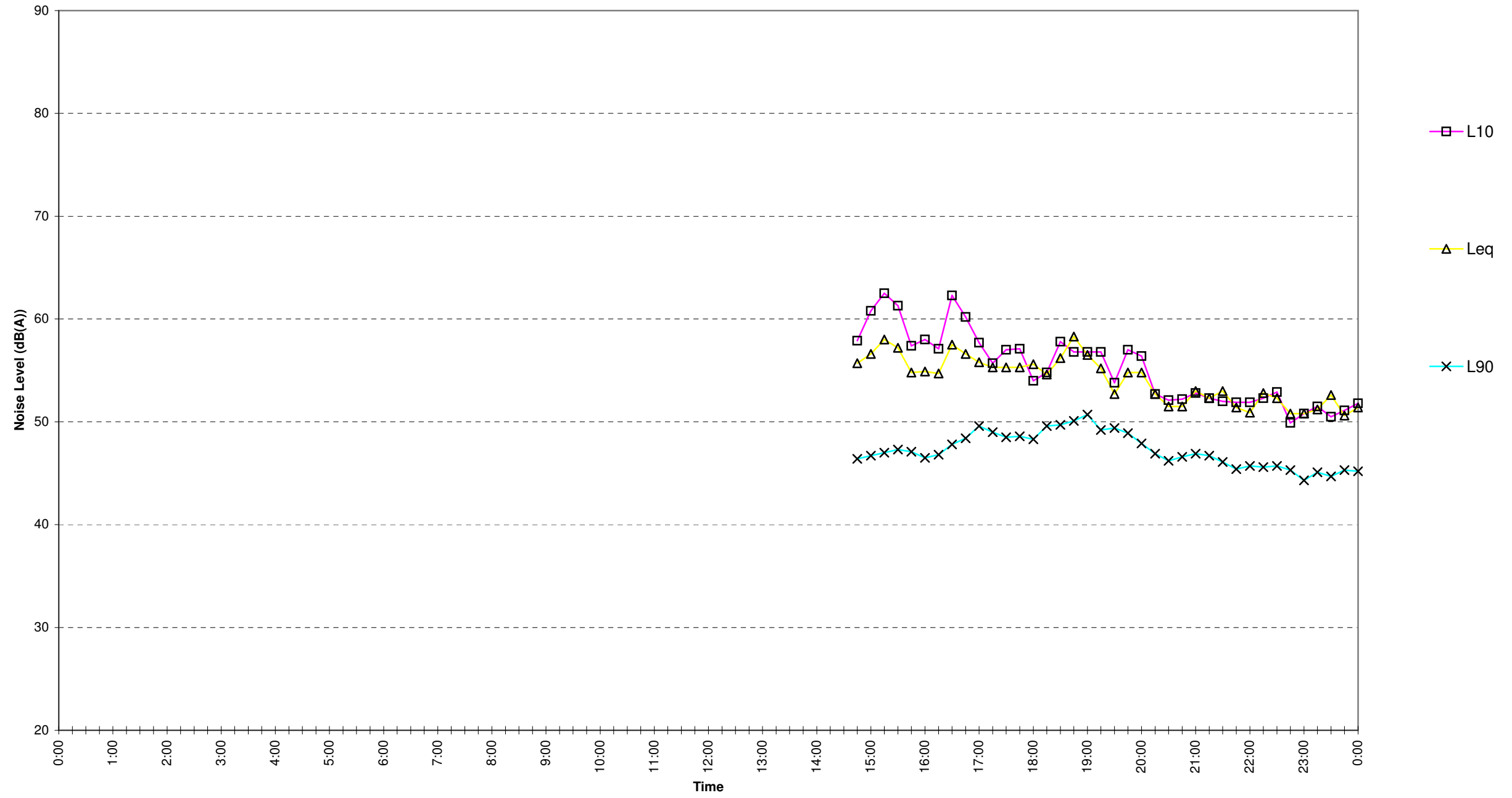


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Katherine Stewart

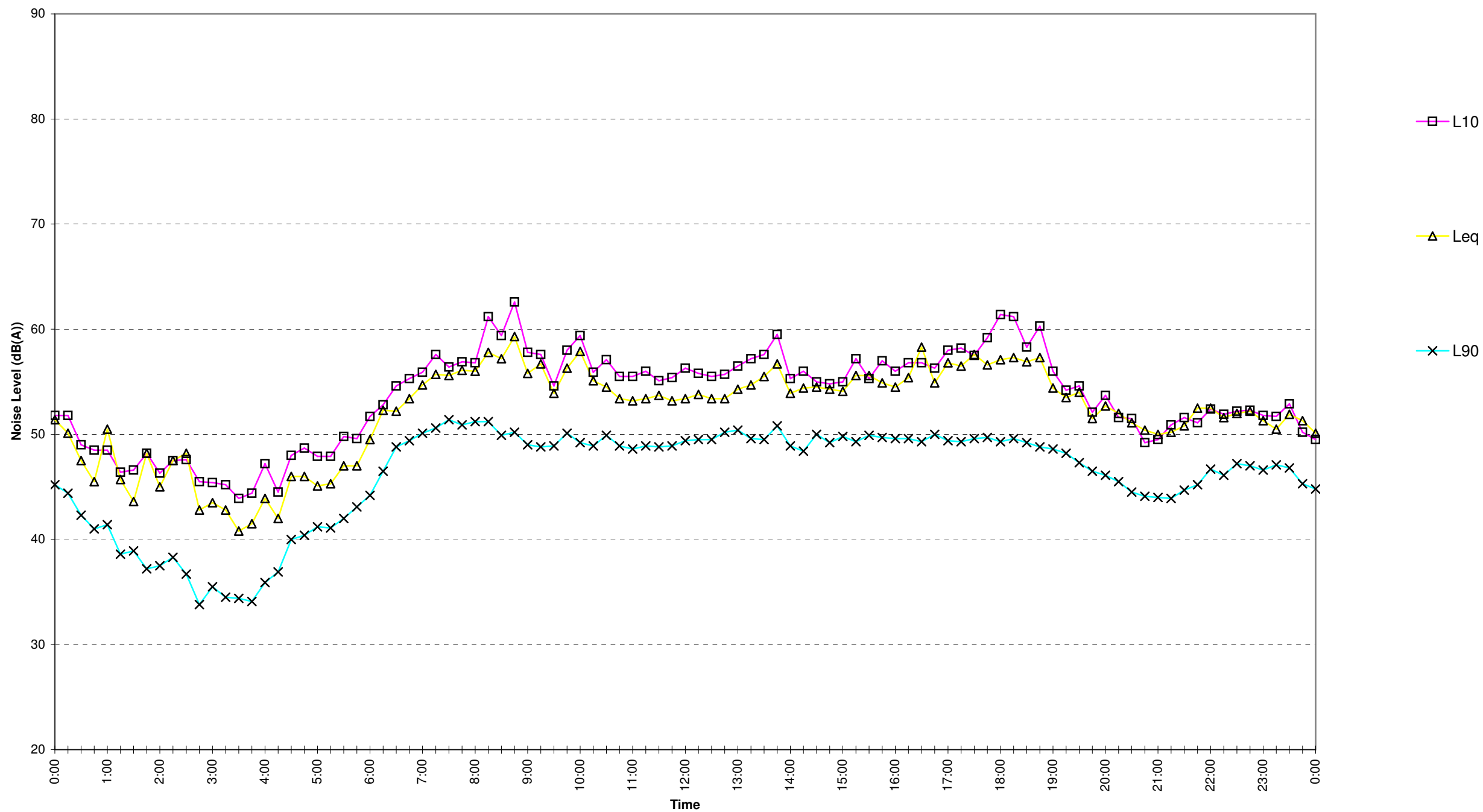
APPENDIX 1

UNATTENDED NOISE LEVELS

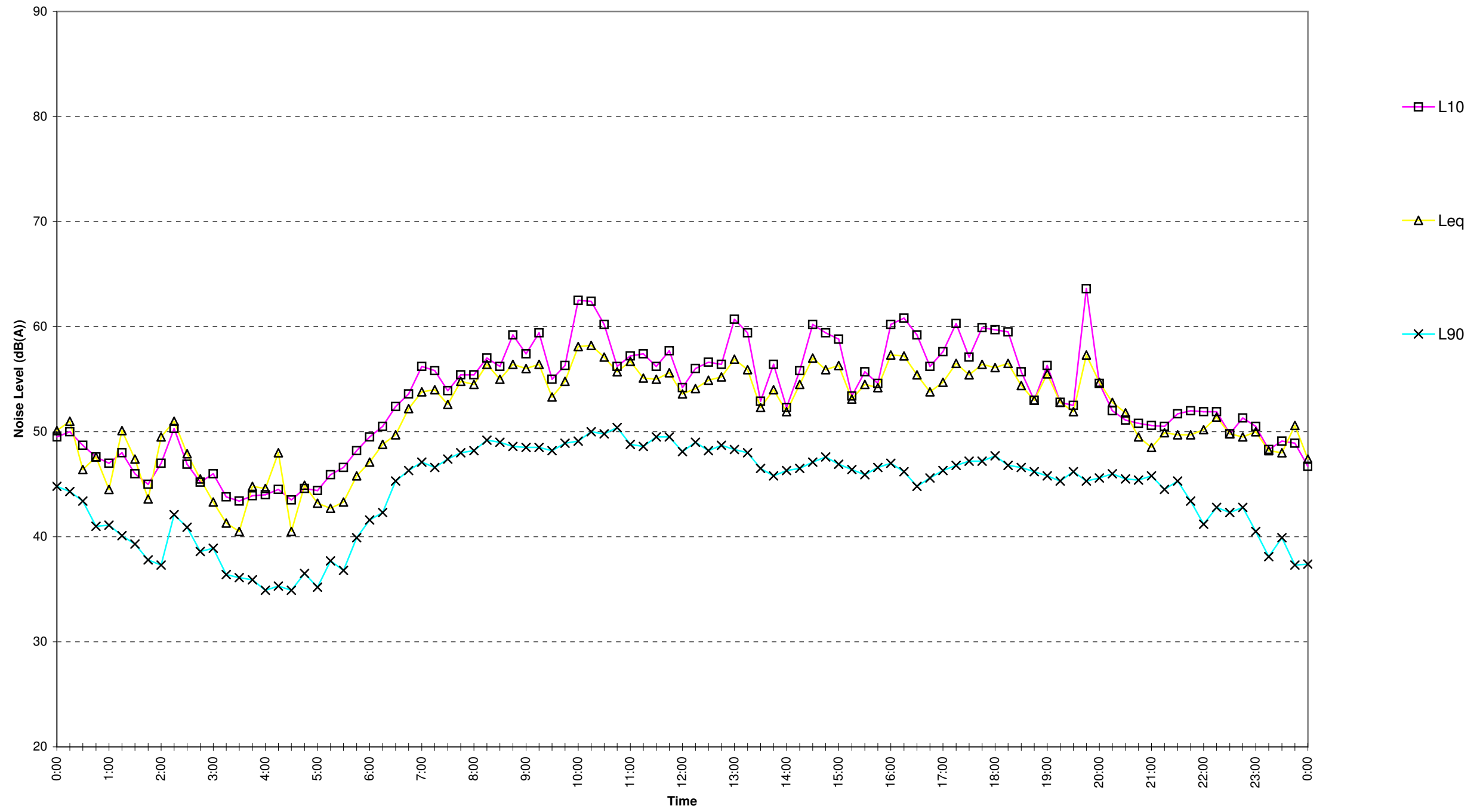
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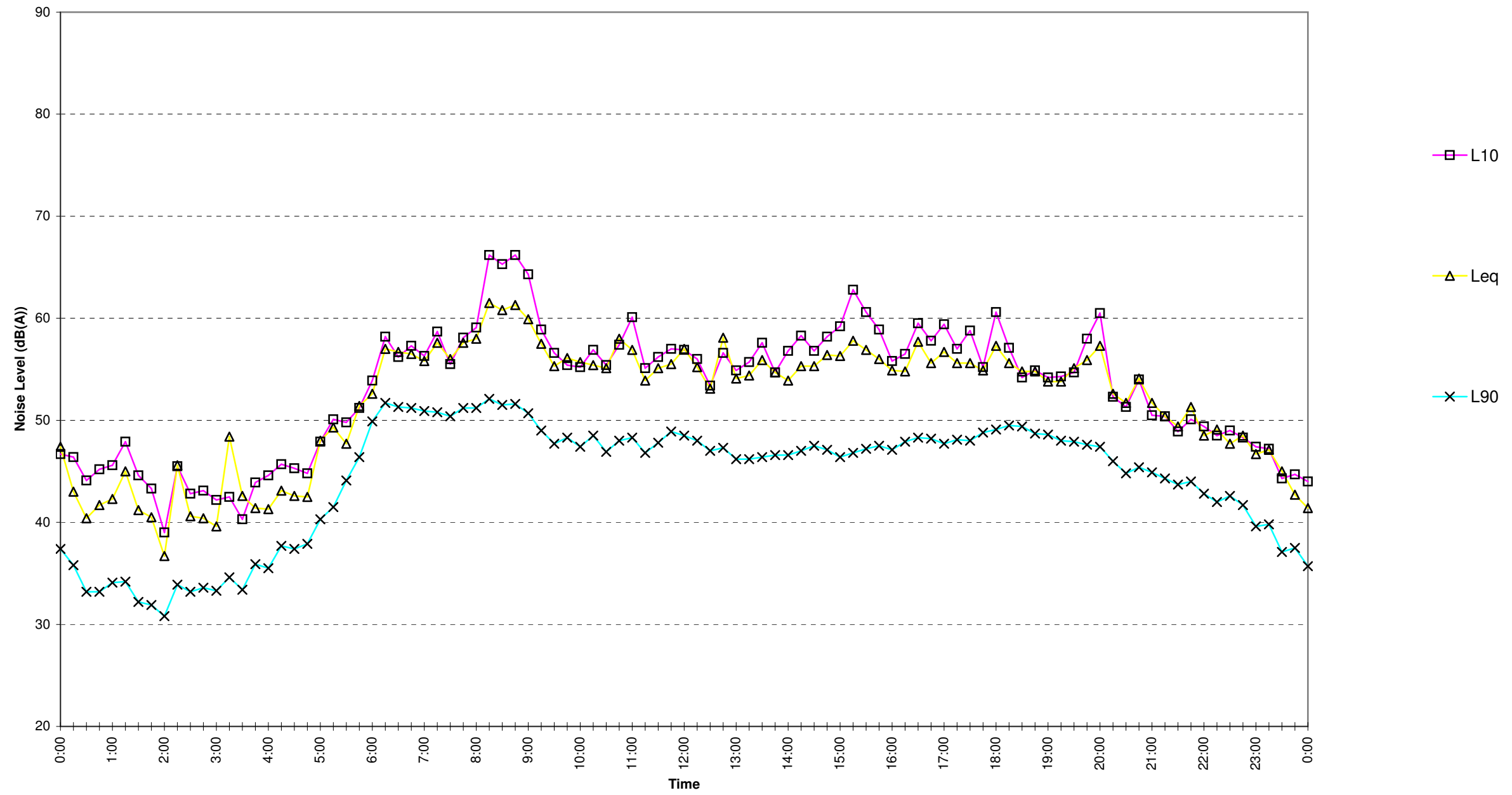
St. Ives
Saturday June 19, 2010



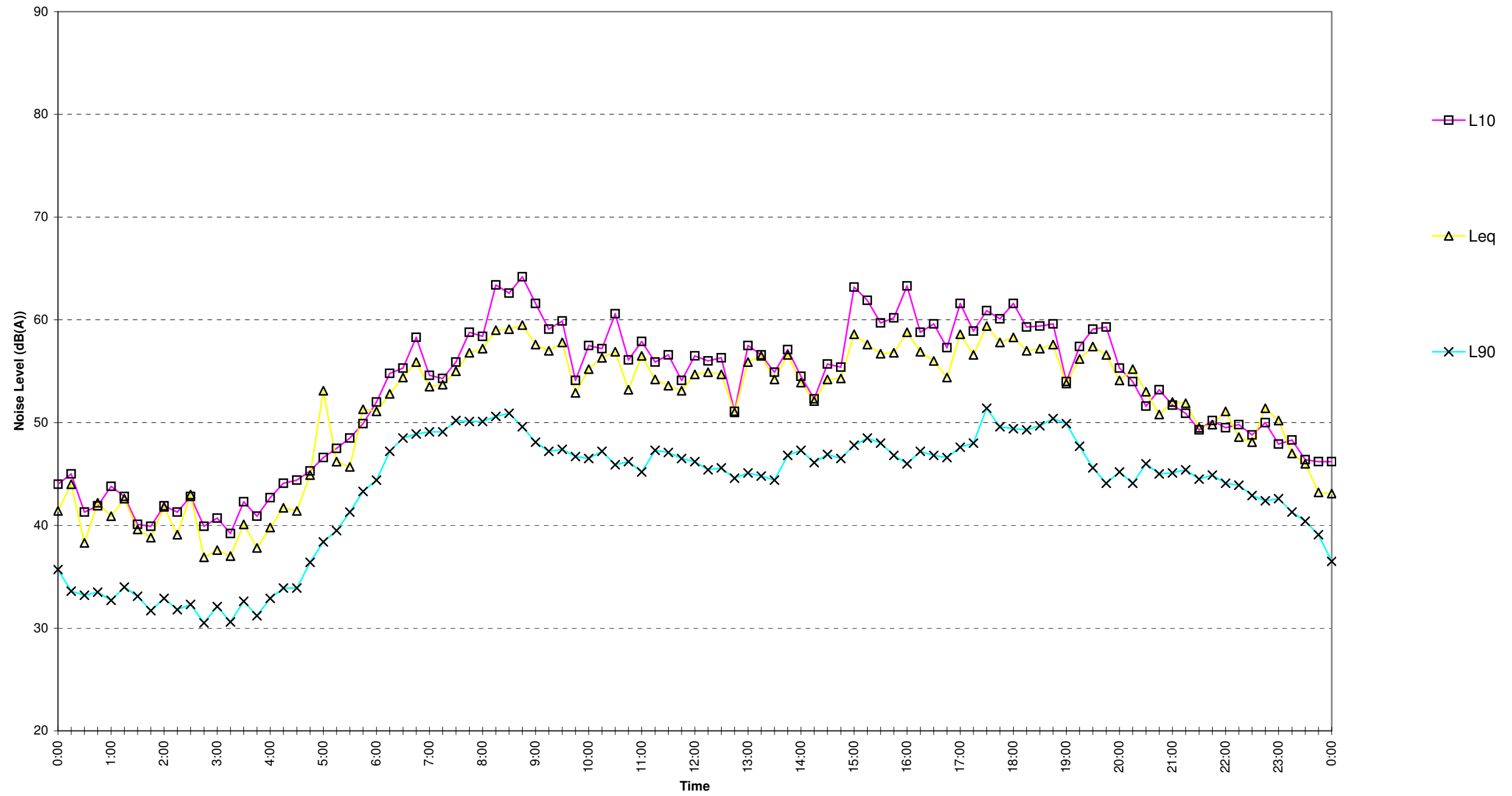
St. Ives
Sunday June 20, 2010



St. Ives
Monday June 21, 2010



St. Ives
Tuesday June 22, 2010



St. Ives
Wednesday June 23, 2010

