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61 Mobbs Lane, Epping Park - Stage 3

Traffic Noise Intrusion Assessment

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1 INTRODUCTION

This report presents an analysis of acoustic impacts associated with Stage 3 of the residential development to be located at 61 Mobbs Lane, Epping Park.

In this report we will conduct an external noise impact assessment (primarily traffic noise) and recommend acoustic treatments to ensure that a reasonable level of amenity is achieved for future tenants.

This report has been prepared to address requirement 5 of the Director Generals Requirements.

2 SITE DESCRIPTION / PROPOSED DEVELOPMENT

The subject site is located at 61 Mobbs Lane, Epping Park.

Stage 3 is located within the centre of the Epping Park site and consists of five buildings with a total of 323 apartments.

Stage 3 is bounded to the north-northeast by the Ryde TAFE Epping Annex. East of Stage 3 is bounded by future Epping Park development; to the west is an undeveloped area of the Epping Park site which is generally occupied by landscaped grasslands. To the south of Stage 3 lies Mobbs Lane which carries medium volumes of traffic and mainly acts as a conduit for traffic exiting Marsden Road and accessing local streets and residences.

Figures 1 below details the existing site and proposed development.

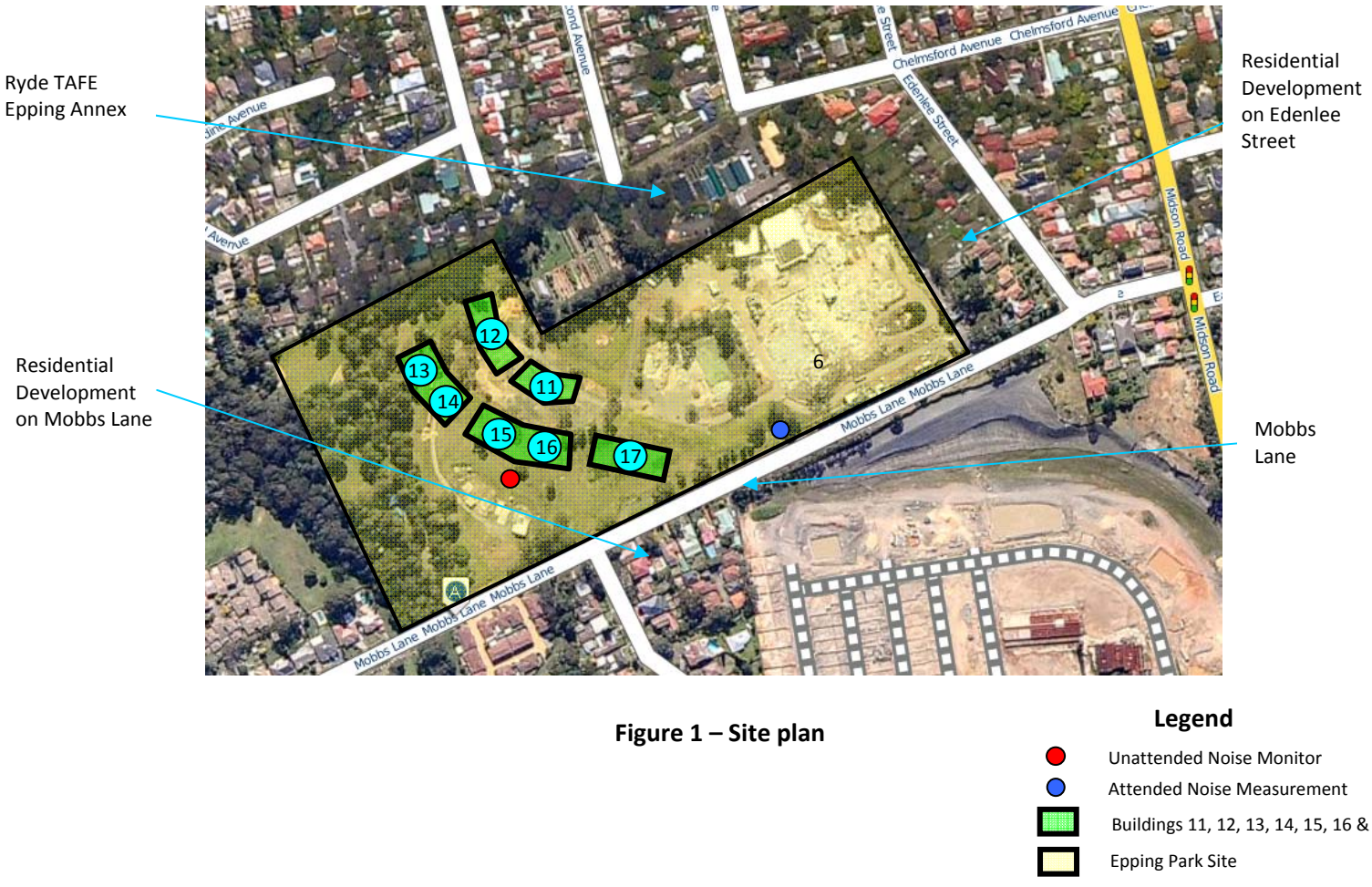


Figure 1 – Site plan

3 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.

4 NOISE IMPACT ASSESSMENT

The only significant source of noise for potential impact to Stage 3 is Mobbs Lane, on the southern Epping Park property boundary, which carries medium to low traffic volumes.

Noise impacts should comply with the Director General requirements for the site.

4.1 NOISE MEASUREMENTS

Measurement of external noise was conducted using long term monitoring and short term, hand held measurements.

Long term monitoring was conducted using a noise monitor installed on site as shown in Figure 1. Monitoring conducted from 7 to 11 October 2010 using an Acoustic Research Laboratories noise monitor set to A-weighted fast response. The monitor was calibrated at the start and end of the monitoring period using a Rion NC-73 calibrator. No significant drift was noted. Noise logger data is provided in Appendix 1.

Short term noise measurements were conducted on 20 October 2010 at a distance of 6m from Mobbs Lane to supplement the long term monitoring. The unattended noise monitor data has been used to determine the difference between the day and night level.

Table 1 - Measured Noise Levels

Location	Daytime Noise Level $dB(A)L_{eq}$ (15 hours)	Night Time Noise Level $dB(A)L_{eq,}$ (9 hour)
6m from Mobbs Lane	64	57

4.2 ACOUSTIC OBJECTIVES

Director General Requirement 5 for Stage 3 states:

> *"The EA must address solar access, acoustic privacy, visual privacy, view loss and achieve a high level of environmental and residential amenity. In this regard, the EA should consider appropriate separation distances to any adjacent residential buildings."*

Director General Requirements for Stage One of the same development stipulate that the recommended noise levels presented in Australian Standard 2107:2000 "*Recommended design sound levels and reverberation times for building interiors*" must be achieved within the residential areas of the development. These criteria have been adopted for the Stage 3 development.

The following table presents the recommended internal noise levels for different areas of occupancy within residential buildings adjacent to minor roads.

Table 2 – Internal Noise Goals

Area of Occupancy	Time Period	Internal Noise Goals dB(A) L_{eq}
Bedroom	10pm – 7am	35dB(A) $L_{eq\ (9\ hour)}$
Living Room	24 hours	40dB(A) $L_{eq\ (15\ hour)}$
Work Areas	24 hours	40dB(A) $L_{eq\ (15hour)}$

4.3 RECOMMENDATIONS

Noise intrusion into the residential units was assessed using the measured external noise levels reported above as the basis. Recommendations have been determined taking into account the orientation of windows, barrier effects (where applicable), the total area of glazing, facade transmission loss and room sound absorption characteristics.

Recommended treatments are set out below.

4.3.1 Glazing

The table below indicates the glazing types that will be required to achieve the recommended internal noise levels. The Table below accounts for Building 11, 12, 13, 14, 15, 16 & 17 of the development.

Table 3 – Glazing Requirements

Level	Facade	Room Type	Glass Areas per Room	Glazing	Acoustic Seals
All	All	Bedroom	≥3m^2	6mm float	Yes
All	All	Bedroom	≤3m^2	4mm float	Yes
All	All	Living Room	All	6mm float	Yes

The glazing thicknesses recommended are those needed to satisfy acoustic requirements and do not take into account other requirements such as thermal, structural, safety or other considerations. These additional considerations may require the glazing thickness to be increased beyond the acoustic requirement.

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. Note that mohair seals in windows and doors are not acceptable where acoustic seals are required.

Table 4 – Minimum STC of Glazing

Glazing Assembly	Acoustic Seals	Minimum STC of Installed Window
4mm	Yes	27
6mm	Yes	30

4.3.2 Walls

Noise intrusion through the external masonry walls will be negligible and will not contribute to internal noise levels. Similarly, noise intrusion through the concrete slab roof construction will not be significant.

4.3.3 Ventilation

Internal noise levels complying with acoustic criteria will be achieved only when windows and sliding doors to the apartments are closed. A complying noise level will not be achieved when they are open. Mechanical engineer should confirm if any supplemental fresh air is required to ensure compliance with ventilation requirements is achieved.

5 CONCLUSION

An assessment of noise intrusion to the proposed Stage 3 of the Epping Park development located at 61 Mobbs Lane has been conducted in accordance with Director General Requirement 5 for the site.

Provided the treatments set out in Section 4 of this report are adopted, noise intrusion will be in compliance with the stipulated noise objectives.

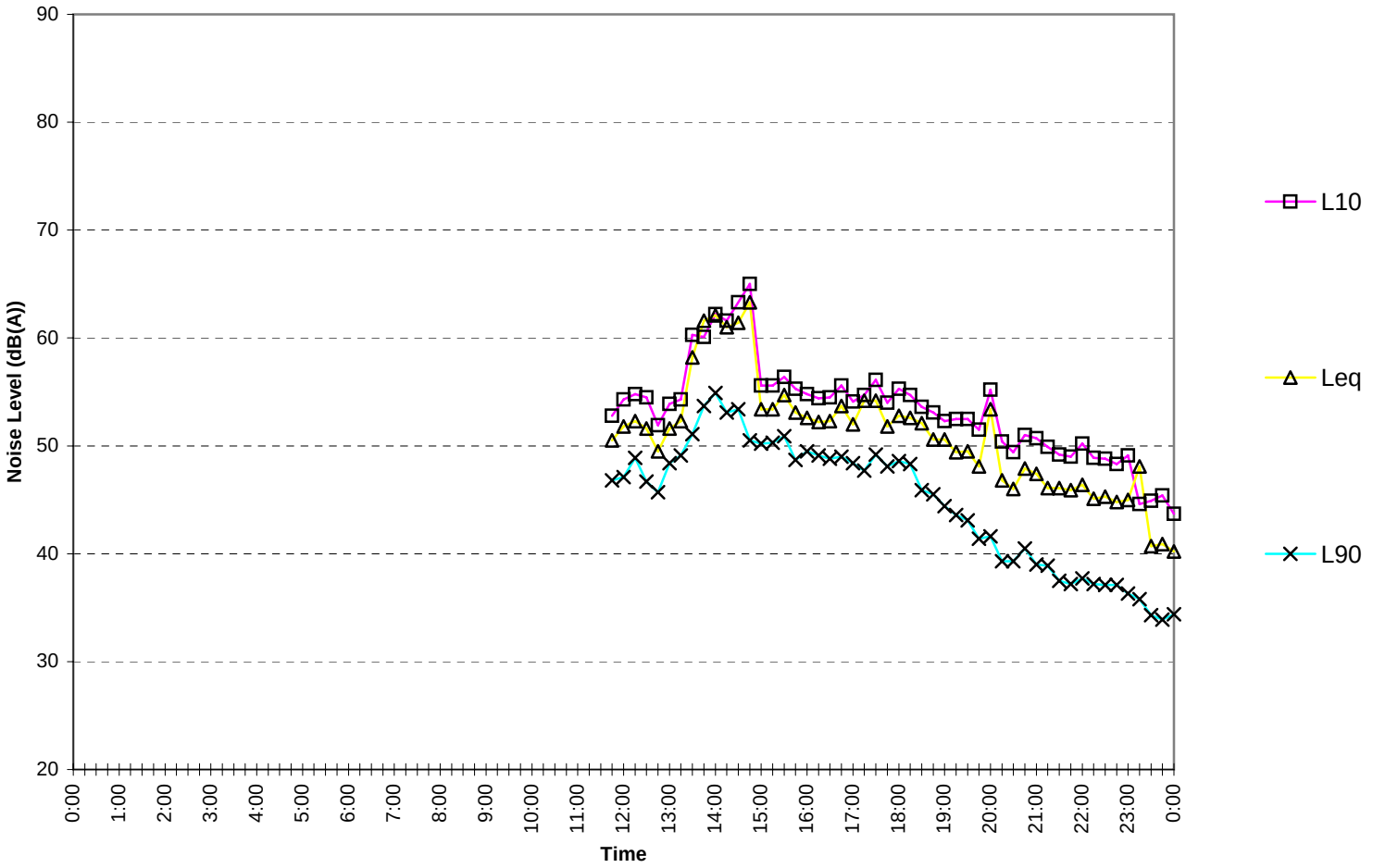
Report prepared by

ACOUSTIC LOGIC CONSULTANCY PTY LTD
Tom Aubusson

Appendix One -
Unattended Noise Monitoring Results

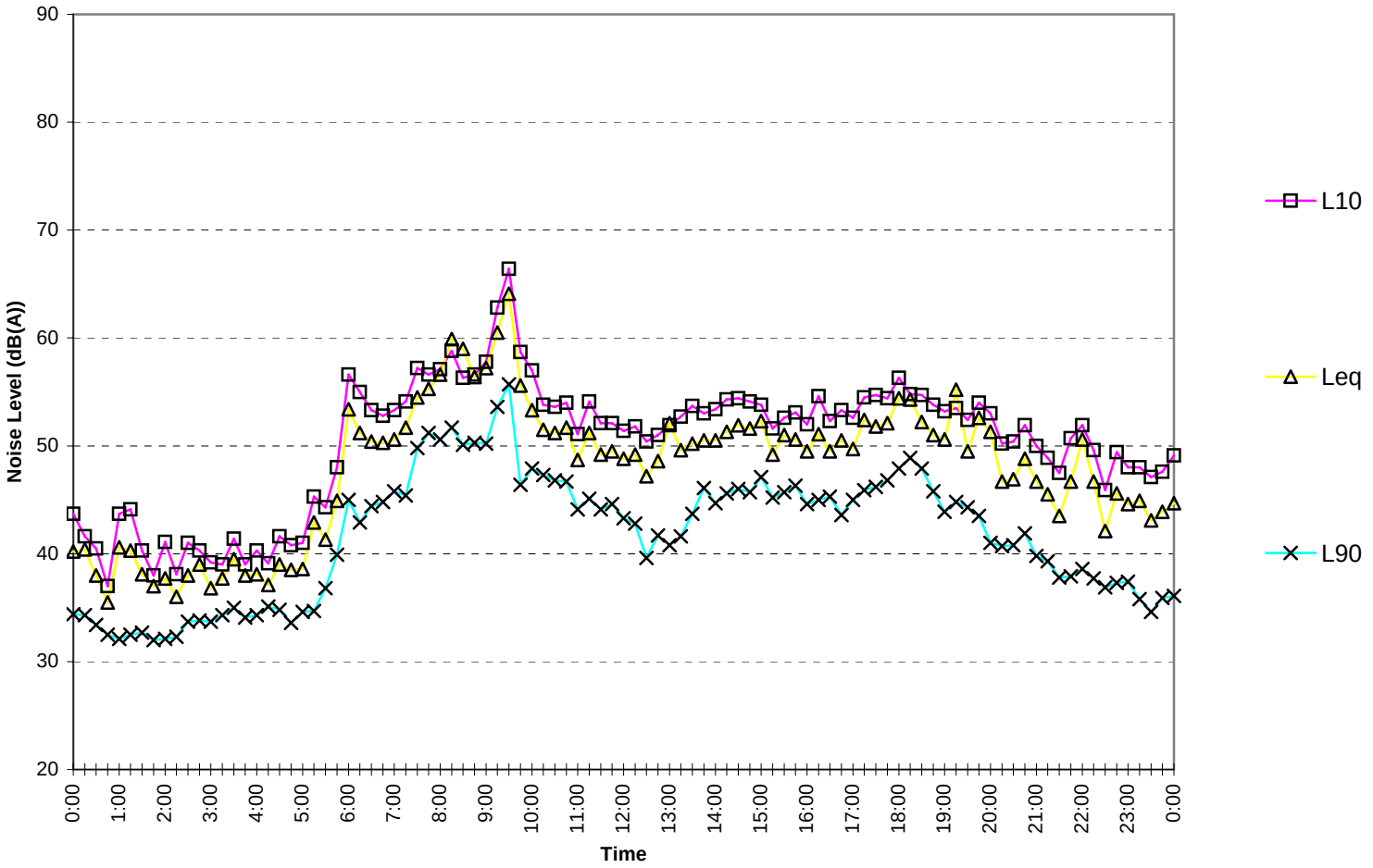
Epping

Thursday October 7,2010



Epping

Friday October 8,2010



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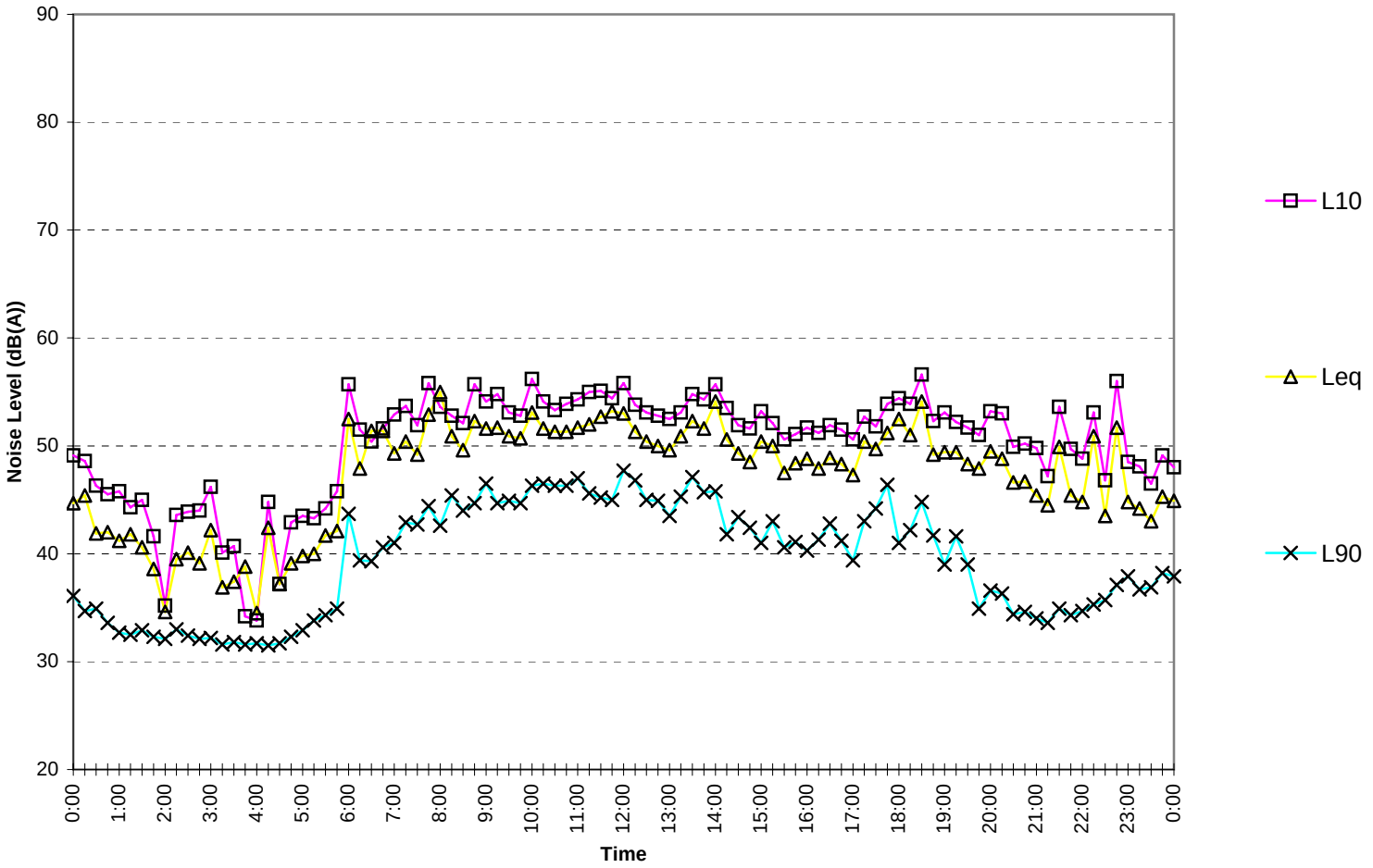

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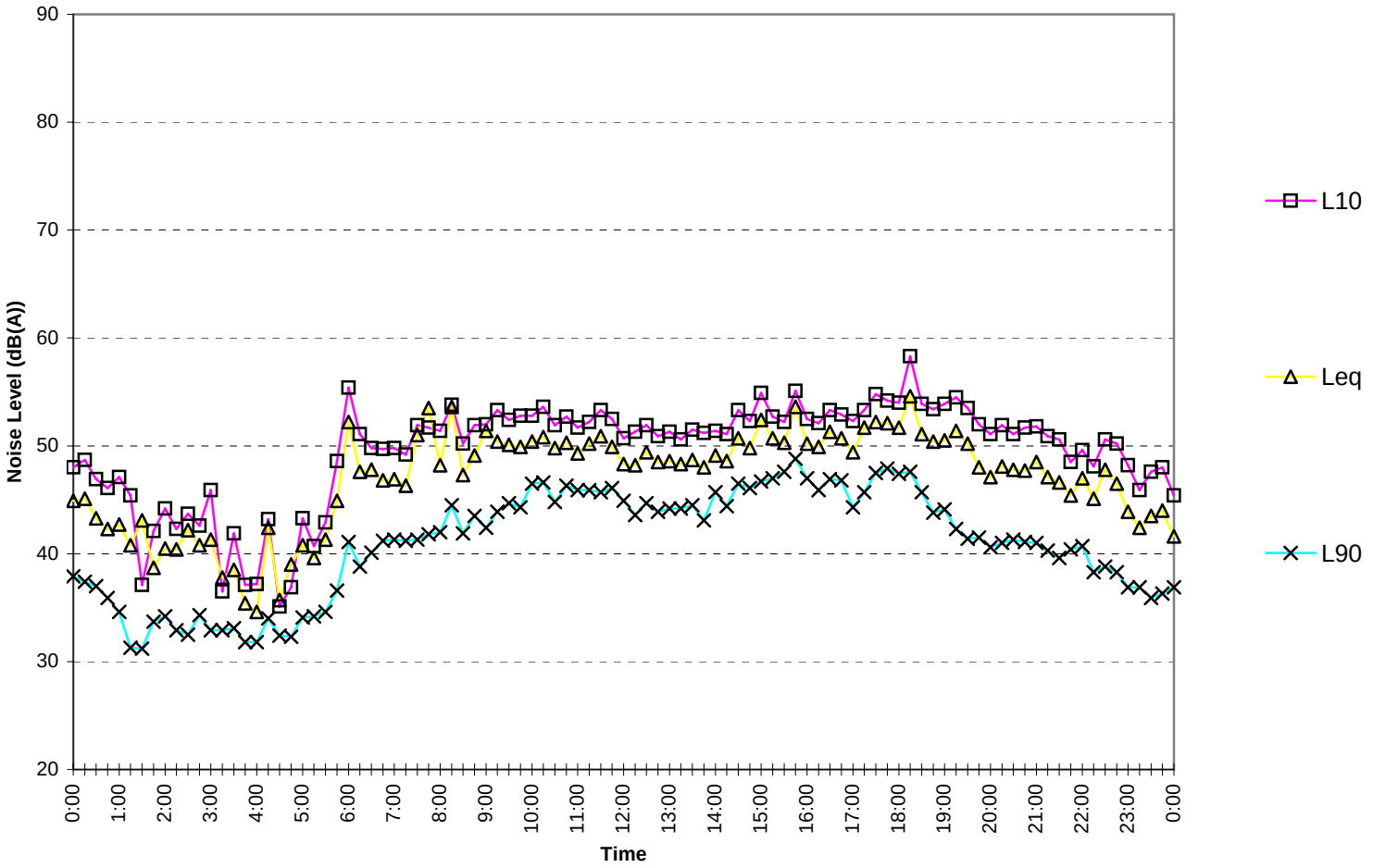

Epping

Monday October 11,2010