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Stage 2 - Epping Park

Noise Impact Assessment

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1 INTRODUCTION

This report presents an analysis of acoustic impacts associated with Stage 2 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.

- Identify potential noise sources generated by the site, and determine noise emission goals for the development to meet Director General and Parramatta City Council acoustic requirements to ensure that nearby developments are not adversely impacted.

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 2 is located within the centre of the Epping Park site and consists of four buildings:

- Building 6 lies within the centre of the site and comprises 76 apartments
- Building 9 is situated on the northern portion of the site, adjacent to the Ryde TAFE Epping Annex and consists of 68 apartments.
- Building 10 and 17 are the two smaller buildings contained within the centre of the site and comprising 42 and 35 apartments, respectively.

Stage 2 is bounded to the north-northwest by the Ryde TAFE Epping Annex. Both the east and west of Stage 2 is bounded by future Epping Park development. Further to the south 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 and 2 below details the existing site and proposed development.

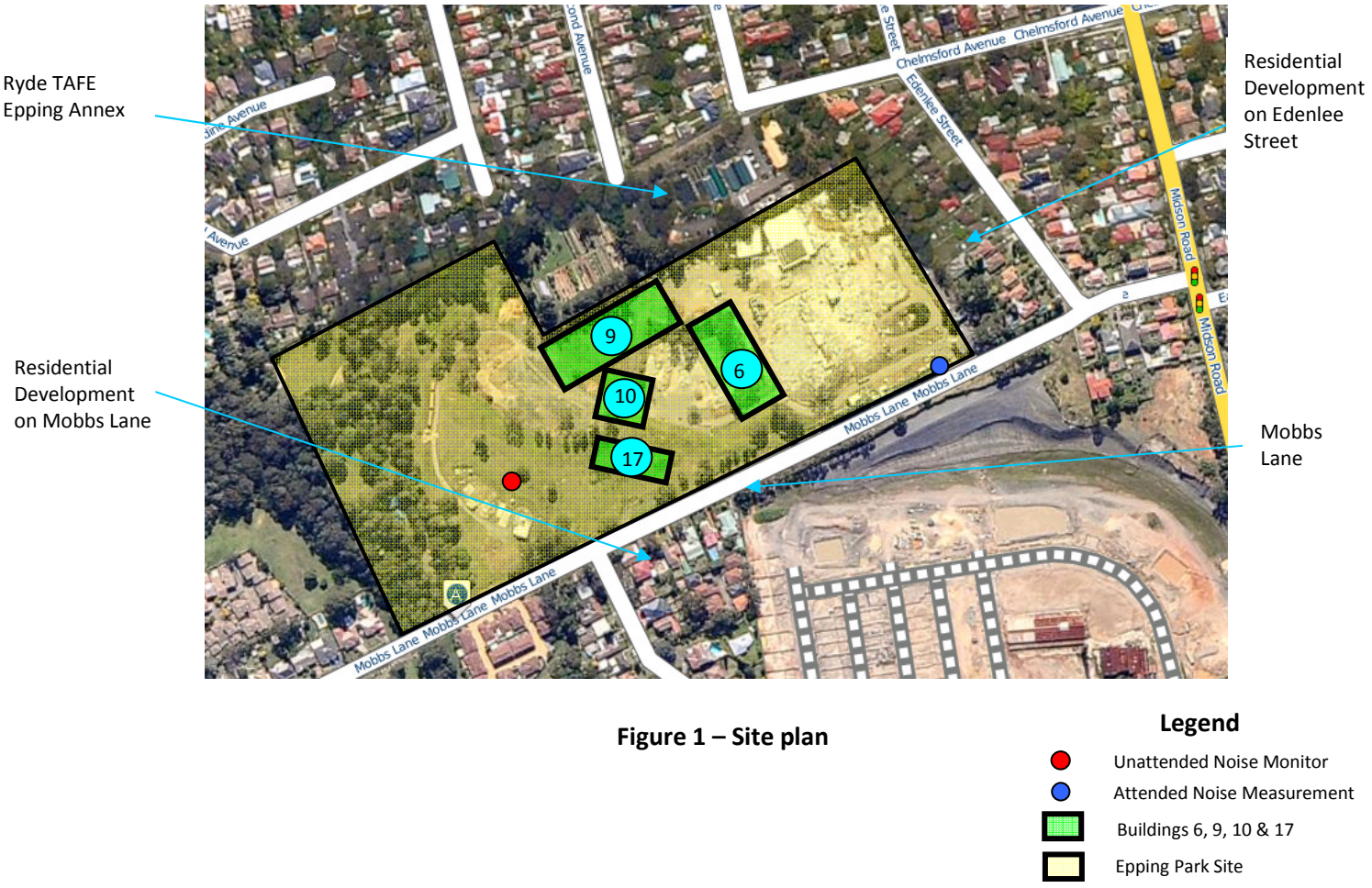


Figure 1 – Site plan

Figure 2 – Proposed Development

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 2 is Mobbs Lane, on the southern Epping Park property boundary, which carries medium traffic flows.

Noise impacts should comply with the Director General and Parramatta City Council Requirements.

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 Requirements for the site stipulate that the areas within the development must be assessed for acoustic privacy. As Buildings 4 and 5 of this same development are stipulated by Director General Requirements to comply the recommended noise levels presented in Australian Standard 2107:2000 "*Recommended design sound levels and reverberation times for building interiors*", the same shall be criteria will be applied to buildings in Stage 2.

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 6, 9, 10 & 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. Fresh air to apartments or air-conditioning to be installed as per mechanical engineers requirements.

5 NOISE EMISSION ASSESSMENT

Noise emissions from the site should be assessed to ensure that the amenity of nearby land users is not adversely affected.

The only potential noise emission source associated with Stage 2 is mechanical plant. The nearest potentially effected residential receivers are the residential houses located to the south of the site and to a lesser extent, the Ryde TAFE Epping Annex to the north-northwest of the site.

5.1 BACKGROUND NOISE MONITORING

Unattended noise monitoring was conducted between 7 and 11 October 2010 using an Acoustic Research Laboratories monitor set on A-weighted fast response mode. The monitor was calibrated before and after the measurements using a Rion Type NC-73 calibrator. No significant drift was recorded.

Measured background noise levels are presented below. Refer to Appendix 1 for unattended noise monitoring data.

Table 5 – Measured Background Noise Levels – dB(A)L_{90}

Daytime (7am-6pm)	Evening (6pm-10pm)	Night (10pm-7am)
43	38	32

5.2 ACOUSTIC OBJECTIVES

5.2.1 Parramatta Council

Parramatta City Council generally states that noise emissions from mechanical items not exceed 5dB(A) above the background level at the property boundary of the site.

5.2.2 DECCW Industrial Noise Policy

In addition to this, noise emission criteria have also been adopted from the Department of Environment, Climate Change and Water (DECCW) NSW Industrial Noise Policy for residential receivers.

The DECCW NSW Industrial Noise Policy provides guidelines for the assessment of noise impacts from different premises. The recommended assessment objectives vary depending on the nearest potentially affected receivers, the time of day and the type of noise source. The DECCW NSW Industrial Noise Policy has two requirements that must both be satisfied; that is, an intrusiveness criterion and an amenity criterion.

5.2.2.1 Intrusiveness Criterion

The guideline is intended to limit the audibility of noise emissions, and requires that noise emissions measured using the L_{eq} descriptor not exceed the existing background noise level by more than 5 dB(A) Where applicable, the intrusive noise level should be penalised *(increased)* to account for any annoying characteristics such as tonality.

5.2.3 Amenity Criterion

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

The DECC NSW Industrial Noise Policy sets out acceptable noise levels for various localities. Table 2.1 titled *"Amenity Criteria"* on page 16 of the Policy designates four categories to distinguish different residential areas. They are rural, suburban, urban and urban/industrial interface. The DECC NSW Industrial Noise Policy also includes recommended noise levels for other land uses such as commercial and industrial premises. The DECC NSW Industrial Noise Policy states that residential receivers such as those neighbouring the proposed development, by virtue of their location and surroundings are classified such that the suburban amenity criterion is applied.

5.2.4 Summary of Noise Emission Goals

Table 6 presents the summary of the applicable assessment criteria to the nearest potentially affected residential receivers and the Ryde TAFE Epping Annex. The residential receiver type utilised against the indicative noise amenity area is defined by the suburban criteria.

Table 6 - Noise Emission Requirements

Receiver Type	Time of Day	Parramatta Council and DECCW Intrusiveness Noise Objective dB(A)$L_{eq(15min)}$	Amenity Noise Objective dB(A)$L_{eq(Lt)}$
Residential	Day	48	55
	Evening	43	45
	Night	37	40
Commercial	When in use	N/A	65

5.3 RECOMMENDATIONS

Mechanical plant items are not typically selected at selected at DA stage.

Detailed review of all external mechanical plant should be undertaken at construction certificate stage (once plant selections and locations are finalised). Acoustic treatments should be determined in order to control plant noise emissions to the levels set out in section 5.2 of this report.

All plant can be satisfactorily attenuated to levels complying with noise emission criteria through appropriate location and (if necessary) standard acoustic treatments such as noise screens, enclosures, in-duct treatments (silencers/lined ducting) or similar.

6 CONCLUSION

Potential noise impacts from proposed Stage 2 of the Epping Park development located at 61 Mobbs Lane, Epping have been assessed.

Noise impacts from nearby noise sources (primarily traffic noise) on occupants of the development have been assessed in accordance with Director General Requirement 5 and Council guidelines. The acoustic treatments necessary to achieve these guidelines have been set out in section 4.

Noise emissions objectives for the site have been determined based on on-site noise logging and noise emission guidelines typically adopted by Council, and have been presented in section 5.

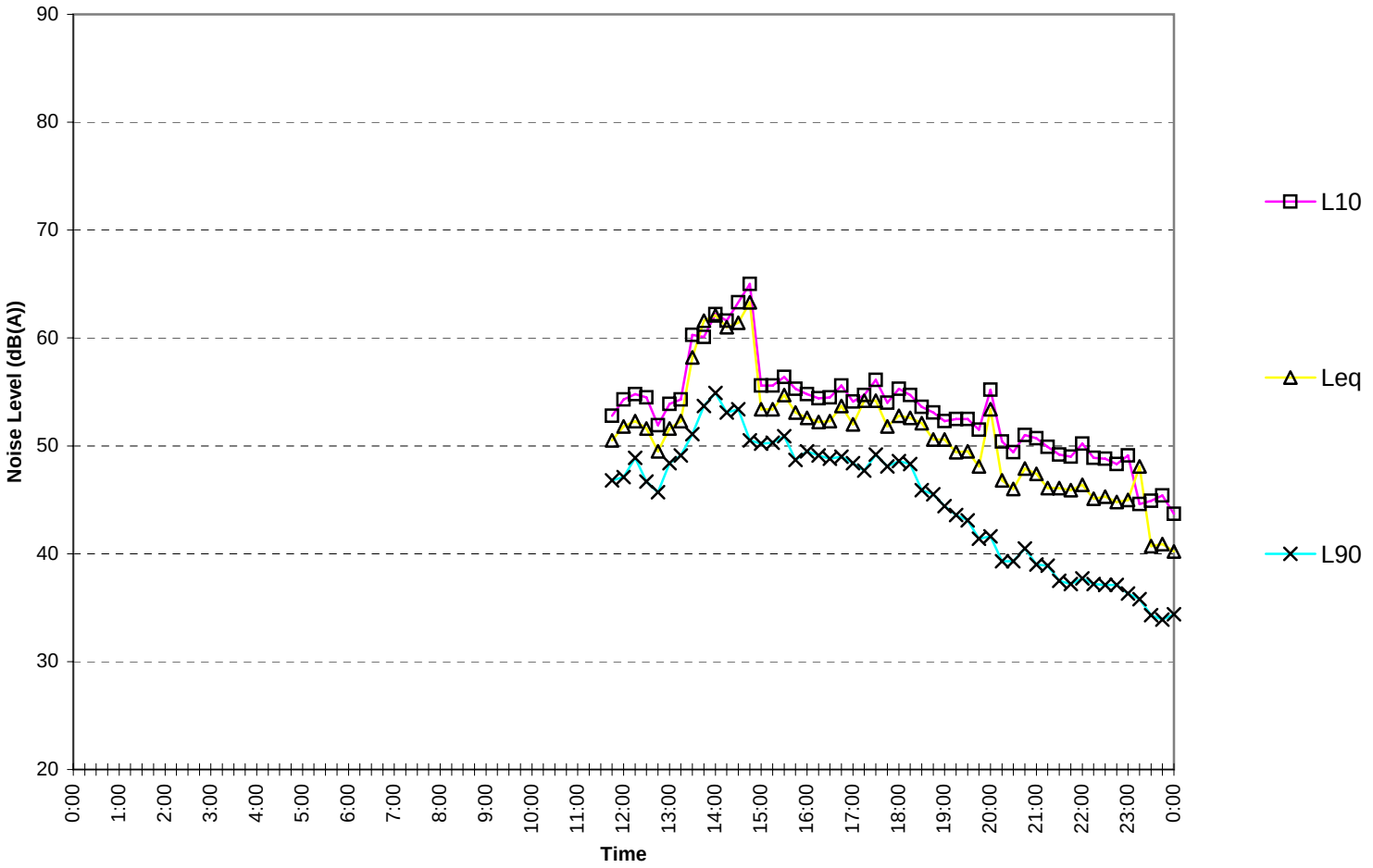
Report prepared by

ACOUSTIC LOGIC CONSULTANCY PTY LTD
Tom Aubusson

Appendix One -
Unattended Noise Monitoring Results

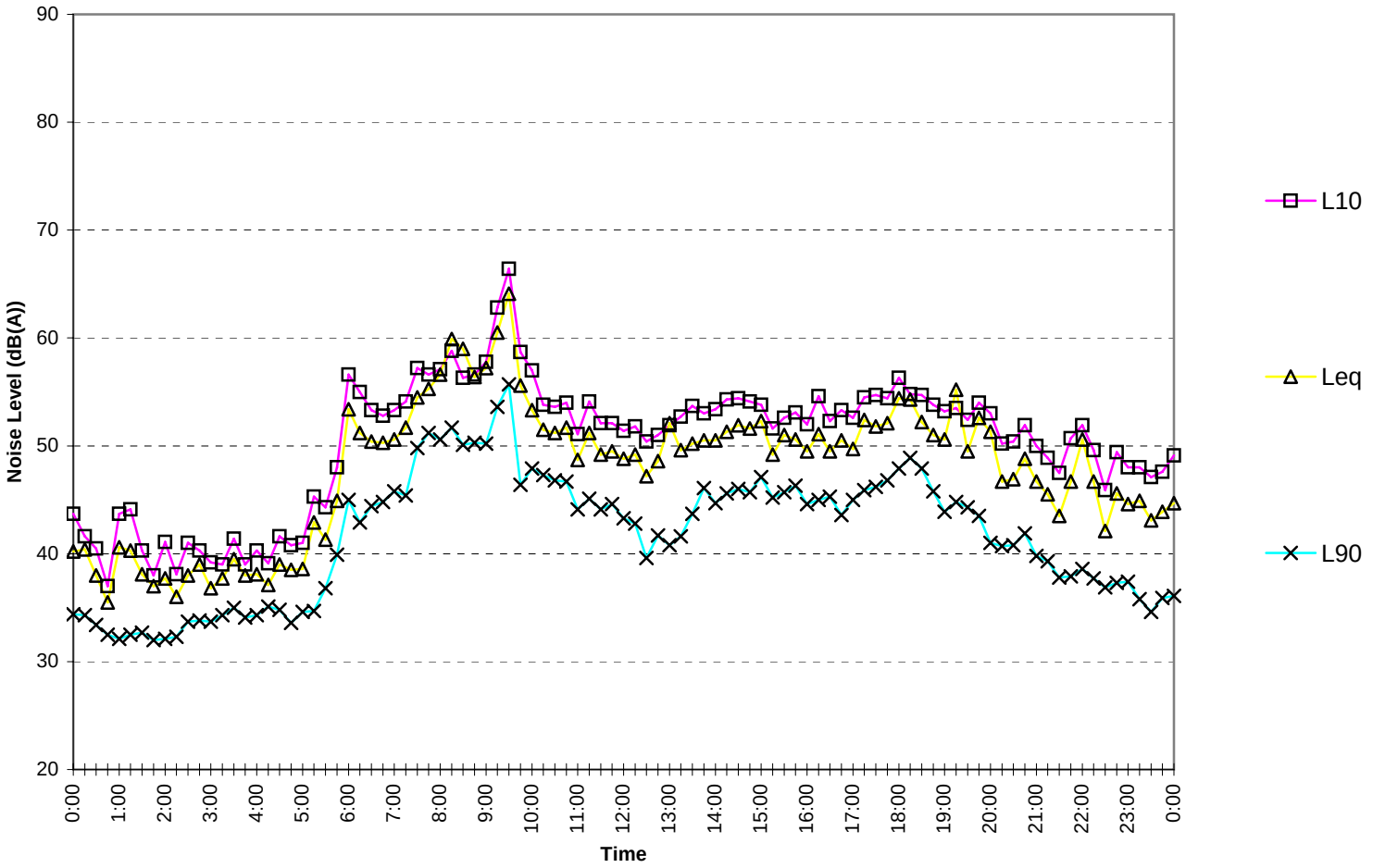
Epping

Thursday October 7,2010



Epping

Friday October 8,2010



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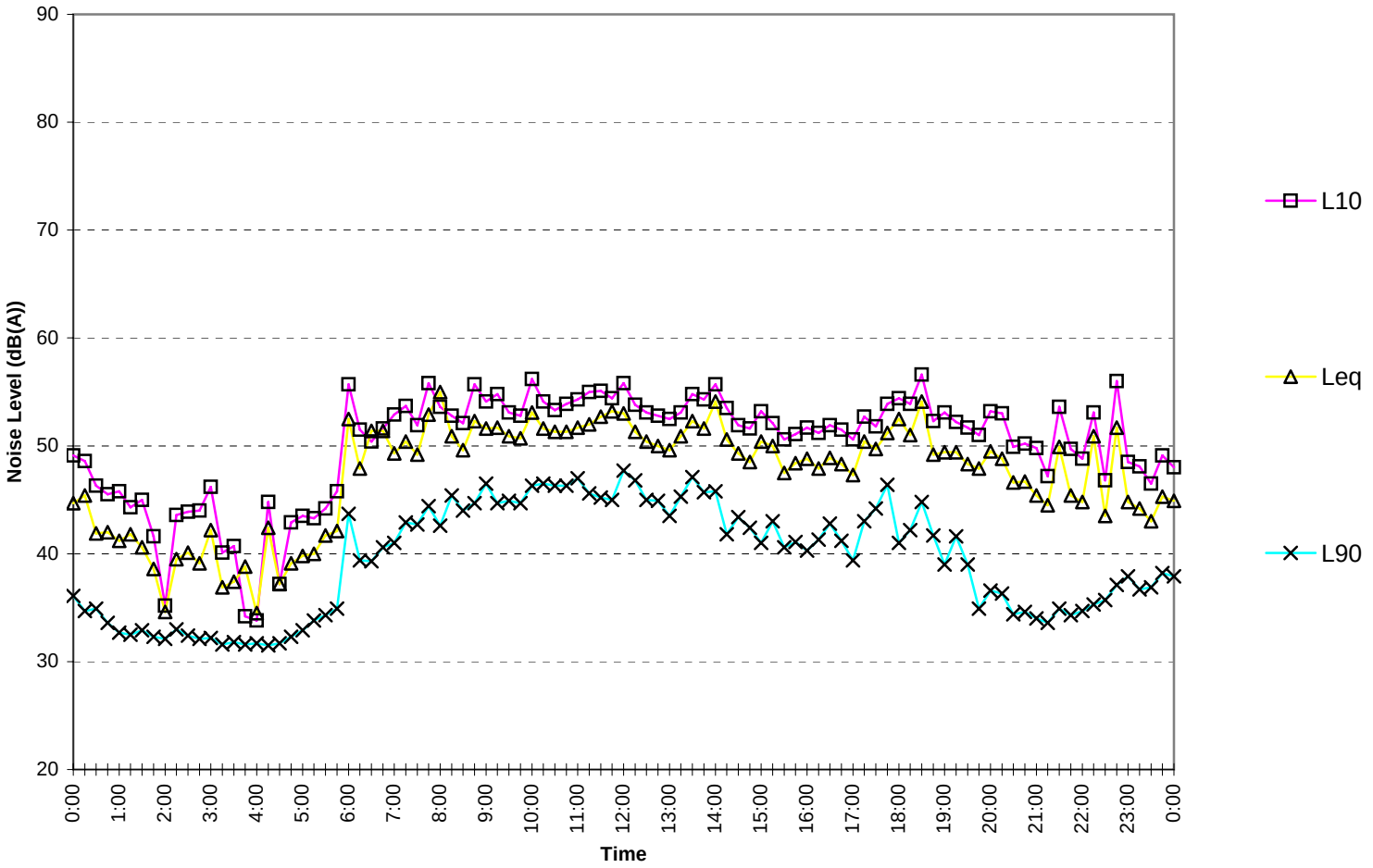

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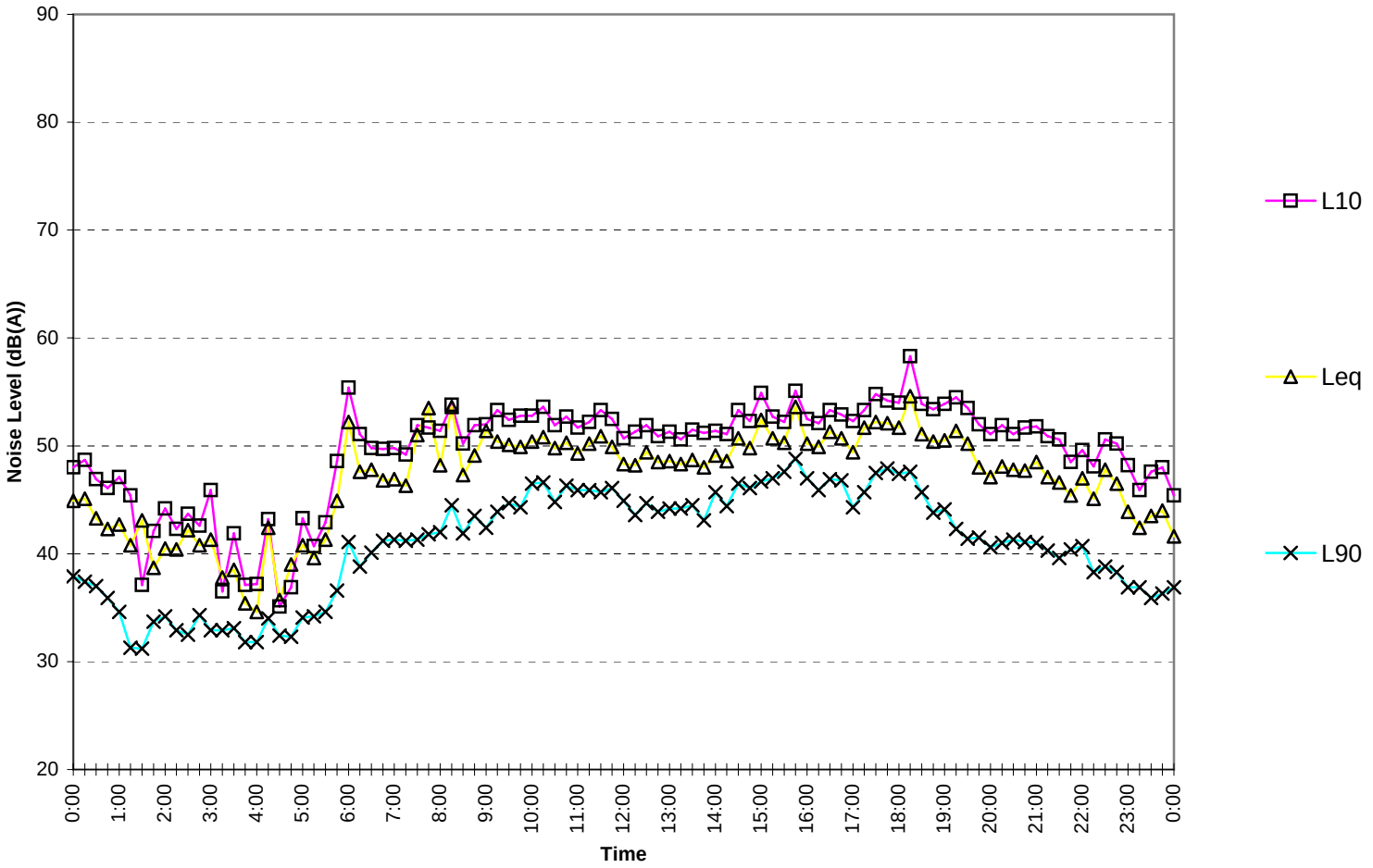
Sunday October 10,2010



Epping

Monday October 11,2010