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Extended Hours Noise Impact Assessment

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1 INTRODUCTION

This report details the acoustic assessment of noise associated with the construction of the office tower at 1 Denison Street and hotel tower at 88 Walker Street, North Sydney for the purpose of submission to the Department of Planning NSW with the application to modify the development consent under section 75W for the extension of construction working hours for construction activities.

The project involves the demolition of an existing commercial buildings, excavation and site works, and construction of new buildings on the site. The document summarises the results of a noise impact assessment of these operations. (Note: in this report “construction” refers generically to demolition, excavation and construction activities)

2 BACKGROUND

The current development consent for the project provides for construction hours as follows:

D1 Construction Hours

Building construction shall be restricted to within the hours of 7.00 am to 5.00 pm Monday to Friday and on Saturday to within the hours of 8.00 am to 1.00 pm inclusive, with no work on Sundays and Public Holidays.

Demolition and excavation works shall be restricted to within the hours of 8.00 am to 5.00 pm Monday to Friday only. For the purposes of this condition:

i. "Building construction" means any physical activity on the site involved in the erection of a structure, cladding, external finish, formwork, fixture, fitting of service installation and the unloading of plant, machinery, materials or the like.

ii. "Demolition works" means any physical activity to tear down or break up a structure (or part thereof) or surface, or the like, and includes the loading of demolition waste and the unloading of plant or machinery.

iii. "Excavation work" means the use of any excavation machinery and the use of jackhammers, rock breakers, excavators, loaders, or the like, regardless of whether the activities disturb or alter the natural state of the existing ground stratum or are breaking up/removing materials from the site and includes the unloading of plant or machinery associated with excavation work.

The builder and excavator shall display, on-site, their twenty-four (24) hour contact telephone number, which is to be clearly visible and legible from any public place adjoining the site.

The restriction imposed on works allowed on Saturdays by means of prohibiting excavation and/or demolition and by reduced hours or works allowed, being between 8.00 am and 1.00 pm is considered unreasonable. Most construction noise guidelines/codes permit these activities to occur on Saturdays for hours beyond those allowed in the consent, albeit may be with some conditions on noise level restrictions at different times. The fact that the development site is located within an area which is primarily commercial in nature where Saturday activity and ambient noise are similar to week days, makes this more unreasonable.

An assessment of potential noise impacts has been undertaken, and management of noise emissions from possible Saturday activities is discussed.

3 PROJECT LOCATION AND POTENTIALLY AFFECTED RECEIVERS

The office development at 1 Denison Street is located within the North Sydney block bound by Little Spring Street to the east, Spring Street to the south, Denison Street to the west and Berry Street to the north. The hotel development at 88 Walker Street fronts Walker Street to east and to rear is is Little Spring Street to west.

Potentially affected receivers within the surrounding area of the development include:

1. The residential receivers located at 79-81 Berry Street North Sydney which is a multistorey development.

2. The multistorey residential development located on the corner of Walker and Berry Streets

3. All other surrounding receivers are either commercial or retail receivers.

Figure 1 below details the site location, background noise monitor location and residential receivers within the vicinity of the site.

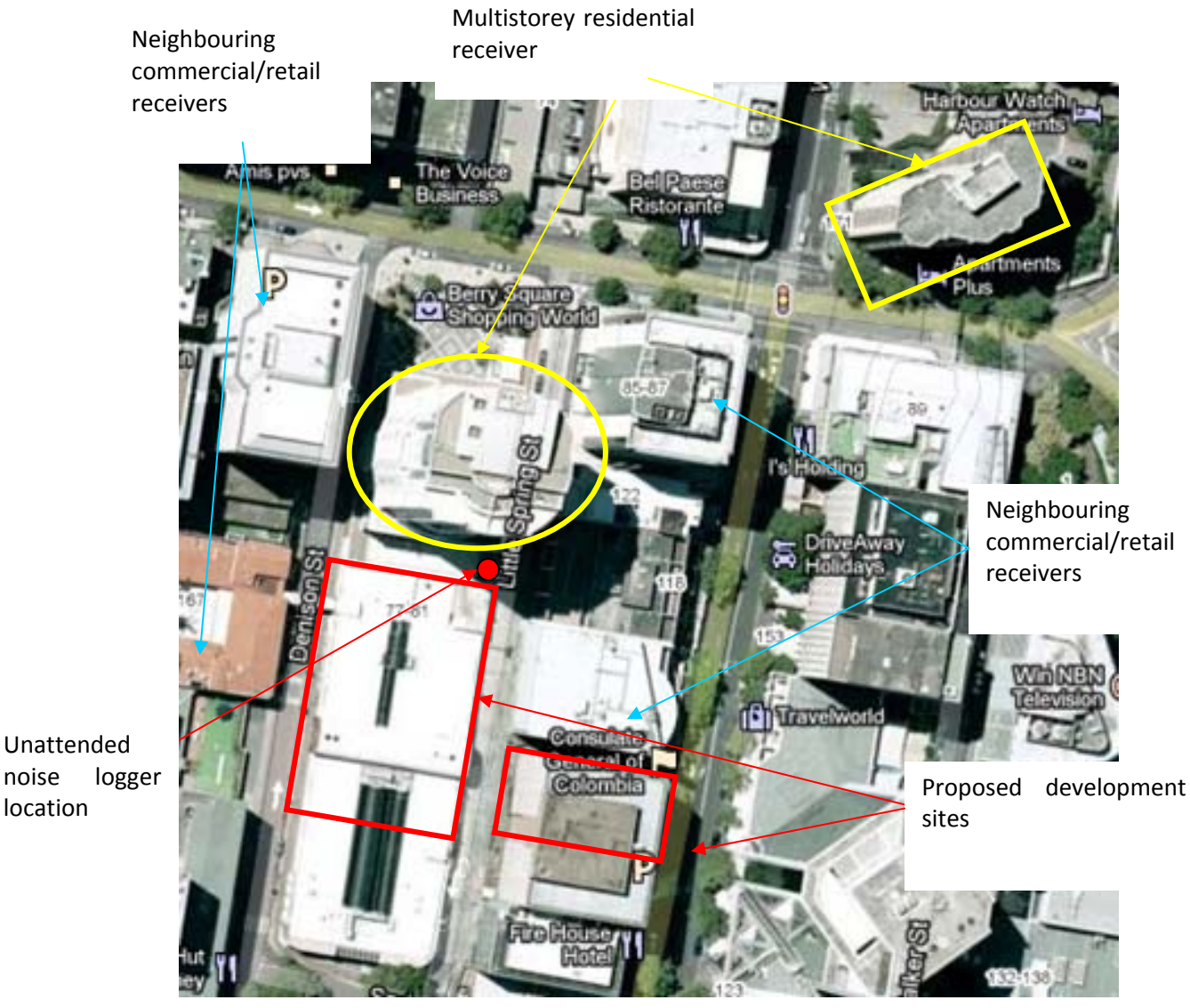


Figure 1- Site Location, Noise Logger and Residential Receivers

4 PROPOSED CONSTRUCTION HOURS

The proposal is to vary the permitted construction hours on Saturdays and to allow excavation and demolition activities on Saturdays. The suggested amended condition reads as follows:

D1 Construction Hours

Building construction shall be restricted to within the hours of 7.00 am to 5.00 pm Monday to Friday and on Saturday to within the hours of 8.00 am to 1.00 pm inclusive Saturday, with no work on Sundays and Public Holidays.

Demolition and excavation works shall be restricted to within the hours of 8.00 am to 5.00 pm Monday to Friday Saturday only. For the purposes of this condition:

i. "Building construction" means any physical activity on the site involved in the erection of a structure, cladding, external finish, formwork, fixture, fitting of service installation and the unloading of plant, machinery, materials or the like.

ii. "Demolition works" means any physical activity to tear down or break up a structure (or part thereof) or surface, or the like, and includes the loading of demolition waste and the unloading of plant or machinery.

iii. "Excavation work" means the use of any excavation machinery and the use of jackhammers, rock breakers, excavators, loaders, or the like, regardless of whether the activities disturb or alter the natural state of the existing ground stratum or are breaking up/removing materials from the site and includes the unloading of plant or machinery associated with excavation work.

The builder and excavator shall display, on-site, their twenty-four (24) hour contact telephone number, which is to be clearly visible and legible from any public place adjoining the site.

5 CONSTRUCTION NOISE GUIDELINES

Currently, North Sydney Council does not stipulate criteria for noise associated with construction activities.

In the absence of criteria for construction noise the Sydney City Council DCP "Code of Practice for Construction Hours/Noise within the Central Business District", NSW DECCW "Interim Construction Noise Guideline", and the Australian Standard AS2436 "Guide to Noise Control on Construction Maintenance and Demolition Site" can be used as a basis for the assessment of noise impact on surrounding receivers during the proposed extended hours of operations.

These guidelines are summarised in the following sections.

As a general principle, the guideline documents generally adopt a principle of managing construction noise impact by introducing time restrictions preventing activity from occurring during highly sensitive times, in combination with the application of noise management goals to try to achieve these goals where reasonable and feasible.

5.1 SYDNEY CITY COUNCIL CONSTRUCTION NOISE GUIDELINES

Table 1 below details the Sydney City Council DCP "Code of Practice for Construction Hours/Noise within the Central Business District" construction noise objectives.

It is noted that the noise level criteria for category 1 are those which are assessed in this report for the proposed working hours on Saturdays.

Table 1 - Construction Noise Criteria Promulgated By the Sydney City Council Construction Noise Code (Saturdays)

Time	Category Hours	Noise Objective dB(A)
00:00 to 07:00	4	Background + 0
07:00 to 08:00	1	Background + 5
08:00 to 17:00	1	Background + 5 + 5 to be determined on a site basis
17:00 to 23:00	2	Background + 3
23:00 to 00:00	4	Background + 0

For construction work occurring during Category 1, 2, 3 & 4 hours, the Code requires that the $L_{A,av\ max}$ noise level emitted from activities on the construction site and measured over a 15 minute period must not exceed the background noise level by more than the applicable criterion at any potentially affected residential premises.

5.2 NSW DECCW "INTERIM CONSTRUCTION NOISE GUIDELINE" (ICNG)

The Office of Environment and Heritage has developed a construction noise guideline specifically to manage construction noise impacts.

The guideline reflects on feasible and reasonable mitigation strategies, management controls and public liaising in the effort to reach realistic comprises between construction sites and potential noise affected receivers.

5.2.1 DECC Construction Noise Guideline - Qualitative Assessment Method

The guideline refers to a qualitative assessment method in which construction noise is assessed on a case by case basis with regard to various activities to be conducted on site. This assessment method was developed to smaller scale projects.

Essentially this method of assessment requires that the proponent take into consideration and employ all reasonable and feasible measures to ensure that the impact on noise receivers is minimised. This is generally conducted in the following manner:

- The assessment of noise producing equipment such as rock-hammers and sheet piles for lower noise producing methods of construction/excavation to determine which activities/processes will emit noise exceeding the management levels;
- The drafting of a noise management plan outlining all reasonable and feasible mitigation methods for the reduction of noise impact including:
    - The implementation of a complaints handling register and community consultation system;
    - Employee (builders, contractors etc) education in effective noise reducing techniques and site etiquette; and
    - The operation of plant in a quiet and efficient manner (ie turning off machinery when not in use, ensuring plant is maintained, etc).
    - Physical barriers, etc

This qualitative assessment method outlined in the ICGN has been used for the basis of the assessment in this is report. The guideline specifies criteria which can be used in the effort of minimising noise from construction related activities, as indicated in the following table.

Table 2 - ICGN Recommended Construction Noise Management Levels

Receiver	Management Level	External Sound Level, $L_{eq\ 15\ min}$ dB(A)	Where Applied
Residential	Noise Affected Level[1]	Background + 10dB(A)	Externally
	Highly Noise Affected Level[2]	75dB(A)	Externally
Commercial Office	Noise Affected Level	45 (internal level)	Internally

1: Where the predicted or measured L_{Aeq} (15 min) is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to minimise noise. (DECC CNG, 2008).

2: Where noise is above this level, the proponent should consider very carefully if there is any other feasible and reasonable way to reduce noise to below this level. If no quieter work method is feasible and reasonable, and the works proceed, the proponent should communicate with the impacted residents by clearly explaining the duration and noise level of the works, and by describing any respite periods that will be provided. (DECC CNG, 2008).

5.3 AUSTRALIAN STANDARD 2436-1981 "GUIDE TO NOISE CONTROL ON CONSTRUCTION MAINTENANCE AND DEMOLITION SITE"

The Australian Standard 2436-1981 "Guide to Noise Control on Construction Maintenance and Demolition Site" states that care shall be taken in applying criteria that normally would be used to regulate noise emitted from industrial, commercial and residential premises to construction, particularly for those activities which are transitory and of short duration. For the control and regulation of noise from construction sites AS2436 nominates the following:

- That reasonable suitable noise criterion is established.
- That all practicable measures be taken on the building site to regulate noise emissions, including the siting on noisy static processes parts of the site where they can be shielded, selecting less noisy processes, and if required regulating construction hours
- The undertaking of noise monitoring where non-compliance occurs to assist in the management and control of noise emission from the building site.

5.4 PROPOSED NOISE LEVEL OBJECTIVES

Based on the detailed standard above the following procedure will be used to assess noise emissions:

- Predict noise levels produced by typical construction activities at the sensitive receivers.
- If noise levels exceed "background + 10 dB(A)" noise goal at sensitive receiver locations, investigate and implement all practical and cost effective techniques to limit noise emissions. A background + 10 dB(A) criterion has been applied because, due to the size of the whole site, impacts at any one sensitive receiver are unlikely to occur for a greater period than 6 months, even if the total demolition period is longer.
- If the noise goal is still exceeded after applying all practical engineering controls to limit noise emissions investigate management and other techniques to mitigate noise emissions.

5.5 EXTENSION OF APPROVED WORK HOURS SOUGHT

In the case of the 1 Denison Street and 88 Walker Street Developments' extension to the construction working hours it is sought to extend approved work hours to include 8am to 5pm Saturdays, which fall within Category 1, ie normal Saturday working hours by Sydney City Council.

The table below details the proposed construction noise objectives for the proposed extended hours on Saturdays.

Table 3 – Extended Hours (Saturday's) Construction Noise Objectives

Time Period	Receiver	Management Level	External Sound Level Maximum Objective $L_{eq\ 15\ min}$ dB(A)	Where Applied
8am to 5pm Saturdays	Residential	Background + 10 dB(A)	75dB(A)	Externally

6 POTENTIALLY AFFECTED RECIEVERS

The following locations represent the potentially worst affected locations from works conducted on the Denison Street Development site. Compliance at this location will represent compliance at all other surrounding locations:

1. **Beau Monde Multi Story Residential Building–** This receiver includes of a multi story residential building with residential tenancies.
2. **Residential Receiver on the Corner of Berry and Walker Street** – This receiver includes of a multi story residential building with residential tenancies.
3. **Commercial/retail properties –** the assessment includes noise impact to the neighbouring commercial property neighbouring the development to the south east and west. This site represents the potentially worst affected commercial locations, compliance at this location represents compliance at all other surrounding commercial properties.

7 ACTIVITIES INCLUDED IN THIS STUDY

The construction activities, which will be assessed in this document, are:

1. Demolition and excavation.
2. Erection of the structure.
3. External finishes works.
4. Internal fitout and finishes.

A brief description of each of these activities is presented below:

Activity 1: Demolition and Remediation

This process includes the demolition of the existing internal structure using bobcats, excavators and hydraulic hammers. Materials will be moved around the site and removed using excavators and trucks. Removal of concrete on the site will include concrete munching and cutting where possible.

Activity 2: Erection of the Structure

This involves the construction of new building structure. The processes involved in this activity include the construction of piles to support the basement slab and structure, delivery of materials, erection of formwork, pouring of concrete, and stripping of formwork. All materials for form working and structural steel are transported to the work face using the site tower cranes and man/material hoists. Concrete will be pumped using concrete pumps.

Activity 3: External Finishes Works

This involves installation primarily of façade glazing and elements to the exterior of the building. This work will be implemented once the building structure is complete and formwork has been removed.

Activity 4: Internal Fitout and Finishes

This involves all internal fitout work from the installation of plasterboard ceilings, services installation, painting and joinery. All work covered under this section, will be contained within the building, with the facade providing a barrier to the direct transmission of noise to the exterior.

7.1 SOUND POWER LEVELS

Noise impact will be determined from all processes and equipment, which are involved in the activities outlined above by defining the levels of sound, which they generate.

The A-weighted sound power levels for all the component parts of the above-described activities are outlined in the tables below.

Table 4 - Construction Activities - Sound Power Levels

CONSTRUCTION ACTIVITY	EQUIPMENT /PROCESS	SOUND POWER LEVEL - dB(A)
1-Demolition Activities	Hydraulic Hammering	115
	Bobcat	105
	Trucks	108
	Concrete Munching	110
	Excavators	105
2 - Excavation/Detailed Excavation	Milling Machine	110
	Excavator	114
	Rock breaker	120-125
	Bulldozer	114
	Scraper	116
3- Erection of the Structure	Angle grinders	114
	Piling rig	110
	Electric Saw	111
	Tower Crain	105
	Hammering	110
	Concrete vibrator	100
	Cement mixing truck	105
	Concrete pumps	107

Table 3 - Construction Activities - Sound Power Levels (continued)

4- External Finishes Works	Angle grinders	114
	Electric Saw	111
	Drilling	94
	Hammering	110
	Crane	105
	Electric Hoist	92
5- Internal Fitout and Finishes	Hammering	110
	Drilling	94
	Impact drill	112
	Electric Saw	94
	Angle Grinders	114

The noise levels presented in the above table are derived from the following sources, namely:

1. On-site measurements
2. Table D2 of Australian Standard 2436-1981
3. Data held by this office from other similar studies.

8 BACKGROUND NOISE MONITORING

Background noise monitoring has been conducted at the site to obtain existing noise levels at the site.

8.1 MEASUREMENT POSITION AND EQUIPMENT USED

Unattended noise monitoring was conducted between 16th and 27th June 2011 (which includes 2 Saturdays) 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.

The monitor was installed at the site as shown in figure 1 above, the location was selected to provide indicative existing background noise levels at the nearest potentially affected residents.

8.2 ATTENDED NOISE MEASURMENTS

Attended noise level measurements conducted as part of this assessment are detailed in this section of the report.

8.2.1 Measurement Equipment

Attended noise measurements were obtained using a CEL-593 Type 1 Sound Level Analyser, set to A-weighted fast response. The sound level meter was calibrated before and after the measurements using a RION NC-73 Sound Level Calibrator. No significant drift was recorded.

8.2.2 Measurement Period

Noise monitoring was conducted at within Denison Street on Saturday 25th June, 2011 between 10 and 10.30am.

8.3 MEASURED NOISE LEVELS

Table 4 below lists the representative minimum repeatable background noise level for the monitoring location based on both attended and unattended noise level measurements. Refer to Appendix for unmanned noise monitoring data.

Table 5 - Measured Background Noise Levels at Nearest Resident

Time	Background noise level L_{90} dB(A)
Saturday between 8am and 5pm	54

9 SUMMARY OF RESULTANT NOISE LEVELS AT NOMINATED RECEIVER LOCATIONS

The construction activities described above involve normal building work. Over the duration of the project it is expected that the above-described activities may all occur simultaneously, i.e. For this reason it will be assumed in this study that all noise sources may occur collectively.

The remainder of the report presents the determined construction noise levels at each of the nominated receiver locations and their likely acoustic impact.

9.1 RESIDENTIAL TENANCIES LOCATED WITHIN BERRY SQUARE

The following table presents a summary of the maximum noise levels, which will occur at the residential tenancies within the Berry Square multi story residential tower during the proposed extended hour's period during construction. In the case of this location noise levels are assessed to the external facade of the building.

As the residential tenancies within the Berry Square tower represent the potentially worst affected residential receiver, if the these external noise levels fully comply with the relevant criteria, then the external noise levels at all the other residential locations will be equally acceptable.

The following table presents a summary of the calculated worst-case maximum noise levels that will occur at the potentially worst affected residential receivers.

BERRY SQUARE MULTISTPRY RESIDENTIAL RECEIVER SATURDAY						
PERIOD HOURS	ACTIVITY	CALCULATED LEVEL OF NOISE AT AFFECTED OCCUPANCY L_{avmax} dB(A)	BACK- GROUND L_{90} MEASURED AT THE SITE	LEVEL OF ACTIVITY RELATIVE TO B'GROUND	CODE PERMISSIBLE EXCEEDENCE ABOVE B'GROUND	COMPLIES
8.00 to 13.00	1 and 2	68	54	+14	+10	Management required
13.00 to 17.00	1 and 2	68	54	+14	+10	Management required

Acoustic management of high noise emitting equipment such as hydraulic hammering rock/concrete sawing and the like is required. Management control may include the following:

1. Movement of equipment around the site during the working period.
2. Periods when equipment are not in use, which will include scheduled breaks such as lunch and other breaks through out the day.

9.2 RESIDENTIAL TENANCIES LOCATED ON CORNER OF BERRY AND WALKER STREETS

The following table presents a summary of the maximum noise levels, which will occur at the residential tenancies located within the multistorey building on the corner of Berry and Walker Streets.

The following table presents a summary of the calculated worst-case maximum noise levels that will occur at the potentially worst affected residential receivers.

MULTISTPRY RESIDENTIAL RECEIVER ON THE CORNER OF BERRY AND WALKER STREETS SATURDAY						
PERIOD HOURS	ACTIVITY	CALCULATED LEVEL OF NOISE AT AFFECTED OCCUPANCY L_{avmax} dB(A)	BACK- GROUND L_{90} MEASURED AT THE SITE	LEVEL OF ACTIVITY RELATIVE TO B'GROUND	CODE PERMISSIBLE EXCEEDENCE ABOVE B'GROUND	COMPLIES
8.00 to 13.00	1 and 2	60	54	+6	+10	Yes
13.00 to 17.00	1 and 2	60	54	+6	+10	Yes

9.3 COMMERCIAL BUILDING LOCATED TO THE EAST OF THE DEVELOPMENT

The proposed working hours proposed for Saturdays will not significantly impact he surrounding retail/commercial receivers as they fall outside the normal week day working hours.

10 NOISE CONTROL METHODS

The determination of appropriate additional noise control measures will be dependant on the particular activities and construction appliances identified as requiring future acoustic treatments to those already identified in this report. This section provides an outline of available methods which have previously been used on similar construction sites and may be used on the Dominion Project site.

Potential noise control methods are discussed in the sections below.

10.1 SELECTION OF ALTERNATE APPLIANCE OR PROCESS

Where a particular activity or construction appliance is found to generate noise levels that exceed the criteria, it may be possible to select an alternative approach or appliance. For example; the use of a hydraulic hammer on certain areas of the site may potentially generate high levels of noise. By carrying this activity by use of pneumatic hammers, bulldozers ripping and/or milling machines lower levels of noise will result.

10.1.1 Acoustic Barriers

Barriers or screens can be an effective means of reducing noise. Barriers can be located either at the source or receiver.

The placement of barriers at the source is generally only effective for static plant (tower cranes). Placing barriers at the source cannot effectively attenuate equipment which is on the move or working in rough or undulating terrain.

Barriers can also be placed between the source and the receiver. The degree of noise reduction provided by barriers is dependent on the amount by which line of sight can be blocked by the barrier. If the receiver is totally shielded from the noise source reductions of up to 15 dB(A) can be effected. Where only partial obstruction of line of sight occurs, noise reductions of 5 to 8 dB(A) may be achieved. Where the barrier does not obstruct line of sight, generally no noise reduction will occur.

As barriers are used to provide shielding and do not act as an enclosure, the material they are constructed from should have a noise reduction performance which is approximately 10dB(A) greater than the maximum reduction provided by the barrier. In this case the use of a material such as 10 or 15mm plywood would be acceptable for the barriers.

10.1.2 Silencing Devices

Where construction process or appliances are noisy, the use of silencing devices may be possible. These may take the form of engine shrouding, or special industrial silencers fitted to exhausts.

10.1.3 Material Handling

The installation of rubber matting over material handling areas can reduce the sound of impacts due to material being dropped by up to 20dB(A).

10.1.4 Treatment of Specific Equipment

In certain cases it may be possible to specially treat a piece of equipment to dramatically reduce the sound levels emitted.

10.1.5 Establishment of Site Practices

This involves the formulation of work practices to reduce noise generation. This includes locating fixed plant items as far as possible from residents as well as rotating plant and equipment to provide respite to receivers.

10.1.6 Strategic Positioning of Processes On-Site

Where practicable, particular processes of activities can be located in particular positions on site to minimise noise to surrounding sensitive receivers.

For example, stationary plant may be positioned where direct line of sight shielding can be achieved using natural barriers, or may maximise the distance to the nearest sensitive receiver.

10.1.7 Combination of Methods

In some cases it may be necessary that two or more control measures be implemented to minimise noise emissions.

10.1.8 Management Training

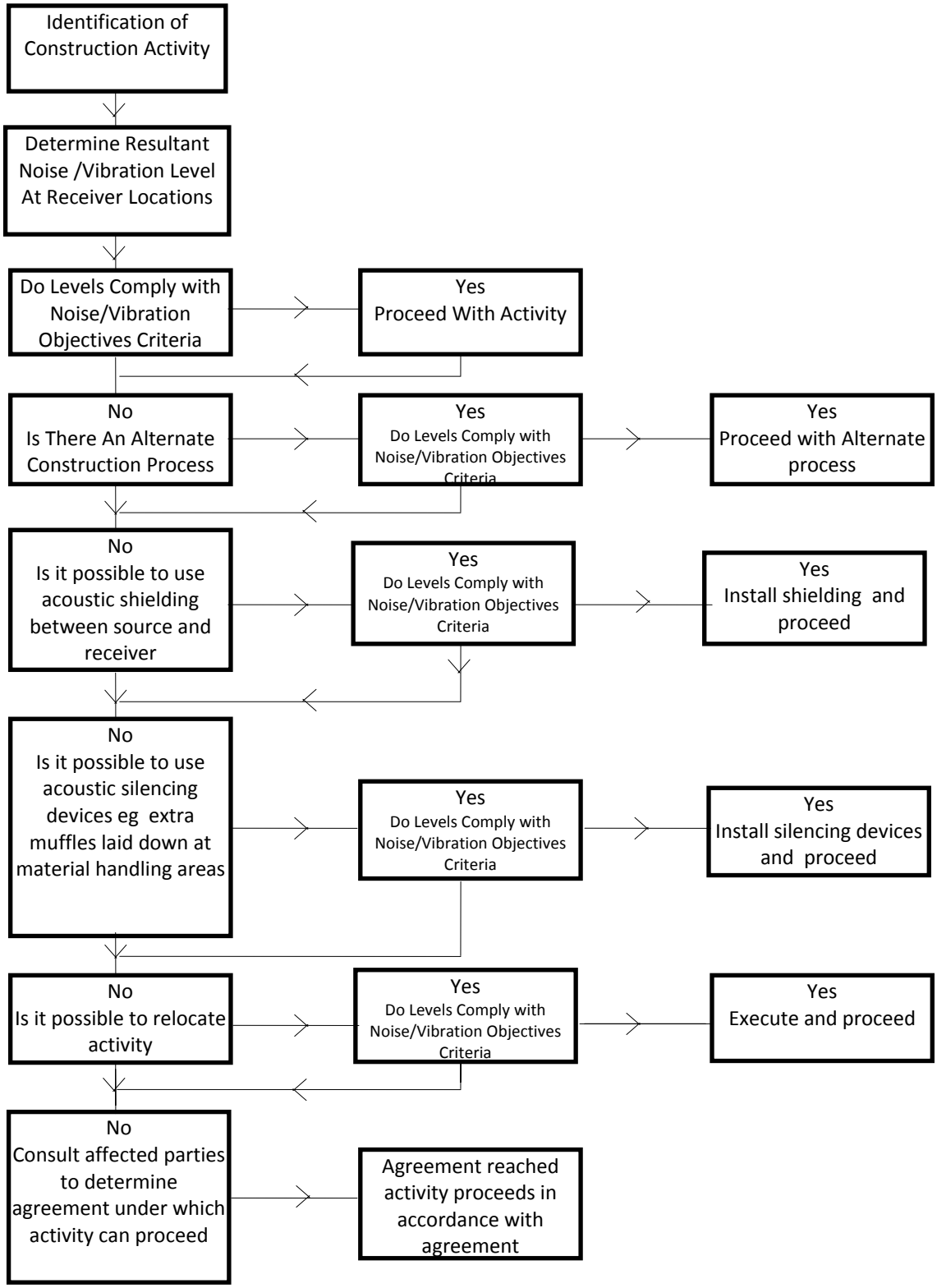
All site managers should be made aware of noise and vibration limits, applicable control measures and methods. They should ensure that all agreed noise and vibration measures are carried out by employees and sub-contractors.

11 CONTROL OF CONSTRUCTION NOISE

As a part of the noise management plan a detailed study has been undertaken of each of the proposed activities that will occur as a part of the excavation works on this project. The execution of this work will facilitate the formulation of noise control strategies for this project.

The flow charts below illustrates the process followed to assess excavation activities prior to the start of work on site and well as the ongoing investigation into noise during the construction period.

Control of Noise and Vibration Management Flow Chart



12 NOISE AND VIBRATION MONITORING, REPORTING AND RESPONSE PROCEDURES FOR COMPLAINTS

Noise and vibration monitoring may either consist of manned and/or unmanned measurements.

Active monitoring will be conducted by Acoustic Logic during the excavation and construction phases of the project. In the event complaints are received from neighbours the following process will be followed:

(1) Determining the offending plant/equipment/process

(2) Locating the plant/equipment/process further away from the affected receiver(s) if possible.

(3) Implementing additional acoustic treatment in the form of localised barriers, silencers etc

(4) Selecting alternative equipment/processes if possible.

12.1 REPORTING REQUIREMENTS

The following shall be kept on site.

A register of complaints received/communication with the local community shall be maintained with information as detailed below.

Where noise/vibration complaints require noise/vibration monitoring, results from monitoring shall be retained.

Any noise exceedences occurring including, the actions taken and results of follow up monitoring.

13 CONTINGENCY PLANS

Complaints associated with noise generated by site activities shall be recorded on a Noise Complaint Form. The person(s) responsible for complaint handling and contact details for receiving of complaints shall be established on site prior to construction works commencing. A sign shall be displayed at the site indicating the Site Manager and the general public and their contact telephone number

If a noise complaint is received the complaint should be recorded on a Noise Complaint Form. The complaint form should list:

- The name and address of the complainant (if provided).
- The time and date the complaint was received.
- The nature of the complaint and the time and date the noise was heard.
- The name of the employee who received the complaint.
- Actions taken to investigate the complaint, and a summary of the results of the investigation.
- Indicate what operations were occurring on site at the time of the complaint.
- Required remedial action, if required
- Monitoring conducted if required.
- Validation of the remedial action.
- Summary of feedback to the complainant.

14 STATEMENT OF INTENT TO COMPLY

The calculation procedure used to predict the noise levels above has been verified with field measurements on other building sites in the inner city including the Grace Plaza, 400 George Street, Aston, GPO and Sydney Central Plaza projects.

On-going compliance monitoring will ensure that the criteria set out in this report are met. This monitoring programme will be similar to the successful monitoring programme implemented for the extended hours work on the Sydney Central Plaza Site (Grace Brothers on the corner of Market and George Sts), Aston, 400 George Street, the GPO and 126 Phillip Street project.

In addition, an after hours contact number of the Site Manager will be advertised outside the building site, so that residents and other interested parties may contact him, should they believe a noise breech is occurring.

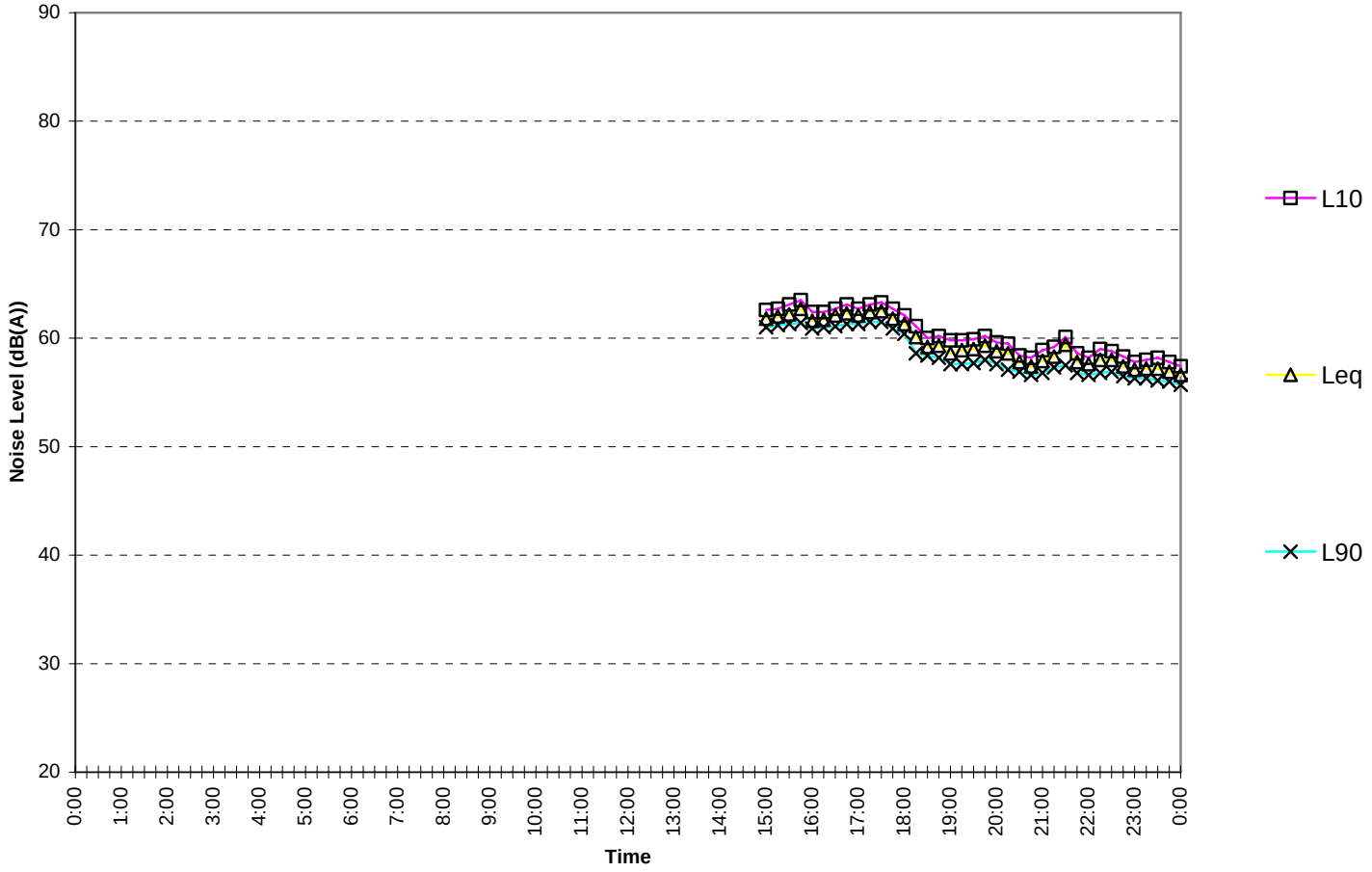
15 FINAL STATEMENT

The findings of this document indicates that noise levels from the proposed extended hours of construction at the Denison Street Development as identified above will comply with the criteria presented in this report for Saturdays which are being applied for.

Report prepared by,

ACOUSTIC LOGIC CONSULTANCY PTY LTD
Ben White

Appendix A – Noise Logging Results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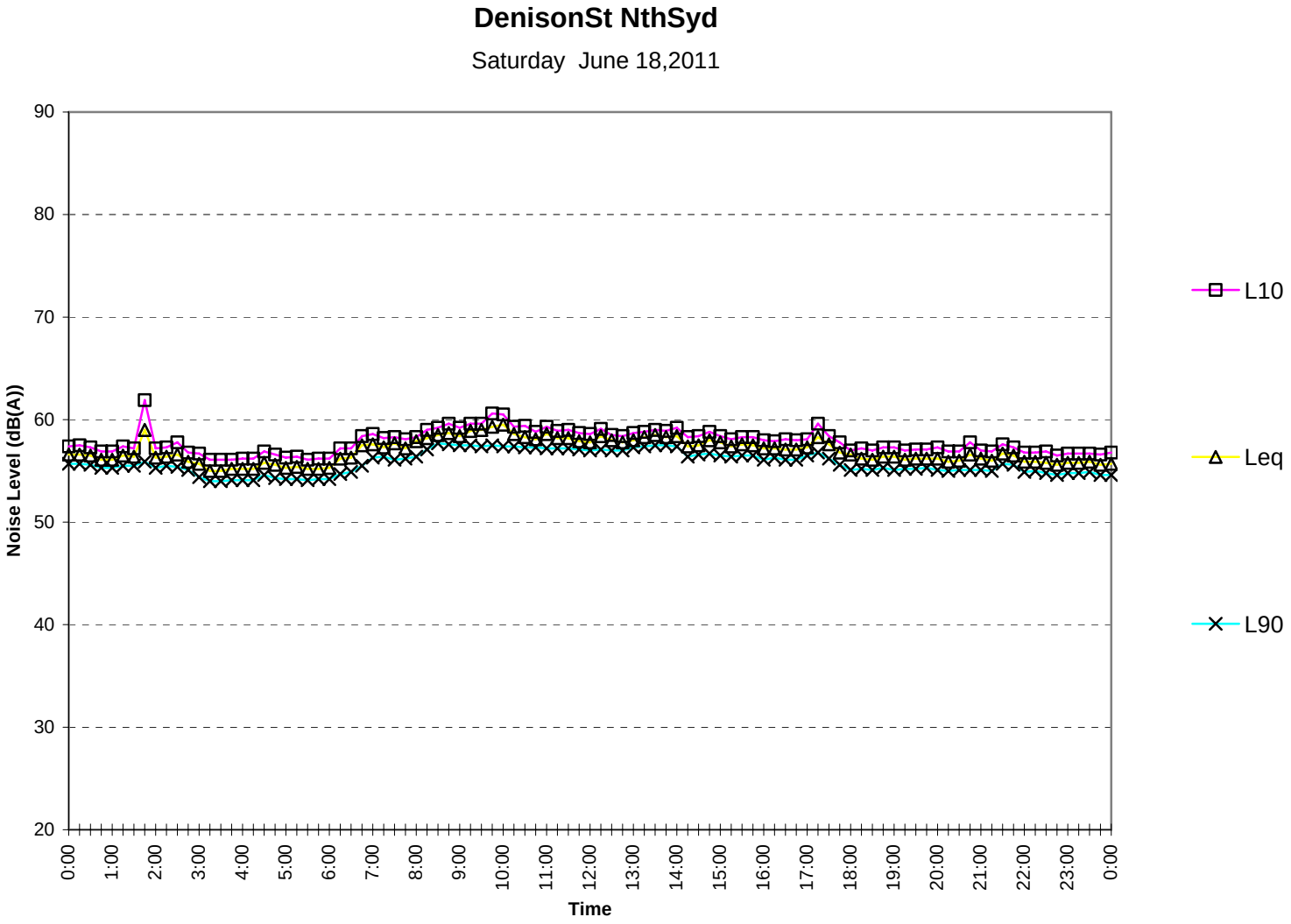
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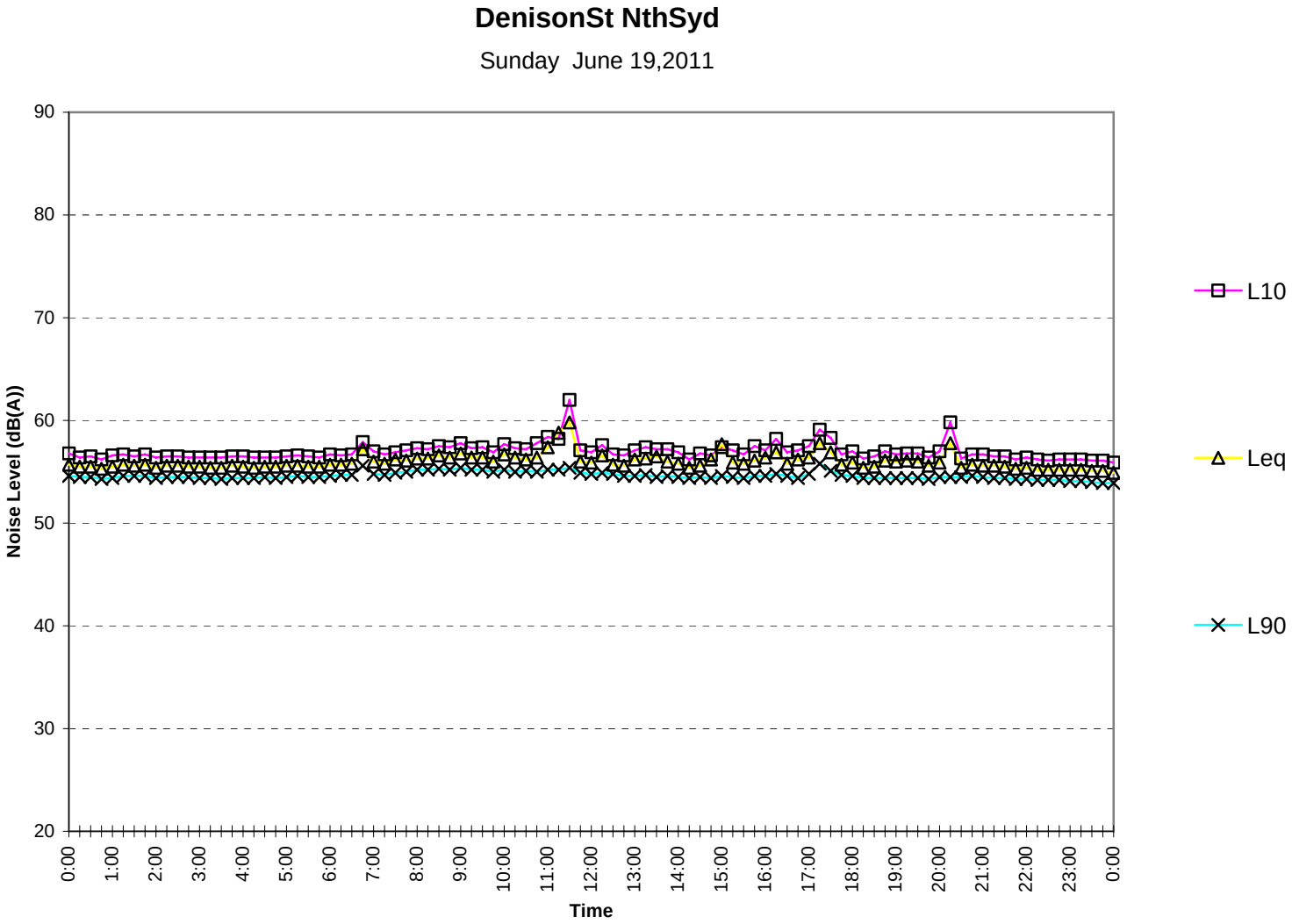
DenisonSt NthSyd
Sunday June 19,2011
Noise Level (dB(A))
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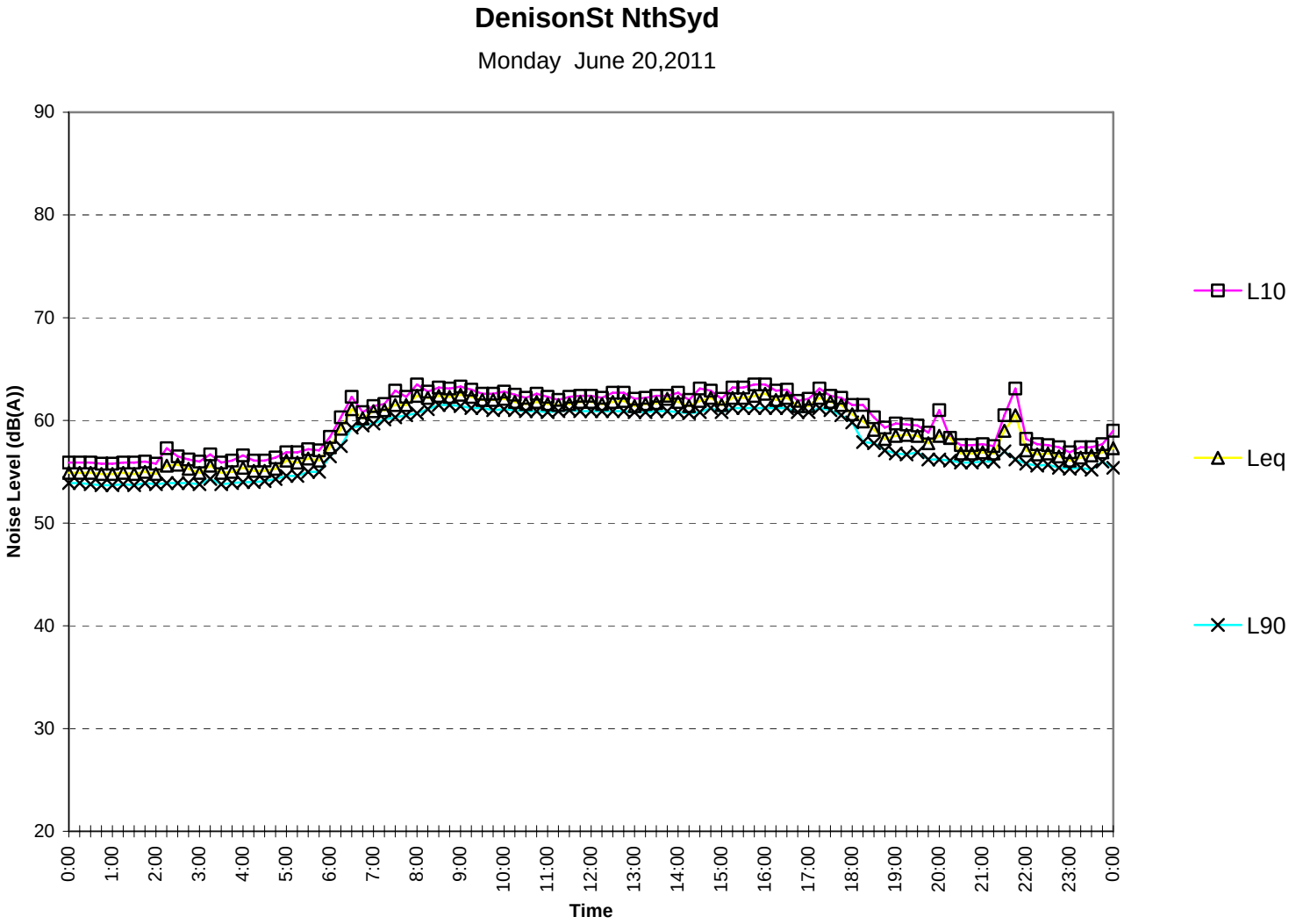
Time
L10
Leq
L90


DenisonSt NthSyd
Monday June 20,2011
Noise Level (dB(A))
90
80
70
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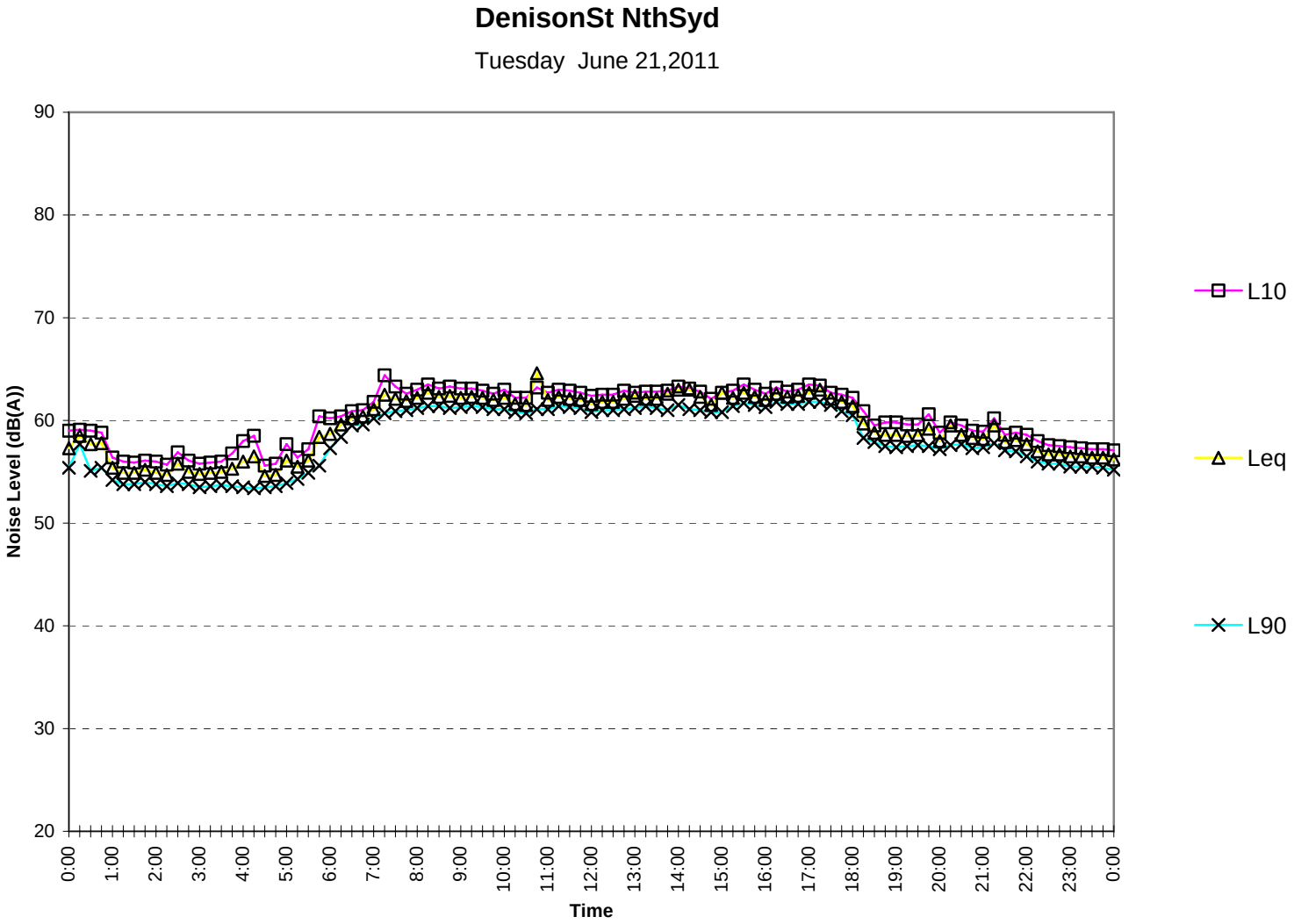
22:00
23:00
0:00
Time
L10
Leq
L90


DenisonSt NthSyd
Tuesday June 21,2011
Noise Level (dB(A))
90
80
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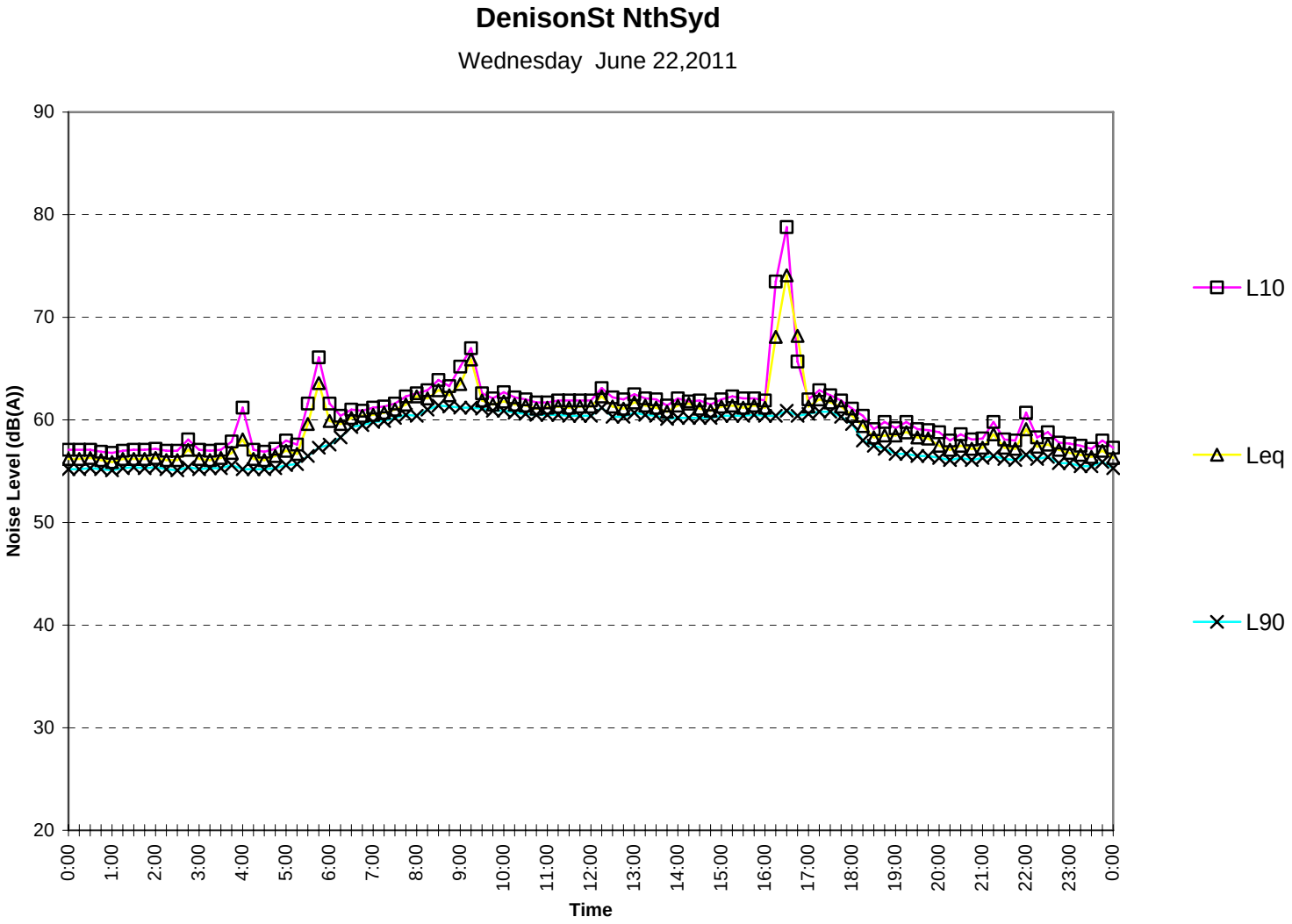
23:00
0:00
Time
L10
Leq
L90


DenisonSt NthSyd
Wednesday June 22,2011
Noise Level (dB(A))
90
80
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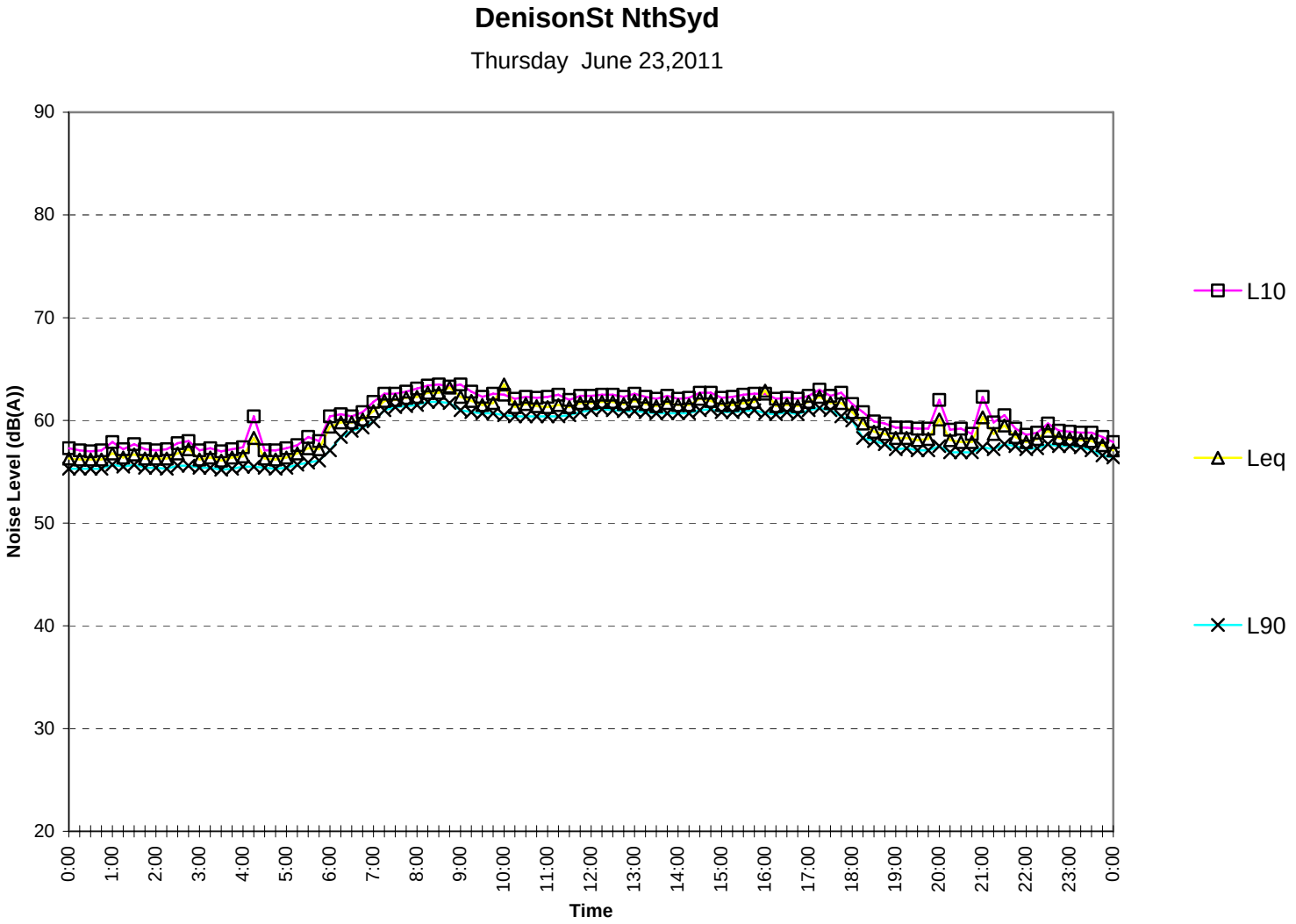
21:00
22:00
23:00
0:00
Time
L10
Leq
L90


DenisonSt NthSyd
Thursday June 23,2011
Noise Level (dB(A))
90
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Time
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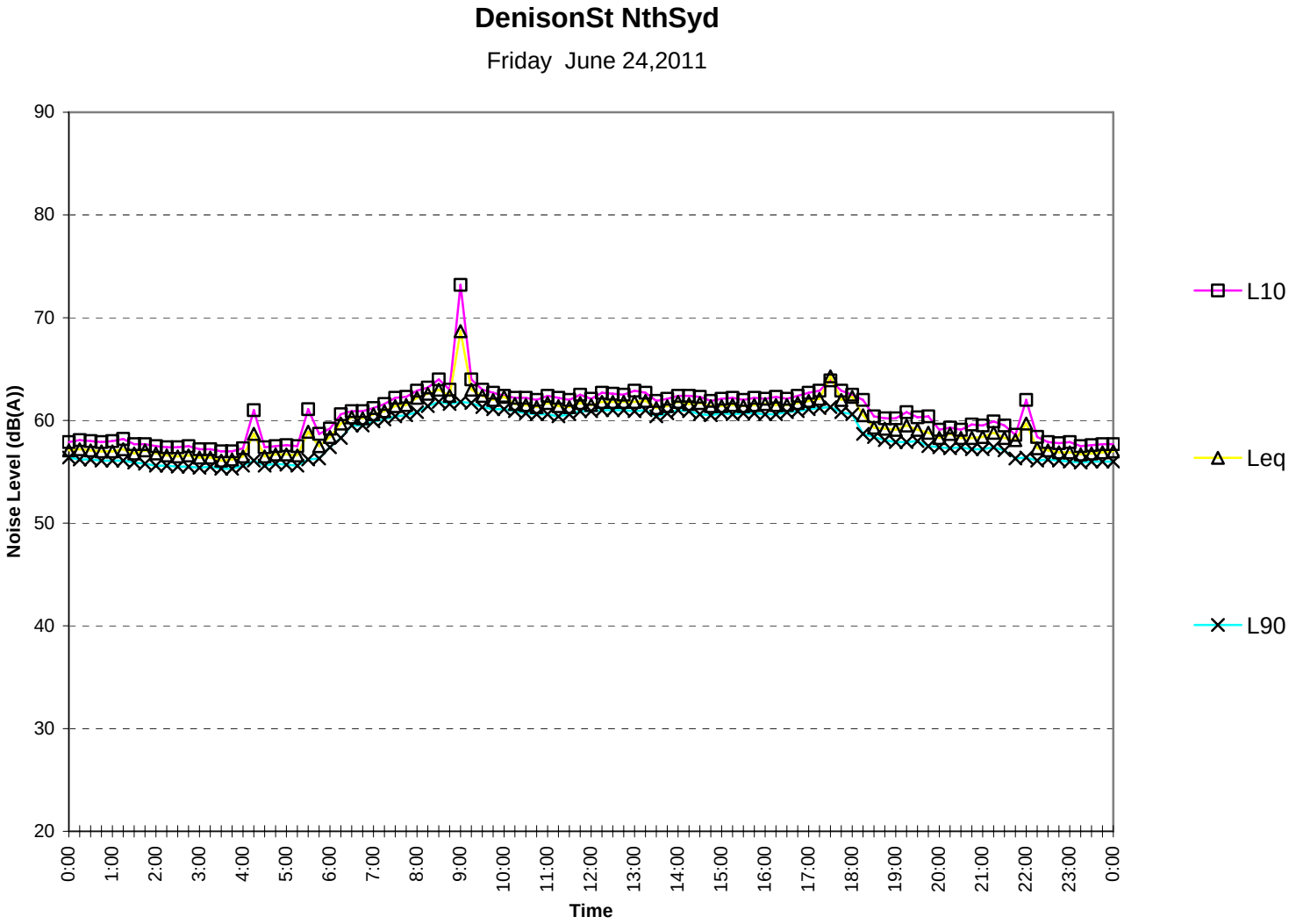
DenisonSt NthSyd
Friday June 24,2011
Noise Level (dB(A))
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Time
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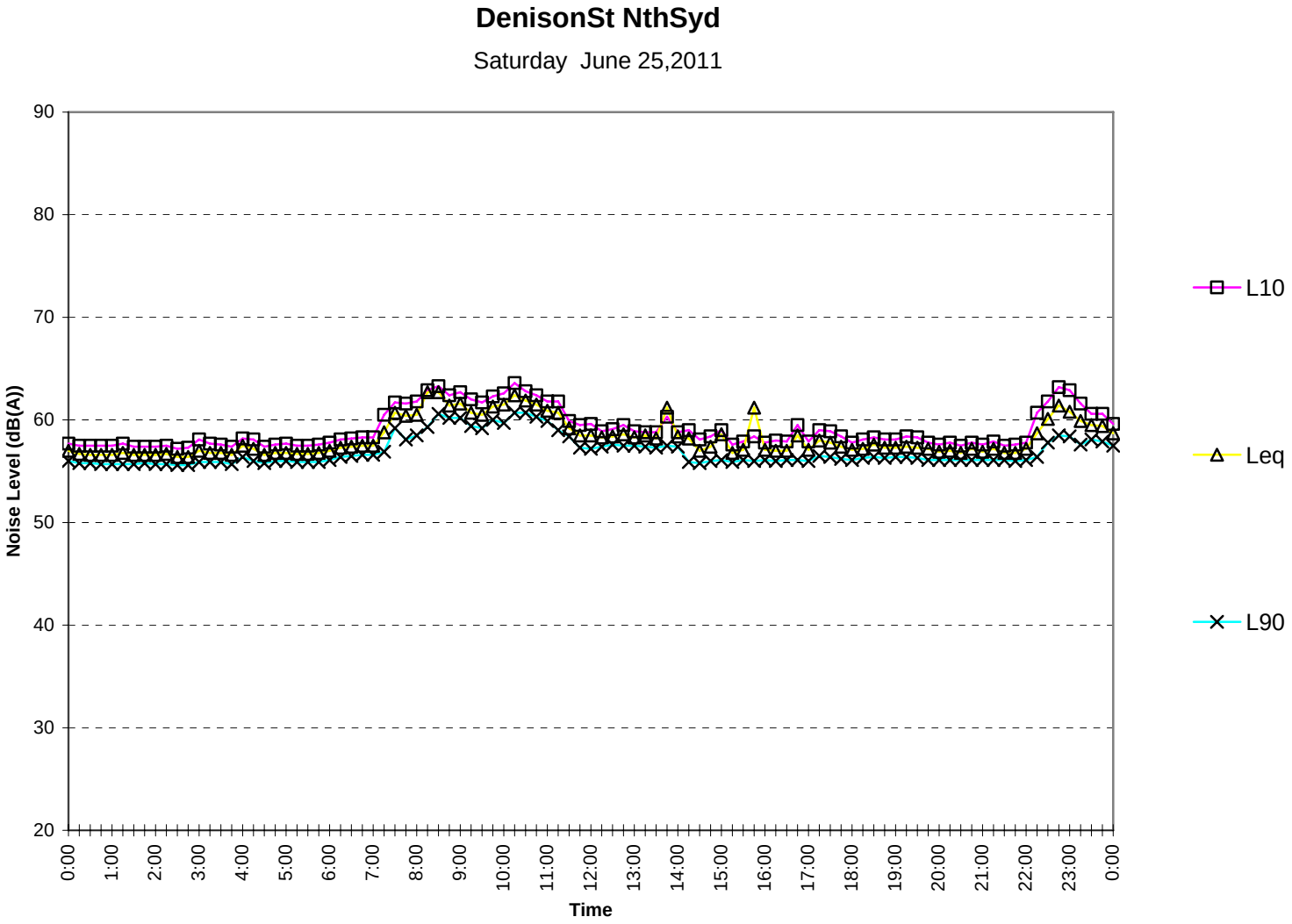
DenisonSt NthSyd
Saturday June 25,2011
Noise Level (dB(A))
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Time
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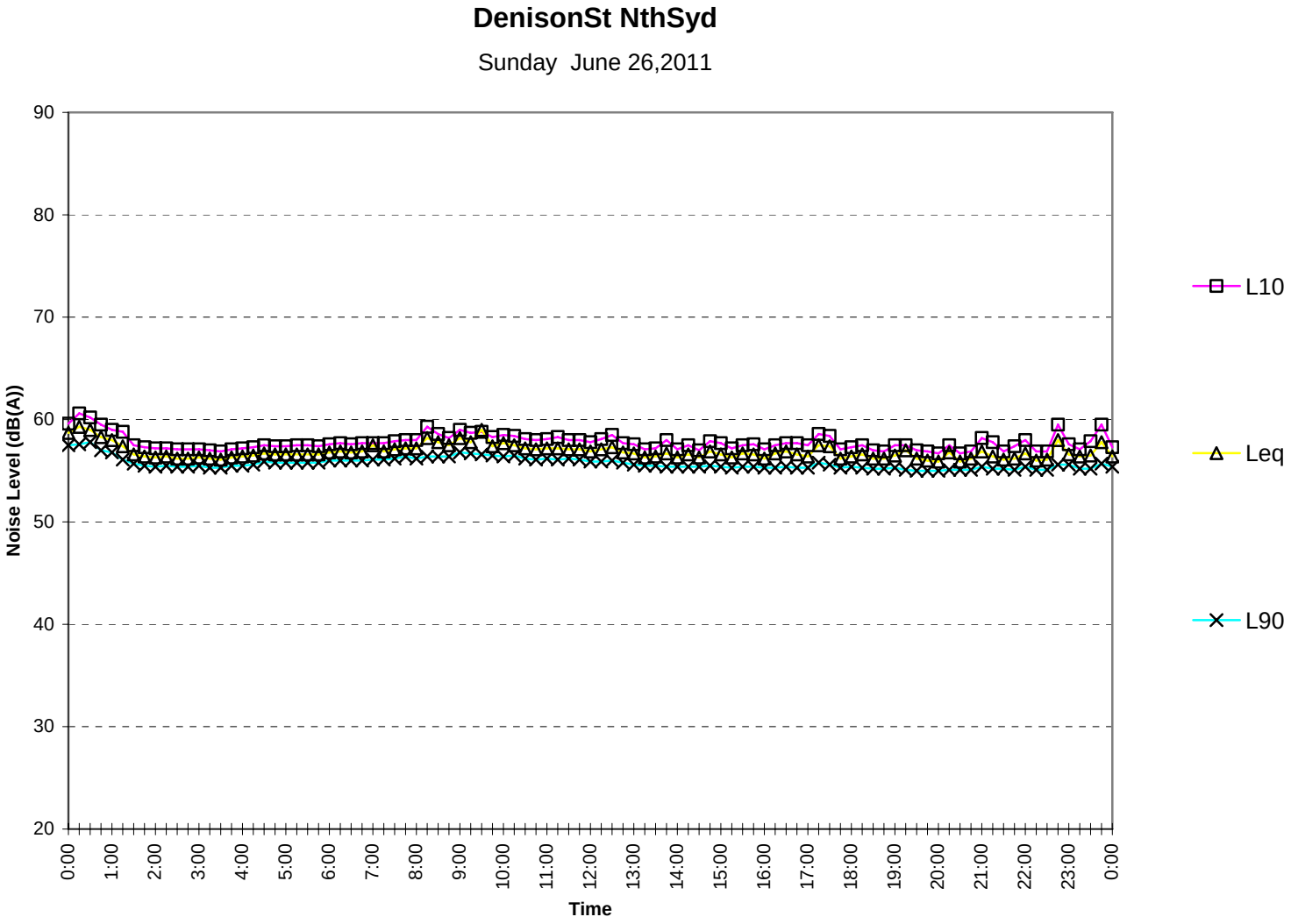
DenisonSt NthSyd
Sunday June 26,2011
Noise Level (dB(A))
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Time
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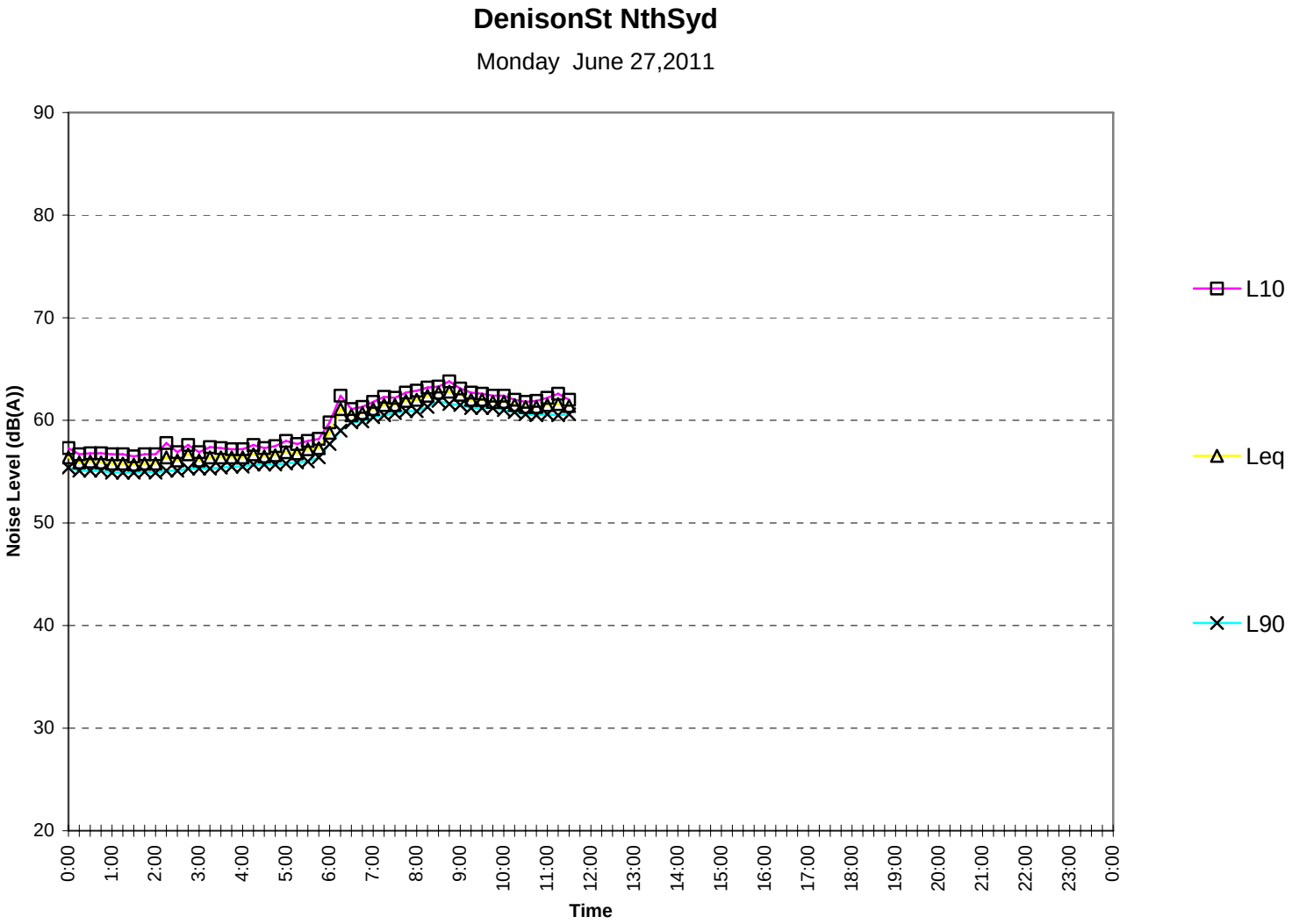
L90


DenisonSt NthSyd
Monday June 27,2011
Noise Level (dB(A))
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Time
L10
Leq
L90