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Construction Noise Vibration Management Plan

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TABLE OF CONTENTS

1	INTRODUCTION	4
2	SITE PROPOSAL.....	5
2.1	RECEIVER LOCATIONS	5
3	CONSTRUCTION NOISE AND VIBRATION CRITERIA	7
3.1	AUSTRALIAN STANDARD AS2436:1981 “GUIDE TO NOISE CONTROL ON CONSTRUCTION, MAINTENANCE AND DEMOLITION SITES	7
3.2	BACKGROUND NOISE LEVELS	7
3.2.1	Measurement Equipment	7
3.2.2	Location and Time of Measurements.....	7
3.2.3	Background Noise Levels	8
3.3	CONSTRUCTION NOISE OBJECTIVES	8
3.4	VIBRATION CRITERIA	8
3.4.1	Structure Borne Vibrations.....	9
3.4.2	Human Comfort.....	9
4	PROPOSED CONSTRUCTION ACTIVITIES	11
4.1	PROPOSED CONSTRUCTION WORKS	11
4.2	HEAVY VEHICLE ACCESS ROUTES.....	11
5	PREDICTED CONSTRUCTION NOISE LEVELS	12
6	AMELIORATIVE MEASURES	15
6.1	SITE SPECIFIC RECOMMENDATIONS	15
6.1.1	Potential Vibration and Structure Borne Noise Impacts	15
6.1.2	Acoustic Screens.....	15
6.1.3	Excavator Mounted Hammer and Sawing.....	16
6.1.4	Excavator Noise	16
6.1.5	Angle Grinders	17
6.1.6	Vehicle Noise and Concrete Pumps.....	17
6.1.7	Other Activities	17
7	CONTROL OF CONSTRUCTION NOISE AND VIBRATION	18
	NOISE AND VIBRATION CONTROL METHODS	18
7.1	SELECTION OF ALTERNATE APPLIANCE OR PROCESS	19
7.2	ACOUSTIC BARRIER	19
7.3	SILENCING DEVICES	20
7.4	MATERIAL HANDLING.....	20
7.5	TREATMENT OF SPECIFIC EQUIPMENT	20
7.6	ESTABLISHMENT OF SITE PRACTICES	20
7.7	NOISE MONITORING.....	20
7.8	COMBINATION OF METHODS	20
7.9	MAINTENANCE OF PLANT, EQUIPMENT AND MACHINERY	21
7.10	STAFF TRAINING AND REPORTING MECHANISM.....	21
8	COMMUNITY INTERACTION AND COMPLAINTS HANDLING	22
8.1	ESTABLISHMENT OF DIRECT COMMUNICATION WITH AFFECTED PARTIES.....	22
8.2	COMMUNITY CONSULTATION SESSIONS AND INFORMATION LEAFLETS.....	22
8.3	DEALING WITH COMPLAINTS	22
8.4	REPORTING REQUIREMENTS.....	23
8.5	CONTINGENCY PLANS.....	23
9	CONCLUSION	25

1 INTRODUCTION

This report presents the recommended approach for managing noise and vibration arising from the demolition and construction of the proposed commercial development to be located at 500 & 504-528 Pacific Highway, St Leonards.

The principal objective of this study is to undertake an evaluation of work to be performed during the demolition, excavation and construction of the project and forecast the potential impact of noise and vibration. The evaluation will be used to formulate and streamline effective regulation and mitigation measures.

The principal issues, which will be addressed in this report, are:

- Identification of the noise and vibration guidelines which will be applicable to this project.
- Prediction of likely noise levels impacting surrounding receiver locations.
- Formulation of a strategy for construction to comply with the standards identified in the above point.
- Establishment of direct communication networks between affected groups, namely Lane Cove Council, New Hope VIMG Pty Ltd and Acoustic Logic Consultancy Pty Ltd.

A critical component of this report is the formulation of noise control strategies for the different construction processes. These strategies include the formulation of site management procedures, whether they can be operational or time based. A detailed noise management plan forms part of this report.

The objective of this study in all cases is to minimise noise emissions from the construction process or to schedule works which may have a significant acoustic impact on adjoining receivers.

In the report construction noise goals are formulated based on the following factors;

- A consideration of the procedures and requirements set out Australian Standard 2436-1981 *"Guide to Noise Control on Construction, Maintenance and Demolition Sites"*.
- The noise mitigation measures available.

Provided all measures outlined in this report are fully implemented, noise associated with the construction of the development site will be strictly controlled, and the impact on the surrounding environs minimised.

2 SITE PROPOSAL

This management plan addresses noise emissions associated with the demolition, excavation and construction activities proposed on the site. The development is to encompass a multi storey development for a mixed use development.

2.1 RECEIVER LOCATIONS

Sensitive receiver locations as presented in Figure 1 and are detailed below. These locations will be used as a basis for this assessment.

- | | |
|--------------------|---|
| Receiver 1. | Commercial/Industrial premises located directly on the north west boundary of the project site. |
| Receiver 2 | Commercial/Industrial premises located to the south of the project site. |
| Receiver 3 | Commercial/Industrial premises located directly on the south east boundary of the project site. |
| Receiver 4 | Commercial/Industrial premises located to the north of the project site, across Pacific Highway |



Figure 1: Site Survey and Monitoring Position

3 CONSTRUCTION NOISE AND VIBRATION CRITERIA

Where feasible and practical measures may be applied the construction site should endeavour to comply with the criteria outlined in the Australian Standard AS2436:1981 “guide to noise control on construction, maintenance and demolition sites. A summary of the code is detailed below.

3.1 AUSTRALIAN STANDARD AS2436:1981 “GUIDE TO NOISE CONTROL ON CONSTRUCTION, MAINTENANCE AND DEMOLITION SITES

The Australian Standard AS2436 states that where all reasonable and available measures have been taken to reduce construction noise, mitigation strategies may be put in place to reduce levels noise levels to within a reasonable and acceptable level.

For the control and regulation of noise from construction sites AS2436:1981 “*Guide to noise control on construction, maintenance and demolition sites*” nominates the following:

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

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

Based on these criteria the following procedure will be used to assess noise emissions:

- Predict noise levels produced by typical construction activities at the sensitive receivers.
- Adopt management conditions as per AS 2436 in the event of a non-compliance.

3.2 BACKGROUND NOISE LEVELS

Background noise levels have been established from monitoring on site.

3.2.1 Measurement Equipment

Long term noise monitoring was conducted using an Acoustic Research Laboratories noise monitor. The monitor was set to an A-weighted fast response mode, recording continuously at 15 minute intervals. The monitor was calibrated at the start and end of the monitoring period using a Rion NC-73 calibrator. No significant drift was noted. Detailed noise logging data is attached in Appendix One below.

3.2.2 Location and Time of Measurements

Long term noise monitoring was conducted from 26th of October to the 2nd November 2015.

The monitor was installed on the eastern boundary adjoining the nearest most affected receivers facing the site as indicated in Figure 1.

3.2.3 Background Noise Levels

The background noise levels established from the unattended noise monitoring are detailed in the Table below.

Table 1 – Measured Background Noise Level

Time of Day	Rating Background Noise Level dB(A) $L_{90}(\text{period})$
Daytime	60

3.3 CONSTRUCTION NOISE OBJECTIVES

Construction noise objectives applicable to the development have been determined based on the minimum background noise level recorded and the construction noise criteria detailed in **Error! Reference source not found.** of this report.

Noise level objectives for the construction period of the site are detailed in Table 2.

Table 2 – Construction Noise Objectives

Category	Time of Day	Background Noise Level dB(A) L_{90}	Construction Noise Objective dB(A) $L_{Av \max}$
Monday to Friday	7am to 8am	60	65
Monday to Friday	8am to 5pm	60	70
Saturday	7am to 8am	60	65
Saturday	8am to 5pm	60	

3.4 VIBRATION CRITERIA

Vibration caused by construction at any residence or structure outside the subject site must be limited to:

- For structural damage vibration, German Standard DIN 4150-3 *Structural Vibration: Effects of Vibration on Structures*; and
- For human exposure to vibration, British Standard BS 6472 – ‘Guide to Evaluate Human Exposure to Vibration Buildings (1Hz to 80Hz.

The criteria and the application of this standard are discussed in separate sections below.

3.4.1 Structure Borne Vibrations

German Standard DIN 4150-3 (1999-02) provides vibration velocity guideline levels for use in evaluating the effects of vibration on structures. The criteria presented in DIN 4150-3 (1999-02) are presented in Table 2.

It is noted that the peak velocity is the absolute value of the maximum of any of the three orthogonal component particle velocities as measured at the foundation, and the maximum levels measured in the x- and y-horizontal directions in the plane of the floor of the uppermost storey.

Table 3 – DIN 4150-3 (1999-02) Safe Limits for Building Vibration

Type of Structure		Peak Particle Velocity (mms ⁻¹)			
		At Foundation at a Frequency of			Plane of Floor of Uppermost Storey
		< 10Hz	10Hz to 50Hz	50Hz to 100Hz	All Frequencies
1	Buildings used in commercial purposes, industrial buildings and buildings of similar design	20	20 to 40	40 to 50	40
2	Dwellings and buildings of similar design and/or use	5	5 to 15	15 to 20	15
3	Structures that because of their particular sensitivity to vibration, do not correspond to those listed in Lines 1 or 2 and have intrinsic value (e.g. buildings that are under a preservation order)	3	3 to 8	8 to 10	8

3.4.2 Human Comfort

The British Standard BS 6472 – ‘Guide to Evaluate Human Exposure to Vibration Buildings (1Hz to 80Hz)’ will be used to assess construction vibration for human comfort.

This guideline provides procedures for assessing tactile vibration and regenerated noise within potentially affected buildings. The recommendations of this guideline should be adopted to assess and manage vibration from the site. Where vibration exceeds, or is likely to exceed, the recommended levels then an assessment of reasonable and feasible methods for the management of vibration should be undertaken.

Table 4 – BS 6472 Vibration Criteria

		RMS acceleration (m/s2)		RMS velocity (mm/s)		Peak velocity (mm/s)	
Place	Time	Preferred	Maximum	Preferred	Maximum	Preferred	Maximum
Continuous Vibration							
Residences	Daytime	0.01	0.02	0.2	0.4	0.28	0.56
Offices		0.02	0.04	0.4	0.8	0.56	1.1
Workshops		0.04	0.08	0.8	1.6	1.1	2.2
Impulsive Vibration							
Residences	Daytime	0.3	0.6	6.0	12.0	8.6	17.0
Offices		0.64	1.28	13.0	26.0	18.0	36.0
Workshops		0.64	1.28	13.0	26.0	18.0	36.0

Note 1: Continuous vibration relates to vibration that continues uninterrupted for a defined period (usually throughout the daytime or night-time), e.g. continuous construction or maintenance activity. (DECC, 2006)

Note 2: Impulsive vibration relate to vibration that builds up rapidly to a peak followed by a damped decay and that may or may not involve several cycles of vibration (depending on frequency and damping), with up to three occurrences in an assessment period, e.g. occasional loading and unloading, or dropping of heavy equipment. (DECC, 2006)

4 PROPOSED CONSTRUCTION ACTIVITIES

4.1 PROPOSED CONSTRUCTION WORKS

The proposed construction works will include the following:

- Demolition, Bulk Excavation and Piling;
- General Construction and Fitout Works;

The typically loudest piece of equipment used will be excavator mounted hammers.

Table 5 – Construction Activities

Construction Activity	Equipment / Process	Sound Power Level dB(A)
Demolition, Bulk Excavation and Piling	Concrete Hammer	120
	Concrete Sawing	115
	Hammer Piling	124
	Angle grinders	114
	Bobcat	105
	Excavator	114
	Trucks	108
General Construction Works	Trucks	108
	Concrete Pumps	110
	Concrete Sawing	115
	Drilling	94
	Angle grinders	114
	Electric Saw	111
	Impact drill	105

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

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

4.2 HEAVY VEHICLE ACCESS ROUTES

Heavy vehicles accessing the site will be via Rothschild Avenue which carries large amounts of commercial and passenger vehicles.

It is anticipated that noise from heavy vehicles will have negligible additional impact when considering existing traffic noise which includes heavy vehicles, busses and the like.

5 PREDICTED CONSTRUCTION NOISE LEVELS

Noise from the worst case construction works for each phase of the development have been predicted to the nearest most affected sensitive receivers. The predicted noise levels are presented in this Section and are based on the areas on the site in which the plant is likely to be used.

The following presents the predicted noise levels for each item of typically loud plant.

Table 6 - Predicted Noise from Demolition and Excavation Works

Construction Phase	Construction Plant	Plant Noise Level dB	Receiver Location	Predicted Noise Range dB(A) Lavmax		Noise Criteria dB(A) L _{Avmax}	Exceedance		Management Conditions
Demolition	Hammering	120	North commercial	57	44	54	3	-10	See Section 7
			East Commercial	76	50	54	22	-4	
			South commercial	61	47	54	7	-7	
			West commercial	74	53	54	20	-1	
	Concrete Sawing	115	North commercial	52	39	54	-2	-15	
			East Commercial	71	45	54	17	-9	
			South commercial	56	42	54	2	-12	
			West commercial	69	48	54	15	-6	
	Excavator	114	North commercial	51	38	54	-3	-16	
			East Commercial	70	44	54	16	-10	
			South commercial	55	41	54	1	-13	
			West commercial	68	47	54	14	-7	

Construction Phase	Construction Plant	Plant Noise Level dB	Receiver Location	Predicted Noise Range dB(A) L _{av} max		Noise Criteria dB(A) L _{Av} max	Exceedance		Management Conditions
Excavation and Construction	Piling	120	North commercial	57	44	54	3	-10	See Section 7
			East Commercial	76	50	54	22	-4	
			South commercial	61	47	54	7	-7	
			West commercial	74	53	54	20	-1	
	Concrete Sawing	115	North commercial	57	44	54	3	-10	
			East Commercial	76	50	54	22	-4	
			South commercial	61	47	54	7	-7	
			West commercial	74	53	54	20	-1	
	Concrete Pump	110	North commercial	57	44	54	3	-10	
			East Commercial	76	50	54	22	-4	
			South commercial	61	47	54	7	-7	
			West commercial	74	53	54	20	-1	

Table 7 - Predicted Noise from General Construction Works

6 AMELIORATIVE MEASURES

6.1 SITE SPECIFIC RECOMMENDATIONS

Site specific recommendations as follows:

6.1.1 Potential Vibration and Structure Borne Noise Impacts

Potential vibration and structure borne noise impacts to the East receivers will be minimal given the separation between the site and the receiver locations.

Structure borne noise to the commercial receiver to the north west and south of the site, namely commercial properties located between 500 & 504-528 Pacific Highway, St Leonards, may occur as a result distance to the building in the north west and south direction.

6.1.2 Acoustic Screens

In relation to the potential for acoustic screens to be employed around the site to reduce the emission of construction noise to surrounding receivers, ALC make the following commentary:

- An acoustic screen is recommended to be installed along the northern boundary of the project site. If an acoustic screen was to be installed along this boundary it would provide screening of by up to 10-15dB(A) during the excavation and demolition works.
- An acoustic screen is recommended to be installed along the exposed boundaries of the project site. If an acoustic screen was to be installed along this boundary it would provide screening of by up to 10-15dB(A) during the excavation and demolition works.
- It is noted that the external walls which are located at number 530 Pacific Highway, St Leonards are constructed of solid concrete, with no windows directly facing the project site. An installation of an acoustic screen for the entire site during the demolition and construction stage would not be required. An acoustic screen located around all exposed boundary lines would provide screening of by up to 10-15dB(A) during the excavation and demolition works.
- It should be noted that height of the multi-storey commercial building located to the north, east and south would still have a view over any reasonable acoustic screen which could be installed. Solid hoarding may be employed, but it is expected that for the most part, benefits of this will be minimal.

In relation to above, ALC would recommend the following:

- A 2100mm high solid imperforate acoustic screen or hoarding is to be constructed along all boundaries of the project.
- For screen construction refer to Section 7.2.

6.1.3 Excavator Mounted Hammer and Sawing

Hammering will typically produce the loudest noise levels emanating from the site and have the highest potential for noise impacts on surrounding receivers. On this basis, it is recommended that surrounding receivers are consulted on the processes of the demolition phase (particularly concrete breaking). Management processes will include:

- Substituting concrete breaking during excavation for alternative measures such as sawing and lifting the slab pieces entailing:
 - Making saw cuts to break up the slab;
 - Using a muncher or pulveriser to break up the slab pieces.
- ALC do not recommend the wrapping hammering heads or placing a soft material in between the hammering head and concrete. Ultimately the reduction in construction noise from hammering with this treatment will be minimal and the length of construction exposure will be extended due to constant rewinding due to the hammer wearing away at the material, which in ALC's opinion, will occur frequently.
- All noisy demolition work will commence on site only after 8am, providing a 1 hour respite period during the morning period from the 7am approved hours of construction.
- In addition to this, an afternoon respite period will also be enforced on site between the hours of 12pm to 1:30pm. This period represents a typical lunch period for surrounding commercial tenancies, thereby eliminating impacts from these activities to these receivers during this period.
- All surrounding receivers will be notified of the duration and extent of the works proposed during the demolition stage via letterbox drops.

6.1.4 Excavator Noise

Excavators are expected to be used for the majority of the time during the demolition and excavation periods. Given the acoustic screen proposed around the site, an approximate 10dB(A) reduction would be expected to the rear of the dwellings to the west.

Where prolonged excavator use is necessary, excavators could be moved to another part of the site to offer the receiver closest to the excavator some respite. Where practical and feasible, by moving the excavator from working on one part of the site to the opposite side of the site can provide up to a 13dB(A) reduction in noise levels impacting residential receiver locations. Management processes include;

- All excavation works are envisaged to occur in soil only, No rock breaking or cutting is proposed. Hence, excavation work is proposed to commence after 7:30am, providing a half hour respite period from the 7am approved hours of construction.
- Additionally, an afternoon respite period will also be enforced on site between the hours of 12pm to 1:30pm. This period represents a typical lunch period for surrounding commercial tenancies, thereby eliminating impacts from these activities to these receivers during this period.

- All surrounding receivers will be notified of the duration and extent of the works proposed during the demolition stage via letterbox drops.

6.1.5 Angle Grinders

Angle grinders would only be typically used sporadically. Notwithstanding, where practical, the use of angle grinders should be limited to areas which are screened from surrounding receiver locations.

6.1.6 Vehicle Noise and Concrete Pumps

Vehicle noise will be generally low impact in this instance. Typically noise from cars and busses along Pacific Highway will mask noise from truck movements entering/exiting the site. Notwithstanding, best practice techniques which will minimise noise include the following:

- Trucks, trailers and concrete trucks must turn off their engines when on site to reduce impacts on adjacent land use (unless truck ignition needs to remain on during concrete pumping).
- Locating concrete pumps toward the East of the site will provide the greatest proximity to sensitive residential receiver locations. It is expected that traffic noise on Pacific Highway will have a far greater noise impact on residential and commercial receivers (facing Pacific Highway) and will generally far exceed noise from trucks on site.

6.1.7 Other Activities

- In the event of complaint, noise management techniques identified in this report should be employed to minimise the level of noise impact. This may include community consultation and scheduling of loud construction processes.
- Notwithstanding above, general management techniques and acoustic treatments are included below which may be implemented on a case-by-case basis to reduce noise emissions to surrounding receivers.

7 CONTROL OF CONSTRUCTION NOISE AND VIBRATION

The execution of this work will facilitate the formulation of noise control strategies for this project.

The flow chart presented in Figure 2 illustrates the process that will be followed in assessing construction activities.

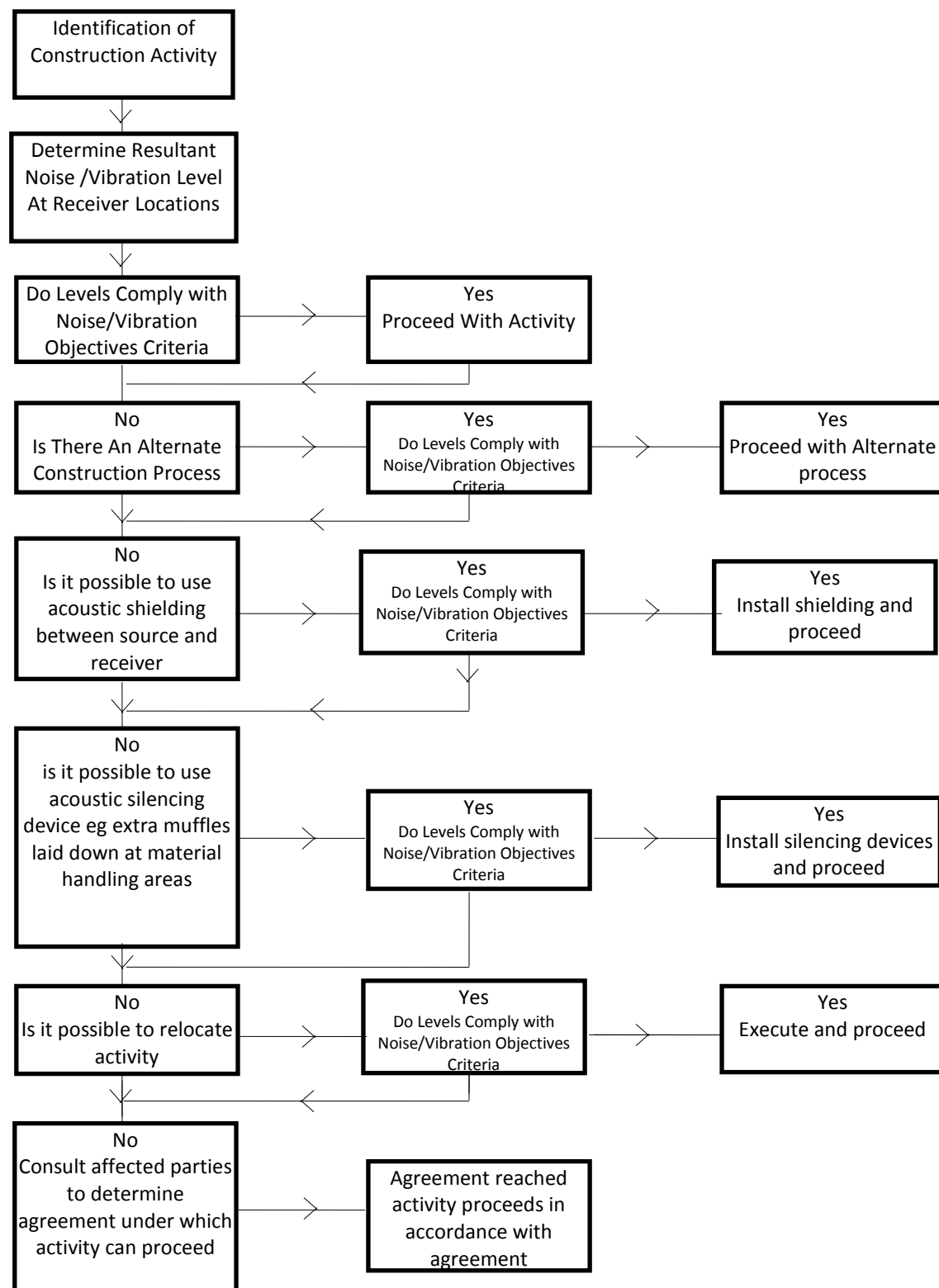


Figure 2 – Process Flowchart

NOISE AND VIBRATION CONTROL METHODS

The determination of appropriate noise control measures will be dependent on the particular activities and construction appliances. This section provides an outline of available methods.

7.1 SELECTION OF ALTERNATE APPLIANCE OR PROCESS

Where a particular activity or construction appliance is found to generate excessive noise levels, 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.

Selection of alternative appliances have been explored for the demolition of the existing structure. Due to safety concerns, particularly in relation to slab and structural loading, large excavator mounted milling will not be feasible.

Pre-drilling, saw cutting and ripping may be incorporated in the excavation of the existing base slab. Whilst hammering may still be required, the substitution of drilling, sawing and ripping will reduce degree of hammering required.

7.2 ACOUSTIC BARRIER

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). Equipment which is on the move or working in rough or undulating terrain cannot be effectively attenuated by placing barriers at the source.
- Barriers can also be placed between the source and the receiver however this will not be beneficial in this instance due to receivers overlooking the site.

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 15dB(A) can be effected. Where only partial obstruction of line of sight occurs, noise reductions of 5 to 8dB(A) may be achieved. Where no line of sight is obstructed by the barrier, 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 that is approximately 10dB(A) greater than the maximum reduction provided by the barrier. In this case the use of a material such as 10mm or 15mm thick plywood (radiata plywood) would be acceptable for the barriers.

7.3 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.

7.4 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).

7.5 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.

7.6 ESTABLISHMENT OF SITE PRACTICES

This involves the formulation of work practices to reduce noise generation. It is recommended that all available and reasonable treatments and mitigation strategies presented in this report be adopted to minimise noise emissions from the excavation and construction activities on site.

7.7 NOISE MONITORING

Predicted noise levels indicate that noise emissions from the proposed works on site will not strictly comply with the council's noise criteria, given the close proximity of adjoining properties. On this basis, noise monitoring can be undertaken to determine the effectiveness of measures which have been implemented.

Noise monitoring can be conducted during the demolition and excavation stages to, establish a benchmark of the potential highest levels of noise likely to be generated. We recommend monitoring for a week long period during each stage of works, to establish these benchmark levels.

Ongoing monitoring and reporting can be conducted if required, after this initial benchmark period. Continuous monitoring will typically include report generated fortnightly, with additional reports created if benchmark levels are exceeded. In events of exceedance in benchmark levels, site foreman will immediately stop work on site and contact acoustic consultant to determine if ;

- Noisy plant/activity was recognised by site foreman – determine reason for exceedance and recommend ameliorative measures or alternate processes for the activity.
- Site attendance is required by acoustic consultant to determine noisy plant/activity and conduct attended measurements. Device further controls based on measured levels.

7.8 COMBINATION OF METHODS

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

7.9 MAINTENANCE OF PLANT, EQUIPMENT AND MACHINERY

European Kitchen Appliances Pty Ltd will ensure all plant, equipment and machinery are regularly serviced and maintained at optimum operating conditions, to ensure excessive noise emissions are not generated from faulty, overused or unmaintained machinery.

7.10 STAFF TRAINING AND REPORTING MECHANISM

All construction staff on site, as part of the site induction process, will be informed of the surrounding sensitive receivers on site and the site specific recommendations to reduce noise impacts to these receivers (late starts, respite period, vehicle noise control etc. – refer section 7.1).

Any complaints received by construction staff must be immediately reported to the site foreman, followed by completion of incident report form and steps detailed in section 10.3 below.

A copy of the recommendations detailed in this report will be posted at key areas around the site for easy reference by all staff.

8 COMMUNITY INTERACTION AND COMPLAINTS HANDLING

8.1 ESTABLISHMENT OF DIRECT COMMUNICATION WITH AFFECTED PARTIES

In order for any construction noise management programme to work effectively, continuous communication is required between all parties, which may be potentially impacted upon, the builder and the regulatory authority. This establishes a dynamic response process which allows for the adjustment of control methods and criteria for the benefit of all parties.

The objective in undertaking a consultation processes is to:

- Inform and educate the groups about the project and the noise controls being implemented;
- Increase understanding of all acoustic issues related to the project and options available;
- Identify group concerns generated by the project, so that they can be addressed; and
- Ensure that concerned individuals or groups are aware of and have access to a Constructions Complaints Register which will be used to address any construction noise related problems should they arise.

Community consultation will be conducted prior to any works commencing on site, with letterbox notifications to all identified surrounding sensitive receivers

8.2 COMMUNITY CONSULTATION SESSIONS AND INFORMATION LEAFLETS

The following is a list of community consultation documents and procedures:

- An incident report form will also be issued to all stakeholders in the area, should the need for any complaints arise.
- New Hope Pty Ltd will maintain a direct line of communication with all affected stakeholders in the area.

8.3 DEALING WITH COMPLAINTS

Should ongoing complaints of excessive noise or vibration criteria occur immediate measures shall be undertaken to investigate the complaint, the cause of the exceedances and identify the required changes to work practices. In the case of exceedances of the vibration limits all work potentially producing vibration shall cease until the exceedance is investigated.

The effectiveness of any changes shall be verified before continuing. Documentation and training of site staff shall occur to ensure the practices that produced the exceedances are not repeated.

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;
- Required remedial action, if required;
- Validation of the remedial action; and
- Summary of feedback to the complainant.

A permanent register of complaints should be held. All complaints received should be fully investigated and reported to management. The complainant should also be notified of the results and actions arising from the investigation.

The investigation of a complaint shall involve where applicable;

- Noise measurements at the affected receiver;
- An investigation of the activities occurring at the time of the incident;
- Inspection of the activity to determine whether any undue noise is being emitted by equipment; and
- Whether work practices were being carried out either within established guidelines or outside these guidelines.

Where an item of plant is found to be emitting excessive noise, the cause is to be rectified as soon as possible. Where work practices within established guidelines are found to result in excessive noise being generated then the guidelines should be modified so as to reduce noise emissions to acceptable levels. Where guidelines are not being followed, the additional training and counselling of employees should be carried out.

Measurement or other methods shall validate the results of any corrective actions arising from a complaint where applicable.

8.4 REPORTING REQUIREMENTS

The following shall be kept on site:

1. A register of complaints received/communication with the local community shall be maintained and kept on site with information as detailed in section 9.2.
2. Where noise/vibration complaints require noise/vibration monitoring, results from monitoring shall be retained on site at all times.
3. Any noise exceedances occurring including, the actions taken and results of follow up monitoring.
4. A report detailing complaints received and actions taken shall be presented to the construction liaison committee.

8.5 CONTINGENCY PLANS

Where non-compliances or noise complaints are raised the following methodology will be implemented.

1. Determine the offending plant/equipment/process
2. Locate the plant/equipment/process further away from the affected receiver(s) if possible.
3. Implement additional acoustic treatment in the form of localised barriers, silencers etc where practical.
4. Selecting alternative equipment/processes where practical

9 CONCLUSION

This report presents an assessment of noise impacts associated with the demolition, excavation and construction of the commercial development to be located 500 & 504-528 Pacific Highway, St Leonards.

A prediction of noise levels associated with the works have been discussed in this report. The outcomes are as follows:

- There is likely to be exceedances of the construction noise criteria particularly with heavier equipment such as excavators, rock breakers, concrete saws and the like during the demolition and excavation phases.
- General construction works will have significantly lower impact on surrounding receivers due to the quieter items of plant (concrete pumps, etc). Notwithstanding, in all circumstances noise emissions from the site should be minimised as practically possible during the construction period.

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

Yours faithfully,

A handwritten signature in black ink, appearing to read 'M Furlong', with a large, sweeping underline.

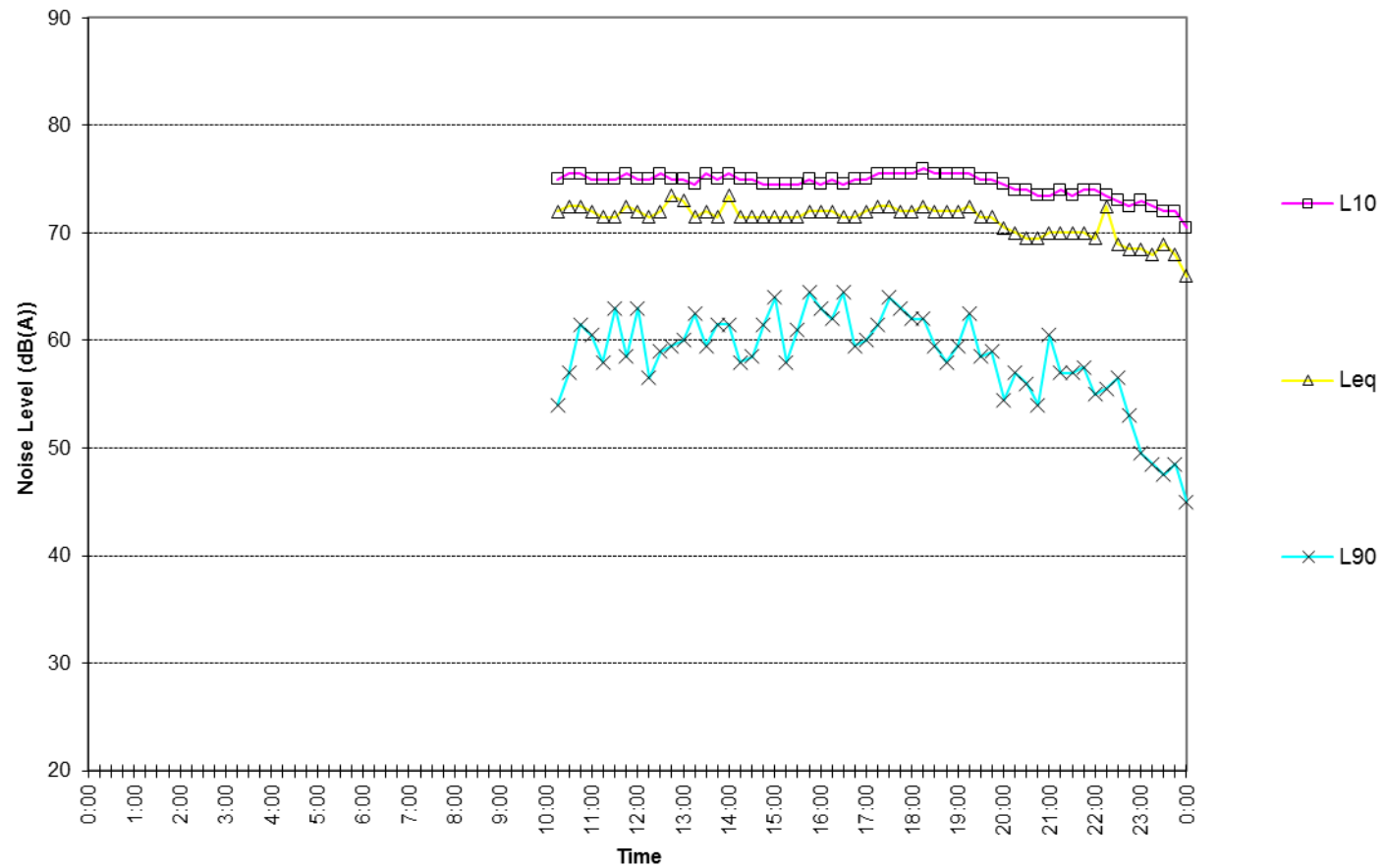
Acoustic Logic Consultancy Pty Ltd
Matthew Furlong

Appendix 1

Noise Logging Data

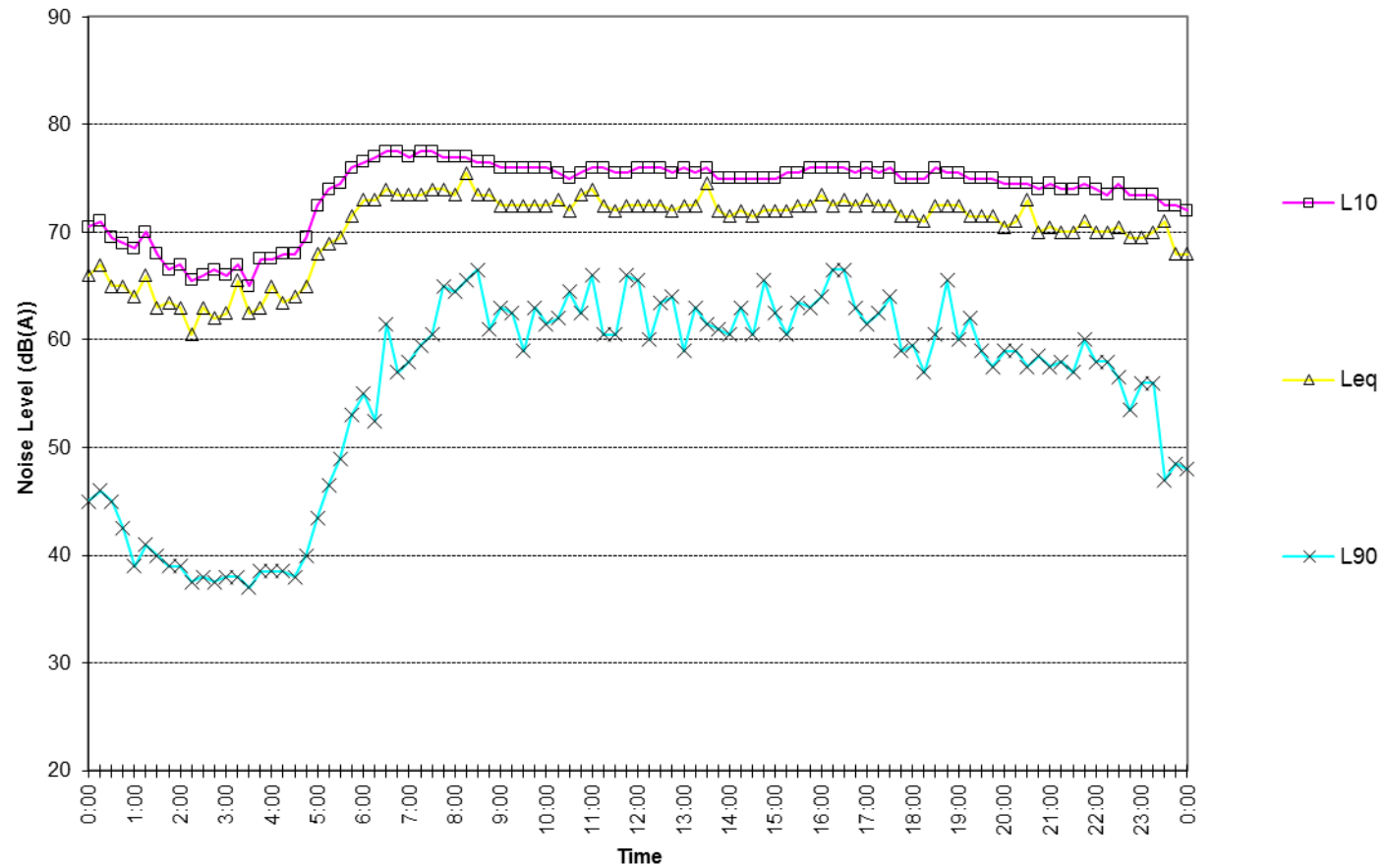
500 Pacific Highway St Leonards

Monday October 26, 2015



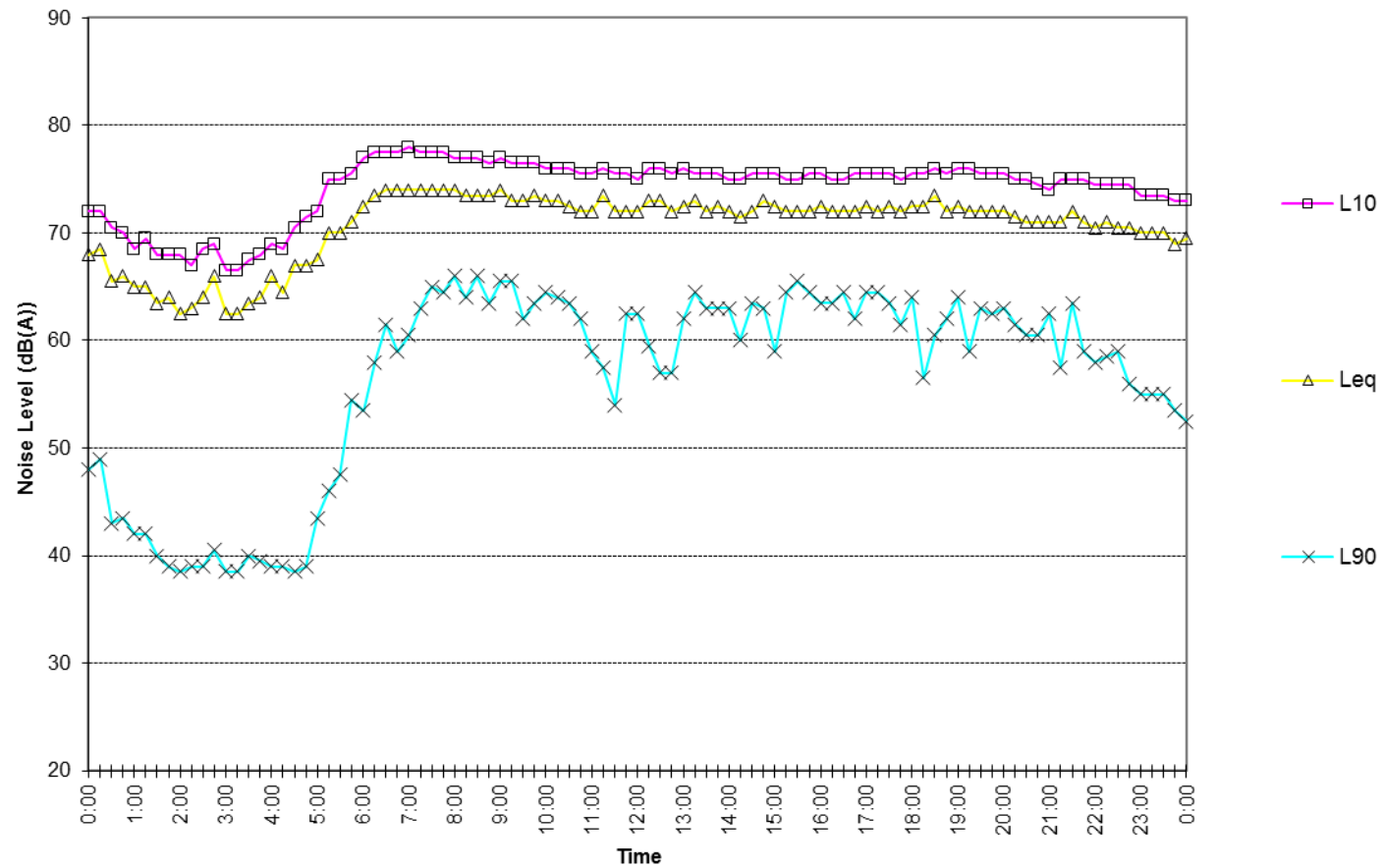
500 Pacific Highway St Leonards

Tuesday October 27, 2015



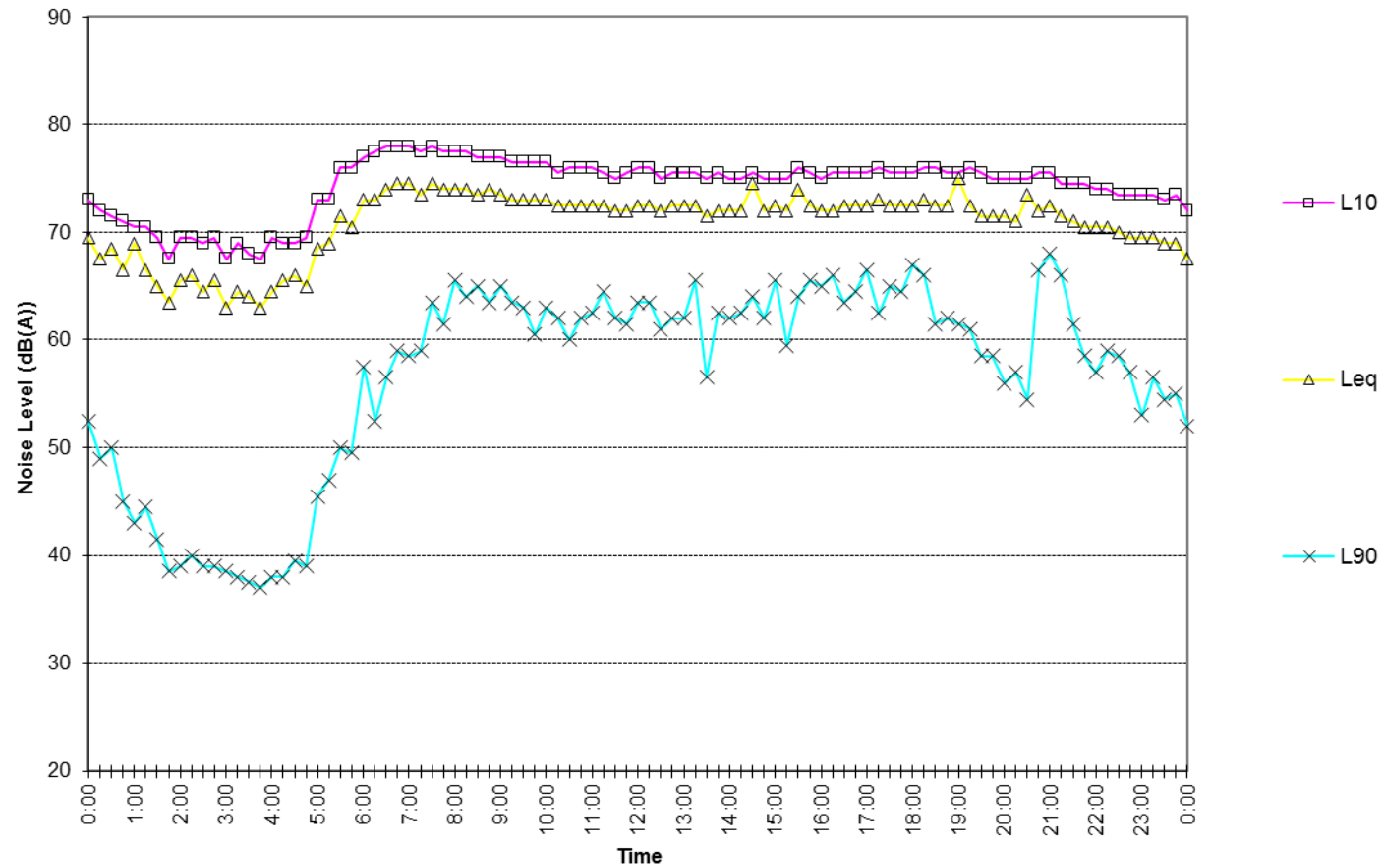
500 Pacific Highway St Leonards

Wednesday October 28, 2015



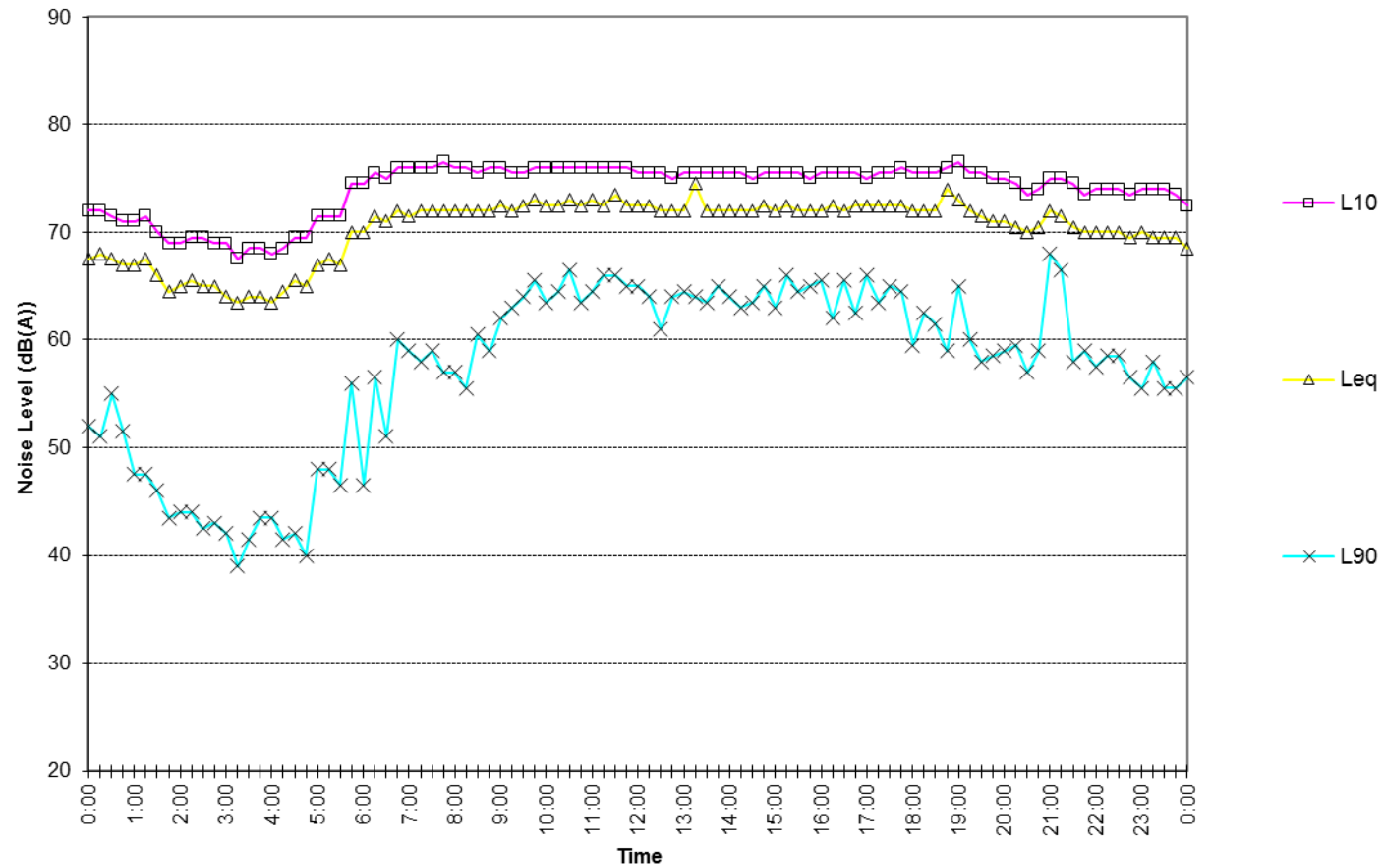
500 Pacific Highway St Leonards

Thursday October 29, 2015



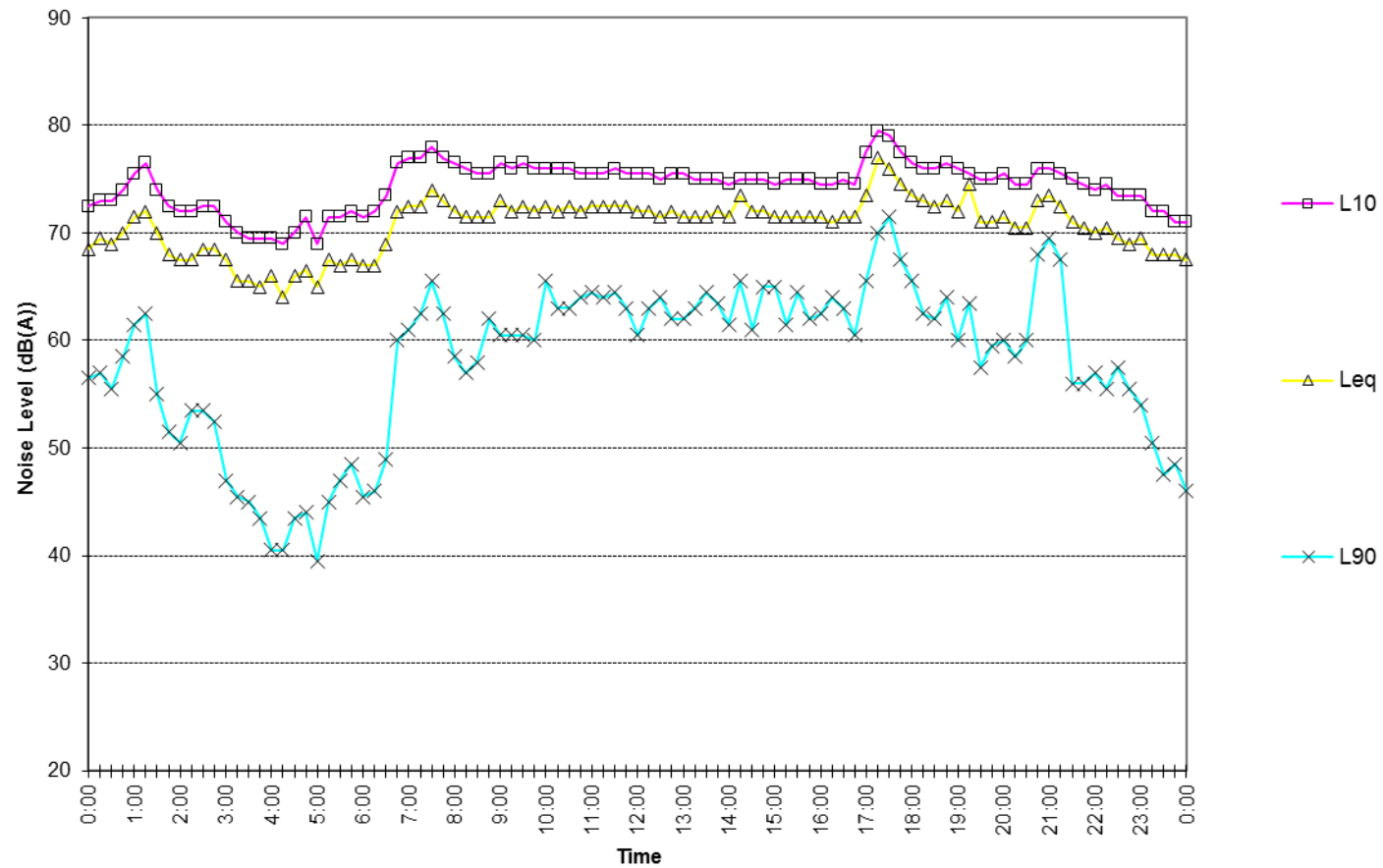
500 Pacific Highway St Leonards

Friday October 30, 2015



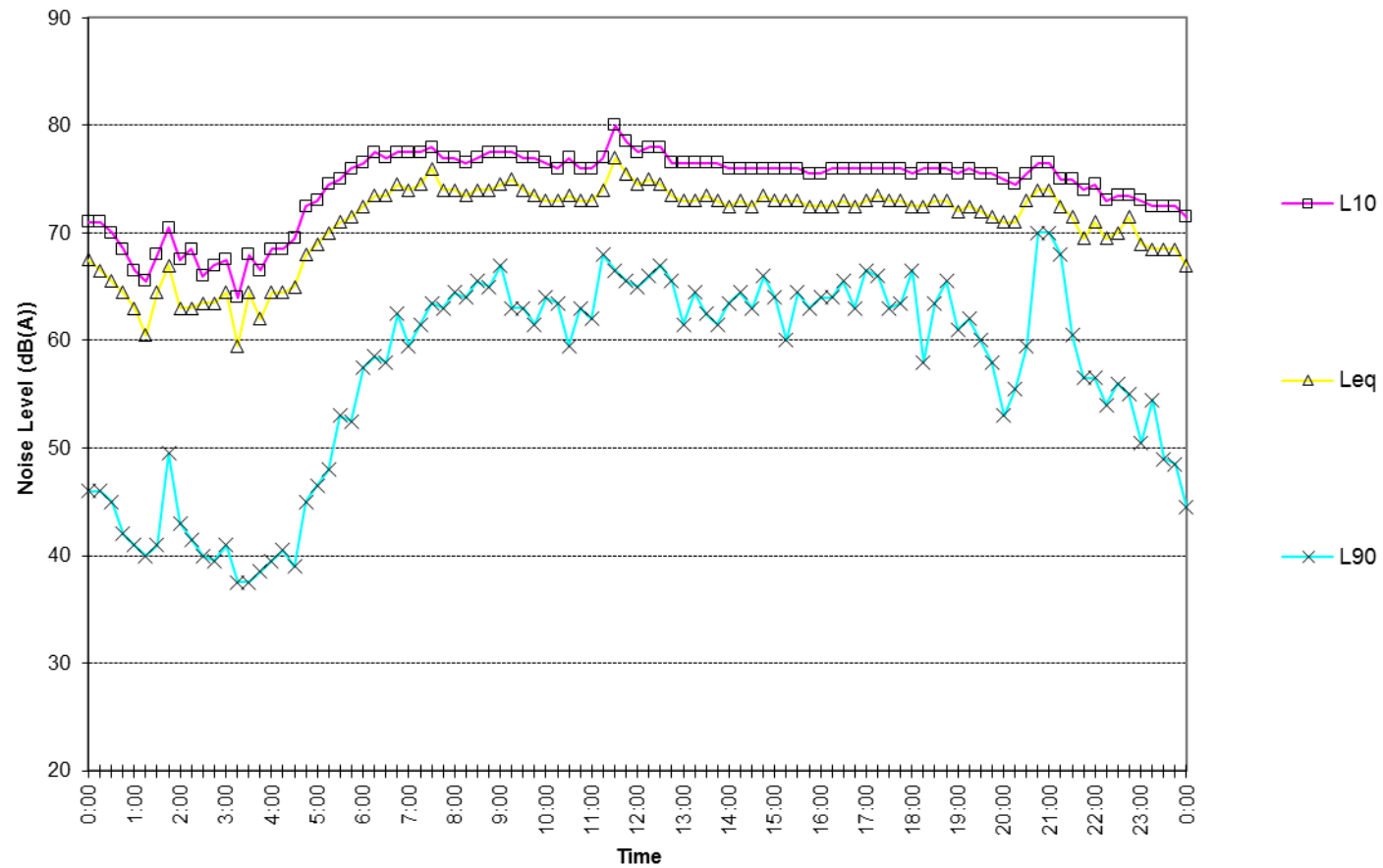
500 Pacific Highway St Leonards

Saturday October 31, 2015



500 Pacific Highway St Leonards

Sunday November 1, 2015



500 Pacific Highway St Leonards

Monday November 2, 2015

