

ACOUSTIC LOGIC CONSULTANCY

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abn 11 068 954 343

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MARRICKVILLE METRO PROPOSED SHOPPING CENTRE EXPANSION

NOISE EMISSION ASSESSMENT OF “PRFERRED PROJECT”

Directors | Matthew Palavidis | Victor Fattoretto | Matthew Carter | Matthew Shields

Sydney | Ph 02 8338 9888 | fax 02 8338 8399 | 9 Sarah Street Mascot NSW 2020

Melbourne | Ph 03 9614 3199 | fax 03 9614 3755 | Level 7, 31 Queen Street Melbourne VIC 3000

Brisbane | Ph (07) 3211 5591 | fax (07) 3839 6194 | Level 6, North Point 231 North Quay Brisbane QLD 4000

Canberra | Ph 02 6162 9797 | fax 02 6162 9711 | Unit 14/71 Leichhardt Street Kingston ACT 2604

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1. INTRODUCTION

This report forms part of a Preferred Project Report (PPR) prepared on behalf of AMP Capital Investors (AMPCI) in respect to the Concept Plan Application under Part 3A of the NSW Environmental Planning and Assessment Act 1979 for the proposed redevelopment of the Marrickville Metro Shopping Centre.

This report has been prepared in response to the letter from the Department of Planning (DOP) dated 14 October 2010 requesting that a Preferred Project Report (PPR) be prepared. The letter requests that the proponent respond to the issues raised by the submissions and for the PPR to identify how the issues raised by the submissions including those of the DOP have been addressed and how the PPR minimises the environmental impacts of the proposal.

The Preferred Project includes the following key amendments to the original proposal:

- The adoption of the "alternative proposal" for Smidmore Street as outlined in section 5.6 of the Environmental Assessment Report, meaning that all proposed development within the Smidmore Street road reserve has been deleted from the proposal and the road will remain open to vehicle traffic.
- Removal of the draft VPA from the PPR following Marrickville Council's decision not to grant owner's consent for the inclusion of Smidmore Street in the application.
- Accompanying refinements to the design of the buildings fronting Smidmore Street to address the existing street interface, optimise pedestrian access between the two buildings and maximise street front retail activation and pedestrian amenity.
- A reduction in the gross leasable floor space of the new development from 21,470sqm to 16,767sqm (a reduction of 22% in floor area).
- A reduction in the number of new car parking spaces from 715 to 528.
- A significant reduction in the new building footprint above the existing shopping centre within the north-east section of the site, including the removal the spiral ramp near the corner of Victoria Road and Murray Street.
- Retention of the existing vehicle ramp location within Murray Street and the relocation of the access from Murray Street to the new loading dock 3 further to the south.
- A public domain 'concept vision' for Smidmore Street which will be subject to the further agreement of Marrickville Council.
- Retention of all existing mature Lemon Scented Gums in Smidmore Street.

In this report we will identify operational noise emissions which will be generated by the site (loading dock noise, mechanical plant noise, vehicle noise) and, where necessary, recommend acoustic and management controls in order to reduce noise impacts on nearby properties to levels complying with relevant acoustic criteria.

2. SITE DESCRIPTION

Marrickville Metro Shopping Centre is located at Victoria Road, Marrickville.

The proposal has these key elements:

- An extension of retail floor area at first floor level above the existing shopping centre building with further additional roof top parking above. New retail area is proposed to include a discount department store, supermarket, mini major and specialty retail space
- Redevelopment of the existing industrial land south of Smidmore Street (13-55 Edinburgh Road) to create a two level retail addition to the shopping centre with car parking above.
- Proposed works result in an increase in parking spaces from approximately 1100 to approximately 1628 spaces.
- There will be vehicle ramps and re-routing of vehicle movement within the site as a result of the proposed changes to existing parking arrangements.
- Relocation of the existing loading dock on Murray Street further to the south.

Development in the vicinity of the site is as follows:

- To the north – residential development directly opposite the site, on the far side of Victoria Road (the Victoria Road residences).
- To the east of the site, on the far side of Murray Street, lies a mixture of commercial/industrial development with a number of residential properties (Murray Street residences) at the northern end of the street.
- To the south of the site, on the far side of Smidmore Street, lies a mixture of commercial and industrial development.
- Adjoining the site to the west lie residential properties on Bourne Street (the Bourne Street residences). We note that there is an approximately 4m high brick wall constructed on the property boundary between the shopping centre/existing loading dock and these residences.

Detailed site map and ambient noise monitor location is presented in Figure 1 below.



3. NOISE DESCRIPTORS

Environmental noise constantly varies. Accordingly, it is not possible to accurately determine prevailing environmental noise conditions by measuring a single, instantaneous noise level.

To accurately determine the environmental 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.

In analysing 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 intervals.

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 15 minute 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 environmental noise.

4. BACKGROUND NOISE MEASUREMENTS

Background noise measurements were conducted using a long term noise logger and short term, attended measurement to characterise the existing noise environment. Measured background noise levels are then used to determine noise emission goals for the site (see section 5, Intrusiveness and Sleep Disturbance acoustic criteria).

4.1 UNATTENDED NOISE MONITORING

Continuous monitoring of background noise levels was conducted between 19 and 26 March 2010. Equipment used consisted of an Acoustic Research Laboratories noise logger. The monitor continuously measures noise levels and every 15 minutes stores statistical data within memory. The stored data was downloaded at the end of the measurement period. The monitor was calibrated before and after the measurement using a Rion NC-73 calibrator. No significant drift was recorded.

The monitor was installed in the Centre Management Office (the Mill House building, separate from the main shopping centre) on Victoria Road, with the microphone protruding from a first floor window (facing Victoria Road). Background noise levels measured here will be indicative of those at the residents on Victoria Road, directly opposite the site.

4.2 ATTENDED NOISE MONITORING

Attended measurements were also taken on 26 March 2010 between 1am and 2am and on 7 May 2010 at between 10.30am and 11.30am at a variety of locations around the centre.

Attended measurements were taken using a Norsonic 140 Type 1 Sound Analyser set on A-weighted fast response mode.

4.3 MONITORING RESULTS.

A summary of the measured background noise levels (based on the long term monitoring and short term measurements) are presented below.

Table 1 – Measured Background Noise Levels

Location	Existing Background Noise Level – dB(A) _{L₉₀}			
	Day (7am-6pm)	Evening (6pm-10pm)	Night (10pm-7am)	6am-7am Shoulder Period
Victoria Road	48	45	41	43
Murray Street	45	44	41	43
Bourne Street	44	40	40	40

5. NOISE EMISSION CRITERIA

Primary noise sources will be loading dock noise, noise from new mechanical plant, noise from vehicles driving on-site and noise as a result of traffic generation on public roads.

Different noise sources have different acoustic criteria. This section sets out the acoustic criteria to be adopted for each of the primary noise sources.

Although acoustic privacy is discussed in Marrickville Council's DCP 28 (Business Centres), there are no noise emission criteria specified. In the absence of this, the appropriate DECC guidelines will be used in the assessment of noise emissions.

5.1 ON-SITE NOISE (LOADING DOCKS, MECHANICAL NOISE, VEHICLE NOISE)

These noise sources will be assessed with reference to the DECC Industrial Noise Policy (Intrusiveness and Amenity criteria).

In addition, as loading docks are proposed to be used after 10pm, a sleep disturbance assessment should be undertaken.

5.1.1 DECC Industrial Noise Policy - Intrusiveness Criteria

Intrusiveness criteria are calculated with reference to the existing background noise levels (as presented in table 1). The DECC Intrusiveness criteria are presented below. Noise emissions from

the site should comply with the criteria when measured at the property boundary of nearby residential properties.

Table 2 – External Noise Emission “Intrusiveness” Criteria

Location	Noise Emission Goal – dB(A) $L_{eq(15min)}$			
	Day (7am-6pm)	Evening (6pm-10pm)	Night (10pm-7am)	6am-7am Shoulder Period
Victoria Road	53	50	46	48
Murray Street	50	49	46	48
Bourne Street	49	45	45	45

Noise emissions under these criteria are assessed using $L_{eq(15minute)}$ descriptor – ie – the noise source is averaged over a fifteen minute period. This short term assessment period is appropriate for assessment of short term (such as peak periods of use of a car park and loading docks).

5.1.2 DECC Industrial Noise Policy - Amenity Criteria

The DECC Amenity Criteria are as set out below. Noise emissions from the site should comply with the criteria when measured at the property boundary of nearby residential properties.

Table 3 - External Noise Emission “Amenity” Criteria

Land Type	Time of Day	Amenity Noise Objective dB(A) $L_{eq(Period)}$
Suburban Residential	Day Time (7am – 6pm)	55
	Evening (6pm – 10pm)	45
	Night (10pm-7am)	40
Commercial areas	When in use	65
Industrial areas	When in use	70

Noise emissions under these criteria are assessed using $L_{eq(Period)}$ descriptor – ie – the noise source is averaged over the entire daytime/evening/night time period and are appropriate when assessing noise sources which will run throughout the majority of a daytime/evening/night period (long term noise from car parks, mechanical services noise).

5.1.3 Sleep Disturbance Assessment

Where noise is expected to be generated either before 7am or after 10pm, an assessment of potential sleep disturbance on nearby residents should be undertaken.

Sleep arousal is a function of both the noise level and the number of noise events during the night time period.

Assessment of potential sleep arousal will be conducted in accordance with the methodology set out in the explanatory notes to the DECC Industrial Noise Policy. This assessment is a two stage process:

- Firstly - an emergence test is carried out. That is, the L_1 noise level of any specific noise source should not exceed the background noise level (L_{90}) by more than 15dB(A) outside a resident's bedroom window. If the noise events are within this guideline, then sleep arousal impacts are unlikely and no further analysis is needed. Criteria are presented below.

Table 4 – Sleep Arousal (Emergence Criteria)

Location	Existing Background Noise Level – dB(A) L_{90}	Noise Emission Goal (Emergence Level) BG+15(dB(A) $L_{1(1min)}$)
Victoria Road	41	56
Murray Street	41	56
Bourne Street	40	55

- If there are noise events that could exceed the emergence level outlined above, then a detailed assessment of sleep arousal impact is required to be carried out taking into account the actual predicted noise level and the likely number of noise events in order to determine the likelihood of sleep disturbance. The DECC explanatory notes refer to the documents such as the DECC Environmental Criteria for Road Traffic Noise appendix B for analysis to correlate noise events with a probability of awakening. If necessary, an assessment of this nature will be conducted.

5.2 NOISE EMISSION CRITERIA – INCREASED TRAFFIC ON LOCAL ROADS

For developments with the potential to create additional traffic, assessment against the DECC Environmental Criteria for Road Traffic Noise guidelines is recommended. Traffic flows on Murray Street and Edinburgh Road are likely to be altered as a result of the development, and therefore noise emissions from the increased traffic flows should be assessed.

Under the policy, Murray Street and Edinburgh Road would be considered a "local road". Noise levels generated by traffic should not exceed the noise levels set out in the table below when measured at a nearby residential property.

Table 5 - Traffic Noise Emissions for New Developments

Location	Recommended Traffic Noise Level	
	Day (7am to 10pm)	Night (10pm to 7am)
Residences on Murray Street and Edinburgh Road.	55dB(A) $L_{Aeq(1hr)}$	50dB(A) $L_{Aeq(1hr)}$

However, if existing traffic noise levels exceed those in the table above, the new development must not cause an increase noise of more than 2 dB.

6. NOISE EMISSION ASSESSMENT

The following noise sources will be assessed:

- Noise from the operation of loading docks:
 - The new loading dock (loading dock 1, in the south-eastern corner of the new site).
 - Existing service dock (loading dock 2, in the south-western corner of the existing shopping centre).
 - A new, consolidated loading dock (loading dock 3) on Murray Street, replacing the existing open docks on Murray Street.
- Noise from new mechanical plant.
- Noise from vehicle circulation/car parks, specifically the new car park ramps:
 - On the western boundary of the existing shopping centre
 - On the western side of the proposed new extension.
 - We note that a ramp in the north-eastern corner of the shopping centre (adjacent to the Murray Street/Victoria Road intersection) has now been deleted with the existing ramps remaining. Ramps connecting level 2 and the roof top car park are now located further within the site, away from the site perimeter and the residences on Victoria Road/Murray Street.
- Noise as a result of increased traffic generation on public roads.

Where necessary, acoustic treatments/management controls will be recommended to reduce noise emissions to levels complying with acoustic criteria.

6.1 LOADING DOCKS

An assessment of all new and altered loading docks will be presented. Noise emissions (semi-trailer movement being the loudest) will be assessed with reference to both average noise levels (Industrial Noise Policy Intrusiveness Criteria) in addition to sleep disturbance assessment criteria.

As the loading docks will be potentially used at any time, noise emissions will be assessed against night time acoustic criteria (the most stringent applicable).

6.1.1 Loading Dock 1

Noise from the use of the proposed new loading dock in the south-eastern corner of the shopping centre expansion will be assessed at the nearest residences – those on Murray Street, approximately 160m to the north.

Noise emissions will be predicted based on the following assumptions:

- Trucks (semi-trailers, the largest vehicle that will use the loading dock) generate a sound power level of 105dB(A)_{L_{eq}}. This noise level is based on data held by this office for semi-trailers.

- An inbound truck movement (which takes the longest and therefore generates the most noise) takes approximately 2 minutes.
- There is no more than one truck movement in any 15 minute period.

Noise emissions are assessed below. An assessment of both average noise levels (ie the $L_{eq(15min)}$ noise levels) and peak noise events will be presented.

Table 6 - Noise Emission Assessment – Loading Dock (Average Noise Events)

Noise Source	Receiver	Predicted Noise Level – $dB(A)L_{eq(15min)}$	Complies
Semi Trailer Entry Movement	Murray Street Residences	38	Complies. Less than $46dB(A)L_{eq(15min)}$ (Intrusiveness Criteria) – see table 2.

Table 7 - Noise Emission Assessment – Loading Dock (Peak Noise Event)

Noise Source	Receiver	Predicted Noise Level – $dB(A)L_{1(1min)}$	Complies
Semi Trailer Entering/Leaving Dock	Murray Street Residences	54	Complies. Less than $56dB(A)L_{1(1min)}$ (Sleep Disturbance Criteria) – see table 4.

Noise generated by material handling (loading and unloading) is less than that of the truck engine, and will also not present a noise emission problem.

6.1.2 Service Dock 2

Noise from the use of the existing loading dock in the south-western corner of the existing shopping centre will be assessed at the nearest residences – those on Bourne Street, approximately 30m to the west.

The primary noise sources associated with the use of the loading dock will be vehicle noise (semi-trailers) during entry/exit movements.

Noise emissions will be predicted based on the following assumptions:

- Trucks (semi-trailers, the largest vehicle that will use the loading dock) generate a sound power level of $105dB(A)L_{eq}$. This noise level is based on data held by this office for semi-trailers.
- An inbound truck movement (which takes the longest and therefore generates the most noise) takes approximately 2 minutes.
- There is no more than one truck movement in any 15 minute period.
- The acoustic screening provided by the 3.5m high masonry wall on the western boundary of the site will be taken into account.

Noise emissions are assessed below. An assessment of both average noise levels (ie the $L_{eq(15min)}$ noise levels) and peak noise events will be presented.

Table 8 - Noise Emission Assessment – Loading Dock (Average Noise Events)

Noise Source	Receiver	Predicted Noise Level – $dB(A)L_{eq(15min)}$	Complies
Semi Trailer Entry Movement	Bourne Street Residences	44	Complies. Less than $45dB(A)L_{eq(15min)}$ (Intrusiveness Criteria) – see table 2.

Table 9 - Noise Emission Assessment – Loading Dock (Peak Noise Event)

Noise Source	Receiver	Predicted Noise Level – $dB(A)L_{1(1min)}$	Complies
Semi Trailer Entering/Leaving Dock	Bourne Street Residences	53	Complies. Less than $55dB(A)L_{1(1min)}$ (Sleep Disturbance Criteria) – see table 4.

Noise generated by material handling (loading and unloading) is less than that of the truck engine, and will also not present a noise emission problem.

6.1.3 Loading Dock 3

It is proposed to consolidate the numerous existing open docks on Murray Street with a new, enclosed consolidated dock – loading dock 3. The proposed loading dock will be moved further south (further away from the residential properties which are directly opposite the existing dock) and will be enclosed by a slab over.

We note that there are typically 4-5 large truck movements per week which may use the dock at any time.

Noise emissions will be predicted based on the following assumptions:

- Trucks (semi-trailers, the largest vehicle that will use the loading dock) generate a sound power level of $105dB(A)L_{eq}$.
- An inbound truck movement (which takes the longest and therefore generates the most noise) takes approximately 2 minutes.
- There is no more than one truck movement in any 15 minute period.
- Building controls recommended in section 7 are adopted.

Noise emissions are assessed below. An assessment of both average noise levels (ie the $L_{eq(15min)}$ noise levels) and peak noise events will be presented.

Table 10 - Noise Emission Assessment – Loading Dock (Average Noise Events)

Noise Source	Receiver	Predicted Noise Level – dB(A) $L_{eq(15min)}$	Complies
Semi Trailer Entry Movement	Murray Street Residences	44	Complies. Less than 46dB(A) $L_{eq(15min)}$ (Intrusiveness Criteria) – see table 2.

Table 11 - Noise Emission Assessment – Loading Dock (Peak Noise Event)

Noise Source	Receiver	Predicted Noise Level – dB(A) $L_{1(1min)}$	Complies
Semi Trailer Entering/Leaving Dock.	Murray Street Residences	64	Does not comply with "Background+15dB(A)" assessment (see Sleep Disturbance Criteria, table 4) – more detailed assessment is required. See below.

As noted in the table above, peak noise events (momentary peaks in noise level as trucks leave the covered loading dock) exceed the initial "background + 15dB(A)" assessment, and a more detailed assessment is needed.

As noted in the Industrial Noise Policy Explanatory notes, a more detailed assessment should take into account the number of peak noise events per night and the actual noise level *within a habitable area* in a nearby residence.

In this regard we note:

- Predicted noise level at the building façade of the house on Murray Road nearest the loading dock as a truck leaves the loading dock is 64dB(A) (see table above).
- Assuming that the windows to bedrooms of the house are left open, an external noise level of 64dB(A) will result in an internal noise level (in a habitable room) of approximately 54dB(A).
- DECC Environmental Criteria for Road traffic noise (appendix B) note that there is close to a 0% chance of sleep disturbance from such as noise event. The policy goes on to note that peak noise events in the 50-55dB(A) range are unlikely to cause awakening reactions.
- Given that there are 4-5 large truck deliveries to this loading dock per week, one would expect there would be no more than one truck delivery per night. Therefore 1-2 noise events (one inbound truck movement, one outbound) in the 50-55dB(A) range per night will not adversely impact residents.
- Further, noise levels will be significantly improved compared to the current location of the dock, where noise levels are likely to be approximately 5dB(A) higher.

6.2 MECHANICAL PLANT NOISE EMISSIONS

Noise emissions from mechanical plant are to comply with the noise emission criteria set out in section 5.1.

Detailed plant selection has not been determined at this stage. Detailed acoustic review should be undertaken at CC stage to determine acoustic treatments to control noise emissions to satisfactory levels (as per the project Statement of Commitments). Satisfactory levels will be achievable through appropriate plant selection and location and, if necessary, standard acoustic treatments such as duct lining, acoustic silencers and enclosures.

6.3 VEHICLE NOISE

Noise from vehicles using the car park, in particular noise from cars driving on the ramps which are located relatively close to residential properties, should be assessed.

Noise predictions will be based on the following assumptions:

- Peak periods of use of the car park are likely to occur on Saturday mornings and Thursday evenings. Noise emissions will therefore be assessed with reference to daytime and evening acoustic criteria.
- Predicted noise levels are based on the assumption that there are four cars on each of the ramps at any one time (a conservatively high assumption, as in all likelihood, the numbers of cars on the ramps at any one time will be between zero and one).
- The sound power level of a car driving up a ramp is 89dB(A) L_{eq} .
- The acoustic treatments recommended in section 7 are taken into account.

Refer to appendix 2 showing position of ramps.

6.3.1 Cumulative noise level – Ramp serving shopping centre expansion and relocated ramp in south-western corner of the existing shopping centre (Ramps 1 and 2).

The cumulative noise level from the use of these two ramps is assessed below. Noise emissions will be predicted at the nearest residences (the Bourne Street residences, adjoining the site to the west).

The predicted noise level takes into account the screening affect provided by the 4m high masonry wall around the western boundary of the site. Predicted noise level is presented below.

Table 12 - Vehicle Noise Bourne Street Residences

Receiver	Predicted Noise Level	Compliance
Bourne Street residences	43 dB(A) $L_{eq(15min)}$	Complies* Less than 45dB(A) $L_{eq(15min)}$ (Intrusiveness Criteria) – see table 2. Less than 45dB(A) $L_{eq(Period)}$ (Amenity Criteria) – see table 3.

*Noise emissions assessed with reference to daytime and evening criteria.

6.3.2 Existing Murray Street Ramp and Inboard Ramps Serving level 2 and Roof

The existing Murray street ramp is retained; new access to Level 2 and roof is further back from the road (and therefore further away from any residential properties)..

Noise emissions from vehicles on the ramps will be predicted at the nearest residences (on Murray Street and Victoria Road, to the east and north of the site).

Predicted noise levels are presented below.

Table 13 - Vehicle Noise Bourke Street Residences

Receiver	Predicted Noise Level	Compliance
Victoria Road residences	37dB(A) $L_{eq(15min)}$ (previously 37dB(A) $L_{eq(15min)}$)	Complies* Less than 50dB(A) $L_{eq(15min)}$ (Intrusiveness Criteria) – see table 2. Less than 45dB(A) $L_{eq(Period)}$ (Amenity Criteria) – see table 3.
Murray Street residences	39dB(A) $L_{eq(15min)}$ (previously 42dB(A) $L_{eq(15min)}$)	Complies* Less than 49dB(A) $L_{eq(15min)}$ (Intrusiveness Criteria) – see table 2. Less than 45dB(A) $L_{eq(Period)}$ (Amenity Criteria) – see table 3.

*Noise emissions assessed with reference to daytime and evening criteria.

6.3.3 New Ramp to Roof Level of Existing Shopping Centre (Ramp 4)

Noise emissions will be predicted at the nearest residences (on Bourne Street, to the west of the site).

Predicted noise level is presented below.

Table 14 - Vehicle Noise Bourke Street Residences

Receiver	Predicted Noise Level	Compliance
Bourne Street residences	44 dB(A) $L_{eq(15min)}$	Complies* Less than 45dB(A) $L_{eq(15min)}$ (Intrusiveness Criteria) – see table 2. Less than 45dB(A) $L_{eq(Period)}$ (Amenity Criteria) – see table 3.

*Noise emissions assessed with reference to daytime and evening criteria.

6.4 NOISE FROM INCREASED TRAFFIC GENERATION ON PUBLIC ROADS

In general – the number of parking spaces in the shopping centre is to increase from approximately 1100 to 1628, an increase of approximately 50%. An increase of this magnitude will result in an increase in noise level of 1.8dB(A) from traffic in the surrounding road network, which is within DECC guidelines (see section 5.2).

Specifically, the intersection of Smidmore St and Edinburgh Road is likely to have the greatest change in vehicle flow as a result of the new car park in the shopping centre expansion and the re-routing of the ramp on the southern façade of the existing shopping centre. The rear boundaries residential properties on Bourne Street (which back onto the south-western boundary of the shopping centre), are the most potentially impacted due the re-routing of additional traffic on Smidmore Street.

In this regard we note:

- Traffic noise impact on back yards of the Bourne Street residences will be substantially screened by the 4m high boundary fence. Noise generated by traffic on public roads will be less than 55dB(A) L_{eq} during the daytime and less than 50dB(A) at night time, complying with the criteria in section 5.2.
- Assuming that the centre generates noise levels of no more than 200 vehicle movements per hour on Edinburgh Road (past the residential properties), noise generated by vehicles on public roads will be approximately 55dB(A) at these properties, and will also comply with the acoustic criteria in section 5.2. In any event, Edinburgh Road contains relatively high levels of traffic (including a large number of heavy vehicle movements), generating a noise level of over 65dB(A) L_{eq} during the daytime/evening at the adjacent residential properties. Any increase to existing noise levels as a result of traffic generated by the site will be less than 1dB(A), and so will comply with the DECC 2dB(A) requirement (see note at the end of section 5.2).

7. RECOMMENDATIONS

The following acoustic treatments are required in order to ensure compliance with acoustic objectives:

- Loading docks:
 - Loading dock 1 and 2 - No more than 1 vehicle delivery in any 15 minute period during the night time period (10pm-7am).
 - Loading dock 3 – No more than one semi-trailer delivery per night.
 - Line the underside of the slab over Loading Dock 3 with noise absorptive material (Anticon building blanket or Tontine Acoustisorb 2 insulation with perforated foil lining).
 - Trucks should be directed to/from the centre via Edinburgh Road to avoid travelling through residential areas.
- Car park ramps:
 - Minimum 1.2m high screen/balustrade around the perimeter to the ramps to provide a line of sight screen between the ramp deck and any nearby residential development. Screen may consist of a masonry wall or other imperforate material.
 - Provided that the screen/balustrade is constructed to the height specified above, noise from vehicles on the ramps will comply with DECCW acoustic guidelines. We note that the DOP has raised concern regarding the potential for noise impacts from the operation of the car park ramps. While the noise screen referred to above should provide satisfactory noise attenuation, there is still scope for further reduction in noise levels in the event that noise from the ramps causes disturbance. This could include use of noise absorptive lining fixed to the underside of any ramp/structure above, or increasing the height of the balustrade, for ramps with no structure over. However, in our opinion, provided that there are no sheet metal speed bumps or excessive changes in gradient likely to create an impact noise from cars bottoming out, there is little proposed to DECCW acoustic guidelines being exceeded.
- Detailed assessment of mechanical plant should be conducted at CC stage to determine acoustic treatments (if any) necessary to ensure compliance with acoustic criteria set out in section 5.

8. CONCLUSION

This report provides the results of our assessment of noise emissions from the "Preferred Project" plan for the expansion to the Marrickville Metro Shopping Centre.

Potential environmental noise emissions from the operation of the loading dock, car parks and mechanical plant have been assessed against DECC Industrial Noise Policy criteria and Slepp Disturbance Guidelines.

Provided that the acoustic treatments set out in this report are adopted, noise emissions will comply with DECC guidelines and will not adversely impact nearby development.

Report prepared by



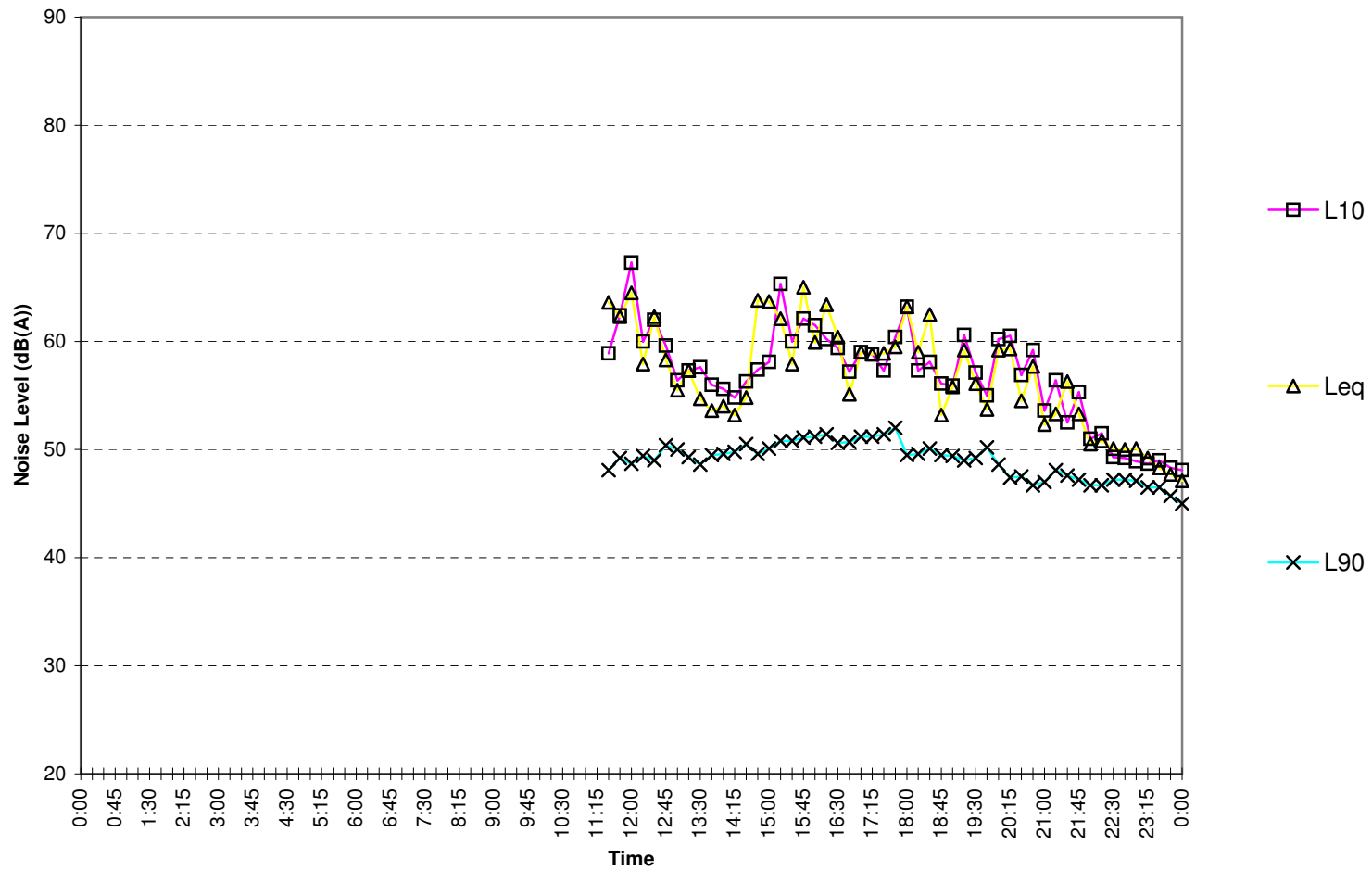
ACOUSTIC LOGIC CONSULTANCY PTY LTD
Thomas Taylor

APPENDIX 1

MEASURED AMBIENT NOISE LEVELS

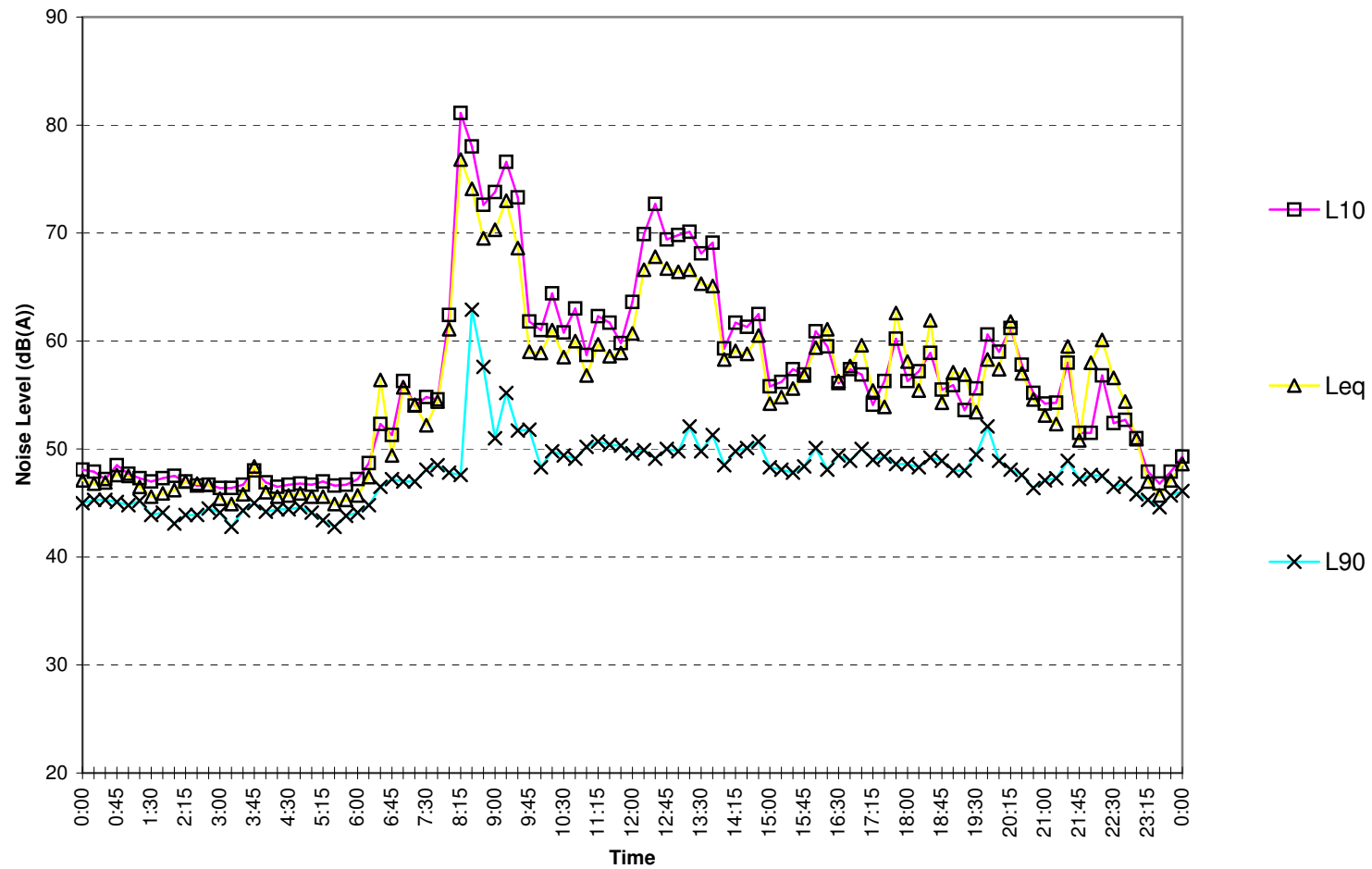
Marrickville

Friday March 19,2010



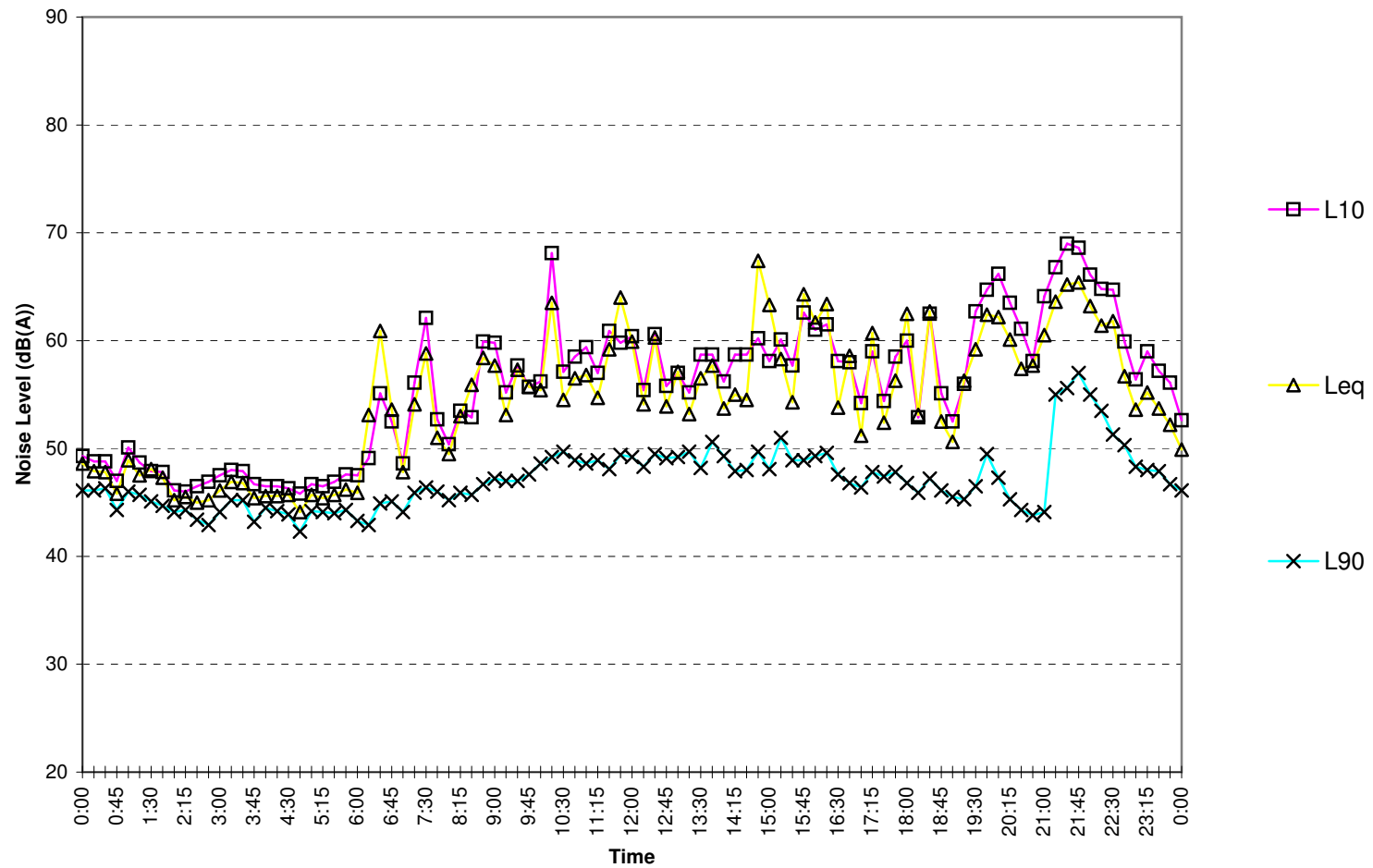
Marrickville

Saturday March 20,2010



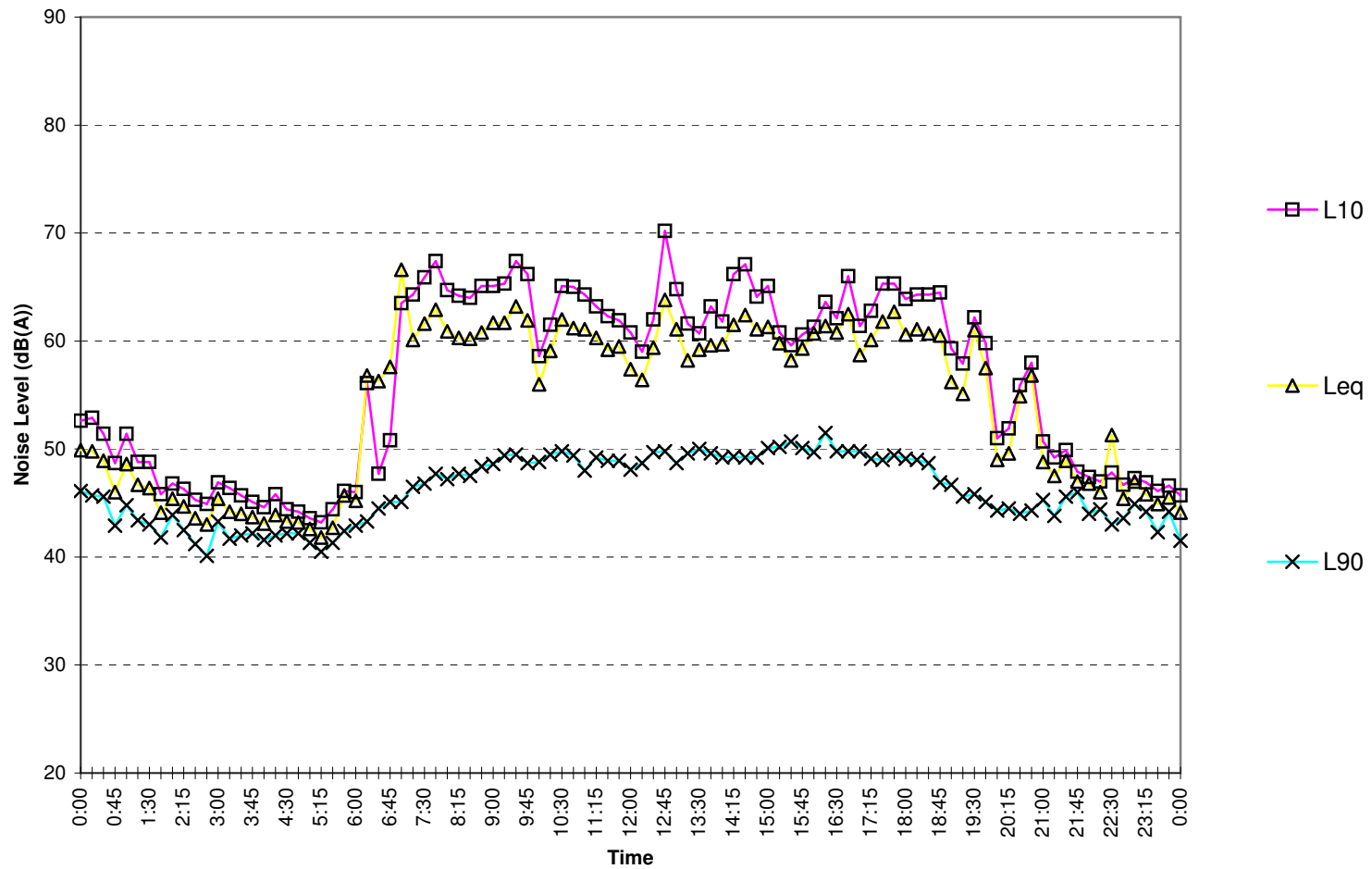
Marrickville

Sunday March 21, 2010



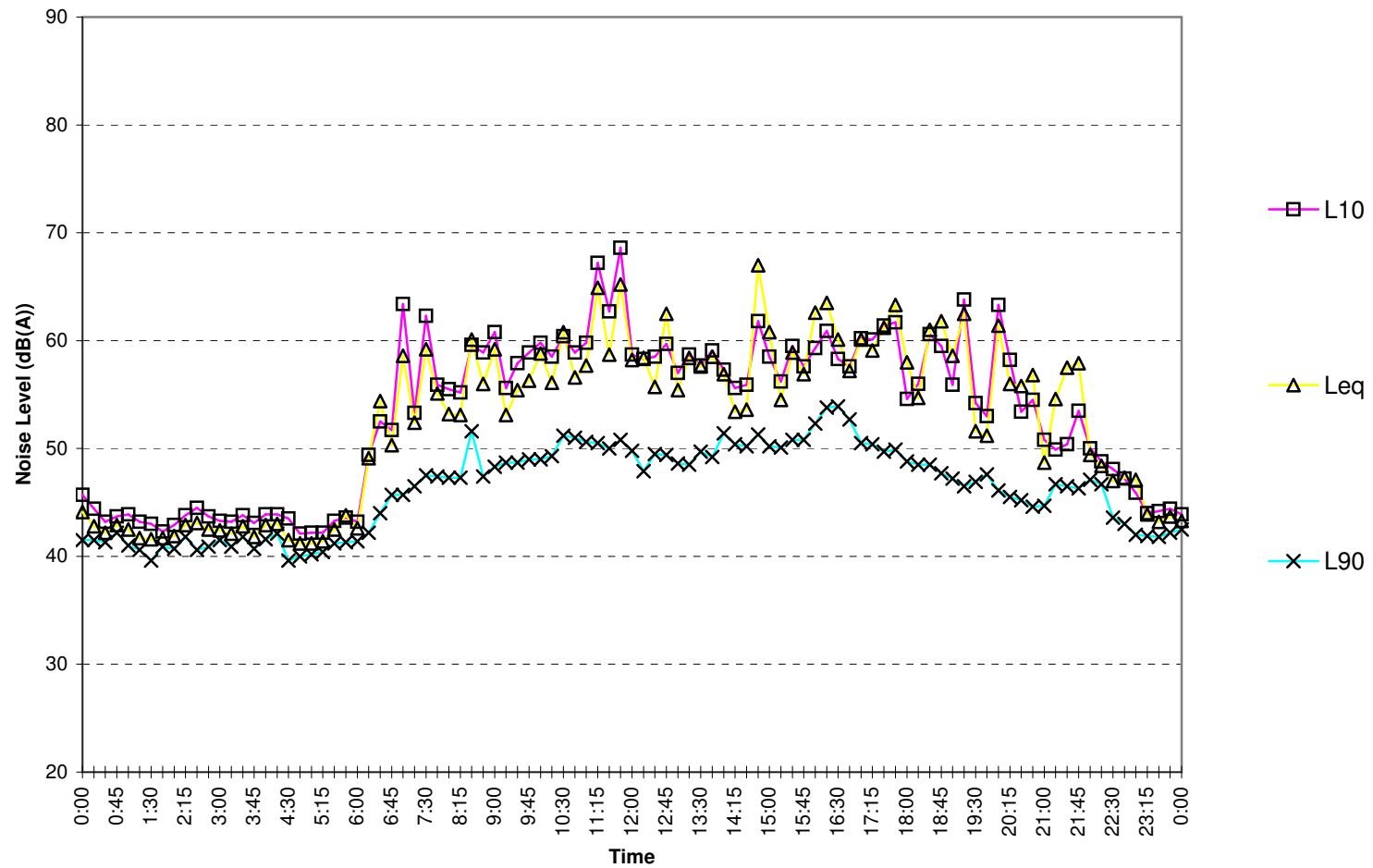
Marrickville

Monday March 22,2010



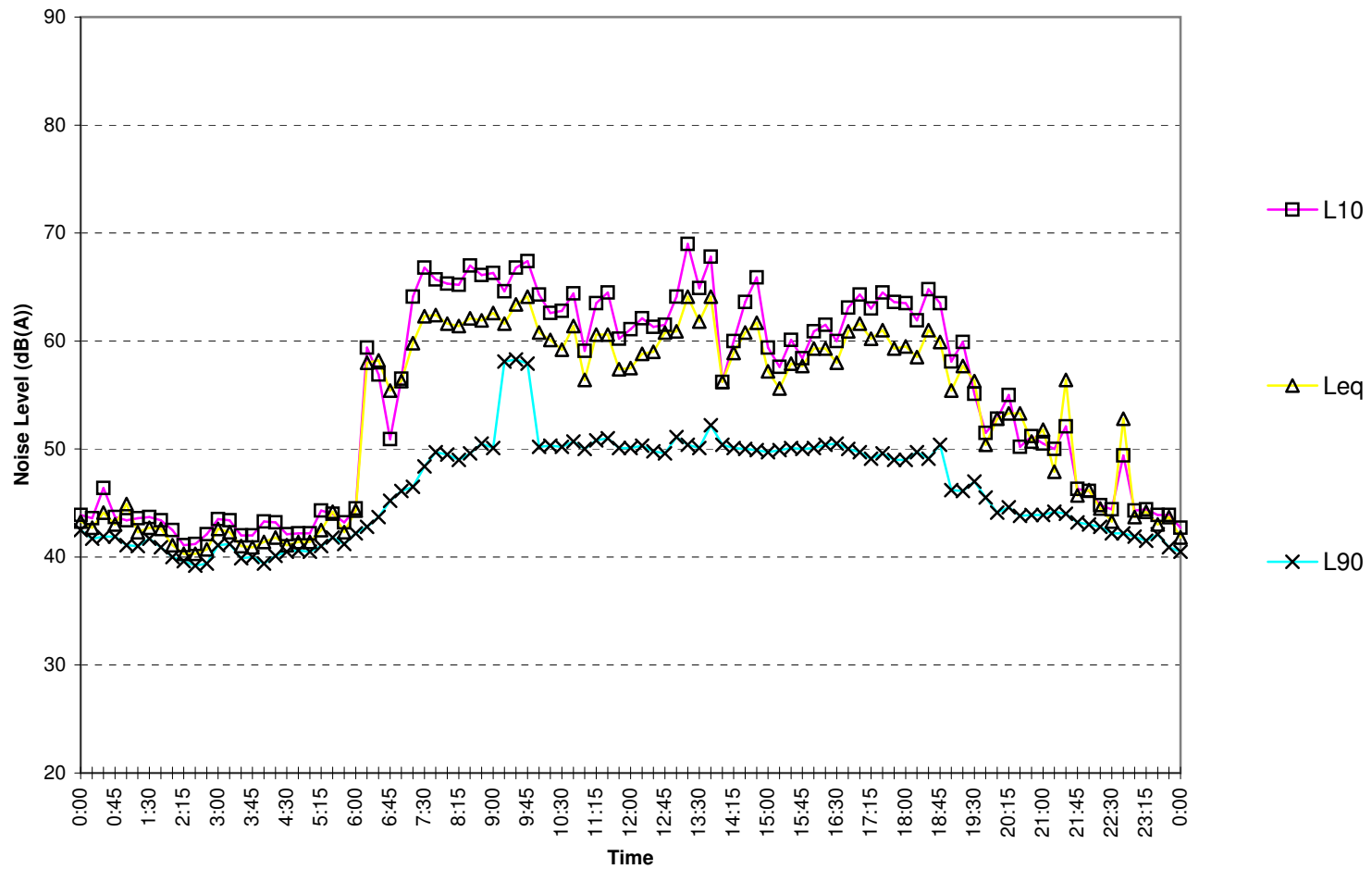
Marrickville

Tuesday March 23,2010



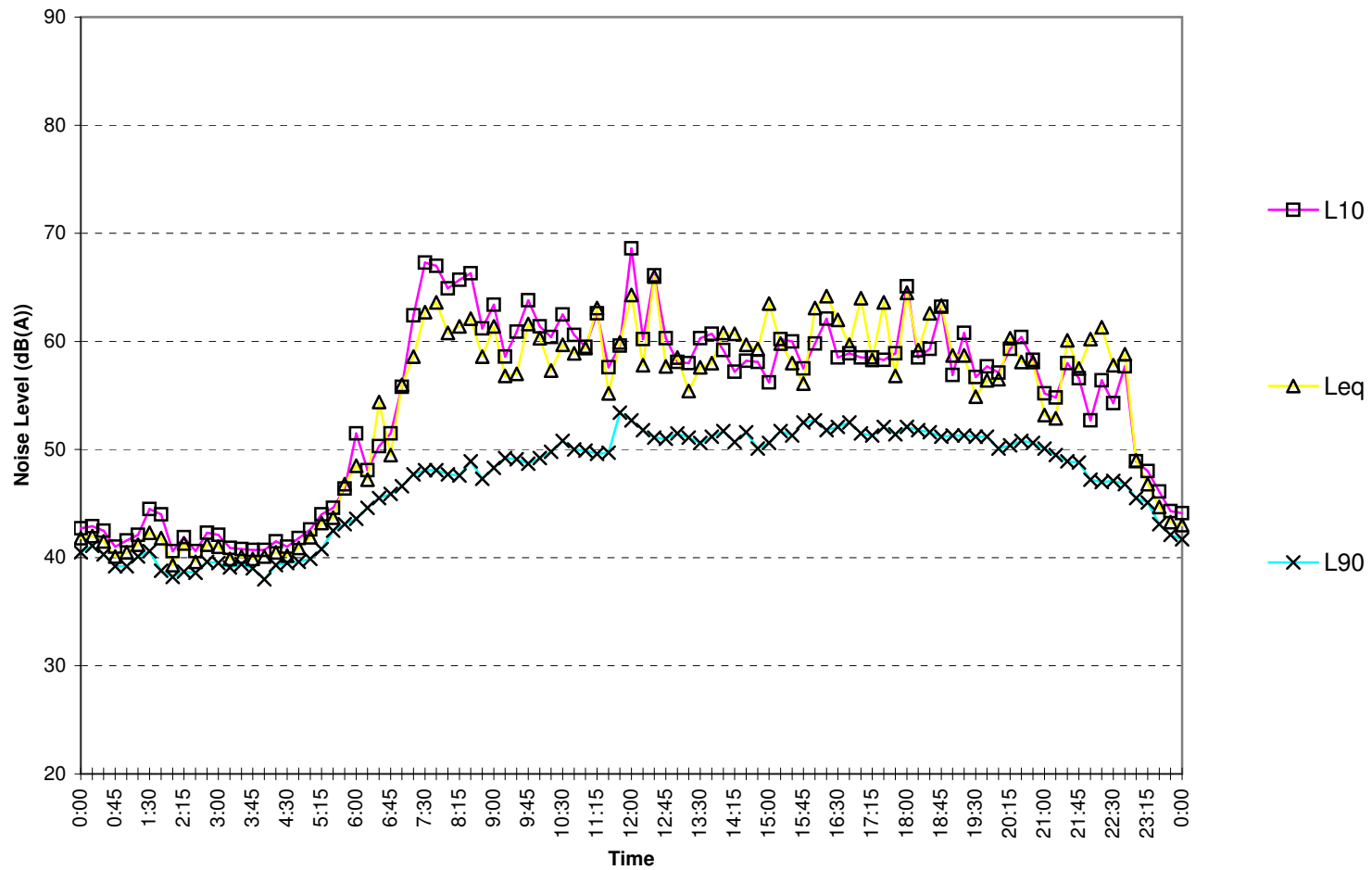
Marrickville

Wednesday March 24,2010



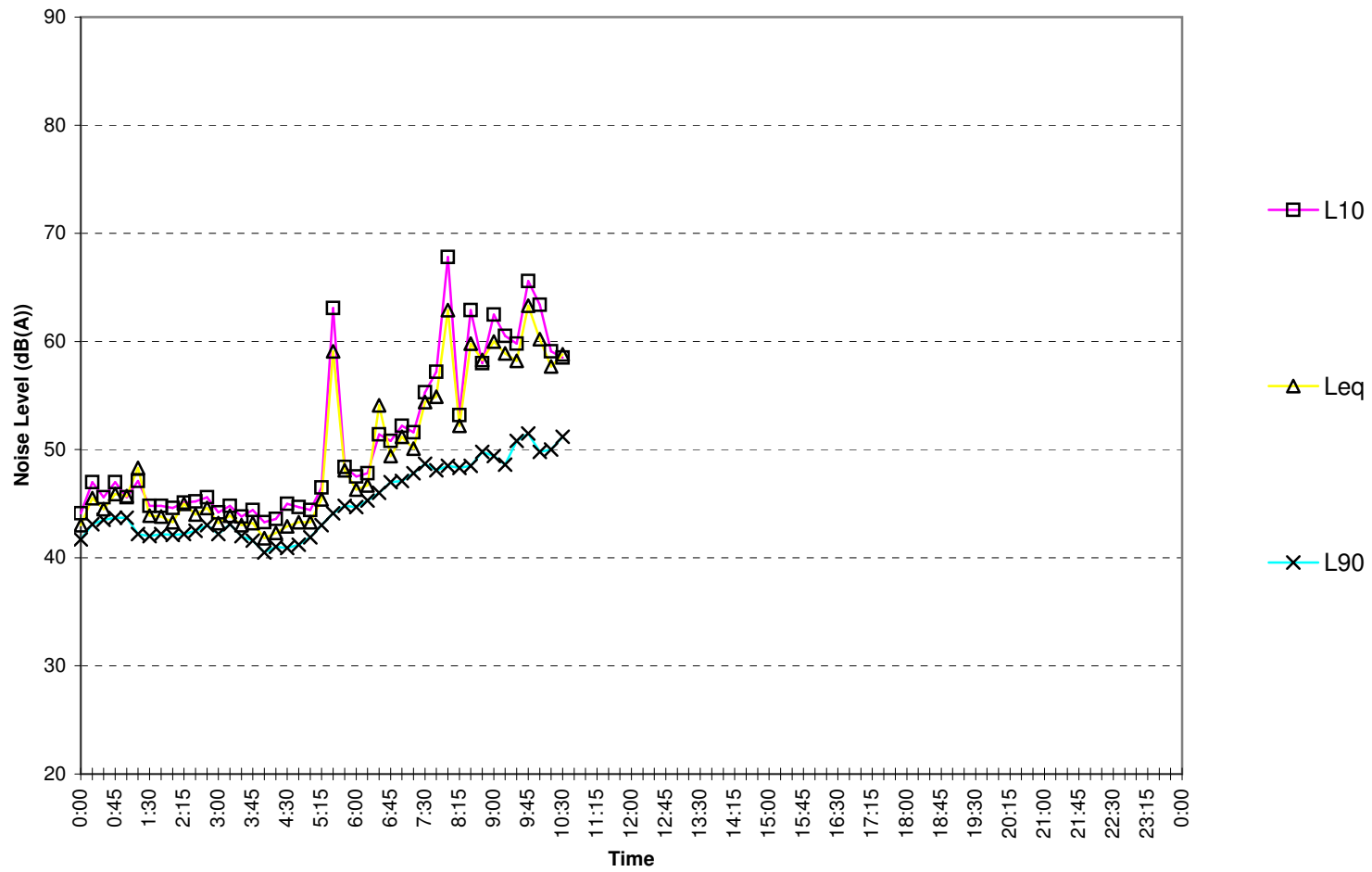
Marrickville

Thursday March 25,2010



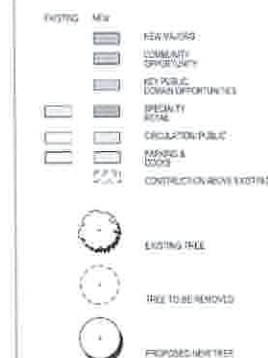
Marrickville

Friday March 26,2010



APPENDIX 2

CAR PARK RAMPS



1100
524
1128