RCA ref 11246-401.1 - Masters Windale
Client ref

12 February 2015

Masters Home Improvement
PO Box 8000
Baulkham Hills, NSW 2153

Attention: Shaylie Walton

MASTERS HOME IMPROVEMENT CENTRE
WINDALE

Dear Shaylie

This letter report is a supplementary report that is to be read in conjunction with the acoustic impact assessment report prepared by Acoustic Logic ref 20141023Yka_R3_Noise. This report is based on an updated site plan and addresses acoustic issues associated with the operation of heavy vehicles on the service road along the southern side of the site. Delivery vehicles will access the Masters Home Improvement dock from the Pacific Highway entrance, progress around the service road on the south side of the Masters building, unload materials, and continue along the service road to exit left into South Street and depart the site via South Street to the Pacific Highway.

The Acoustic Logic (AL) report 20141023Yka_R3_Noise (Attachment 2) was based on an earlier version of the site plan (Appendix 1 of the AL Report) which showed a continuous service road around the perimeter of the site. The recommendations of the AL report were that heavy vehicle access to the service road on the South Street side of the site should be avoided at all times.

An updated site plan Revision F dated 7 November 2014 (Attachment 1) has been provided to RCA Acoustics showing that the service road, which is assessed in this report, enters the site from the Pacific Highway at the southern end of the site, progresses along the southern side to the Masters Building and exits on to South Street.

This report assesses the impact of heavy vehicle operations on the service road and along South Street to the south of the site. The operation of trucks in this part of the site is considered to be sufficiently acoustically independent in nature that it will not cumulatively add to the overall sound impacts from the development provided the noise imissions from heavy vehicle and dock operations at nearby residences are adequately

controlled. Therefore, the report does not assess any other aspects of noise emissions associated with site because these are assessed in the Acoustic Logic report.

Method of Assessment

There are two acoustic issues associated with the operation of heavy vehicles to service the Masters dock. The first is the noise emissions from the vehicle on the site that are assessed against the target noise goals set in accordance with the NSW Industrial Noise Policy. The second issue is the acoustic impact from the addition of the heavy vehicles to the existing traffic flows on the southern part of South Street, which is assessed under the NSW Road Noise Policy.

On Site Heavy Vehicle Noise

The assessment of the noise from on site heavy vehicles has been conducted against the Target Noise Goals set in the Acoustic Logic Report.

I am advised by Masters that they anticipate an average of four deliveries per day mostly made with a combination of heavy rigid (HR) and medium or light rigid (MR & LR) classification vehicles. As part of the delivery mix there will also be two 19 meter Heavy Combination (HC) articulated vehicles used for deliveries each week.

On site vehicle noise has been assessed by preparing a noise model in CadnaA using the CONCAWE algorithm to conduct predictive calculations of noise impacts from on site trucks to residences in South Street that may be affected by noise from vehicles on the service road. Given that there are four deliveries per day the modeling assumes that there will be one delivery vehicle in a typical 15 minute assessable period. The assessment further assumes that all deliveries will be in Daytime hours between 7 am and 6 pm. The worst case condition has been assessed by assuming that all vehicles that access the site will have the sound emission levels of a Heavy Rigid or Heavy Combination vehicle with a Sound Power Level of 105dB(A) when transiting the site.

The modelling assumes a moving point source that transits the length of the service road, as shown, over a period of 3 minutes. It is assumed that the vehicle engine is shut down during unloading operations during which only a forklift will be operated to unload the vehicle. The forklift will have a much lower sound output than the truck and the noise source is at a lower level so if compliance is achieved with a heavy truck then compliance will also be achieved with the forklift since the noise sources operate separately and are not cumulative.

The predictive calculations have been made assuming no acoustic treatment and with the provision of a 2.4 metre high barrier along the side of the service road as shown in Attachment 1.

Noise impacts from on site heavy vehicles have been predicted at:-

1. 1 Iona Street,
2. 38 South Street,
3. 40 South Street,
4. 54 South Street,

which, have been identified as the residences that are closest and worst affected by noise from the heavy vehicle operations on the southern service road. Table 1 sets out the results of the predictive assessment.

Table 1 Predicated Noise impacts from On site Trucks

Receiver ID	Address	Received SPL without Acoustic Treatment		Received SPL with 2.4 metre high Barrier as shown in Attachment 1.	
		dB(A) $_{Leq\ 15\ Min}$	Highest Pass by level	dB(A) $_{Leq\ 15\ Min}$	Highest Pass by level
1	1 Iona Street	46.7	53.6	40.1	46.7
2	38 South Street	48.8	55.8	40.4	47
3	40 South Street	49.6	56.6	40.5	47.2
4	54 South Street	46.1	53	40.8	47.5
Target Noise Goal		46	Not Applicable	46	Not Applicable

The assessment shows that the provision of 2.4 metre high acoustic barrier for a part length of the service road will adequately control noise impacts on nearby properties from on site heavy vehicles.

Assessment of Heavy Vehicle Noise from Trucks on South Street

An attended traffic survey was conducted outside 36 South Street between 3:00 pm and 4:00 pm on the 6th of February 2015. Traffic noise levels were measured at the front boundary of the premises under free field conditions. After adjusting the measured levels to account for additional distance loss to the facade and the addition of a facade reflection adjustment the measured traffic noise level that can be compared with the target noise levels in the Road Noise Policy was 61 dB $_{LAeq\ 1hr}$ for the one hour period surveyed.

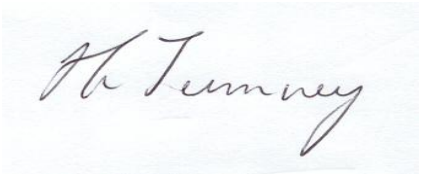
A traffic count was conducted during the survey period giving a total of 168 vehicles north bound and 180 vehicles south bound on South Street. This gives a two way total of 348 vehicles per hour in the sample hour, which is slightly less the peak daily flow measured by Colston Budd Hunt and Kafes, (CBHK). During the survey it was observed that there was a number of medium and light rigid vehicles and two heavy vehicles which were buses operated by Newcastle buses.

CBHK have predicted traffic flows and noise increases resulting from the operation of the overall development to be an increase of 150 vehicles per hour with a peak hourly increase of 330 vehicles per hour on the current base of 415 and 435 Vph respectively. Acoustic Logic have predicted the resulting traffic noise increase on South Street from the total additional vehicles associated with the centre to be 1.5 dB $_{LAeq1hr}$.

I accept the traffic noise predictions from the AL report as accurate and given the proposed delivery schedule of four deliveries per day there is likely to be a maximum of 1 additional heavy vehicle in the traffic stream on the southern part of South Street in any given hour. On that basis the effect of the heavy vehicles on the existing traffic noise is less than 0.1 of a dB and is too small to calculate. Traffic noise associated with heavy vehicles using the Masters dock and exiting to the south along South Street is, therefore not considered to be a significant impact on residences in South Street.

In summary the provision of a 2.4 metre high acoustic barrier along the western portion of the service road as shown in Attachment 1 will provide adequate protection from the activity of heavy vehicles on the site to service the Masters store.

Yours Sincerely
RCA Acoustics



Ray Tumney BEng (Mech), MEnv Stud, MIEAust, MAAS.

Principal Acoustic Engineer

Attachment 1 Marked Up site plan showing extent of Acoustic Barrier.

Attachment 2 Acoustic logic Report 20141023Yka_R3_Noise.

Acoustic Barrier to 2.4 metres above Finished Ground Level

SOUTH STREET

1.5m HIGH ACOUSTIC WALL TO ACOUSTIC ENGINEERS REQUIREMENTS RETAINING WALL TO ENGINEERS DETAIL

NEW FOOTPATH

PROPOSED ENTRY/EXIT

DIRECTIONAL SIGN

NEW PEDESTRIAN ACCESS

GIVE WAY SIGN

BOUNDARY

WATER EASEMENT

STAFF PARKING

+RL. 24.10

+EX RL. 24.21

SWITCH ROOM

GENERATOR

+RL. 23.50

RL. 23.50+

RECEIVING
GFA 787 SQM
FFL 23.50 ±100mm

AMENITIES
GFA 243 SQM

TRADE
GFA 1,932 SQM
FFL 23.50 ±100mm

TRADE EXIT
+RL. 23.50

TRADE ENTRY
+RL. 23.50

TRAILER PARKING

+EX RL. 23.41

+EX RL. 23.06

EXISTING PLAYING FIELDS

+EX RL. 23.70

+EX RL. 22.15

+EX RL. 21.88

+EX RL. 21.30

RETAINING WALLS ALONG BOUNDARY REFER TO CIVIL ENGINEERS DRAWINGS

+EX RL. 21.00

RL 25.00

RL. 23.20

RL. 23.50+

2.4M HIGH SECURITY FENCE AND GATE

ADJACENT BUSHLAND & CREEK

RL 24.00

SERVICE ROAD

MAIN FLOOR
GFA 8,489 SQM

TOTAL FLOOR AREA
GFA 13,538 SQM
FFL 23.50 ±100mm

ADMINISTRATION
GFA 109 SQM

MAIN ENTRY

TACTILE PAVER

SPEED HUMPS

ACCESSIBLE CARPARKING

PARENTS CARPARKING

PEDESTRIAN WALKWAY

TROLLEY

+RL. 23.00

+RL. 22.50

+RL. 22.00

+RL. 21.50

+RL. 21.00

+RL. 23.00

SPRINKLER TANK

SPRINKLER TANK

PUMP ROOM

RL. 23.70+

2.4M HIGH SECURITY FENCE AND GATE

LANDSCAPE AS PER LANDSCAPE ARCHITECTS DETAILS

DETENTION BASIN TO CIVIN ENGINEERS DRAWINGS

RL. 23.50+

LOADING

GARDEN
GFA 1,978 SQM
FFL 23.50 ±100mm

GARDEN ENTRY

BIKE RACKS FOR 16 BICYCLES

BRIGADE ACCESS ONLY

+RL. 19.93

DIRECTIONAL SIGN

+ RL 20.00

+ RL 21.00

+ RL 22.00

+ RL 23.00

+ RL 23.00

+ RL 22.00

+ RL 21.00

BOUNDARY

PACIFIC HIGHWAY

ZONE FOR RETAINING WALL

INCREASED SETBACK TO ALLOW FOR THE UNLOADING OF TRUCKS AND FOR OTHER SERVICE VEHICLES TO PASS

LOT BOUNDARY

SERVICE ROAD TURNING CIRCLE

RL. 20.85 +

LOT 2
BULKY GOODS TENANCY
GFA 5,630 SQM
FFL 21.25 ±100mm

CONTINUES ABOVE

PROPOSED SUBSTATION

12M HIGH PYLON SIGN

+ RL 20.00

PROPOSED SERVICE ENTRY(LEFT IN ONLY)

PROPOSED SUBSTATION, SUBJECT TO ELECTRICAL ENGR'S DETAIL

INCREASED SERVICE ROAD WIDTH TO ALLOW FOR NURSERY LOADING & SWEPT PATHS OF PASSING VEHICLES.

1 / - Site Plan
Scale 1:500

CONTINUES BELOW

LOT 3
FAMILY RESTAURANT
GFA 425 SQM
FFL 20.00 ±100mm

Attachment 1 Site Plan showing Acoustic Barrier

DEVELOPMENT APPLICATION

DATE	ISSUE	AMENDMENT	CHK
18.07.14	A	MAIN BUILDING PLAN UPDATED; ISSUED FOR DA	JAJ
28.07.14	B	MAIN BUILDING PLAN UPDATED; ISSUED FOR S96	JAJ
17.09.14	C	ISSUED FOR INFORMATION	JAJ
19.09.14	D	ISSUED FOR INFORMATION	JAJ
23.09.14	E	ISSUED FOR INFORMATION	JAJ
07.11.14	F	EXTENT OF SECURITY FENCING REVISED. TACTILES & KERB RAMPS ADDED AS PER ACCESS REPORT	JAJ

Site Plan

10 20 50 100 SCALE: 1/500_@_A1

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Masters Home Improvement

Masters Home Improvement
4B South Street,Windale, NSW

JOB NO: 2906
DATE: FEB 2013
DRAWN: CHW

DA02/F

LEFFLER SIMES ARCHITECTS

MANAGING DIRECTORS
MATTHEW PALAVIDIS
VICTOR FATTORETTO

DIRECTORS
MATTHEW SHIELDS
BEN WHITE

Attachment 2

Masters Home Improvement, Windale

Noise Impact Assessment

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DOCUMENT CONTROL REGISTER

Project Number	20120328.1
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Attention To	Hydrox Nominees Pty Ltd Mr Roy Vigdor

Revision	Date	Document Reference	Prepared By	Checked By	Approved By
0	23/05/2012	20120328.1/2305A/R0/YK	YK		TT
1	14/01/2013	20120328.1/2305A/R1/YK	YK	TT	TT
2	23/05/2012	20120328.1/2305A/R2/YK	YK		TT
3	23/10/2014	20120328.1/2310A/R3/YK	YK		BW

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1 INTRODUCTION

This report presents an assessment of the potential noise impacts associated with the proposed Maters Home Improvement development at 4B South Street, Windale. This development is stage 1A of the proposed multi – stage development at part lot 10 and lots 11, 12, 123 and 14 in DP 1013486.

In this report we will:

- Identify relevant Council and Office of Environment and Heritage noise emission criteria applicable to the development.
- Identify nearby noise sensitive receivers and operational noise sources with the potential to adversely impact nearby developments.
- Predict operational noise emissions and assess them against the relevant acoustic criteria.
- If necessary, determine building and/or management controls necessary to ensure ongoing compliance with noise emission goals.

This assessment has been conducted based on the following architectural drawings provided by Leffler Simes Architects;

Table 1 – Reference Drawings

Drawing Number	Date	Revision
DA – 02	February 2012	P6
DA – 05	February 2012	P2
DA – 06	February 2012	P2
DA – 07	February 2012	P2
DA – 08	February 2012	P1
DA – 10	February 2012	P1
DA – 12	February 2012	P2

2 PROPOSAL/SITE DESCRIPTION

The subject site is located at 4B South Street, Windale, which is bound by South Street to the north, Pacific Highway to the south and part of Tulootaba reserve to the west. Land (vacant/undeveloped at this stage) to the east of the subject site is part of future developments which will be subject to separate development applications. South Street is a four lane local road with medium – low volumes of traffic. Pacific Highway is a four lane arterial road with high volumes of traffic.

The proposal includes the construction of a Masters Home Improvement centre with a loading dock and external carpark with approximately 370 spaces.

Development in the vicinity of the site consists of:

- The worst affected noise sensitive receivers are the residential properties located immediately to the west and south of the subject site, across South Street.

- Receivers to the east of the site across Pacific Highway are all industrial and bulky goods uses and **are unlikely to be impacted** by the subject proposal due to the high levels of noise already being generated for their use and by traffic movements along Pacific Highway.

Proposed hours of operation will be as follows:

Table 2 – Proposed Operating Hours

Space	Day	Time
Masters Home Improvement Centre	Monday to Friday	7.00 am to 10.00pm
	Saturday – Sunday	7.00 am to 10.00pm
Loading Dock Operations	Monday – Sunday	7.00 am to 10.00pm

Potential noise generated by the site will mainly consist of:

- Noise emissions from mechanical plant/equipment servicing the proposed development;
- Noise emissions from the loading dock and associated works;
- Noise emissions from external car parking areas; and
- Noise generated by additional traffic resulting from the proposed development.

Figure 1 details the site, surrounding noise sources and measurement locations.

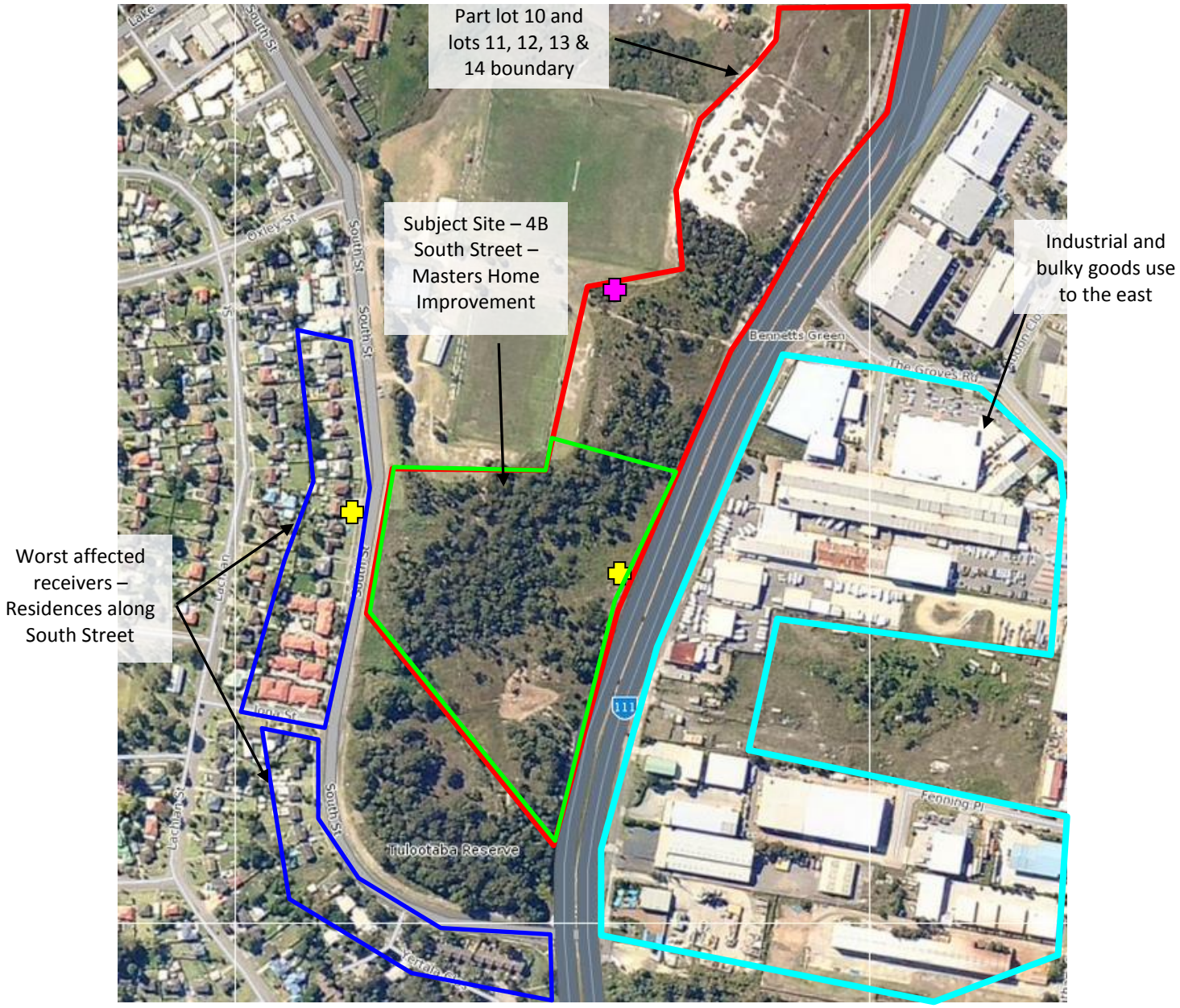


Figure 1 – Site and Measurement Locations

Unattended noise monitoring

Attended Noise Measurement Location

3 NOISE DESCRIPTORS

Traffic noise constantly varies in level, due to fluctuations in traffic speed, vehicle types, road conditions and traffic densities. Accordingly, it is not possible to accurately determine prevailing traffic noise conditions by measuring a single, instantaneous noise level. To accurately determine the effects of traffic noise a 15-20 minute measurement interval is utilised. Over this period, noise levels are monitored on a continuous basis and statistical and integrating techniques are used to determine noise description parameters. These parameters are used to measure how much annoyance would be caused by a particular noise source.

In the case of environmental noise three principle measurement parameters are used, namely L_{10}, L_{90} and L_{eq}.

The L_{10} and L_{90} measurement parameters are statistical levels that represent the average maximum and average minimum noise levels respectively, over the measurement interval.

The L_{10} parameter is commonly used to measure noise produced by a particular intrusive noise source since it represents the average of the loudest noise levels produced by the source.

Conversely, the L_{90} level (which is commonly referred to as the background noise level) represents the noise level heard in the quieter periods during a measurement interval. The L_{90} parameter is used to set the allowable noise level for new, potentially intrusive noise sources since the disturbance caused by the new source will depend on how audible it is above the pre-existing noise environment, particularly during quiet periods, as represented by the L_{90} level.

The L_{eq} parameter represents the average noise energy during a measurement period. This parameter is derived by integrating the noise levels measured over the measurement period. L_{eq} is important in the assessment of traffic noise impact as it closely corresponds with human perception of a changing noise environment; such is the character of traffic noise.

Current practice favours the L_{eq} parameter as a means of measuring traffic noise, whereas the L_{10} parameter has been used in the past and is still incorporated in some codes. For the reasons outlined above, the L_{90} parameter is not used to assess traffic noise intrusion.

4 AMBIENT NOISE SURVEY

Unattended background noise monitoring was conducted on site from the 24th April to 1st May 2012. Refer figure 1 above for monitor location. The monitoring was conducted using an Acoustic Research Laboratories noise monitor set to an A – weighted fast response and recording continuously at 15 minute time 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.

Attended noise measurements were also undertaken by this office to supplement the long term unattended monitoring data. Measurements were conducted at the boundary of the residential receivers along South Street and at the boundary of the site along Pacific Highway (refer to figure 1).

Measured background noise levels are representative of the ambient atmosphere at the affected sensitive receivers along South Street. Refer to Appendix 2 for unmanned noise monitoring data.

Table 3 – Measured Background Noise Levels

Location	**Background Noise Level dB(A)$L_{90(period)}$**		
	Daytime (7am – 6pm)	Evening (6pm – 10pm)	Night (10pm – 7am)
Monitor Location (figure 1)	41	43	35

Table 4 – Measured Average Noise Levels

Location	**Average Noise Level dB(A)L_{eq}**
	Daytime (7am – 10pm)
South Street	60
Pacific Highway	73

5 NOISE IMPACT GUIDELINES AND ASSESSMENT CRITERIA

We note that there are no specific acoustic controls stipulated by the City of Lake Macquarie council with regards to proposed new commercial/industrial developments. In the absence of this the following noise controls will be adopted for this assessment:

- Environment Protection Authority (EPA) NSW Industrial Noise Policy.
- Office of Environment and Heritage (OEH) guidelines for sleep arousal.
- Office of Environment and Heritage (OEH) NSW Road Noise Policy.

5.1 OPERATIONAL NOISE

5.1.1 EPA Industrial Noise Policy

Noise generated by the day to day operations and future mechanical plant and equipment servicing the proposed development will be assessed with reference to the Industrial Noise Policy (INP). The INP outlines two requirements which both have to be complied with, namely an amenity criterion and an intrusiveness criterion.

5.1.1.1 Intrusiveness Criterion

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

Allowable noise level is as follows:

Table 5 – Allowable Intrusive Noise Levels

Location	Time of Day	Background Noise Level dB(A)L_{90}	Intrusiveness Noise Objective dB(A)$L_{eq(15min)}$ (Background + 5dB)
All Potentially Affected Residential Properties	Day Time (7am – 6pm)	41	46
	Evening (6pm – 10pm)	43	48
	Night (10pm – 7am)	35	40

5.1.1.2 Amenity Criterion

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

The INP sets out acceptable noise levels for various localities. Table 2.1 on page 16 of the policy indicates 4 categories to distinguish different residential areas. They are rural, suburban, urban and urban/industrial interface.

Table 6 provides the recommended ambient noise levels for the surrounding suburban residential and industrial receivers for the day, evening and night periods. For the purposes of this condition:

- Day is defined as the period from 7am to 6pm Monday to Saturday and 8am to 6pm Sundays and Public Holidays;
- Evening is defined as the period from 6pm to 10pm; and
- Night is defined as the period from 10pm to 7am Monday to Saturday and 10pm to 8am Sundays and Public Holidays.

Table 6 – INP Recommended Amenity Noise Levels

Type of Receiver	Time of day	Recommended Acceptable Noise Level dB(A) $L_{eq(period)}$
Residential – Suburban	Day (7am – 6pm)	55
	Evening (6pm – 10pm)	45
	Night (10pm – 7am)	40
Industrial Premises	When in use	70

5.1.2 Sleep Disturbance

The proposed facility is not operational between the night-time period of 10pm – 7am, hence no sleep disturbance impacts are envisaged.

5.2 NOISE FROM INCREASED TRAFFIC GENERATION ON PUBLIC STREETS

5.2.1 OEH NSW Road Noise Policy

Council's DCP has no specific noise criteria with respect to traffic generation associated with developments. In the absence of this, OEH guidelines will be used for this assessment.

For land use developments with the potential to create additional traffic the development should comply with the requirements for new developments detailed in the OEH NSW Road Noise Policy guidelines. Increased noise levels on Pacific Highway will be assessed against the "arterial" roads acoustic criteria, while increased traffic on South Street will be assessed against the "local" roads acoustic criteria.

Noise levels generated by traffic should not exceed the noise levels set out in the table below when measured at a nearby property. However, if the existing traffic noise levels exceed those in the table below, the new development must not cause an increase in the overall traffic noise level of more than 2 dB (refer to section 3.4 of the Road Noise Policy document). This level represents a minor impact that is considered barely perceptible to an average person.

Table 7 – NSW Road Noise Policy – Criteria for Residential land uses

Road Type	Time of day	Criteria for Acceptable Traffic Noise Level Arterial Roads
Arterial	Day (7am to 10pm)	60 dB(A)$L_{eq(15hr)}$
	Night (10pm to 7am)	55 dB(A)$L_{eq(9hr)}$
Local	Day (7am to 10pm)	55 dB(A)$L_{eq(Worst\ 1hr)}$
	Night (10pm to 7am)	50dB(A)$L_{eq(Worst\ 1hr)}$

The Road Noise Policy does not outline any specific criteria for industrial or bulky goods receivers.

6 NOISE EMISSION ASSESSMENT

The operational noise emissions from the proposed Masters Home Improvement development will be assessed below. Assessment of the following noise sources will be undertaken:

- Noise from the use of loading docks (truck manoeuvring and material handling) will be assessed with reference to the EPA Industrial Noise Policy.
- Noise from mechanical services (roof top ventilation) will be assessed with reference to the EPA Industrial Noise Policy.
- Noise from traffic generated on the surrounding public roads will be assessed with reference to the OEH NSW Road Noise Policy guidelines.

In all cases, the predicted noise levels in the following sections are based on the proviso that the acoustic treatments/management controls recommended in section 7 are implemented.

6.1 LOADING DOCK ACTIVITIES

Noise emissions associated with the loading dock activities at the subject development are predicted below. The predicted levels are based on the following assumptions:

- No more than one semi-trailer (19 metre long – worst case) and small rigid truck movements in any fifteen minute period.
- Trucks/trailer access to the loading dock is proposed to be limited to the Pacific Highway entrance or the signalised intersection at Pacific Highway and Groves Road. Trucks arriving via the Pacific Highway entrance and the Groves Road intersection entrance (this access will require trucks to drive along the service road) have been marked up and attached in Appendix 1.
- One forklift for loading/unloading. Worst case assumption of forklift operating the entire time of a fifteen minute period.
- The loading dock will be in use from 7am till 7pm only Monday to Friday and 7am to 6pm Saturdays and Sundays.
- Relative position of noise source and noise receiver, taking into account distance attenuation and noise screening (where appropriate).
- It is assumed it takes approximately 3 minutes for a truck to manoeuvre into or out of a loading dock.
- Predicted noise levels are based on the following noise levels:

Table 8 – Source Noise Level

Noise Source	Sound Power Level (SWL)
Truck engine (semi-trailer driving at apprx. 5km/h)	105dB(A)L_{eq}
Materials Handling	90dB(A)L_{eq}

Operational noise levels are predicted and assessed against relevant criteria from section 5.

Table 9 – Loading Dock Operations – Predicted Noise Level

Receiver Location	Noise Source	Predicted Level dB(A)$L_{eq(15min)}$	Complies
Residential Receivers along South Street	Truck manoeuvring to/from site	52	Heavy vehicle (trucks and trailers) movements along the service road adjacent to South Street, does not comply with the INP Intrusiveness criteria (during day or evening periods). Refer to section 7 below for recommendations. Heavy vehicle movements along all service roads, complies with the INP amenity criteria. Additionally, all other activities also comply with INP criteria.
	Forklifts manoeuvring around loading dock	35	
	Material handling	40	
Industrial and Bulky Goods Receivers along Pacific Highway	Truck manoeuvring to/from site	55	Yes – Complies with the amenity criteria setout in Table 6.
	Forklifts manoeuvring around loading dock	41	
	Material handling	46	

As showing the table above, noise emanating from vehicles using the loading docks is compliant with noise emission goals at all nearby development.

6.2 MECHANICAL PLANT AND EQUIPMENT

Detailed acoustic assessment of mechanical plant is not typically undertaken at DA stage as plant selections and locations are not finalised.

We recommend that a detailed review of plant items be undertaken at Construction Certificate stage, once mechanical plant selections have been undertaken. All plant items will be capable of complying with the EPA INP acoustic guidelines which are presented in the table below;

Table 10 – Mechanical Plant Noise Emission Objectives

Receiver	Time of day	Measured Background Noise Level dB(A) $L_{90(15minutes)}$	Amenity Criteria dB(A) $L_{eq(period)}$	Intrusiveness Criteria Background + 5 dB(A) $L_{eq(15minutes)}$	Criteria for Sleep Disturbance dB (A) $L_{1(1minute)}$
All affected surrounding residential receivers	Day	41	55	46	N/A
	Evening	42	45	47	N/A
	Night	39	40	44	54
Industrial and Bulky Goods Receivers along Pacific Highway	When In Use	-	70	-	-

6.3 INCREASED TRAFFIC ON PUBLIC STREETS (TRUCKS AND CARS)

Vehicular access (general traffic, no heavy vehicles) to and from the site will be via driveways located along Pacific Highway and South Street. Trucks/trailers (service vehicles) will access the site only via driveways located along Pacifica Highway (refer Appendix 1).

The majority of the traffic is anticipated to use the Pacific Highway entrance to access the car parking areas at the front of the venue and also the loading dock location at the south east corner of the development. Some vehicular access is also predicted to occur via South Street, but this will be restricted to customer vehicles only and no service vehicles are proposed to occur via this entrance. Access points are also proposed along Lake Street but this is part of the bulky goods development on site which will be subject to a separate DA.

Noise predictions from additional traffic generated on the surrounding streets have been undertaken, based on the *"Traffic Report for Proposed Masters Home Improvement Centre and Bulky Goods Development, Bennetts Green"* report prepared by Colston Budd Hunt & Kafes Pty Ltd (reference 7678, dated May 2012) and the following assumptions;

- Cars are assumed to have a sound power level of 94 dB(A)L_{eq} when driving on the road.
- Trucks are assumed to have a sound power level of 105 dB(A)L_{eq} when driving on the road.
- The following roads will be potentially affected by the proposed Masters development:
    - Pacific Highway – North of South Street (Customer and Service Access)
        - Weekday afternoon peak hour – Existing two-way traffic movements is 3,420, with a predicted increase of 40 movements.
        - Saturday midday peak hour – Existing two-way traffic movements is 2,785, with a predicted increase of 105 movements.
    - Pacific Highway – South of South Street (Customer and Service Access)

- Weekday afternoon peak hour – Existing two-way traffic movements is 3,535, with a predicted increase of 90 movements.
- Saturday midday peak hour – Existing two-way traffic movements is 2,955, with a predicted increase of 225 movements.

- Pacific Highway – North of Groves Street (Customer and Service Access)
  - Weekday afternoon peak hour – Existing two-way traffic movements is 3,600, with a predicted increase of 155 movements.
  - Saturday midday peak hour – Existing two-way traffic movements is 3,155, with a predicted increase of 350 movements.
- South Street – South of Lake Street (Customer Access only)
  - Weekday afternoon peak hour – Existing two-way traffic movements is 415, with a predicted increase of 150 movements.
  - Saturday midday peak hour – Existing two-way traffic movements is 435, with a predicted increase of 330 movements.
- South Street – West of Pacific Highway
  - Weekday afternoon peak hour – Existing two-way traffic movements is 245, with a predicted increase of 50 movements.
  - Saturday midday peak hour – Existing two-way traffic movements is 250, with a predicted increase of 120 movements.

We note that vehicle noise on South Street is presently 60dB(A)L_{eq}, (refer to Table 4), already exceeding OEH guidelines (refer to section 5.2.1). Given this, noise as a result of the new traffic should not result in an increase of existing noise levels by more than 2 dB.

Noise levels as a result of the predicted increase in traffic volumes along South Street (south of Lake Street and customer vehicles only) are predicted to be 57dB(A)$L_{eq(1hour)}$. The cumulative noise from the new and existing traffic are predicted to be 61.5dB(A). As the predicted increase is less than 2dB(A) above existing levels, noise emissions will be compliant with OEH guidelines.

7 RECOMMENDATIONS

We recommend the following acoustic treatments/management controls:

- Service vehicles (trucks/trailers) not to access the development via South Street (customer access only – refer Appendix 1).

- If possible, all heavy vehicle (trucks, trailers) or the like) movements associated with the subject development, must occur via the Pacific Highway entrance (service and customer access – refer Appendix 1). Service road adjacent to South Road must be avoided by heavy vehicles at all times if possible.

- Detailed review of all additional external mechanical plant should be undertaken at construction certificate stage (once plant selections and locations are finalised). Acoustic treatments should be determined in order to control plant noise emissions to the levels set out in section 6.2 of this report.

8 CUMULATIVE IMPACT OF FUTURE DEVELOPMENTS

The proposed Masters Home Improvement development encompasses stage 1A of the proposed multi – stage development at part lot 10 and lots 11, 12, 123 and 14 in DP 1013486 at Windale. The subject development occupies the southern part of the lots with two future bulky goods developments proposed to the north (extending all the way to the northern site boundary along Lake Street . We assume both of these developments will be required to submit development applications

- Noise impacts associated with the proposed Masters development have been assessed in this report with acoustic treatments / management controls recommended in section 7, to ensure compliance with the relevant noise goals for surrounding sensitive receivers.

- The residential receivers nearest to the Masters site are located at least 190m away from the likely location of any access driveway or loading dock of the future Bulky Goods site. Given this distance, there is unlikely to be any excessive cumulative impact from the future development provided that the Masters site itself is appropriately treated (as documented in this report).

- In addition, we assume that an acoustic report will also need to be undertaken as part of the DA process for these future developments to demonstrate that any potential noise impacts are satisfactory.

9 CONCLUSION

Noise emissions associated with the proposed Masters Home Improvement Centre at 4B South Street, Windale have been assessed with reference to relevant OEH and Council acoustic guidelines.

With the recommendations presented in section 7 of this report adopted, noise emissions from the operation of the site will comply with acoustic criteria, ensuring no unacceptable noise impact on the nearest surrounding residential properties.

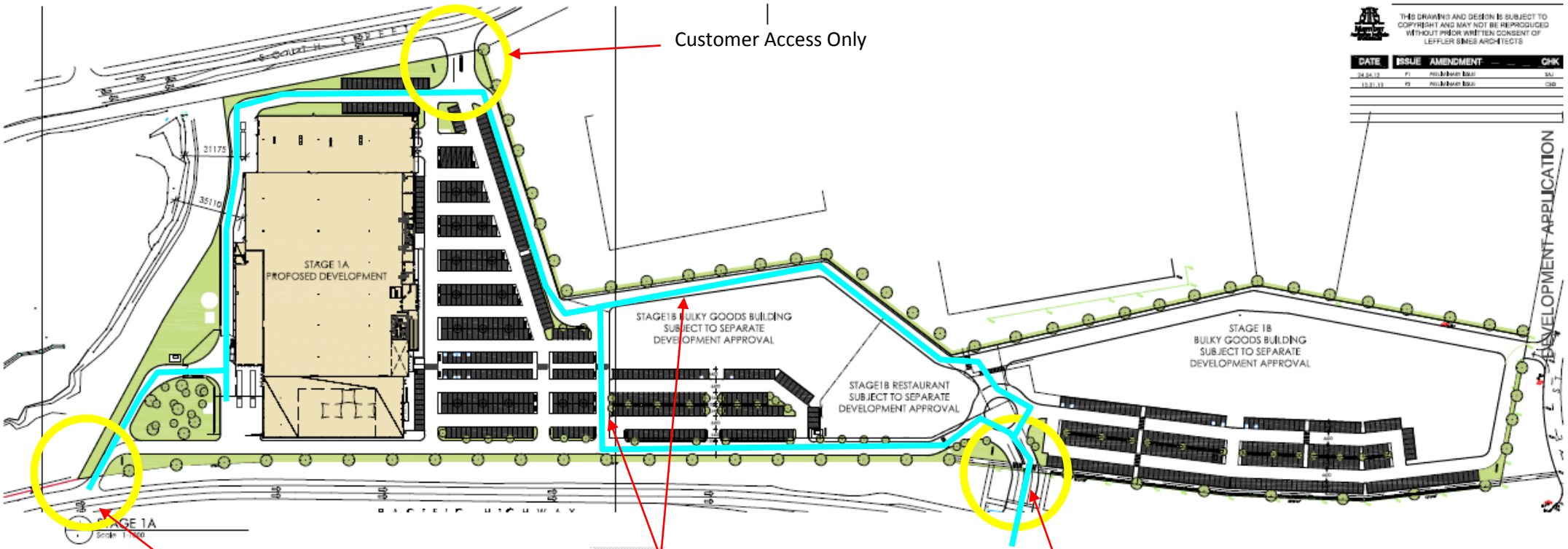
We trust this information is satisfactory. Please contact us should you have any further queries.

Yours faithfully,

Acoustic Logic Consultancy Pty Ltd
Yogendra Kalkunte

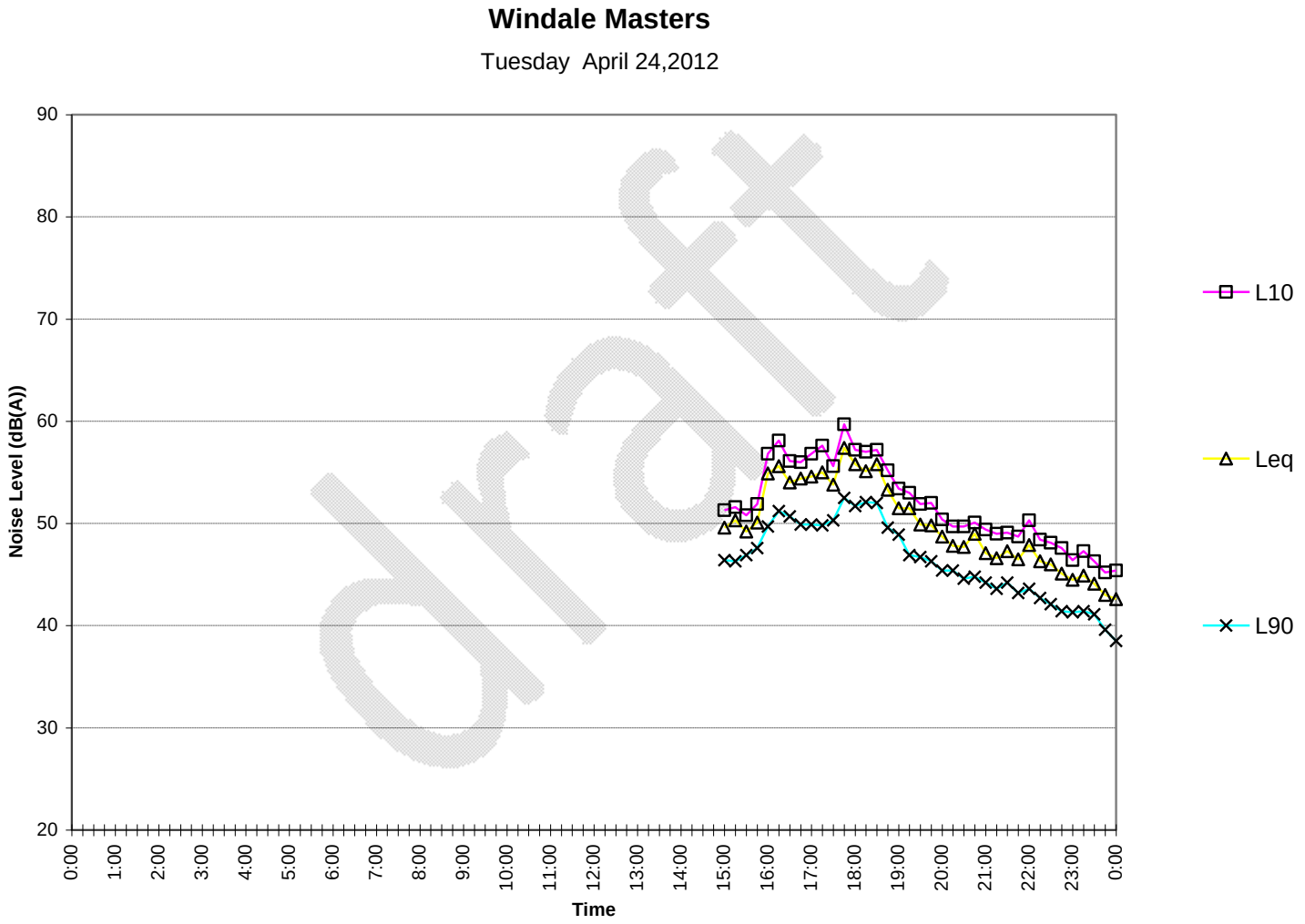
Appendix 1

Site Plan


Customer Access Only
STAGE 1A
PROPOSED DEVELOPMENT
STAGE1B BULKY GOODS BUILDING
SUBJECT TO SEPARATE
DEVELOPMENT APPROVAL
STAGE1B RESTAURANT
SUBJECT TO SEPARATE
DEVELOPMENT APPROVAL
STAGE 1B
BULKY GOODS BUILDING
SUBJECT TO SEPARATE
DEVELOPMENT APPROVAL
DEVELOPMENT APPLICATION
THIS DRAWING AND DESIGN IS SUBJECT TO COPYRIGHT AND MAY NOT BE REPRODUCED WITHOUT PRIOR WRITTEN CONSENT OF LEFFLER SIMES ARCHITECTS
DATE
ISSUE
AMENDMENT
CHK
Service and Customer Access
Truck/Trailer route when accessing site from Pacific Highway
Service and Customer Access

Appendix 2

Noise Logging Data


Windale Masters
Tuesday April 24,2012
Noise Level (dB(A))
90
80
70
60
50
40
30
20
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
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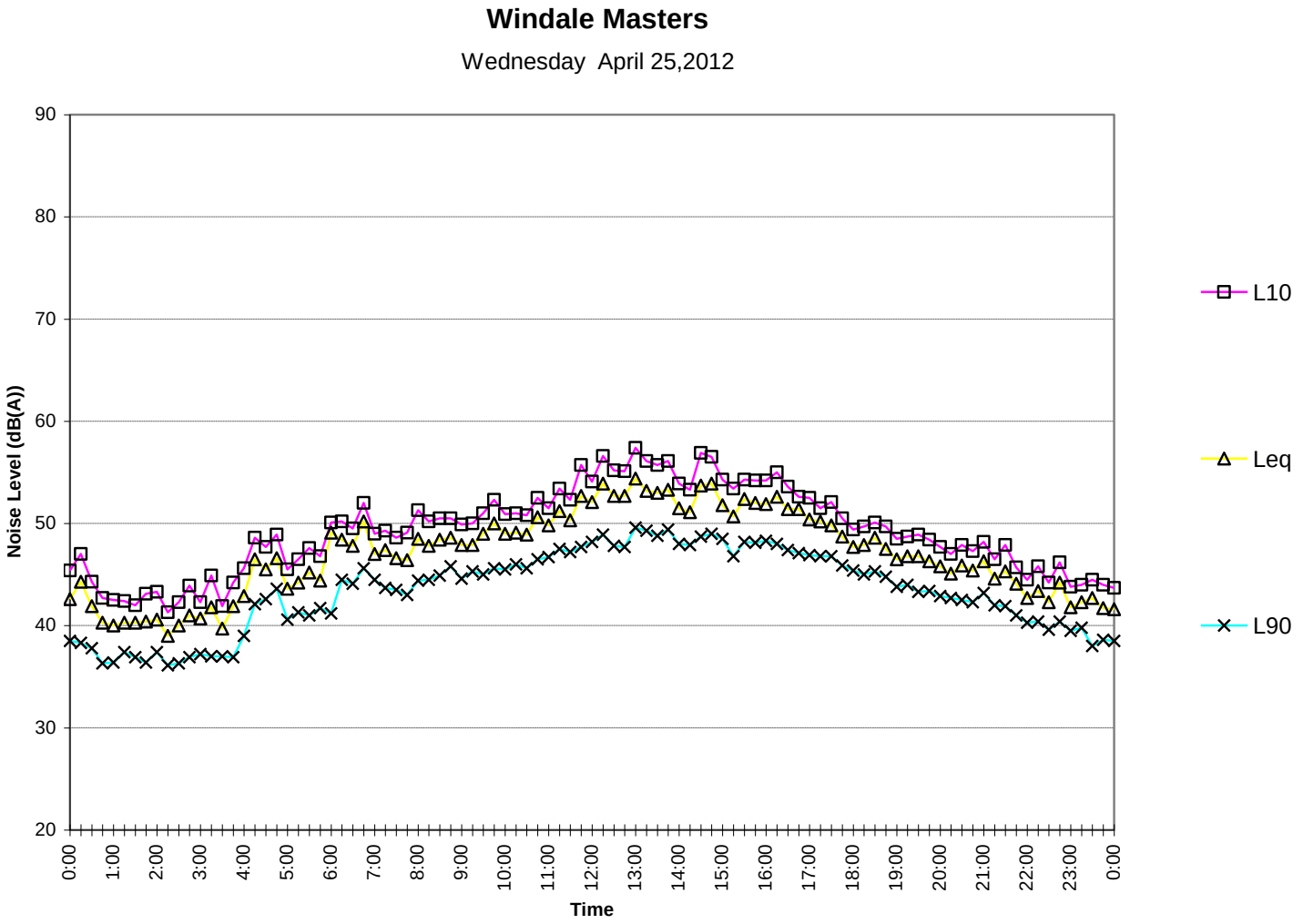
22:00
23:00
0:00
Time
L10
Leq
L90
draft


Windale Masters
Wednesday April 25,2012
Noise Level (dB(A))
90
80
70
60
50
40
30
20
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
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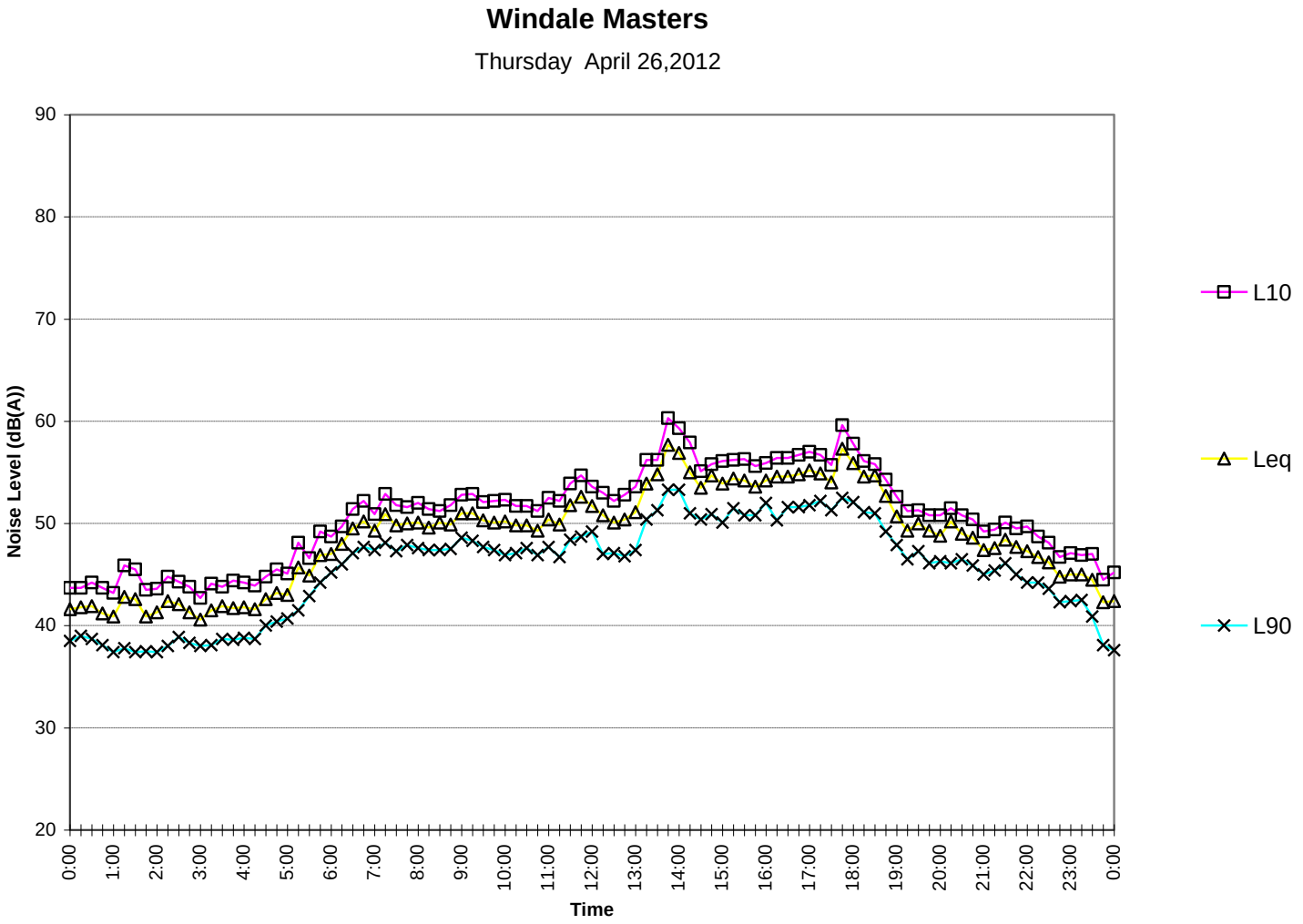
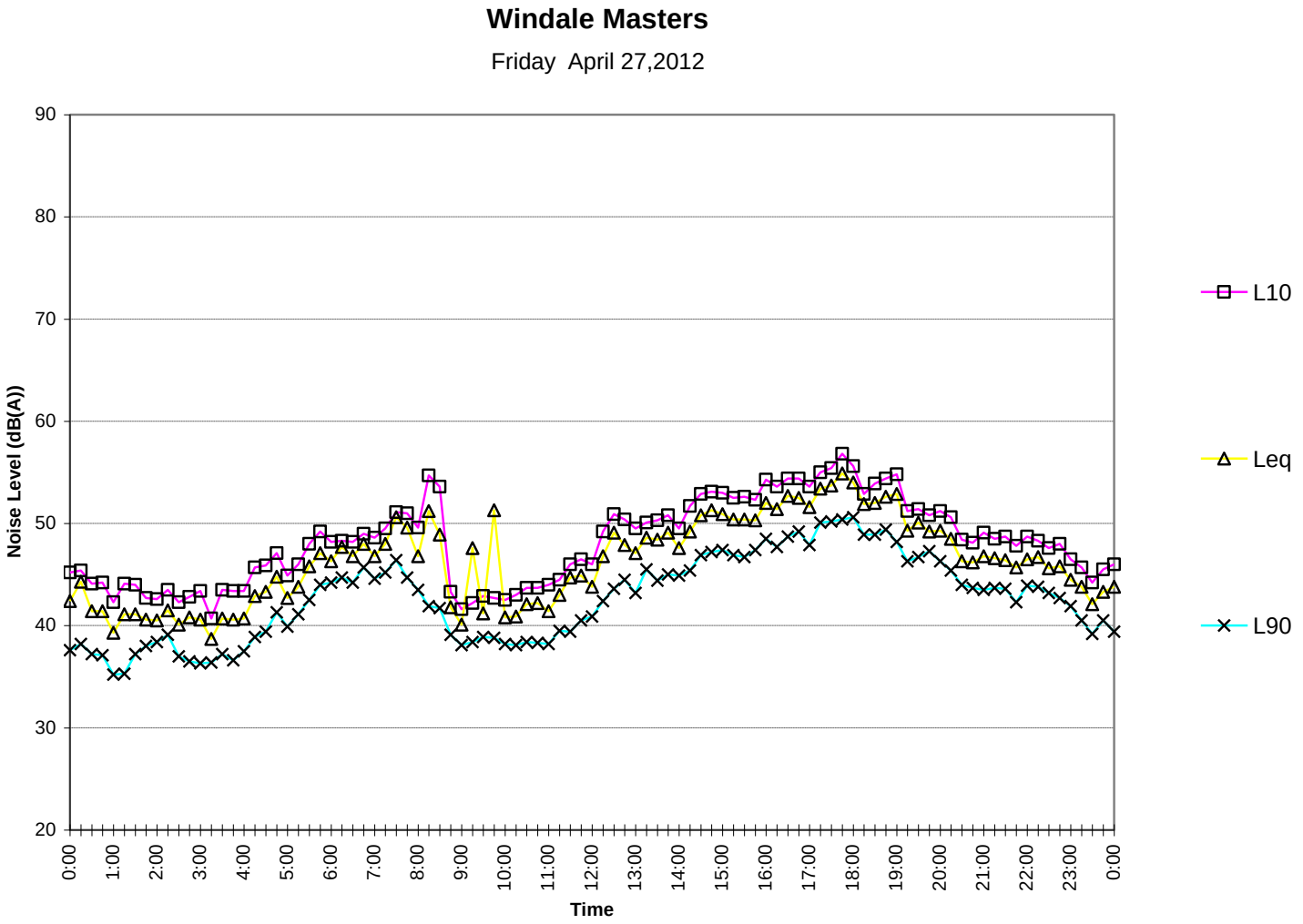
22:00
23:00
0:00
Time
L10
Leq
L90


Windale Masters
Thursday April 26,2012
Noise Level (dB(A))
90
80
70
60
50
40
30
20
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
0:00
Time
L10
Leq
L90


Windale Masters
Friday April 27,2012
Noise Level (dB(A))
90
80
70
60
50
40
30
20
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
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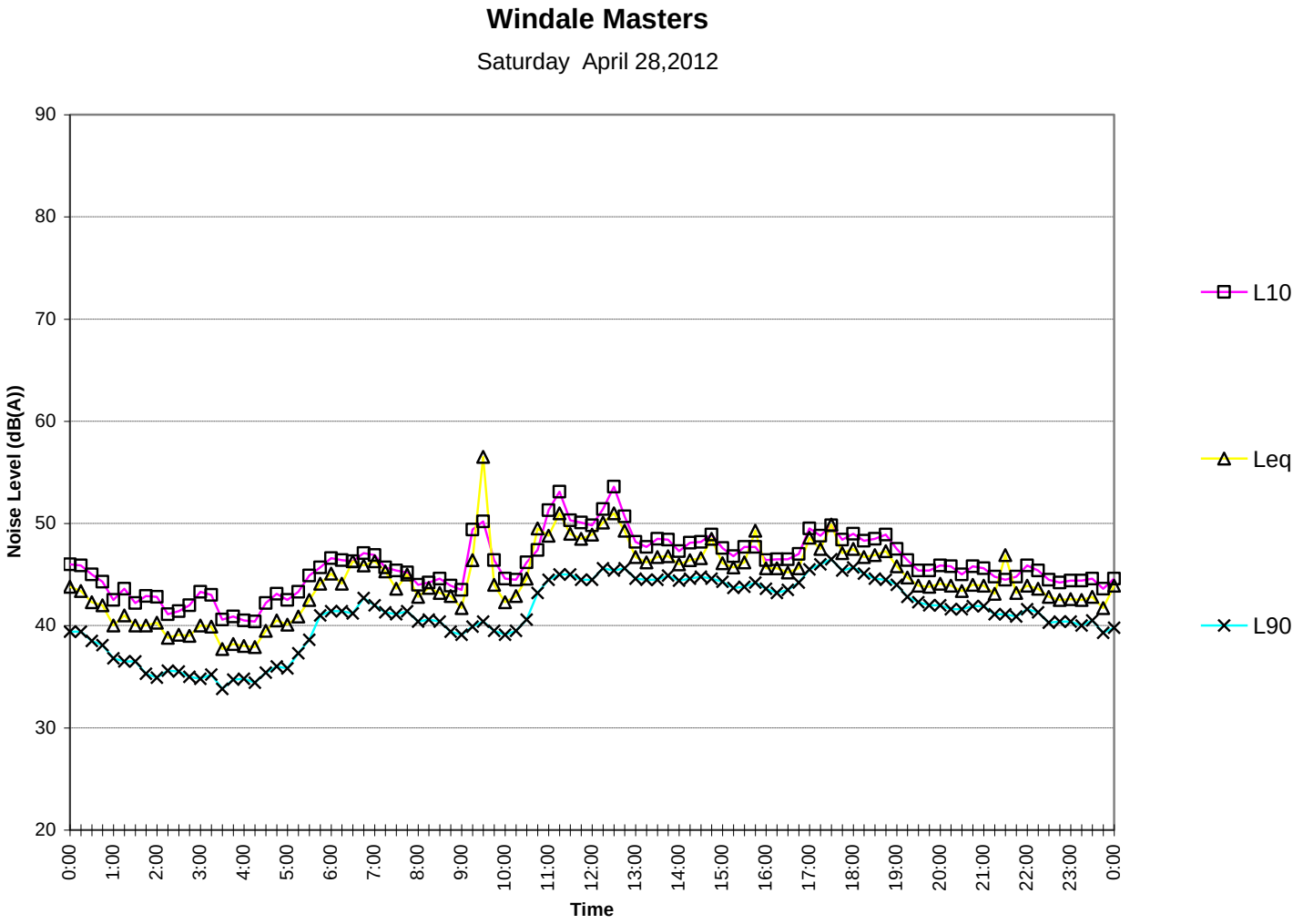
22:00
23:00
0:00
Time
L10
Leq
L90


Windale Masters
Saturday April 28,2012
Noise Level (dB(A))
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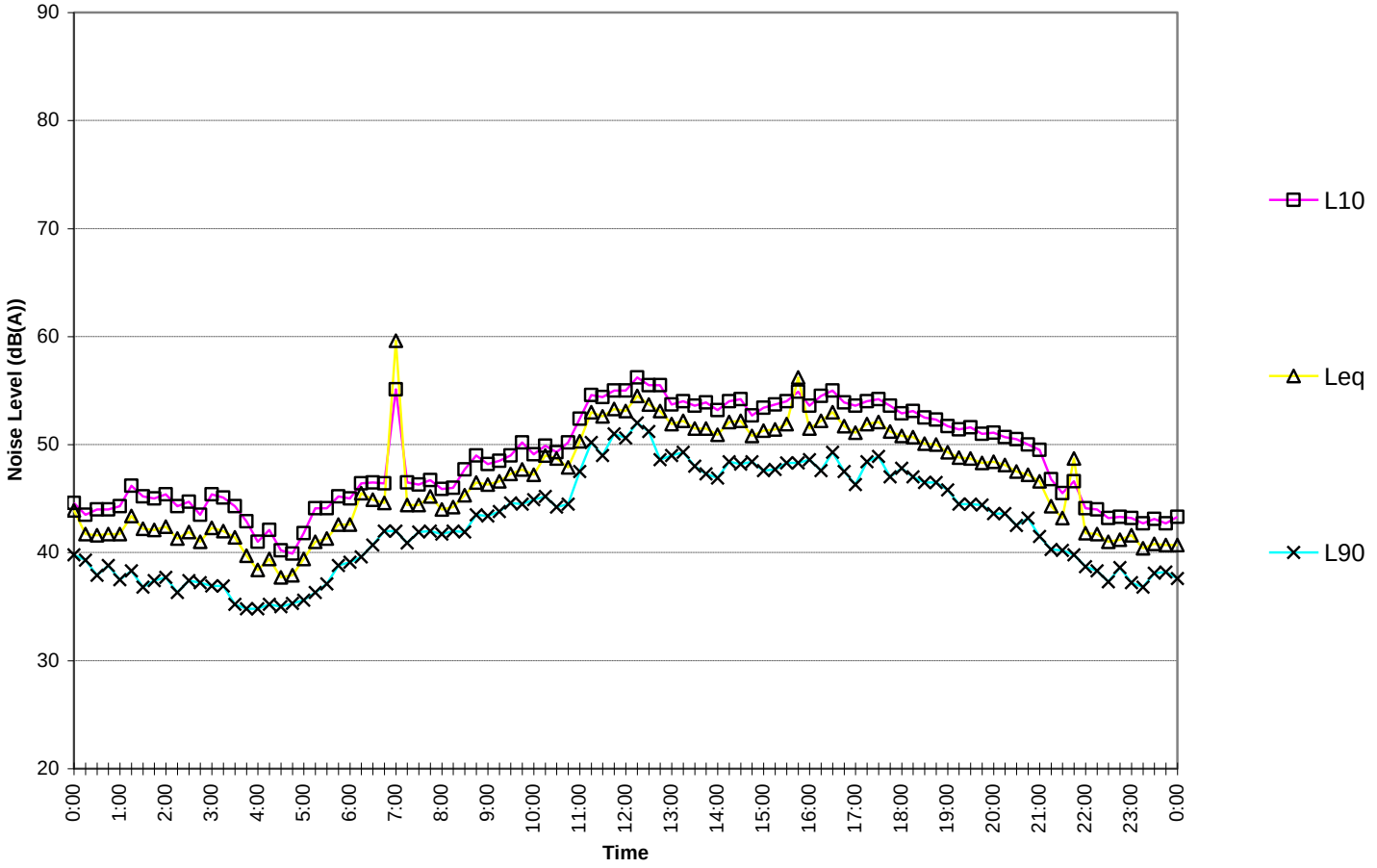
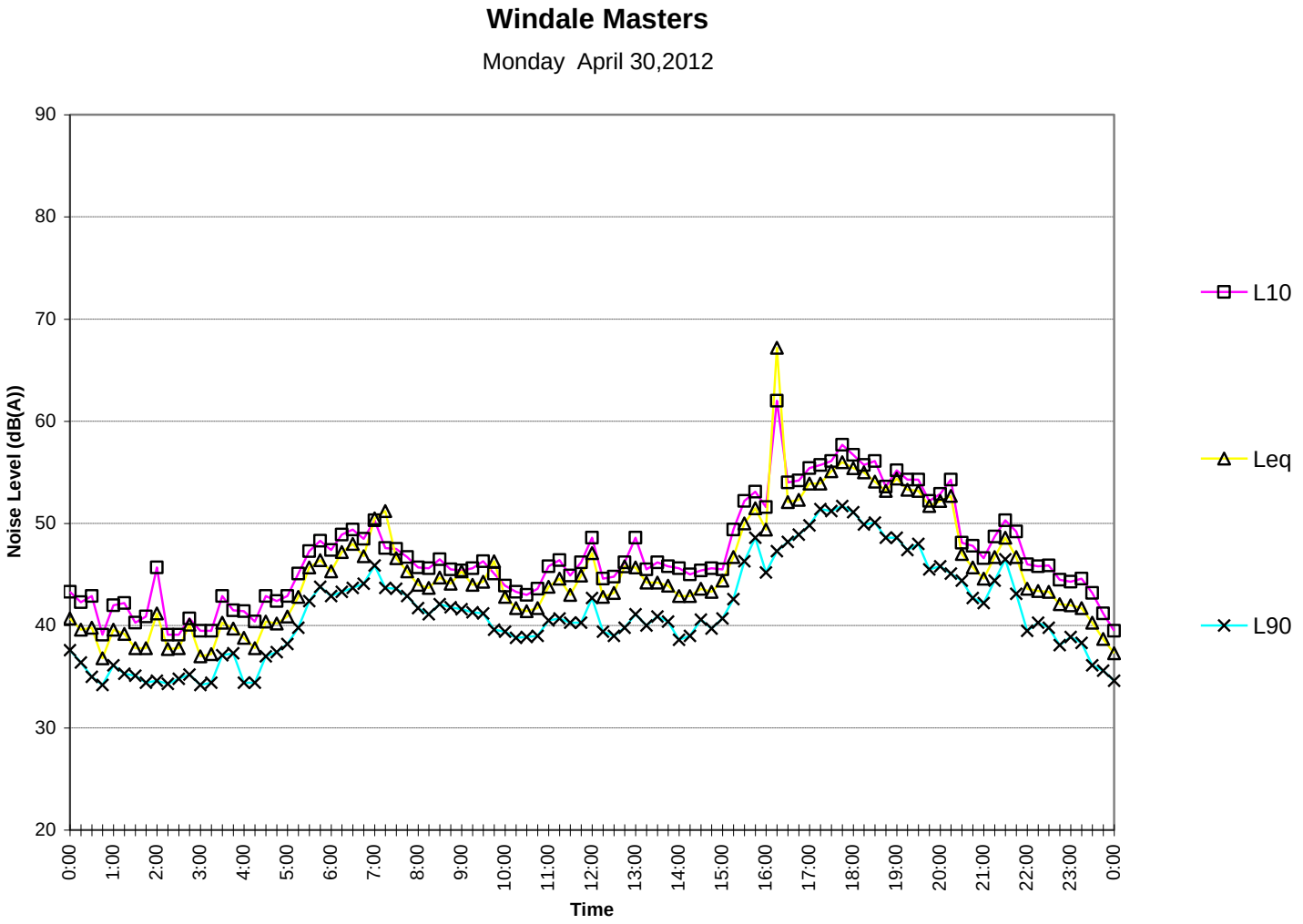
80
70
60
50
40
30
20
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
0:00
Time
L10
Leq
L90

Windale Masters

Sunday April 29,2012




Windale Masters
Monday April 30,2012
Noise Level (dB(A))
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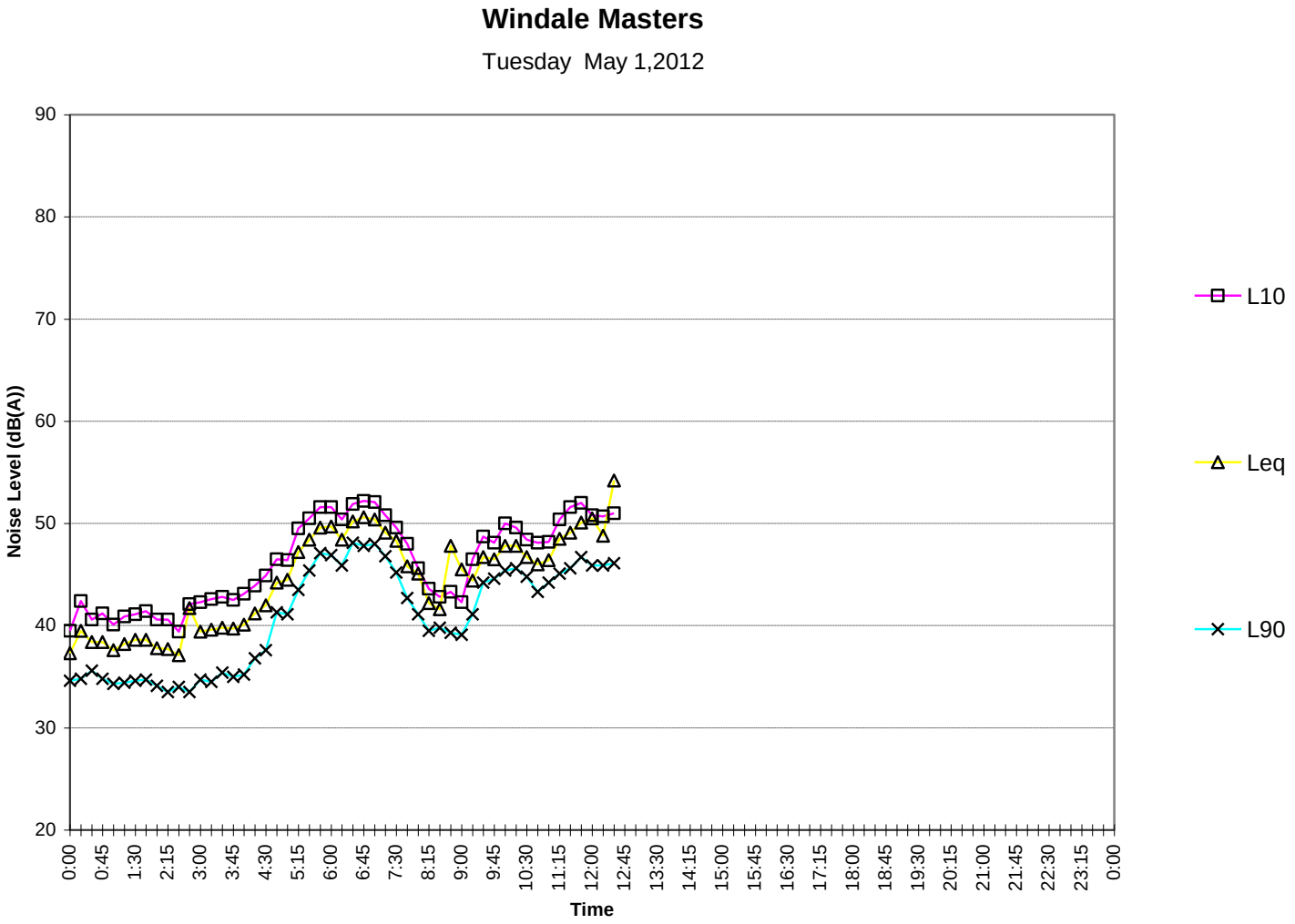
80
70
60
50
40
30
20
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
0:00
Time
L10
Leq
L90


Windale Masters
Tuesday May 1,2012
Noise Level (dB(A))
90
80
70
60
50
40
30
20
0:00
0:45
1:30
2:15
3:00
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4:30
5:15
6:00
6:45
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13:30
14:15
15:00
15:45
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17:15
18:00
18:45
19:30
20:15
21:00
21:45
22:30
23:15
0:00
Time
L10
Leq
L90