Attachment 11

Revised Acoustic Impact Assessment

ACOUSTICS AND AIR

FRANK STREET, WETHERILL PARK
WASTE & RESOURCE MANAGEMENT FACILITY

NOISE IMPACT ASSESSMENT

REPORT NO. 15278-N
VERSION B

MAY 2016

PREPARED FOR

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GLOSSARY OF ACOUSTIC TERMS

Most environments are affected by environmental noise which continuously varies, largely as a result of road traffic. To describe the overall noise environment, a number of noise descriptors have been developed and these involve statistical and other analysis of the varying noise over sampling periods, typically taken as 15 minutes. These descriptors, which are demonstrated in the graph below, are here defined.

Maximum Noise Level (L_{Amax}) – The maximum noise level over a sample period is the maximum level, measured on fast response, during the sample period.

L_{A1} – The L_{A1} level is the noise level which is exceeded for 1% of the sample period. During the sample period, the noise level is below the L_{A1} level for 99% of the time.

L_{A10} – The L_{A10} level is the noise level which is exceeded for 10% of the sample period. During the sample period, the noise level is below the L_{A10} level for 90% of the time. The L_{A10} is a common noise descriptor for environmental noise and road traffic noise.

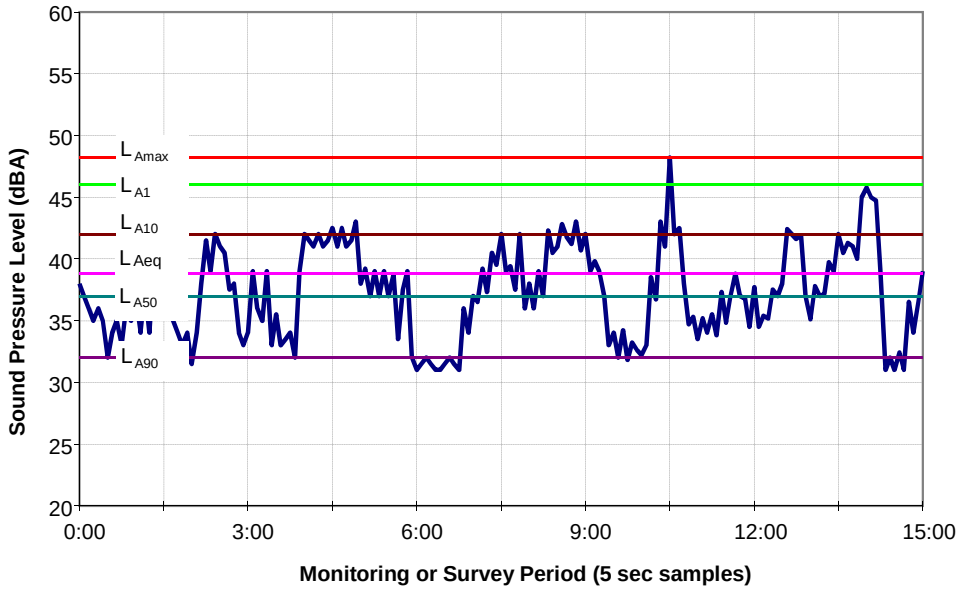
L_{A90} – The L_{A90} level is the noise level which is exceeded for 90% of the sample period. During the sample period, the noise level is below the L_{A90} level for 10% of the time. This measure is commonly referred to as the background noise level.

L_{Aeq} – The equivalent continuous sound level (L_{Aeq}) is the energy average of the varying noise over the sample period and is equivalent to the level of a constant noise which contains the same energy as the varying noise environment. This measure is also a common measure of environmental noise and road traffic noise.

ABL – The Assessment Background Level is the single figure background level representing each assessment period (daytime, evening and night time) for each day. It is determined by calculating the 10th percentile (lowest 10th percent) background level (L_{A90}) for each period.

RBL – The Rating Background Level for each period is the median value of the ABL values for the period over all of the days measured. There is therefore an RBL value for each period – daytime, evening and night time.

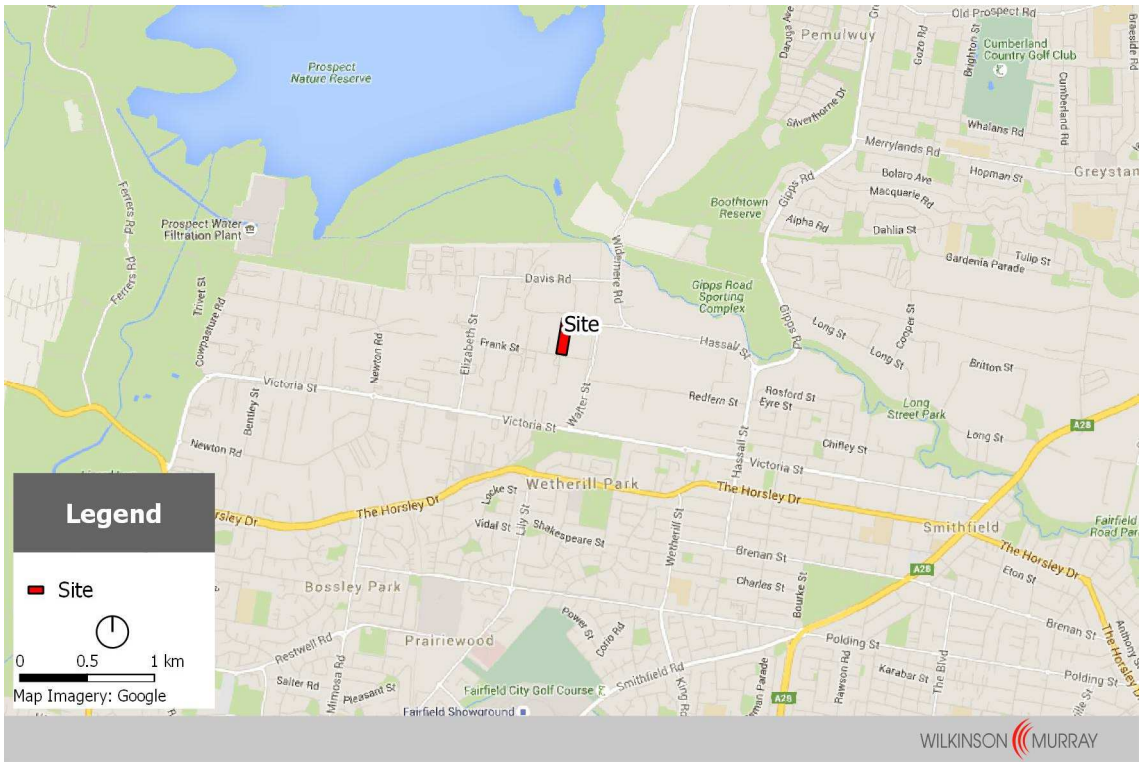
Typical Graph of Sound Pressure Level vs Time



1 INTRODUCTION

ResourceCo RRF Pty Ltd (ResourceCo) is seeking approval under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) for the construction and operation of a Waste and Resource Management Facility (the Project) at 35-37 Frank Street, Wetherill Park (the Site). The location of the Site is shown in Figure 1-1.

Figure 1-1 Site Location



The Project was declared to be a State Significant Development (SSD). Assessment and approval is being pursued in accordance with the EP&A Act. The Secretary's Environmental Assessment Requirements (SEARs) for the project have been issued and set out the environmental assessment requirements for the project.

This Noise and Vibration Impact Assessment (NVIA) has been prepared to address the relevant SEARs in relation to the preparation of the Environmental Impact Statement (EIS) for the project, and was conducted in general accordance with the following NSW Government guidelines:

- NSW *Industrial Noise Policy* (EPA, 2000);
- *Noise Guide for Local Government* (EPA, 2013);
- NSW *Road Noise Policy* (DECCW, 2011); and,
- *Interim Construction Noise Guideline* (DECC, 2009).

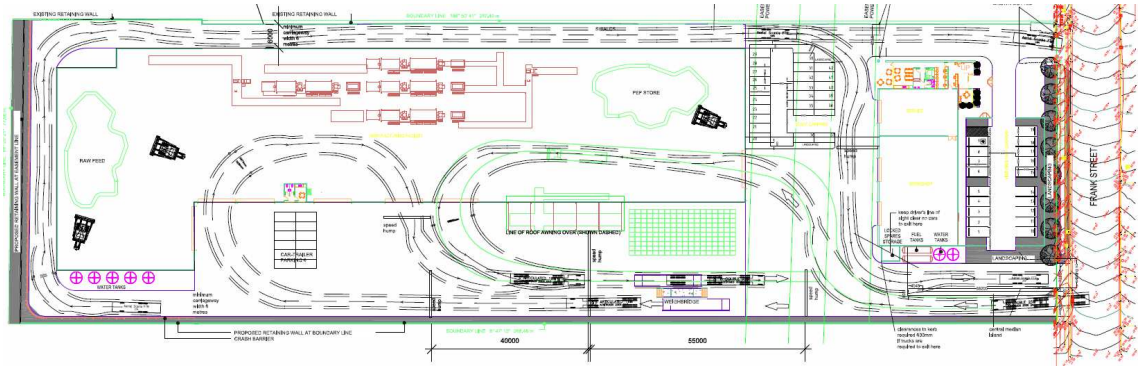
Given the substantial setback distances to nearby receivers, it is considered that a vibration assessment is not warranted and therefore not considered further in this assessment.

2 AREA DESCRIPTION & PROPOSED OPERATION

2.1 The Site

The Site is located on the northern side of Frank Street, to the west of the intersection with Redfern Street. The Site has an area of approximately 2.1 hectares. The site plan, as presented in Figure 2-1, shows car parking, office and workshop facilities at the southern end of the Site, near Frank Street, and a large building covering the rear two thirds of the Site.

Figure 2-1 Site Plan



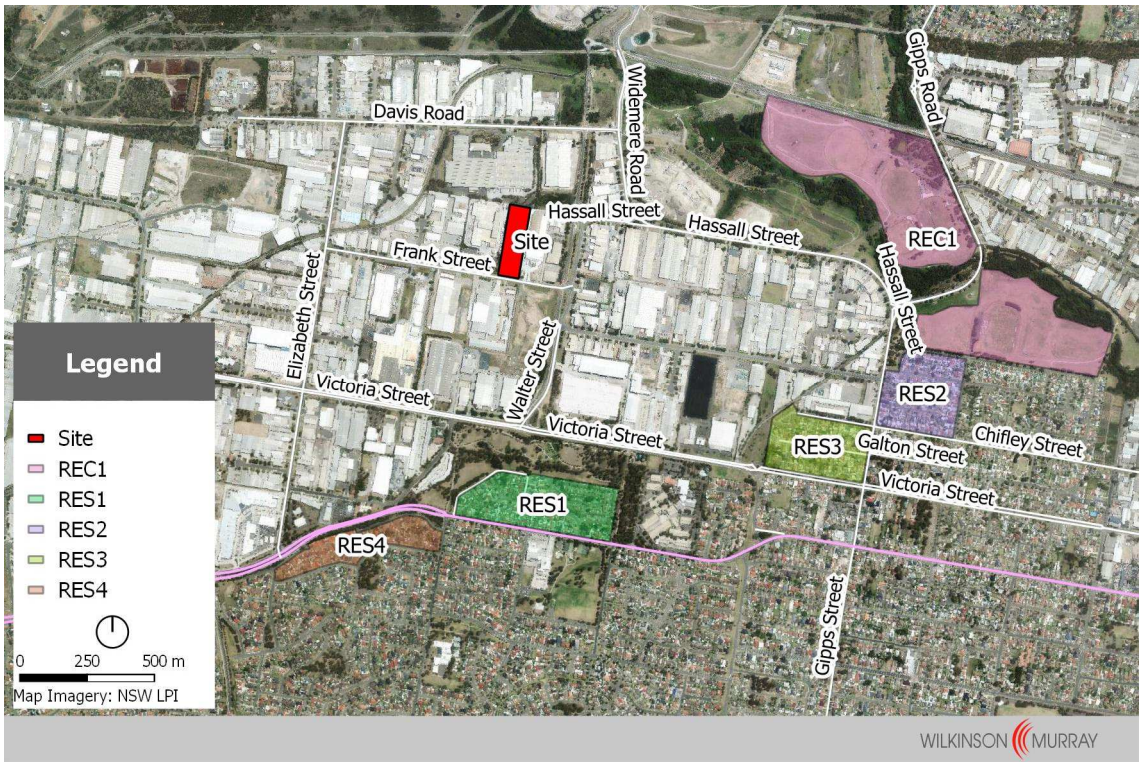
2.2 Surrounding Land Use & Sensitive Receivers

The immediate surrounding land use is industrial. Figure 2-2 shows the location of noise sensitive receivers.

The nearest residential receivers are located to the south in Maugham Crescent, Wetherill Park, approximately 840m away (RES1). There are residences to the east on Hassel Street (1,450m RES 2), to the south-east (Chifley Street and Galton Street near Victoria Street RES 3) and to the south-west along The Horsley Drive (1,250m RES 4).

The Gipps Road Sporting Complex is located to the north-east with the nearest oval at a distance of approximately 1,150m (REC1).

Figure 2-2 Sensitive Receivers



2.3 The Project

2.3.1 Overview

It is proposed to establish a Waste and Resource Management Facility on the Site which will process waste material to produce *Processed Engineering Fuel* (PEF) and other reusable commodities including aggregates, metal, timber and soil.

PEF is primarily a plastic-based material with high calorific value, derived from waste streams such as Construction and Demolition (C&D) waste, Commercial and Industrial (C&I) waste, and pre-processed Municipal Solid Waste (MSW). The proposed development would process dry, non-putrescible C&I and mixed C&D waste.

PEF is an alternative fuel used in energy intensive industrial to replace fossil fuels, such as coal and petcoke and is most commonly used in the cement manufacturing industry.

Recycling combustible waste into PEF provides the following benefits:

- Diverting waste from landfill;
- Conserving natural fossil fuels by replacement with sustainable green fuel;
- Reducing carbon emissions in cement manufacturing processes; and,
- Cost savings for industry through replacing fossil fuels with PEF.

The proposed facility has the capability to convert up to 250,000 tonnes of raw material per annum into approximately 100,000 tonnes of PEF and over 100,000 tonnes of other reusable commodities. All raw materials are separated during processing and over 90% of the material is recycled.

2.3.2 Site Operations & Processes

C&D and C&I waste would be delivered to the site by customers, typically in medium rigid tip trucks. The average load size would be approximately 6 tonnes and up to 150 trucks would deliver to the site per day (300 movements). As shown in Figure 2-1, these will enter through one of the two northern doors on the eastern façade and leave through the centre doors.

Materials dumped onto the tipping floor of the processing building and inspected. If the load is found to contain any prohibited materials, such as batteries or putrescible waste, it would immediately be loaded back into the delivering vehicle and rejected from the site. The approved waste materials are then moved to a stockpile. Prior to processing this material is pre-sorted through using an excavator where large metal items such as gas bottles are removed.

The waste is then loaded into the processing plant using an excavator and/or a front end loader. Based on the size and weight of the waste high calorific value products, such as plastics, paper, timber and textiles are separated from non-combustible products such as bricks, sand, concrete and glass.

The non-combustible products are quickly removed from the waste stream and are temporarily stockpiled in the building prior to being taken to other facilities for recycling into other products, such as road base.

The high calorific value products are then run through shredders to size the PEF to the specification of the end user. The sized material is then passed beneath another magnet to extract any ferrous metal liberated by the shredding process. This material is then stockpiled for loading on to outgoing trucks.

Approximately 25 semi-trailer loads of PEF would be shipped from the site per day. These will arrive through the door on the southern façade and leave through a centre door as shown in Figure 2-1. Additionally, approximately 31 large tip truck loads of other materials, including aggregates and waste to landfill, would leave the site per day. These will enter through one of the two northern doors on the eastern façade and leave through the centre doors. This results in a total of 112 movements.

Rapid roller doors are proposed in all locations where regular access is required. For other doors, which only require access for maintenance, conventional doors are proposed however these will remain closed during normal operations. Based on the proposed number of truck movements any one of the roller doors used for access are likely to be open up to a total of ⅓ of the time during the day.

In addition to the heavy vehicle movements on the site, a number of mobile plant items would be operated within the processing building, as presented in Table 2-1.

Table 2-1 Mobile Plant

Item	Quantity
Bobcat	1
Excavator	3
Front End Loader	2
Sweeper	1
Forklift	1

The sweeper and the forklift would also be operated outside the building. The processing building would feature a dust suppression sprinkler system, fitted to the ceiling, and would not have any form of mechanical ventilation.

A workshop and service area are proposed in the northern part of the building which fronts Frank Street. This will operate during core hours and also when maintenance work is undertaken. Typical power tools such as rattle guns and angle grinders as well as welding equipment would be used.

A 1.8m Colorbond fence is proposed along the top of the retaining wall along the western boundary, north of the weighbridge and along the northern boundary.

2.3.3 Operating Hours

The processing plant would primarily operate in 2 shifts; from 5.00am to 10.30pm Monday to Friday, 6.00am to 5.00pm Saturday, and 8.00am to 6.00pm Sunday as required.

Waste would be accepted between 5.00am and 5.00pm Monday to Saturday, and between 7.00am and 4.00pm Sunday.

In addition, maintenance activities would occur as required outside these core hours, and it is possible some deliveries from the site may occasionally occur.

3 EXISTING NOISE ENVIRONMENT

3.1 Unattended Noise Monitoring

Ambient noise levels were monitored at 15 Maugham Crescent, Wetherill Park between Friday, 21 and Saturday, 29 August 2015 at monitoring location L1 which is considered representative of the most affected residential receivers in the vicinity of the Project and is shown in Figure 3-1. The unattended noise monitoring equipment used consisted of environmental noise loggers set to A-weighted, fast response, continuously monitoring over 15-minute sampling periods. This equipment is capable of remotely monitoring and storing noise level descriptors for later detailed analysis. The equipment calibration was checked before and after the survey and no significant drift occurred.

The logger determines L_{A1}, L_{A10}, L_{A90} and L_{Aeq} levels of the ambient noise. L_{A1}, L_{A10} and L_{A90} are the levels exceeded for 1%, 10% and 90% of the sample time respectively. L_{Aeq} represents the average noise energy during a measurement period.

Times when there was rainfall or wind speeds above 5m/s were excluded in accordance with the *INP*. Detailed results of the noise monitoring from both monitoring periods are shown graphically in Appendix A.

Background noise levels may be expressed in terms of the Rating Background Level (RBL), a standard measure of background noise which is used in the *INP*.

Figure 3-1 Noise Monitoring Location

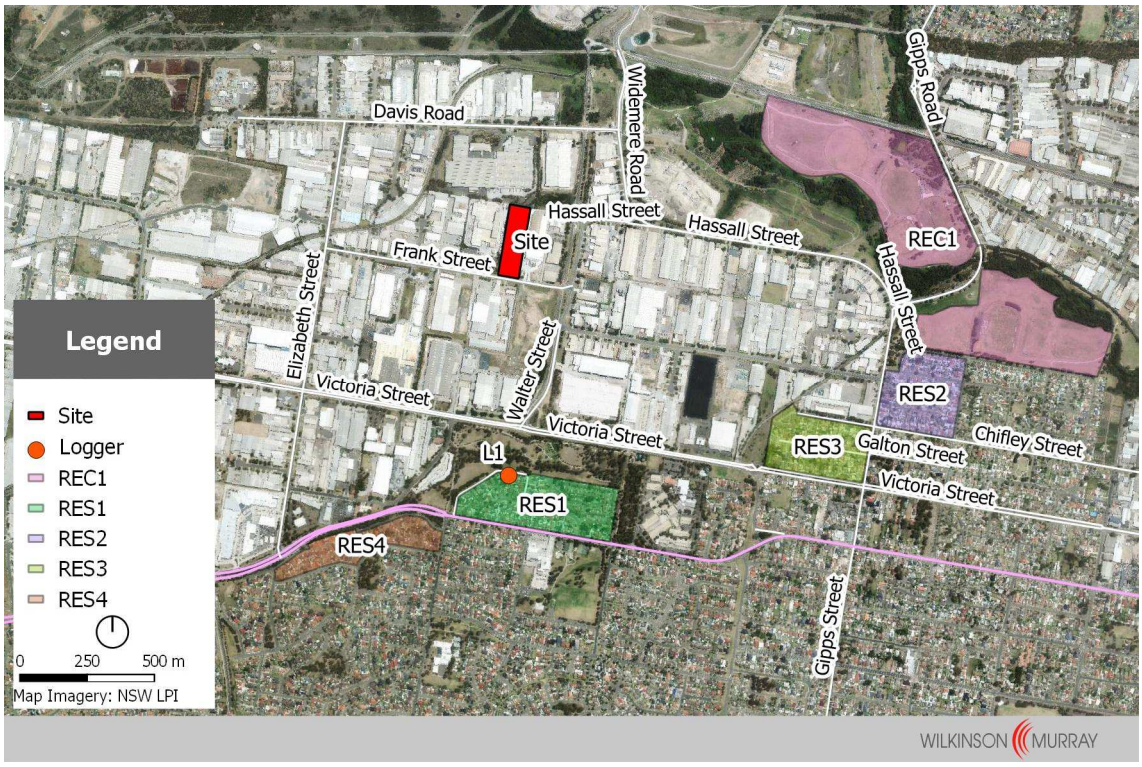


Table 3-1 shows calculated RBL and $L_{Aeq,period}$ levels. L_{Aeq} noise was dominated by traffic and suburban noise rather than industrial noise.

Table 3-1 Measured RBL & $L_{Aeq,period}$ Values

Location	RBL (dBA)			$L_{Aeq,period}$ (dBA)		
	Day	Evening	Night	Day	Evening	Night
RES1 – 15 Maugham Cr	47	44	40	55	55	49

Note: 1. Daytime 7.00am-6.00pm, Evening 6.00pm-10.00pm, Night 10.00pm-7.00am.

4 OPERATIONAL NOISE CRITERIA

The NSW EPA have released a draft Industrial Noise Guideline aimed at superseding the *Industrial Noise Policy (INP)*. However, in relation to the proposed development, we consider the proposed changes to the guideline would not have a material effect on the assessment outcomes. For this reason our assessment has followed the procedures of the *INP*. The *INP* seeks to control noise from newly introduced industrial noise sources by means of its "intrusiveness" and "amenity" noise criteria.

The "intrusiveness" criterion requires that the $L_{Aeq,15min}$ noise level from any new source should not exceed the existing Rating Background Level (RBL) for that period by more than 5dBA. Intrusiveness criterion values for potentially-affected residences follow directly from the RBL values in Table 4-1.

These criteria apply to $L_{Aeq,15min}$ noise levels measured under specific meteorological conditions which are included in the assessment if they occur for more than 30% of the time in any period in any season as outlined in the *INP*. Table 4-1 summarises the intrusive noise criteria. Meteorological data is summarised in Section 5.1.

Table 4-1 Intrusive Noise Criteria (dBA)

Location	Intrusive Criterion		
	Day (dBA)	Evening	Night
RES1 – Maugham Cr	52	49	45

The "amenity" criterion applies to the $L_{Aeq,period}$ noise level due to all industrial sources affecting a location. It sets an upper limit to the total noise level ($L_{Aeq,period}$) in an area from all industrial noise (existing and future). The criterion depends on the time of the day, area classifications and the relationship of the total measured L_{Aeq} (and contribution from existing industrial noise) to determine the Acceptable Noise Level (ANL) for the development.

The potentially-affected areas are classified as *"Suburban"* by the *INP*. Given this, the Acceptable and Maximum Amenity levels ($L_{Aeq,period}$) which apply over the whole day, evening and night period are as follows:

Table 4-2 Amenity Noise Criteria (dBA)

Location	Amenity Criterion		
	Day (dBA)	Evening	Night
Suburban	55-60	45-50	40-45
Active Recreation	55-60		
Industrial	70-75		

Allowing for the different time periods for assessing intrusiveness (15 minute) and amenity (period), it is considered achieving the following intrusive noise limits over a typical busy 15-minute period will also ensure compliance with the recommended acceptable amenity noise limits.

This is based on the assumption that the difference between a typical busy $L_{Aeq,15min}$ descriptor used for the assessment of intrusiveness would be at least 3dBA higher than the $L_{Aeq,period}$ used for the assessment of amenity. Hence a limit of 48dBA (45+3) has been used for the evening (as it is 1dB more stringent than the intrusiveness criterion) and 43dBA (40+3) has been used for the night (as it is 2dB more stringent than the intrusiveness criterion).

Table 4-3 Summary of Noise Criteria (dBA)

Location	Assessment Parameter	Criterion (dBA)		
		Day	Evening	Night
RES1 – Maugham Cr	$L_{Aeq,15min}$	52	48	43
Active Recreation	$L_{Aeq,period}$		55-60	
Industrial	$L_{Aeq,period}$		70-75	

For the other residential areas which are all located closer to other busy roads and the industrial areas than Maugham Crescent, the criteria for RES1 are adopted.

Even if background noise levels in other residential areas are marginally lower, this difference is still not sufficient for these residences to be the potentially most affected due to the increased set back and hence lower predicted noise levels.

5 PREDICTION OF OPERATIONAL NOISE LEVELS

5.1 Meteorological Conditions

The *INP* requires that in predicting operational noise levels, wind speed and direction should be taken into account if wind speeds of up to 3m/s in the source to receiver direction occur more than 30% of the time in any season.

Records of wind speed and direction were obtained from the Bureau of Meteorology monitoring station at the Horsley Park Equestrian Centre, approximately 5km south-west of the site, for the 2012 calendar year. This data was analysed to identify any gradient winds.

The EPA's *Noise Enhancement Wind Analysis (NEWA)* software was used to identify instances of seasonal winds blowing from the source to any sensitive receivers for more than 30% of the time during the day, evening or night time assessment periods.

The NEWA software indicated that gradient winds exist during the night time period in winter for receivers to the east of the Site. No gradient winds where identified for receivers to the south or south-east of the site.

5.2 Prediction Methodology

Table 5-1 shows all equipment included in noise modelling, and the assumed Sound Power Levels. For activities which do not occur continuously over a 15-minute period, the L_{Aeq} is adjusted to account for the duration over which it occurs in any 15-minute period.

The dominant noise will be generated internally within the main manufacturing facility by the fixed plant as well as mobile plant including Front End Loaders, excavators and tipping of materials from trucks or activities in the workshop building which will include intermittent grinding, welding and use of rattle guns. The manufacturing facility building will have thermal insulation on the underside of the roof which will control reverberation times.

Externally, noise will be dominated by trucks arriving and departing as well as intermittent fork lift movements to manage the bale stockpile. There will also be noise associated with air-conditioning plant for the office building.

5.2.1 To Residences

Whilst rapid roller doors are proposed and over a whole day a door would be open one third of the time, it is assumed as a worst-case scenario during a busy 15-minute period one door on the western facade will remain open the whole time.

Given the distances to the nearest noise-sensitive receivers are in excess of 800m and there is shielding by surrounding buildings in all directions, then noise levels have been predicted based on geometric spreading and a conservative allowance of 10dB in relation to shielding from buildings. When considering adverse meteorological conditions the effects of shielding is reduced to 5dB.

5.2.2 To Industrial Boundary & Active Recreation Area

For these assessment locations, assessed over the whole day, evening or night period, a roller door on the western façade is assumed to be open ⅓ of the time and all 412 truck movements are assumed to occur in the daytime. Whilst a 1.8m fence is proposed along part of the western boundary, we have not allowed for shielding provided in our calculations to the industrial boundary as it is not required in order to satisfy noise criteria.

Table 5-1 Equipment Sound Power Levels or Internal Sound Pressure Levels

Plant	Nº	SWL $L_{Aeq,15min}$ (dBA)
Manufacturing Facility, including trucks tipping, front end loaders, excavators and fixed plant		SPL 89 internal at openings
Workshop Building, including grinding / welding		SPL 87 internal at openings
Forklift	1	100
10 Trucks per 15 minutes on site (412 per 11 hour day)	Line	78/m
Air-Conditioning Plant	Total	90

Table 5-2 indicates the operational noise levels predicted at potentially-affected residences, for the case where all equipment is working as shown in Figure 5-1 and for acoustically neutral and adverse meteorological conditions. Calculations include the effect of shielding by intervening buildings. Adverse conditions only need to be considered at RES2 for night time, however, the predicted level of 33dBA is still 10dBA below the PSNL of 43dBA.

Table 5-2 Predicted L_{Aeq} Operational Noise Levels, dBA

Receiver No.	Operational Noise Criterion, $L_{Aeq,15min}$ (dBA) Day/Eve/Night	Predicted Daytime Operational Noise Level $L_{Aeq,15min}$ (dBA)	
		Neutral Conditions	Adverse Conditions
RES1 – Maugham Cr	52/48/43	30	35
RES2 – Hassall St	52/48/43	24	29
RES3 – Galton St	52/48/43	28	33
RES4 – The Horsley Dr	52/48/43	27	32
Active Recreation	55-60 $L_{Aeq,period}$	26	31
Industrial Boundary	70-75 $L_{Aeq,period}$	69	-

The predicted noise levels meet the relevant criteria at all assessment locations for both adverse and neutral conditions. This is based on comparing the typical worst case daytime operations with criteria for all periods even though night time operations are likely to generate much lower noise levels.

6 TRAFFIC NOISE ON PUBLIC ROADS

Truck movements would primarily occur during the 6.00am to 6.00pm period; however, 24-hour access to the site is proposed. A typical day would have staff associated with the processing of materials arriving from approximately 5.00am as it is possible some waste will also arrive after 5.00am. The bulk of the waste will arrive between 6.00am and 5.00pm. Product out will also primarily occur between 6.00am and 6.00pm, but some product will be dispatched during the evening up until 10.00pm and it is possible there may be 1 or 2 semi-trailer movements during the night to dispatch PEF, subject to customer needs.

The processing plant will operate on a 2 shift basis, one commencing at 6.00am and finishing approximately 2.00pm and the next until 10.00pm.

Similarly office staff will primarily work normal business hours. (7.00am to 5.00pm). Light vehicle movements associated with these staff are included in the assessment.

6.1 Noise Criteria

For existing residences affected by additional traffic on existing freeways / arterial roads generated by land use developments, the appropriate noise assessment criteria are set in the *RNP*. The appropriate daytime assessment criterion is $L_{Aeq,15hr}$ 60dBA at 1m in front of the façade. The night time criterion is $L_{Aeq,9hr}$ 55dBA. Where existing traffic noise levels already exceed these noise levels, the *RNP* deems an increase of up to 2dB represents a minor impact that is considered barely perceptible to the average person.

Trucks will access via Frank Street from either the east or west and then typically via Redfern Street / Hassall Street or Elizabeth Street and then the Horsley Drive or Gipps Road, dependent on size and RMS requirements. The nearest residences / noise sensitive receivers to the facility, likely to be affected by additional traffic are located on Hassall Street south of Gipps Road or along The Horsley Drive.

In accordance with the definitions outlined in the *Road Noise Policy (RNP)* all these roads would be classified as arterial.

6.2 Prediction of Traffic Noise Levels

A traffic study was prepared by Lyle Marshall & Associates Pty Ltd. This report predicted future traffic generation by the recycling facility based upon processing 250,000 tonnes of raw materials per annum. The assessment was based upon 250 working days Monday to Friday and 52 Saturdays per annum (302 days) for waste deliveries to the site and 250 days for product out and average truck loads as shown in Table 6-1 which presents the estimated number of truck loads / movements daily.

Table 6-1 Summary of Estimated Number of Daily Movements

Activity	Daily Tonnage & Average Load	Truck Loads & Movements
Incoming Waste	878 tonnes per day 6 tonnes per average load	146 Tipper trucks so 300 movements
Outgoing PEF	400 tonnes per day 16 tonnes per average load	25 trucks so 50 movements
Processed Materials	400 tonnes per day 16 tonnes per load	25 trucks so 50 movements
Waste to Landfill Sites	100 tonnes per day 16 tonnes per load	6 trucks so 12 movements
Plant Staff	-	132 movements
Office Staff	-	50 movements
	Total:	**404 Trucks / 182 Cars**

These movements are split into daytime and night time as follows:

Table 6-2 Summary of Estimated Number of Daily Truck Movements

	Direction / Activity	No. of Truck Movements	
		7-10	10-7
Raw Materials	In loaded trucks-(tipper)	141	5
	Out empty trucks	141	5
Finished Product-PEF	In empty to pick up PEF	23 (Semi and BD)	2
	Out for PEF	23 (Semi and BD)	2
Finished Product Processed Materials	In empty trucks (tippers)	20	5
	Out loaded trucks (tippers)	20	5
Waste to Landfill	In empty	6	0
	Out loaded	6	0
Total No. of Typical Daily Movements:		**370**	**24**

The number of additional vehicles based on an annual average is summarised in the Table 6-3 below.

Table 6-3 Summary of Estimated Number of Daily Truck Movements

Location	Day (7am-10pm)		Night (10pm-7am)	
	Cars	Trucks	Cars	Trucks
Frank St (east of site)	46	147	20	9
Frank St (west of site)	35	233	17	15
Hassall St (south of Gipps Rd)	22	107	10	7
The Horsley Dr (east of Hassall St)	22	107	10	7
The Horsley Dr (west of Elizabeth St)	35	233	17	15

Existing traffic volumes on these roads are summarised in Table 6-4.

Table 6-4 Summary of Estimated Number of Daily Truck Movements

Location	Day (7am-10pm)		Night (10pm-7am)	
	Volume	%HV	Volume	%HV
Frank St (east of site)	3623	35.7	830	22.5
Frank St (west of site)	3623	35.7	830	22.5
Hassall St (south of Gipps Rd)	19548	20 est	4467	-
The Horsley Dr (east of Hassall St)	18230	20 est	4165	-
The Horsley Dr (west of Elizabeth St)	18530	20 est	4240	-

Given the existing high traffic volumes on all the roads where residences are located, existing noise levels are likely to exceed the *RNP* base criterion. The increased noise level due to traffic from the proposed recycling facility based on the splits above is calculated to be 0.2dB at daytime and less than 0.1dB at night time. This is significantly below the 2dB increase which is described as noticeable and negligible impact is therefore expected.

7 NOISE FROM CONSTRUCTION ACTIVITIES

7.1 Noise Criteria for Construction Activities

The *NSW Interim Construction Noise Guideline (ICNG)* presents the process to assess construction in NSW. The *ICNG* was developed by the Department of Environment Climate Change & Water (DECCW) taking into consideration that construction is temporary, noisy and difficult to ameliorate. As such, the *ICNG* was developed to focus on applying a range of work practices most suited to minimising construction noise impacts, rather than focusing only on achieving a numeric noise level.

The *ICNG* recommends that standard construction work hours should typically be as follows:

- Monday to Friday 7.00am to 6.00pm
- Saturday 8.00am to 1.00pm
- No work on Sundays or public holiday

Additionally, it recommends quantitative management noise goals at residences as presented in Table 7-1.

Table 7-1 Construction Noise at Residences using Quantitative Assessment

Time of Day	Management Level $L_{Aeq\ (15\ min)}$	How to Apply
Recommended standard hours: Monday to Friday 7am to 6pm Saturday 8am to 1pm No work on Sundays or public holidays	Noise affected RBL + 10dBA	The noise affected level represents the point above which there may be some community reaction to noise. Where the predicted or measured $L_{Aeq\ (15\ min)}$ is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to minimise noise. The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.
	Highly noise affected 75dBA	The highly noise affected level represents the point above which there may be strong community reaction to noise. Where noise is above this level, the proponent should consider very carefully if there is any other feasible and reasonable way to reduce noise to below this level. If no quieter work method is feasible and reasonable, and the works proceed, the proponent should communicate with the impacted residents by clearly explaining the duration and noise level of the works, and by describing any respite periods that will be provided.
Outside recommended standard hours	Noise affected RBL + 5dBA	A strong justification would typically be required for works outside the recommended standard hours. The proponent should apply all feasible and reasonable work practices to meet the noise affected level. Where all feasible and reasonable practices have been applied and noise is more than 5dBA above the noise affected level, the proponent should negotiate with the community.

The *ICNG* presents the following Noise Management Levels for non-residential premises:

- Active recreation areas external $L_{Aeq\ (15\ min)}$ 65dBA
- Industrial premises external $L_{Aeq\ (15\ min)}$ 75dBA

The construction noise management levels at all the existing residences are shown in Table 7-2. Table 7-2 also shows the management levels at other receivers.

Table 7-2 Construction Noise Criteria for Daytime Construction

Location	Construction Noise Management Levels, L_{Aeq} (dBA)
Residences RES 1-4	57
Active Recreation	65
Industrial	75

7.2 Predicted Construction Noise Levels

Earthworks will generate the highest noise levels. There will need to be construction of retaining walls (the highest in the north-west corner) import of select material plus the spreading and compaction. This will be followed by drainage works and then paving. The final stage will be the construction of buildings followed by fit out.

Construction plant assumed to be required for these works, and the total L_{Aeq} Sound Power Level for are presented in Table 7-3.

Table 7-3 Construction Plant Total Sound Power Level (SWL)

Activity	Typical Equipment Used	Total $L_{Aeq,15min}$ Sound Power Level (dBA)
Earthworks / Drainage / Pavement	Dozer, Front End Loader, Roller, Excavator & Truck	115
Retaining Walls	Piling Rig / Concrete Trucks	112
Buildings & Fit out	Cranes, Delivery Trucks & Power Tools	110

Table 7-4 shows the predicted construction noise levels for the main phases.

Table 7-4 Predicted Noise Levels from Construction

Receiver No.	Construction Noise Management Level, $L_{Aeq,15min}$ (dBA)	Predicted Construction Noise Level $L_{Aeq,15min}$ (dBA)		
		Site Earthworks	Retaining Walls	Site Buildings
RES1 – Maugham Cr	57	39	39	34
RES2 – Hassall St	57	34	34	29
RES3 – Galton St	57	36	36	31
RES4 – The Horsley Dr	57	35	35	30
Active Recreation	65	34	34	29
Industrial Boundary	75	70-81	70-90	70-76

Predicted noise levels at residences and the active recreation area are expected to comply with the Noise Management Levels. Negligible impact is therefore expected.

There will be exceedance of construction Noise Management Levels at the industrial boundaries from time to time when construction plant is located close to the boundary. In particular, this would relate to the western boundary near the north western corner of the site where the larger retaining walls and extensive fill is required. This is common across many construction sites.

Inspection of the aerial photography indicates the boundary areas of the adjoining sites include some buffer area and are currently used for truck trailer parking or car parking, hence negligible impact is expected during these noisier construction periods.

Figure 7-1 Aerial showing Current Uses near Industrial Boundary

It is recommended a further review of potential impacts on neighbouring properties can be conducted in consultation with the potentially affected neighbours at the time the proposed construction commences.

Beyond standard mitigation practices to use modern well-maintained plant, there are no further mitigation measures which are considered feasible and reasonable for the proposed works.

8 CONCLUSION

The proposed development of a resource recycling facility at Frank Street, Wetherill Park has been assessed against NSW government policies in relation to industrial noise, construction noise and traffic noise on the road network.

Industrial noise has been assessed in accordance with the NSW EPA *Industrial Noise Policy (INP)*. The predicted noise levels indicate compliance with intrusive criteria under neutral and adverse meteorological conditions at both residential receivers and the industrial boundary. At residential receivers activities are predicted to be inaudible at all times.

Potential noise impacts from traffic on the surrounding road network, arising from additional truck and car movements associated with the operation of the recycling facility are predicted to not be noticeable as increases in noise are less than 0.2dB at daytime and 0.1dB at night time.

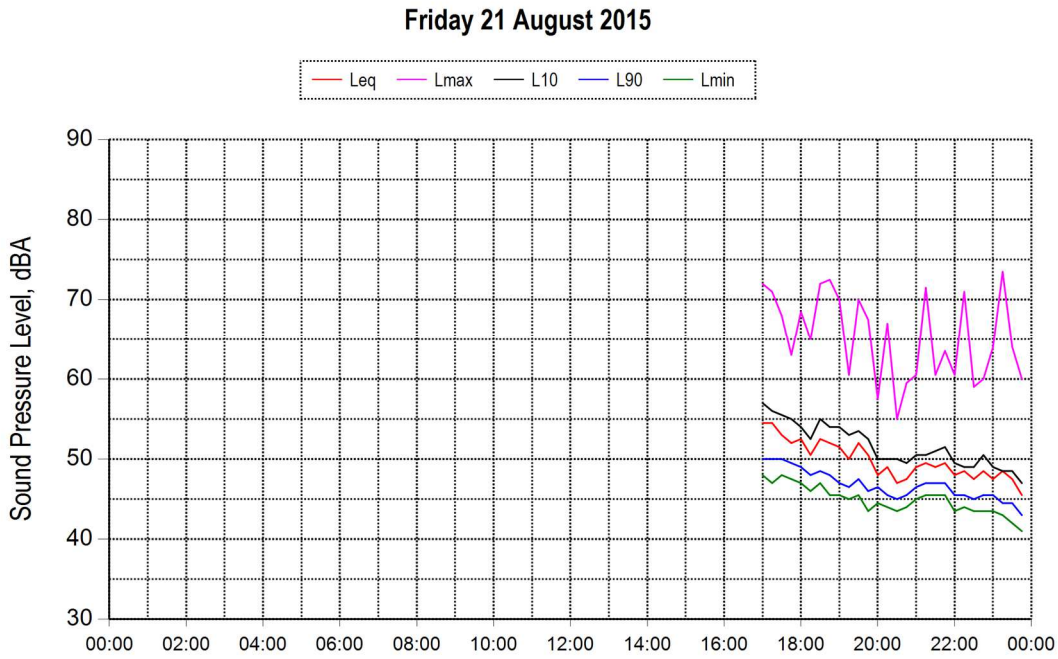
Noise levels associated with the construction of the facility, including the earthworks, are predicted to be within the relevant Noise Management Levels for residences.

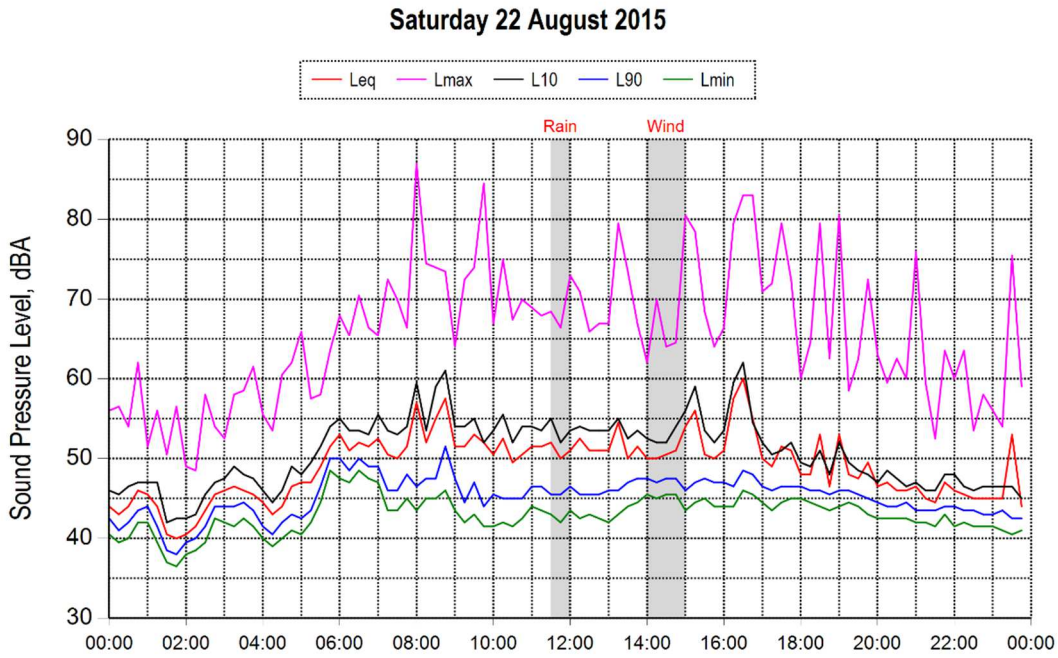
Construction noise from the shorter term retaining walls and earthworks close to the industrial boundary are predicted to exceed Noise Management Levels at times. Since construction is limited to standard daytime hours, these works are short-term, beyond notification of the neighbours at the commencement of construction, no further mitigation measures are considered feasible and reasonable.

APPENDIX A

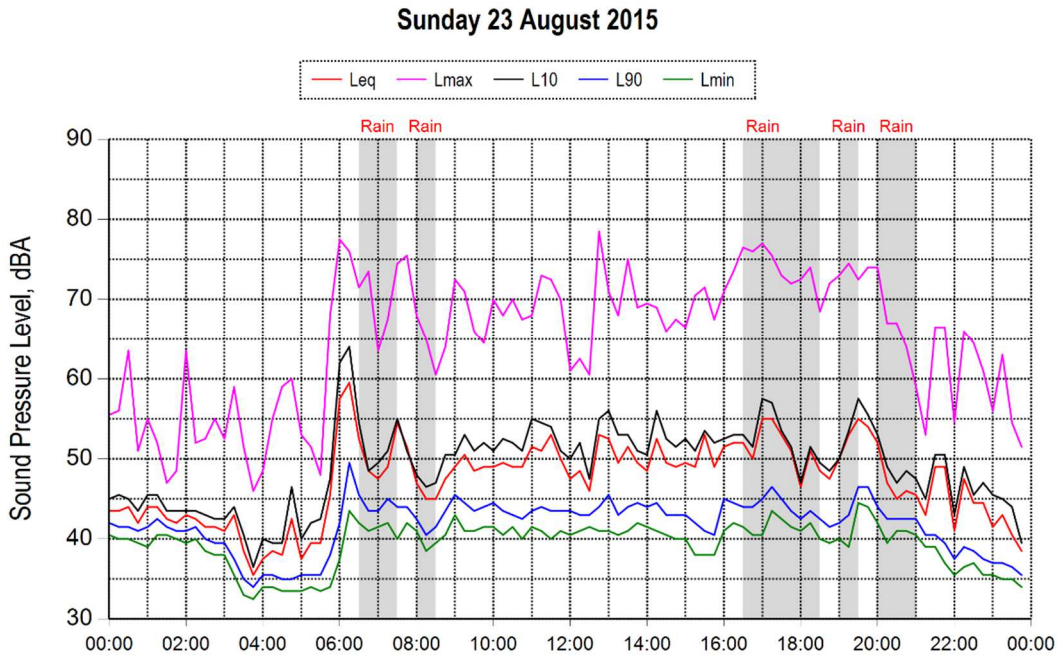
NOISE MEASUREMENT RESULTS

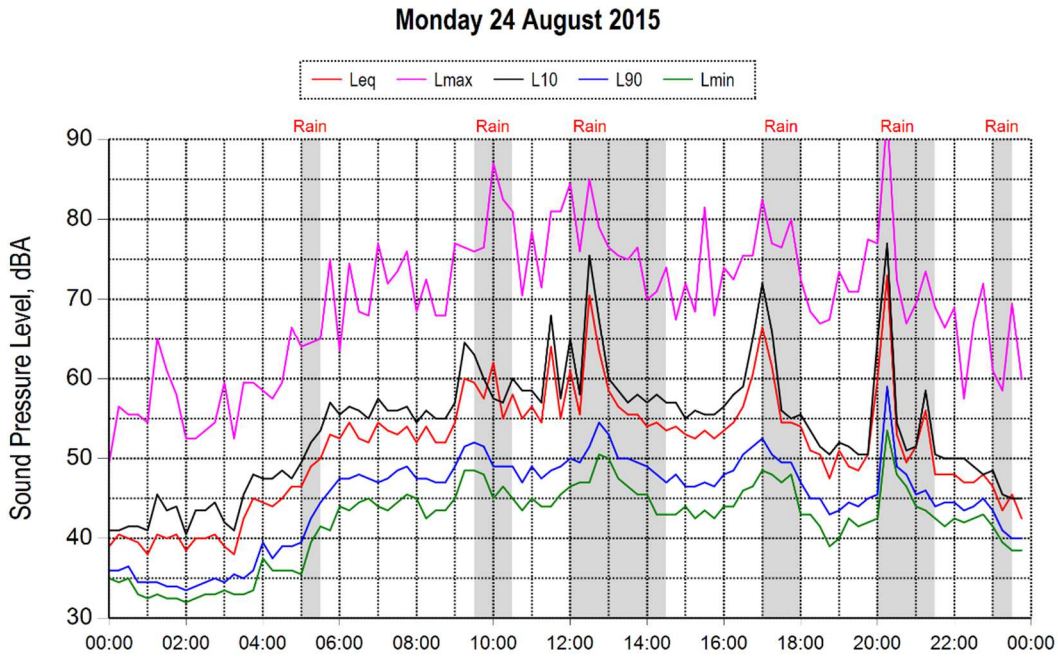
Location: 15 Maugham Crescent, Wetherill Park



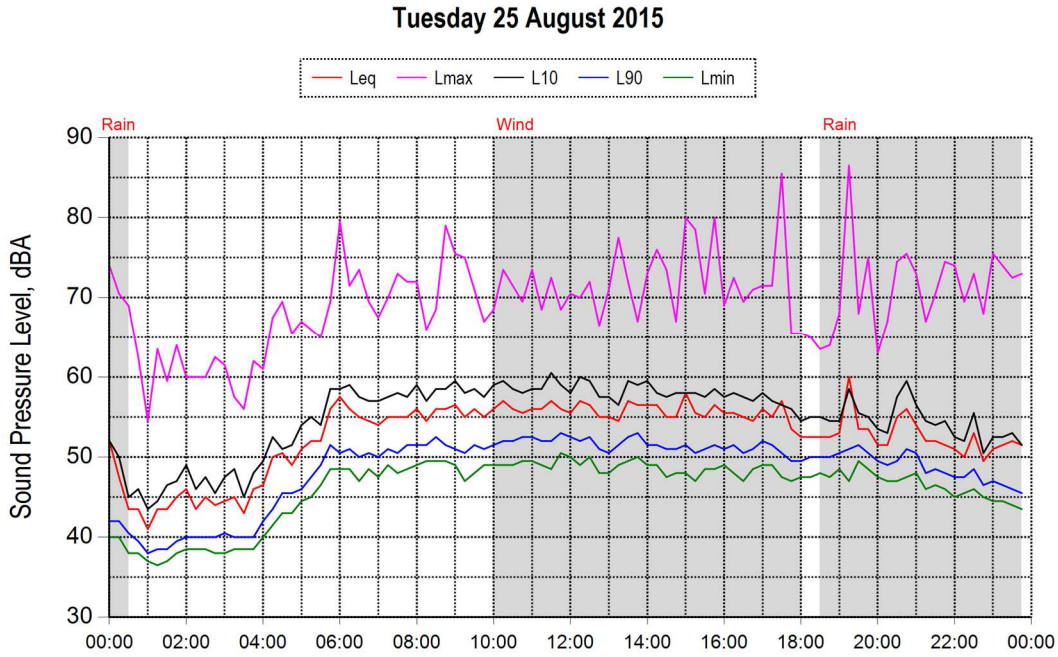


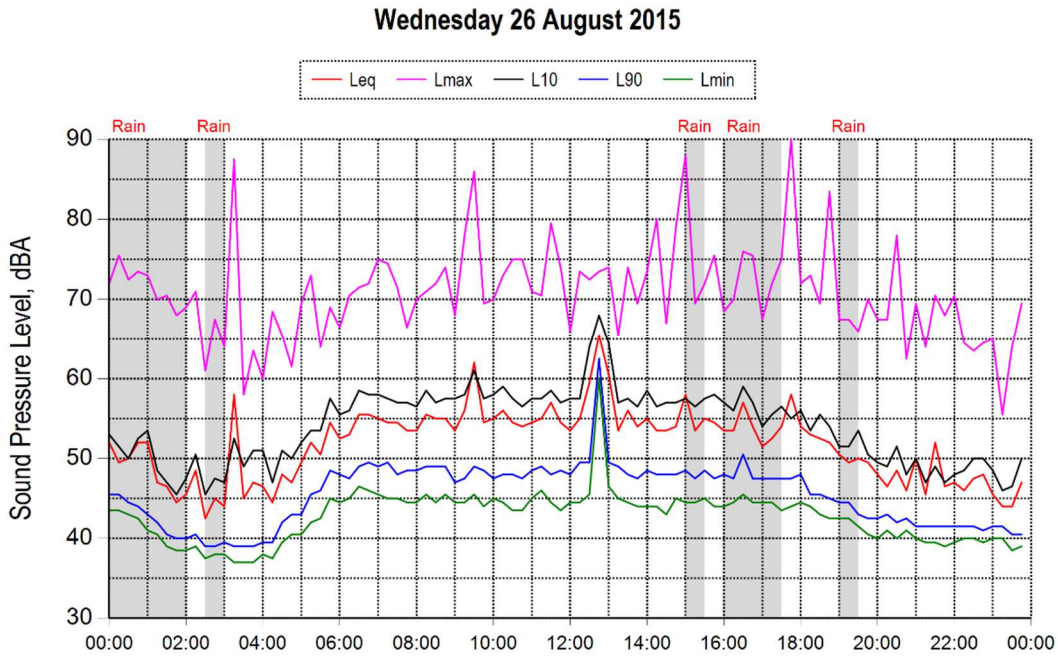
Location: 15 Maugham Crescent, Wetherill Park



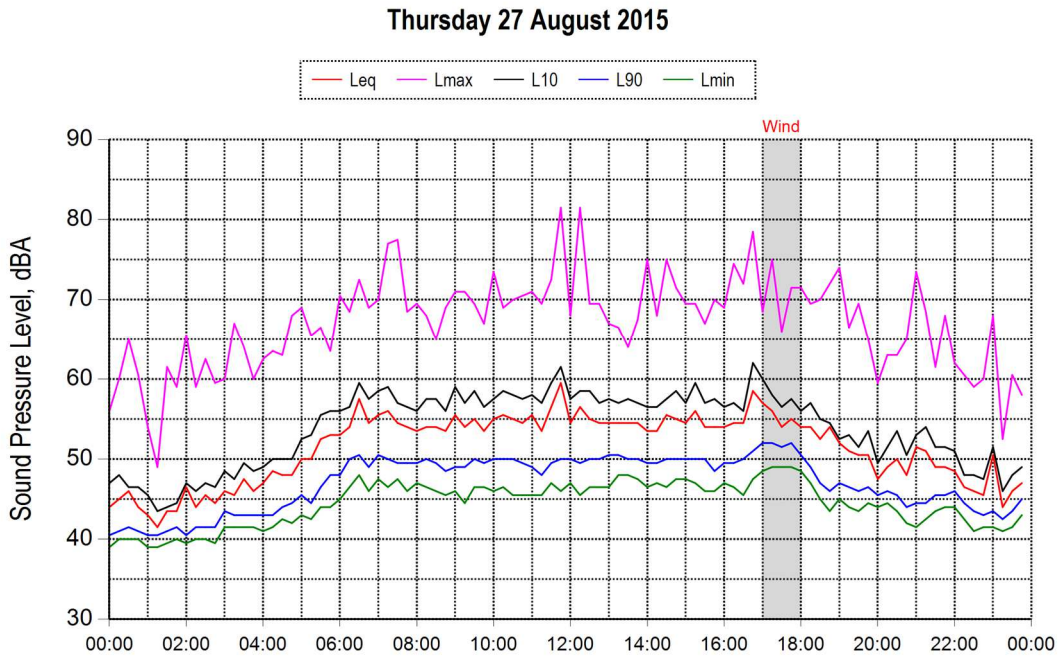


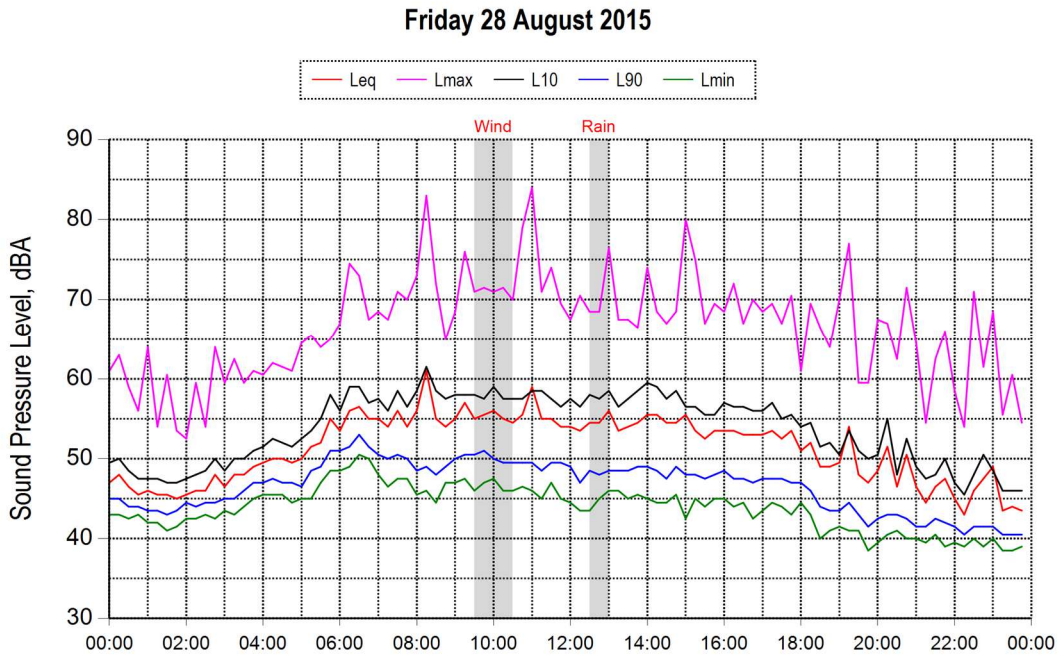
Location: 15 Maugham Crescent, Wetherill Park





Location: 15 Maugham Crescent, Wetherill Park





Location: 15 Maugham Crescent, Wetherill Park