PROPOSED RESOURCE RECOVERY FACILITY 25 MARTIN RD, BADGERYS CREEK NOISE ASSESSMENT BASED ON DETAIL DESIGN

REPORT NO. 13351-DD VERSION A

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PREPARED FOR

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ACOUSTICS AND AIR

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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 10^{th} percentile (lowest 10^{th} 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

Wilkinson Murray conducted a Noise Impact Assessment (NIA) for the proposed Resource Recovery Facility at 25 Martin Road, Badgerys Creek (Wilkinson Murray Report No. 13351 Version B). The NIA addressed the Secretary's Environmental Assessment Requirements (SEARs) for the project and was conducted in general accordance with the NSW Industrial Noise Policy (INP).

The NSW Environment Protection Authority (EPA) requested additional information which was provided by Wilkinson Murray in a letter dated 4 November 2015. The Joint Regional Planning Panel (JRPP) deferred the determination of the application to investigate enclosing the proposed operations. A revised project semi-enclosing the site was developed and assessed which was provided in a letter dated 1 December 2017 titled "25 Martin Road Badgerys Creek - Revised Proposal - Enclosed Site".

The Joint Regional Planning Panel (JRPP) conditioned that "The eastern facade of the building shall be enclosed, subject to the material(s) providing the required noise attenuation outlined in the acoustic report accompanying the application".

A revised project enclosing the facility in a shed has been developed for the detail design. This report has been prepared by Wilkinson Murray on behalf of Mulgoa Excavations Pty Ltd. It provides an assessment of the noise impact for the proposed resource recovery facility at 25 Martin Rd, Badgerys Creek based on the detail design.



2 SITE DESCRIPTION AND PROPOSED OPERATIONS

The proposed Project is a Resource Recovery Facility to be located at 25 Martin Road, Badgerys Creek in NSW. The Project site is approximately 16 km west-northwest of Liverpool and approximately 13km south of St Marys.

Figure 2-1 presents the Project location and identifies the potential surrounding noise-sensitive receptors of relevance to this assessment. The house marked as R9 and R13 have been demolished.

Activities at the Project will consist of the importation (materials sourced from off-site) and processing of various materials for resource recovery. These materials will consist of the following:

- 10,000 tonnes per year of organic/green waste material, to be processed on-site; and
- 50,000 tonnes per year of building demolition waste consisting of concrete, bricks, glass, plastic, paper, wood, metal and rubber.

There would be no putrescible waste accepted for on-site for processing. The Project will operate Monday to Friday, 7.00am to 5.00pm and Saturday, 8.00am to 2.00pm.

The existing 2m and 3m high Hebel fences on the northern, southern and eastern sides of the site are proposed to remain.

The revised site plan showing the revised building and elevations of the building are presented in Figure 2-2 and Figure 2-3, respectively.

The revised plan is a large shed, with the following:

- northern, eastern, western and southern façades of the building constructed of a 3metre-high precast concrete tilt up panel and Colourbond Panel;
- large opening on the northern facade;
- metal decking for the roof;
- existing barriers to remain;
- northern boundary, a new 3m wall starting 10m before the shed opening and terminating 10m past the shed opening; and
- gravel hard stand for the floor.

Trucks entering and existing the building would be from the northern side of the building.

Figure 2-1 Location of the Site and Closest Receptors



Figure 2-2 Revised Site Plan Based on Detail Design





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3 NOISE CRITERIA

Noise criteria for the project were developed consistent with the NSW Industrial Noise Policy in the previous noise assessments. Table 3-1 shows the noise criteria for the project based on the measured background noise levels.

Table 3-1 Noise Criteria – Intrusive Noise Criteria

	Day time		
Receiver	Intrusive Noise Criteria,		
	LAeq,(15min)		
R1	46		
R2	46		
R3	46		
R4	46		
R5	46		
R6	44		
R7	46		
R8	46		
R9	House demolished		
R10	44		
R11	44		
R12	44		
R13	House demolished		
R14	44		
R15	44		
R16	44		
R17	44		
R18	46		

It should be noted that houses R9 and R13 have been demolished and therefore will not be considered further in this assessment.

4 NOISE MODELLING AND ASSESSMENT

4.1 Noise Modelling

Noise predictions were calculated using the "CadnaA" noise modelling software with CONCAWE noise prediction algorithms. This software considers the following noise attenuation factors

- distance;
- barrier effects from earth mounds and/ or site fencing;
- meteorological effects (Daytime D class);
- ground attenuation; and
- air absorption.

The sound power levels used in the noise modelling are presented in the NIA.

Table 4-1 presents the A-Weighted sound power levels (SWLs) used in the noise modelling for the more significant plant that may be used on site. This is based on data contained within the Wilkinson Murray database.

Table 4-1 Plant Sound Power Levels dBA

Noise Source	LAeq, 15min Sound Power Level, dBA
Truck manoeuvring on site	106
Front End Loader	106
Excavator	105
Crusher	111
Shredder	111

4.2 Modelled Scenarios

The different operations within the site have been split into three scenarios for the purpose of noise modelling, namely:

Scenario 1 - Building Waste Delivery

This scenario considers a truck entering the site and unloading building waste adjacent to the temporary stockpile, with an excavator loading the crusher (See Figure 4-1). It was assumed that all plant used in the noise model had a source level of 1.5m.

Scenario 2 - Building Waste – Stockpile A

This scenario considers the front end loader moving material from the temporary stockpile to the storage area and truck being loaded by the excavator (See Figure 4-2).

Scenario 32 - Green Waste Delivery

This scenario considers a truck entering the site and unloading adjacent to the green waste stockpile, with a front end loader loading green waste into a shredder (See Figure 4-3).

4.3 Noise Modelling Results

The results of the noise predictions are presented in Table 4-2, Table 4-3 and Table 4-4. It can be seen from the results that the noise emission from the site based on the detail design, with all activities in the shed, will comply with the noise criteria at all receivers.

Table 4-2Predicted Noise levels, Scenario 1

Receiver	Predicted Noise Level, LAeq,(15min)	Day time Intrusive Noise Criteria, L _{Aeq,(15min)}	Compliance (Yes/No)
R1	34	46	Yes
R2	37	46	Yes
R3	35	46	Yes
R4	44	46	Yes
R5	38	46	Yes
R6	39	44	Yes
R7	45	46	Yes
R8	45	46	Yes
R9	-	House demolished	Yes
R10	33	44	Yes
R11	32	44	Yes
R12	33	44	Yes
R13	-	House demolished	Yes
R14	32	44	Yes
R15	25	44	Yes
R16	26	44	Yes
R17	27	44	Yes
R18	36	46	Yes

LEGEND: BOUNDARY LINE ____ EXISTING ROAD EDGE OF BITUMEN Truck EXISTING NOISE WALL (HEIGHT TO BE EXTENDED TO 3m WHERE REQUIRED NEW ACOUSTIC WALL 3m HIGH MARTIN ROAD NEW RETAINING WALL WITH 3m HIGH ACOUSTIC WALL AT THE TOP OF RETAINING WALL (FACE OF WALL 100mm INSIDE BOUNDARY) Crusher NEW RETAINING WALL WITH 1.8m HIGH POST & WIRE FENCING AT THE TOP OF RETAINING WALL (FACE OF WALL 100mm INSIDE BOUNDARY) LAWSON 8m WIDE CONCRETE OR ASPHALT 1.8m OR 1.2m HIGH POST & WIRE FENCING AS DENOTED ROAD FIRE VEHICLE ACCESS 6m WIDE UNSEALED WITH GATE AT EITHER END ACCESS ROAD TO STRUCTURE ENTRANCE (12m OPENNING) EXISTING NOISE WALL (TO REMAIN AT CURRENT HEIGHT) RETAINING WALL 0-1.2m HIGH WITH 1.8m HIGH POST & WIRE FENCING -57.5 MINOR DESIGN CONTOUR LEVEL NEW ACOUSTIC WALL 3M HIGH ALONG THE NORTHERN BOUNDARY TERMINATING AT THE FAR EXTENT OF THE BUILDING OPENNING EMERGENCY EXIT DOOR WITH 1m WIDE CLEAR PASSAGE WALLS (1m HIGH) 121114024 WEIGHBRIDGE AND OFFICE PAD GATE EXISTING ACOUSTIC WALL WITH HEIGHT TO BE EXTENDED TO 3M WHERE REQUIRED ALONG THE NORTHERN BOUNDARY APPROX 30m X 8m @ 0% GRADE HALF ROAD WIDTH WIDENNING TO MARTIN ROAD 8m WIDE CONCRETE OR ASPHALT ACCESS ROAD MATERIAL STOCKPILE AREA <u>|</u> din T WATER TANK SLAB MATERIAL STOCKPILE AREA MATERIAL STOCKPILI AREA MATERIAL STOCKPILE AREA MATERIAL STOCKPILI AREA · · · · · · BAR - 3.5m WIDENNING AT MATERIAL STOCKPILE AREA MATERIAL STOCKPILE AREA MATERIAL STOCKPILE AREA \bigcirc TOTAL STOCKPILE AREA (ENCLOSED) 4 APPROX 214m X 54m FSL: 59.5 COCRETE CRUSHER LOCATION OF EXISTING — POWERPOLE TO BE ADJUSTED TO ENABLE 3.5m WIDE BAR PASSING LANE 1 MATERIA STOCKPILE MATERIAL STOCKPILE AREA l AND APPROX MATERI STOCKPILE AREA MATERIAL STOCKPILE AREA BIOREMEDIATION AMENITIES AREA (20m x 10m) 1.8m HIGH POST & WIRE FENCING BASIN (126m2 FILTER MEDIA) RETAINING WALL 0-2.2m HIGH WITH 1.8m HIGH FOST & WIRE FENCING FIRE VEHICLE ACCESS 6m WIDE UNSEALED ONSITE DETENTION BASIN GRASSED & (837m3) LANDSCAPED SETBACK ZONE GRASSED SWALE 2.5m WIDE, 0.5m AT BASE AND 0.3m DEEP AT A 1% GRADE EXISTING ACOUSTIC WALL TO REMAIN (12.5m FROM BOUNDARY) FIRE VEHICLE ACCESS 6m WIDE UNSEALED WITH GATE AT EITHER END 11 x CARPARKING SPACES (5.4m x 2.4m) INCLUDING 1 X DISABLED SPACE PLUS A COVERED Excavator AWNING AND DOOR ENTRANCE TO AMENITIES AREA. PAVEMENT TO BE CONCRETE OR ASPHALT Front End Loader APPROX. LOCATION OF WASTEWATER PUMP OUT UNIT TO THE MANUFACTURERS SPECIFICATIONS 1.2m POST & WIRE FENCE WITH ACCESS GATE SITE LAYOUT PLAN Liability imited by a scheme approved under Professione Spectrate L JOB NAME: RESOURCE RECYCLING FACILITY SCALE: 1:500 SURVEY ASS REV DESCRIPATION DATE DRAWN BY: JW CHECKED BY: JB DEVELOPMENT CONSENT MODIFICATION 14 CEB 10 **CivPlan** LOCATION: LOT 1 DP 611519 25 MARTIN ROAD BADGERYS CREEK STATUS: FOR DA MOD APPROVAL SIZE: A1 DATE: 14 FEB 19 DESIGN JW 3 Hunt Street, Old Erowal Bay, NSW, 2540 BIAL 1100 DRAWN JW Ph: 0408581227 Email: john@civplan.com.au DATE: 14 FEB 19 CLIENT: MULGOA EXCAVATIONS SHEET REV 2 of 4 0 Civil Engineering & Project Management Website: www.civplan.com.au B-DRAWING NUMBER CHECKED JB DATUM: AHD DESCRIPTION: CIVIL DESIGN DRAWING: GENERAL LAYOUT 18025-102

Figure 4-1Site Plan showing Source Locations – Scenario 1





Figure 4-2Site Plan showing Source Locations – Scenario 2

Figure 4-3Site Plan showing Source Locations – Scenario 3

Receiver	Predicted Noise Level, LAeq,(15min)	Day time Intrusive Noise Criteria, L _{Aeq,(15min)}	Compliance (Yes/No)
R1	31	46	Yes
R2	33	46	Yes
R3	32	46	Yes
R4	42	46	Yes
R5	38	46	Yes
R6	39	44	Yes
R7	34	46	Yes
R8	35	46	Yes
R9	-	House demolished	Yes
R10	33	44	Yes
R11	32	44	Yes
R12	33	44	Yes
R13	-	House demolished	Yes
R14	32	44	Yes
R15	25	44	Yes
R16	26	44	Yes
R17	27	44	Yes
R18	35	46	Yes

Table 4-3 Predicted Noise levels, Scenario 2

Receiver	Predicted Noise Level, LAeq,(15min)	Day time Intrusive Noise Criteria, LAeq,(15min)	Compliance (Yes/No)
R1	34	46	Yes
R2	37	46	Yes
R3	35	46	Yes
R4	44	46	Yes
R5	38	46	Yes
R6	39	44	Yes
R7	45	46	Yes
R8	45	46	Yes
R9	-	House demolished	Yes
R10	33	44	Yes
R11	32	44	Yes
R12	33	44	Yes
R13	-	House demolished	Yes
R14	32	44	Yes
R15	25	44	Yes
R16	26	44	Yes
R17	27	44	Yes
R18	36	46	Yes

Table 4-4 Predicted Noise levels, Scenario 3

5 CONCLUSION

A noise impact assessment has been conducted for the proposed resource recovery facility at 25 Martin Rd, Badgerys Creek.

A revised project enclosing the facility in a shed has been developed for the detail design. This noise assessment provides an assessment of the noise impact for the proposed resource recovery facility at 25 Martin Rd, Badgerys Creek based on the detail design.

It is concluded that noise emission from the site based on the detail design, with all activities in the shed, will comply with the noise criteria at all receivers.