ACOUSTICS AND AIR

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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Celebrating 50 Years in 2012

Wilkinson Murray is an independent firm established in 1962, originally as Carr & Wilkinson. In 1976 Barry Murray joined founding partner Roger Wilkinson and the firm adopted the name which remains today. From a successful operation in Australia, Wilkinson Murray expanded its reach into Asia by opening a Hong Kong office early in 2006. 2010 saw the introduction of our Queensland office and 2011 the introduction of our Orange office to service a growing client base in these regions. From these offices, Wilkinson Murray services the entire Asia-Pacific region.

50 YEARS 1962–2012

TABLE OF CONTENTS

Page

GLOSSARY OF ACOUSTIC TERMS

1 INTRODUCTION 1

2 SITE DESCRIPTION AND PROPOSED OPERATIONS 2

3 NOISE CRITERIA 6

4 NOISE MODELLING AND ASSESSMENT 7

4.1 Noise Modelling 7

4.2 Modelled Scenarios 7

4.3 Noise Modelling Results 8

5 CONCLUSION 14

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.

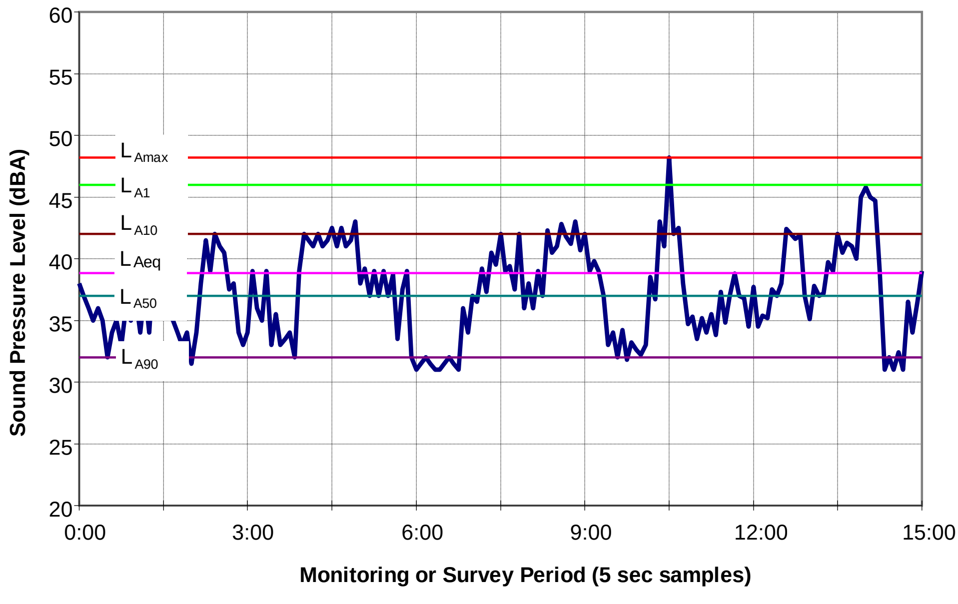
L_{A90} – The L_{A90} level is the noise level which is exceeded for 90% of the sample period. During the sample period, the noise level is below the L_{A90} level for 10% of the time. This measure is commonly referred to as the background noise level.

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

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 3-metre-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

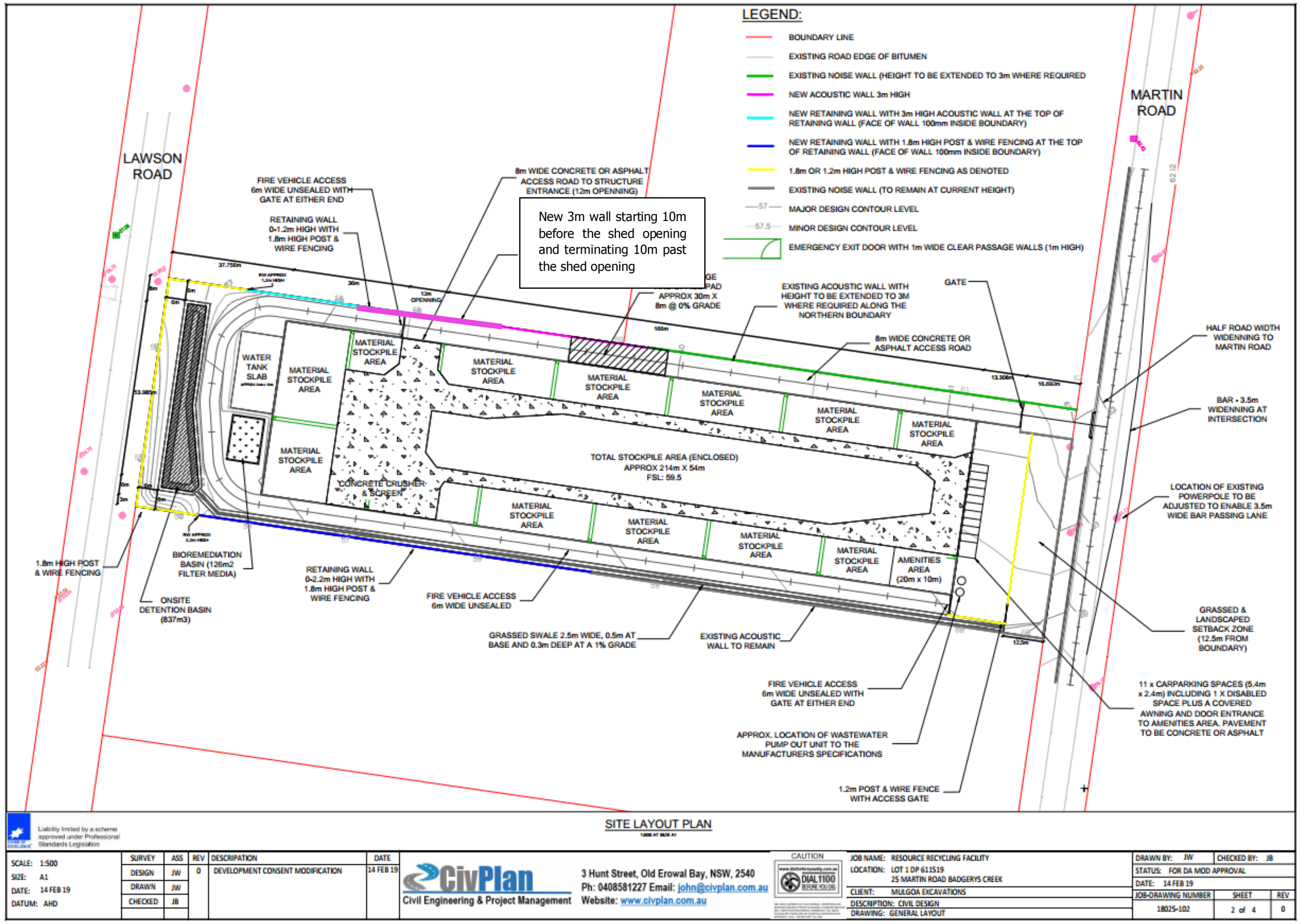
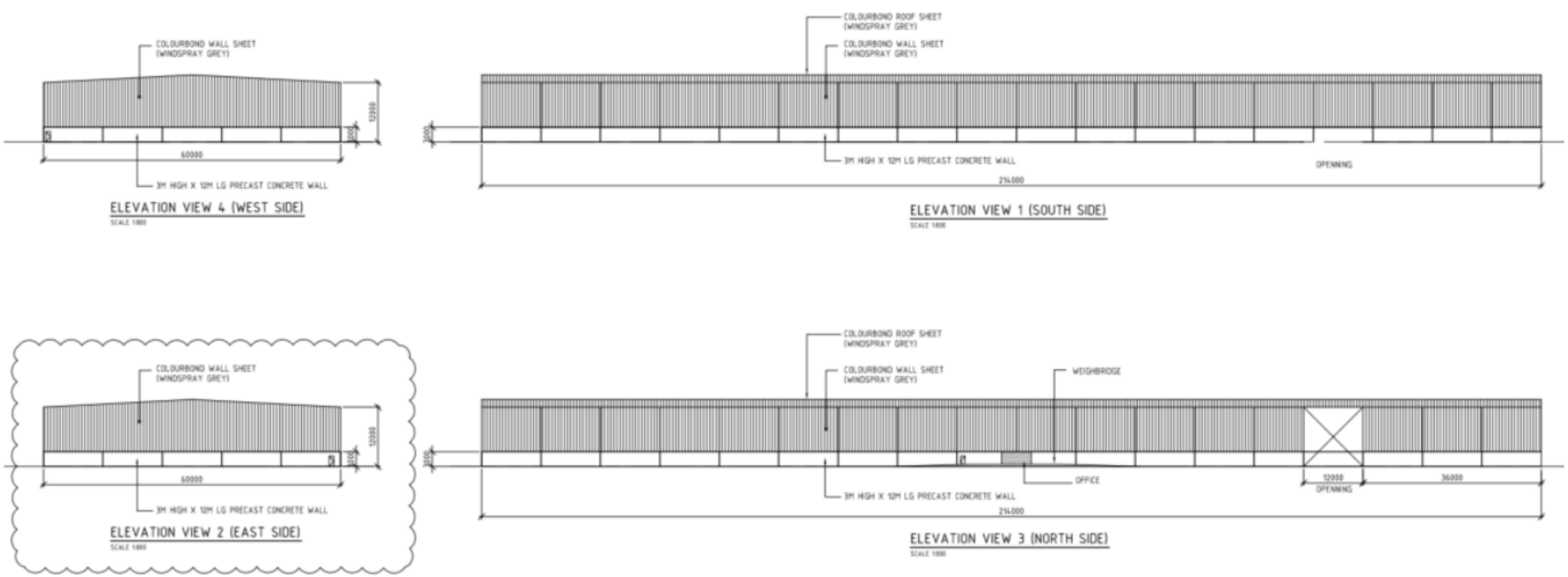


Figure 2-3 Revised Site Elevations based on Detail Design



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

Receiver	Day time Intrusive Noise Criteria, $L_{Aeq,(15min)}$
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	$L_{Aeq,\ 15min}$ 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 4-2 Predicted Noise levels, Scenario 1

Receiver	Predicted Noise Level, $L_{Aeq,(15min)}$	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

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

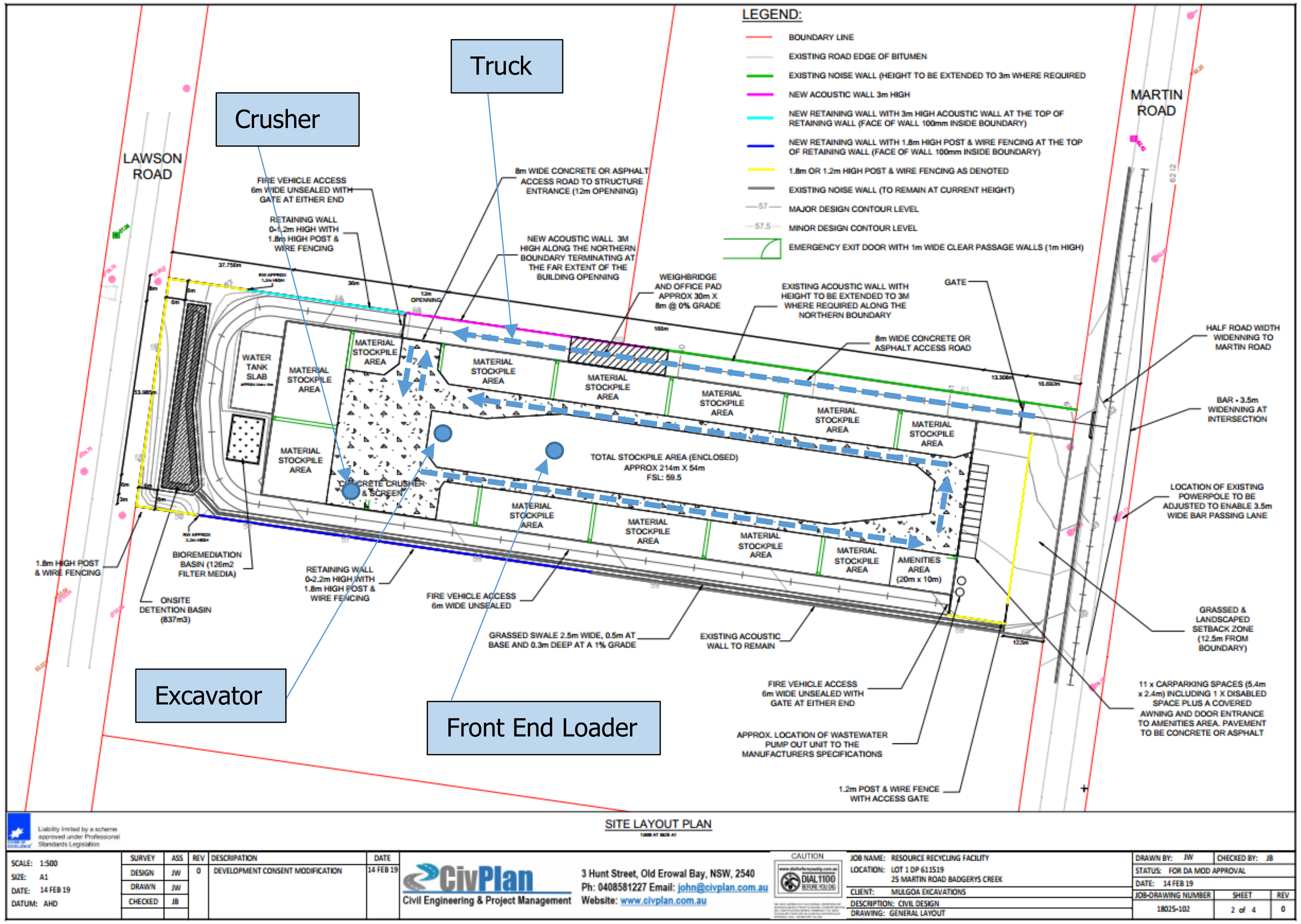


Figure 4-2 Site Plan showing Source Locations – Scenario 2

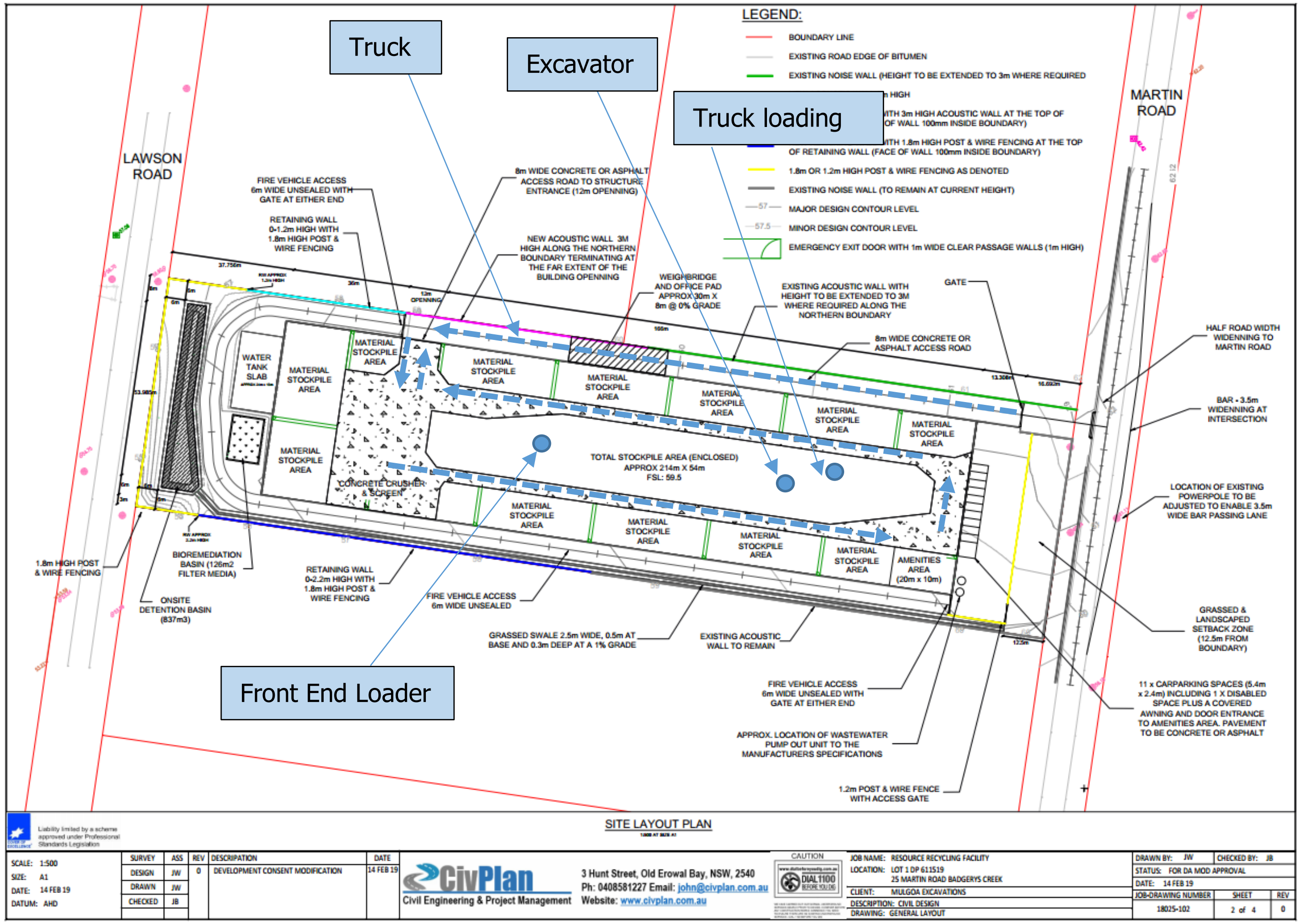


Figure 4-3 Site Plan showing Source Locations – Scenario 3

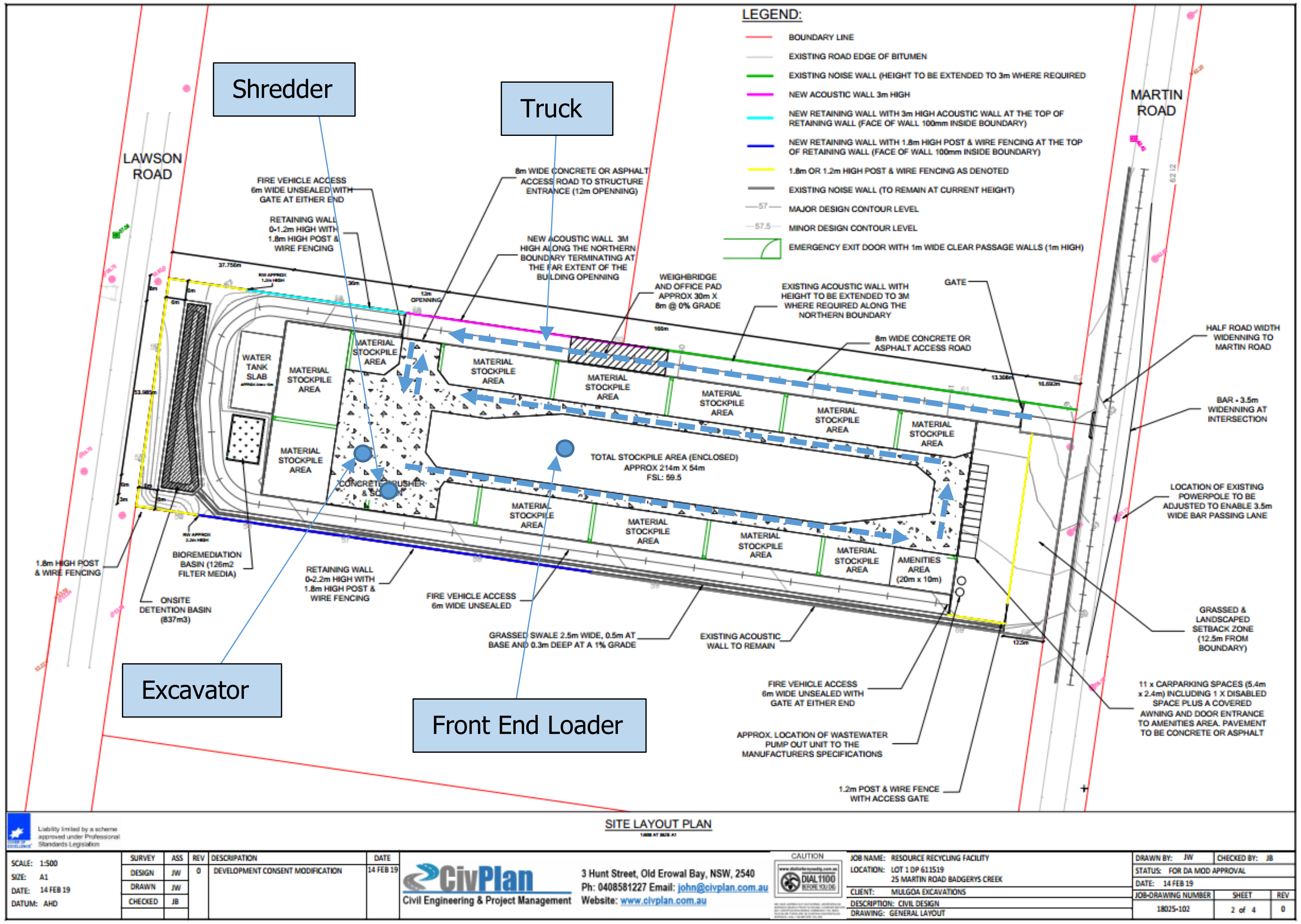


Table 4-3 Predicted Noise levels, Scenario 2

Receiver	Predicted Noise Level, $L_{Aeq,(15min)}$	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 4-4 Predicted Noise levels, Scenario 3

Receiver	Predicted Noise Level, $L_{Aeq,(15min)}$	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

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.