

WOODLAWN ECO PRECINCT  
MODIFICATION TO ENABLE THE  
CONSTRUCTION OF A SOLID  
RECOVERY FUEL FACILITY  
OPERATIONAL NOISE IMPACT ASSESSMENT

**REPORT NO. 17213  
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**PREPARED FOR**

VEOLIA ENVIRONMENTAL SERVICES (AUSTRALIA) PTY LTD  
C/O CW STRATEGIC PLANNING SERVICES

## DOCUMENT CONTROL

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Quality  
ISO 9001



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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.



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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<sup>th</sup> percentile (lowest 10<sup>th</sup> 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



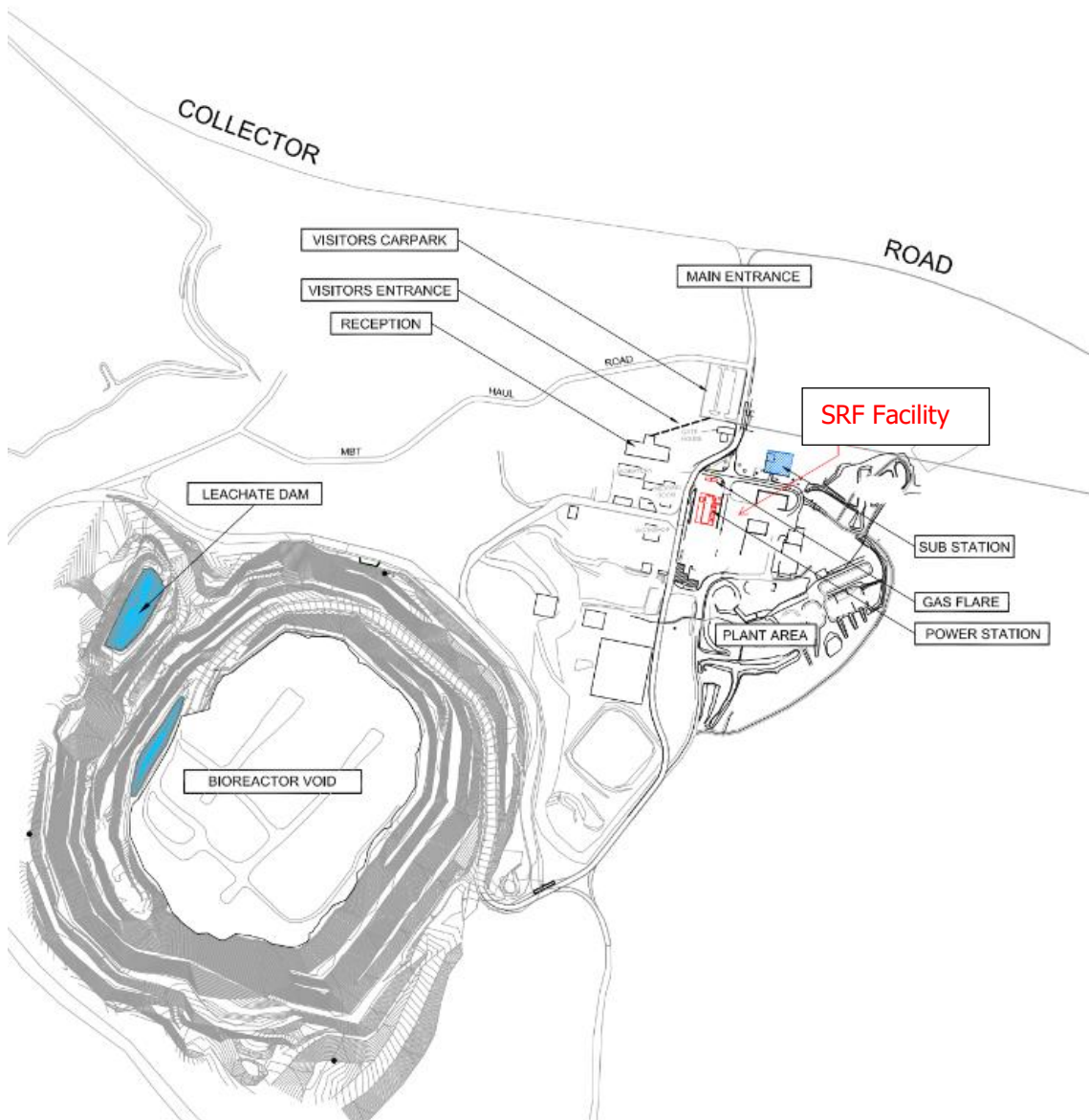
Monitoring or Survey Period (5 sec samples)

## 1 INTRODUCTION

Veolia Environmental Services (Australia) Pty Ltd (Veolia) own and operate the Woodlawn Bioreactor, Mechanical Biological Treatment (MBT) facility and Crips Creek Intermodal Facility (IMF). The complex is commonly known as the Woodlawn Eco Precinct.

Veolia proposes to construct and operate a new building near the entrance of the Eco Precinct (See Figure 1-1) to process MBT waste outputs into Solid Recovered Fuel (SRF). The SRF process will result in outputs with high calorific value being diverted from the waste stream and sold as fuel.

**Figure 1-1 Site Location**



The modification includes fortnightly transportation of approximately 55 containers of SRF by road to Crips Creak IMF for railing to Port Botany and the return of approximately 55 empty containers.

The additional rail movements would fit within Veolia's existing Approval and therefore does not require a rail noise assessment.

The fortnightly transportation of the containers by truck to the IMF site would occur along Collector Road and Bungendore Road. There are no sensitive receivers, not associated with the project along these roads, therefore no road traffic noise assessment has been conducted.

The operating hours of the SRF facility will essentially mirror the operating hours off the MBT being 6am to 10pm, Monday to Saturday.

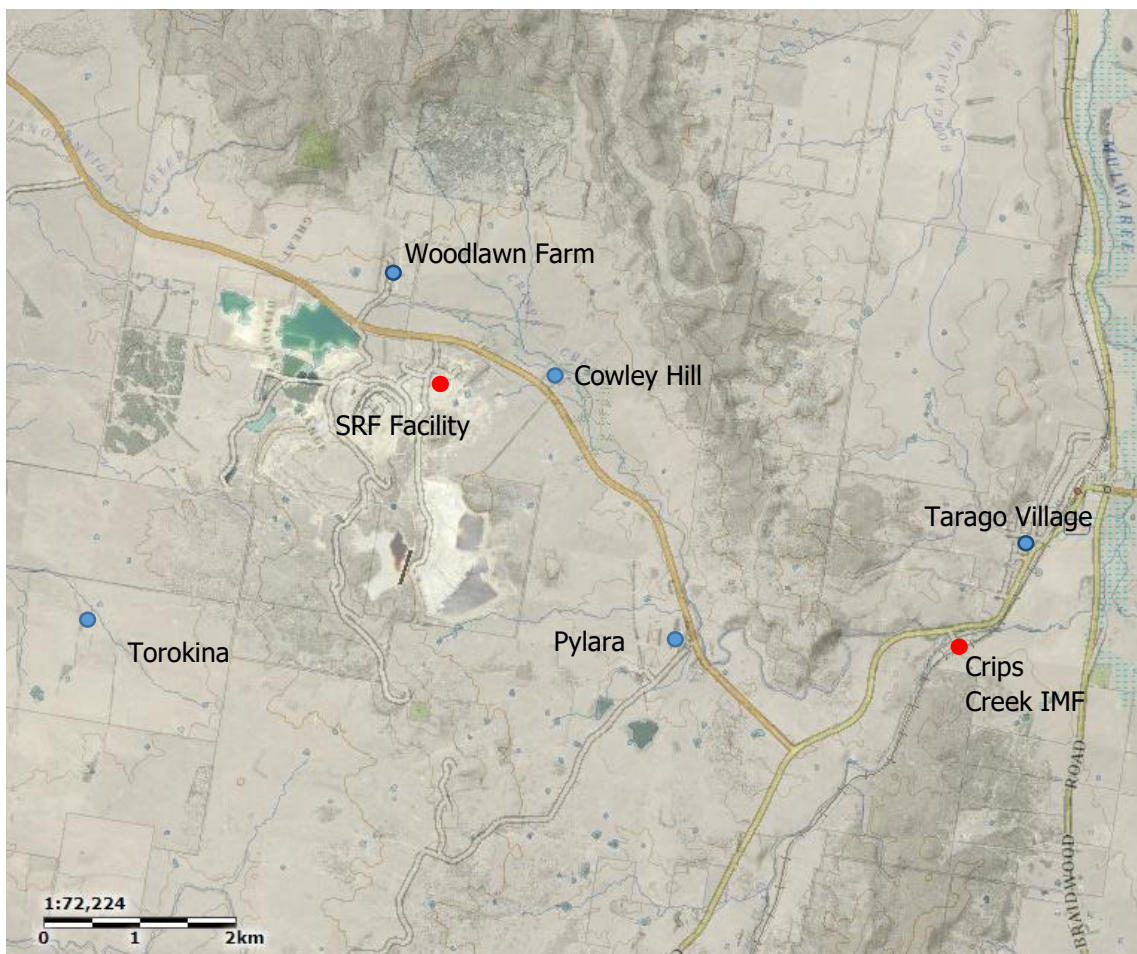
The following report documents an operational and construction noise impact assessment for the proposed new SRF facility. The assessment was conducted in general accordance with the NSW EPA's Industrial Noise Policy (INP) and Interim Construction Noise Guideline (ICNG).

## 2 SITE DESCRIPTION

### 2.1 Site Location

The Veolia Woodlawn Eco Precinct is located approximately 10 kilometres southwest of Tarago and 40 kilometres south of Goulburn. The site is typically surrounded by agricultural land uses (see Figure 2-1). The nearest sensitive receiver not associated with the site is approximately 4.4 kilometres away (Torokina).

**Figure 2-1 Site Location**



Woodlawn Farm, Cowley Hill and Pylara properties are all owned by Veolia.

### 3 NOISE CRITERIA

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#### 3.1 Operational Noise Criteria

The MBT approval (06\_0239) establishes noise criteria for the facility at private residential receivers as:

- 35  $L_{Aeq(15minutes)}$  from 6am to 10pm;
- 35  $L_{Aeq(15minutes)}$  from 10pm to 6am; and
- 45  $L_{A1(1minute)}$  from 10pm to 6am.

It also states that noise generated by the project is to be measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW Industrial Noise Policy.

The  $L_{Aeq(15minute)}$  noise levels are considered intrusive noise levels which are energy averaged over a 15minute period. The  $L_{A1(1minute)}$  level is the noise level exceeded 1 percent of a 1 minute period. The  $L_{A1(1minute)}$  level is a typical a maximum noise level and is used to assess sleep disturbance.

#### 3.2 Construction Noise Criteria

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; and
- No work on Sundays or public holiday

##### 3.2.1 Residential Noise Criteria

Table 3-1 sets out management levels for noise at residences and how they are to be applied. Restrictions to the hours of construction may apply to activities that generate noise at residences above the 'highly noise affected' noise management level.

**Table 3-1 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	<p>The noise affected level represents the point above which there may be some community reaction to noise.</p> <ul style="list-style-type: none"> <li>Where the predicted or measured <math>L_{Aeq(15\ minute)}</math> is greater than the noise affected level, the proponent should apply all feasible and reasonable work practises to meet the noise affected level.</li> <li>The proponent should also inform all potentially affected residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.</li> </ul>
	Highly noise affected 75dBA	<p>The highly noise affected level represents the point above which there may be strong community reaction to noise.</p> <p>Where noise is above this level, the relevant authority (consent, determining or regulatory) may require respite periods by restricting the hours that the very noisy activities can occur, taking into account:</p> <ol style="list-style-type: none"> <li>times identified by the community when they are less sensitive to noise (such as before and after school, or mid-morning or mid-afternoon for works near residents).</li> <li>if the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.</li> </ol>
Outside recommended standard hours	Noise affected RBL + 5dBA	<ul style="list-style-type: none"> <li>A strong justification would typically be required for works outside the recommended standard hours.</li> <li>The proponent should apply all feasible and reasonable work practices to meet the noise affected level.</li> <li>Where all feasible and reasonable practices have been applied and noise is more than 5 dB(A) above the noise affected level, the proponent should negotiate with the community.</li> </ul>

The construction noise management level at the nearest sensitive receiver not associated with the project is (30+10) 40dBA  $L_{Aeq(15\ minute)}$  assuming that background noise level of the area is 30dBA  $L_{A90}$  which is the lowest background used for developing noise criteria.

## 4 ASSESSMENT OF IMPACTS

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This section of the report details the assessment methodology and presents the predicted operational noise levels at nearby receivers.

### 4.1 Noise Modelling Methodology and Assumptions

Operational and construction noise emissions from the site were modelled using the "CadnaA" acoustic noise prediction software using the CONCAWE noise algorithm. Factors that were addressed in the noise modelling are:

- Equipment noise level emissions and locations;
- Shielding from structures;
- Noise attenuation due to geometric spreading;
- Ground absorption; and,
- Atmospheric absorption.

The modelling during the day was conducted using neutral meteorological condition equivalent to D class Pasquill stability category while night time modelling used adverse meteorological conditions of F class Pasquill stability category, which is equivalent to a temperature inversions of 3 to 4 degree Celsius/ 100 metres.

### 4.2 Assessment of Operational Noise

The SRF facility would be located in a new building constructed of Colourbond. Table 4-1 shows the typical plant that would be located within the building.

**Table 4-1 Proposed SRF plant.**

<b>Proposed SRF plant</b>
Disch. conv. A-1 heavies 1st
Disch. conv. A-1 heavies 2nd
Conveyor Titech 02
Disch. conv. PVC
Disch. conv. post shredder 1st
Disch. conv. post shredder 2nd
Feed conv. rev. Dryer
Disch. conv. Dryers_1
Disch. conv. Toploaders
Incline conv. from Toploaders
Conveyor rev. from Toploader
Conveyor from Top loader to Dryer

<b>Proposed SRF plant</b>
Conveyor from Top loader to Baler
Feed chain conveyor Baler
WALAIR Air system 1400 wide 2 way system
Acceleration conveyor 1400
Main Fan
Titech T-2 2800 POLYSORT PVC
Post shredder 0-30
Integration engineering
<b>DRYER SYSTEM</b>
Intermediate Storage 120 m3 Movingfloor with dosing grinders
Toploader system 1 with drop over chute (no side walls included)
Toploader system 2 (no side walls included)
Horizontal pre-press flap baler
Wrapping machine

Indicatively it has been estimated that the overall reverberant plant noise in the building would 84 dBA. The construction details of the existing building were used to calculate the sound power levels transmitted to the outside of the building as a result of the operation of the aforementioned indoor noise sources. Sound transmitted through the walls and roof of the building were included in the noise model.

The predicted operational noise levels at nearby residential receivers due to activities within the SRF facility are presented in Table 4-2.

**Table 4-2 Predicted Operational Noise Levels**

Receiver	Predicted Day time $L_{Aeq, 15min}$ Level	Predicted Night time $L_{Aeq, 15min}$ Level	Criteria		
			Day	Evening	Night
Torokina Property	<10	<10	35	35	35
Woodlawn Farm (property owned by Veolia)	22	27	35	35	35
Cowley Hill (property owned by Veolia)	22	25	35	35	35
Pylara (property owned by Veolia)	<10	<10	35	35	35

Review of Table 4-2 reveals that noise levels from the SFR at nearby receivers are well below noise criteria. The predicted noise level at the nearest sensitive receptor (Torokina) not owned by Veolia is well below the day and night time noise criteria and as such is unlikely to contribute to the existing noise levels from the Woodlawn facility. The predicted SRF facility noise levels are at a level that indicates inaudibility at the at the nearest sensitive receptor.

In assessing sleep disturbance, typical  $L_{Amax}$  noise levels of acoustically significant operations at night have been considered (i.e. the percussive impact noise associated with workshop activities). The use of the  $L_{Amax}$  noise level provides a worst-case prediction since the  $L_{A1(1minute)}$  noise level of a noise event will be equal to or less than the  $L_{Amax}$ . It has been assumed that the noise source is inside the workshop with open doors and windows.

The noise events considered are the following:

- Hammering – Sound power level of 123 dBA  $L_{Amax}$ ; and
- Grinding – Sound power level of 120 dBA  $L_{Amax}$ .

The highest  $L_{Amax}$  predicted at any potentially affected receiver was 40 dBA at “Woodlawn Farm”. This predicted  $L_{Amax}$  noise level is compliant with the relevant sleep disturbance noise goal of 45 dBA.

### 4.3 Construction Noise Assessment

Construction is proposed to commence in the first half of 2018 and is predicted to be complete, inclusive of commissioning by the end of 2018. Two (2) potential construction scenarios have been modelled for construction of the SRF facility based on the likely stages of construction and are provided in Table 4-3.

**Table 4-3 Construction Scenarios**

Scenario	Description	Estimated Sound Power Level, dBA
Scenario 1	Site preparation; including excavation and pouring of a concrete slab	120
Scenario 2	Installation of MBT plant and equipment, construction of the buildings and delivery of materials.	115

Results of the construction noise modelling for each construction scenario during the day are provided in Table 4-4.

**Table 4-4 Predicted Construction Noise Levels**

Receiver	Predicted	Predicted	Construction Noise Management Levels $L_{Aeq, 15min}$ Level
	Day time Scenario	Day time Scenario	
	1 $L_{Aeq, 15min}$ Level	2 $L_{Aeq, 15min}$ Level	
Torokina Property	<10	<10	40
Woodlawn Farm (property owned by Veolia)	44	39	40
Cowley Hill (property owned by Veolia)	42	37	40
Pylara (property owned by Veolia)	23	18	40

Noise predictions indicate that noise emissions during construction of the SRF facility would comply with the relevant noise criteria at the closest receiver not owned by Veolia. Marginal exceedance of the Noise Management levels are predicted for scenario 1 at Woodlawn Farm and Cowley Hill which are owned by Veolia. The tenants of Woodlawn Farm and Cowley Hill would be notified of any noisy construction works and all reasonable and feasible noise management strategies would be considered to minimise noise.

## **5 CONCLUSION**

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Wilkinson Murray has conducted a noise impact assessment for the SRF facility. The purpose of the noise impact assessment was to identify the potential impacts of noise from the SRF facility.

Noise levels at potentially affected receivers were predicted under calm and noise enhancing weather conditions. Noise from operation of the SRF facility is predicted to comply with the noise limits under calm and prevailing conditions at all receiver locations. Night time sleep disturbance noise goals are also predicted to be met at all receiver locations.

Noise levels associated with construction activities at potentially affected receivers were predicted for two (2) scenarios and were predicted to meet the construction noise management levels at the closet receiver not owned by Veolia. Marginal exceedance of the Noise Management levels are predicted for scenario 1 at Woodlawn Farm and Cowley Hill which are owned by Veolia. The tenants of Woodlawn Farm and Cowley Hill would be notified of any noisy construction works and all reasonable and feasible noise management strategies would be considered to minimise noise.