

GAS COLLECTION SYSTEM & LANDFILL GAS FLARE – EASTERN CREEK RECYCLING ECOLOGY PARK

1 KANGAROO AVE, EASTERN CREEK NSW

NOISE IMPACT ASSESSMENT

RWDI # 2200609

27 November 2021

SUBMITTED TO

Rylan Loemker

Senior Consultant

Jackson Environment and Planning Pty Ltd

Suite 102, Level 1, 25-29 Berry St, North

Sydney NSW 2060

rylan@jacksonenvironment.com.au

SUBMITTED BY

John Wassermann

Senior Technical Director

john.wassermann@rwdi.com

RWDI Australia Pty Ltd (RWDI)

Suite 602, 80 William Street

Woolloomooloo NSW 2011

T: +61 2 9437 4611

E-mail: solutions@rwdi.com

ABN: 86 641 303 871



DOCUMENT CONTROL

| Version | Status | Date | Prepared By | Reviewed By |
|---------|--------|------------------|-----------------|-----------------|
| A | Draft | 21 November 2021 | John Wassermann | Remi Larmandieu |
| B | Final | 27 November 2021 | John Wassermann | Remi Larmandieu |

NOTE

All materials specified by RWDI Australia Pty Ltd (RWDI) have been selected solely on the basis of acoustic performance. Any other properties of these materials, such as fire rating, chemical properties etc. should be checked with the suppliers or other specialised bodies for fitness for a given purpose.

The information contained in this document produced by RWDI is solely for the use of the client identified on the front page of this report. Our client becomes the owner of this document upon full payment of our **Tax Invoice** for its provision. This document must not be used for any purposes other than those of the document's owner. RWDI undertakes no duty to or accepts any responsibility to any third party who may rely upon this document.

WILKINSON MURRAY

In October 2020, Wilkinson Murray Pty Ltd merged with RWDI Group, a leading international consulting firm. Wilkinson Murrays core practice areas of noise, acoustics, vibration and air quality consulting built since 1962 servicing Australia and Asia-Pacific region will complement RWDI practice areas. Combined, RWDI+Wilkinson Murray is one of the largest teams globally specialising in the area of noise, acoustics, vibration and air quality.

RWDI

RWDI is a team of highly specialised consulting engineers and scientists working to improve the built environment through three core areas of practice: building performance, climate engineering and environmental engineering. More information is available at www.rwdi.com.

AAAC

This firm is a member firm of the Association of Australasian Acoustical Consultants and the work here reported has been carried out in accordance with the terms of that membership.



QUALITY ASSURANCE

RWDI Australia Pty Ltd operates a Quality Management System which complies with the requirements of AS/NZS ISO 9001:2015. This management system has been externally certified by SAI Global and Licence No. QEC 13457 has been issued for the following scope: The provision of consultancy services in acoustic engineering and air quality; and the sale, service, support and installation of acoustic monitoring and related systems and technologies.



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.

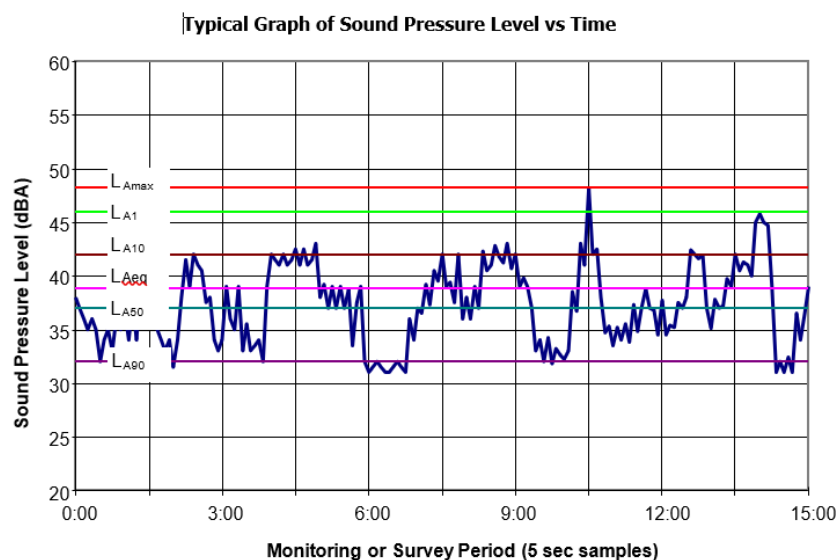




TABLE OF CONTENTS

GLOSSARY OF ACOUSTIC TERMS

| | | |
|----------|---|-----------|
| 1 | INTRODUCTION | 5 |
| 1.1 | Purpose of this Report | 5 |
| 1.2 | Site Location | 6 |
| 1.3 | Operational Hours | 7 |
| 1.4 | Approvals and Noise Limits | 8 |
| 2 | PROJECT DESCRIPTION..... | 9 |
| 2.1 | Flare design | 10 |
| 2.2 | Construction Works..... | 12 |
| 2.2.1 | Construction hours | 12 |
| 2.3 | Noise sensitive receivers..... | 12 |
| 3 | REVIEW OF EXISTING NOISE LEVELS | 14 |
| 3.1 | Noise Monitoring & Compliance Reporting | 14 |
| 4 | NOISE ASSESSMENT | 18 |
| 4.1 | Operational Noise Assessment | 18 |
| 4.2 | Construction Noise Assessment..... | 21 |
| 5 | CONCLUSION | 25 |
| 6 | REFERENCES | 26 |

1 INTRODUCTION

Dial-A-Dump Industries (EC) Pty Ltd (which was acquired by Bingo Industries Ltd in February 2019) is the operator of the Eastern Creek Recycling Ecology Park (REP), located at 1 Kangaroo Ave, Eastern Creek NSW. The original project approval for the site was granted by the Minister for Planning in 2009 (MP 06_0139) under Section 75J of the *NSW Environmental Planning and Assessment Act 1979* (EP&A Act). Following the repeal of Part 3A of the EP&A Act on 1 October 2011, the project was subject to the transitional arrangements provided by the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulations). The transitional arrangements provided by EP&A Regulations have now ceased, and the project was transitioned to State Significant Development (SSD) on 2nd October 2020. Consequently, MP06_0139 is now considered to be SSD and this Development Modification application has been prepared pursuant to Section 4.55 (1A) of the EP&A Act.

Dial-A-Dump Industries (EC) Pty Ltd (Dial-A-Dump) are seeking approval for a development modification to install a gas collection system (GCS) and a permanent landfill gas (LFG) flare to support the operations of the Eastern Creek Recycling Ecology Park.

RWDI Australia Pty Limited (RWDI) was commissioned by Jackson Environment and Planning Pty Ltd (JEP) to prepare a noise impact assessment addressing operational and construction noise associated with the Modification. The assessment will be based on the following NSW noise policies and guidelines:

- NSW Noise Policy for Industry (NPfI) (Environment Protection Authority [EPA], 2017).
- Interim Construction Noise Guideline (ICNG) (Department of Environment and Climate Change, 2009)

The ICNG was considered however, construction associated with the new flares was conservatively assessed cumulatively with operational noise in this noise assessment.

1.1 Purpose of this Report

This Noise Impact Assessment (NIA) supports the Statement of Environmental Effects for the Proposal and has been prepared as part of a minor modification under s4.55(1a) of the *Environmental Planning and Assessment Act 1979*.

This report has been prepared to address the noise requirement in the letter from the Department of Planning, Industry and Environment on 9 September 2021. Table 1-1 provides a summary of the relevant DPIE requirement which relate to Noise, and where these have been addressed in this report.

Table 1-1 : DPIE Noise Requirements

| DPIE Noise Requirements | Where addressed |
|---|-----------------------------------|
| Noise and vibration | |
| <ul style="list-style-type: none"> A quantitative assessment of potential construction and operational noise and vibration impacts in accordance with relevant Environment Protection Authority guidelines and including details of the proposed on-going monitoring regime to be implemented. | <p>Section 4</p> <p>Section 5</p> |

1.2 Site Location

The Eastern Creek REP key operational area comprises two parcels of land totalling around 54 hectares (ha) at 1 Kangaroo Avenue, Eastern Creek (Lot 1 DP1145808 and Lot 2 DP1247691), shown in Figure 1-1. The Proposal Site is located within the Eastern Creek industrial precinct / M7 business hub and is surrounded by a large range of industrial developments, primarily to the east. These industrial developments include Techtronic Industries, H&M distribution warehouse, Kuehne + Nagel (Australia) Pty Ltd warehouse, Kmart distribution centre, Bunnings distribution centre and DB Schenker warehouse. To the west of the Eastern Creek REP is the Fulton Hogan asphalt batching plant and a vacant area of undeveloped land.

The Eastern Creek REP is bounded by the Western Motorway (M4) to the north, Kangaroo Avenue to the east and Honeycomb Drive to the south. The Eastern Creek REP is enclosed by commercial and industrial buildings to the immediate north, east and south. The closest residential receivers are located across the M4 Motorway approximately 400 m to the north in the suburb of Minchinbury and approximately 1.2 km west in the suburb of Erskine Park. Nearby sensitive receivers are shown on Figure 1-1.

Existing access to the Eastern Creek REP is from Kangaroo Avenue which connects to Honeycomb Drive to the south and provides access to the broader arterial road network including the M4 and M7 motorways.

The surrounding area has generally low relief with no major hills or ridgelines, other than amenity berms adjacent to the landfill that were created from quarry overburden. Angus Creek, a small ephemeral drainage line is located immediately east of the Eastern Creek REP (between the landfill area and Kangaroo Avenue) which drains to the north into Eastern Creek. There are several other ephemeral drainage lines west of the Eastern Creek REP which drain towards Ropes Creek, which is approximately 580 m west of the Eastern Creek REP.

Figure 1-1 : The Eastern Creek Recycling Ecology Park located at 1 Kangaroo Avenue Eastern Creek (Lot 1 DP 1145808 and Lot 2 DP 1247691).



1.3 Operational Hours

The operational hours for the Eastern Creek REP are presented in Table 1-2. No changes are proposed to operational hours as a result of the Proposal.

Table 1-2: Operating hours

| Description | Day | Time |
|---|----------------------------|------------------|
| Construction | Monday – Friday | 7:00am to 6:00pm |
| | Saturday | 8:00am to 4:00pm |
| | Sunday and Public Holidays | Nil |
| MPC¹ – operation, waste receival, chute use and maintenance | Monday – Friday | 24 hours |
| | Saturday | |
| | Sunday and Public Holidays | |
| SMA² – crushing and screening | Monday – Friday | 6:00am to 6:00pm |
| | Saturday | 8:00am to 4:00pm |
| | Sunday and Public Holidays | |
| SMA – receipt of segregated materials | Monday – Friday | 24 hours |
| | Saturday | 8:00am to 4:00pm |

| Description | Day | Time |
|------------------------------------|----------------------------|------------------|
| | Sunday and Public Holidays | |
| Landfill – truck deliveries | Monday – Friday | 5:00am to 9:00pm |
| | Saturday | |
| | Sunday and Public Holidays | |
| | | |

¹ MPC, Material Processing Centres; ² SMA, Segregated Materials Area.

1.4 Approvals and Noise Limits

Following the subsequent modifications up to and including Modification 8 (approved March 2021), the Eastern Creek REP is now authorised for the following activities:

- Accept up to two million tonnes per annum (Mtpa) of C&D (construction and demolition) and C&I (commercial and industrial) waste and landfilling of the quarry void of up to 1 Mtpa of non-putrescible waste (including asbestos and other non-recyclable waste), excluding residual chute waste from the materials processing centres
- Operation of two advanced materials processing centres (MPC1 and MPC2) which recover recyclable material from construction and demolition (C&D) waste and commercial and industrial (C&I) waste streams as well as utilisation of a landfill disposal chute and maintenance activities
- Crushing, grinding and separating works to process waste masonry material located in an area earmarked as the Segregated Materials Area (SMA)
- Stockpile up to 50 tonnes of waste tyres
- Stockpile up to 20,000 tonnes of green waste.

The noise limits for the site are presented in Table 1-3.

Table 1-3 : Noise Limits.

| Location | Noise Limits dBA | | | | | | |
|--|-----------------------------------|-----------------------------------|-----------------------------------|--------------------------------|---------------------------------|-----------------------------------|---------------------------------|
| | Day | Evening | Night | | | Morning Shoulder | |
| | L _{Aeq} , (15minutes) | L _{Aeq} , (15minutes) | L _{Aeq} , (15minutes) | L _{Aeq} , (period) | L _{A1} , (1minutes) | L _{Aeq} , (15minutes) | L _{A1} , (1minutes) |
| 1-6 Eber Place, Minchinbury | 48 | 47 | 44 | 41 | 53 | 47 | 53 |
| 2-44 Warbler Street, Erskine Park | 42 | 42 | 39 | N/A | 44 | 39 | 44 |

The noise limits in the Approval are reflected in the sites Environment Protection Licence (EPL) (#13426).

2 PROJECT DESCRIPTION

The proposed development involves the installation of two (2) 1500 m³/hr high temperature, fully enclosed ground flares (model OEF-300) at the site.

An example of the flare is provided in Figure 2-1. The flares will be approximately 8m high and located approximately 50m northeast of MPC1 (refer to Figure 2-2). Figure 2-3 and Figure 2-4 provides a general arrangement drawing.

The flares will be connected to the existing gas collection system via a 450 mm main header line. Biogas enters the flares via a stainless-steel knock-out pot and is drawn into the biogas blower. Electric motors, with direct-drive arrangement to a gas booster, will be capable of delivering 1,500 m³/hr to each flare.

The stainless-steel condensate knockout pot will be located prior to the entry of the gas booster to ensure that no airborne liquids can pass into the gas booster.

Figure 2-1: Example of the model OEF-300 flare installed for Harvey Beef, Western Australia.



RWDI#2200609
27 November 2021

2.1 Flare design

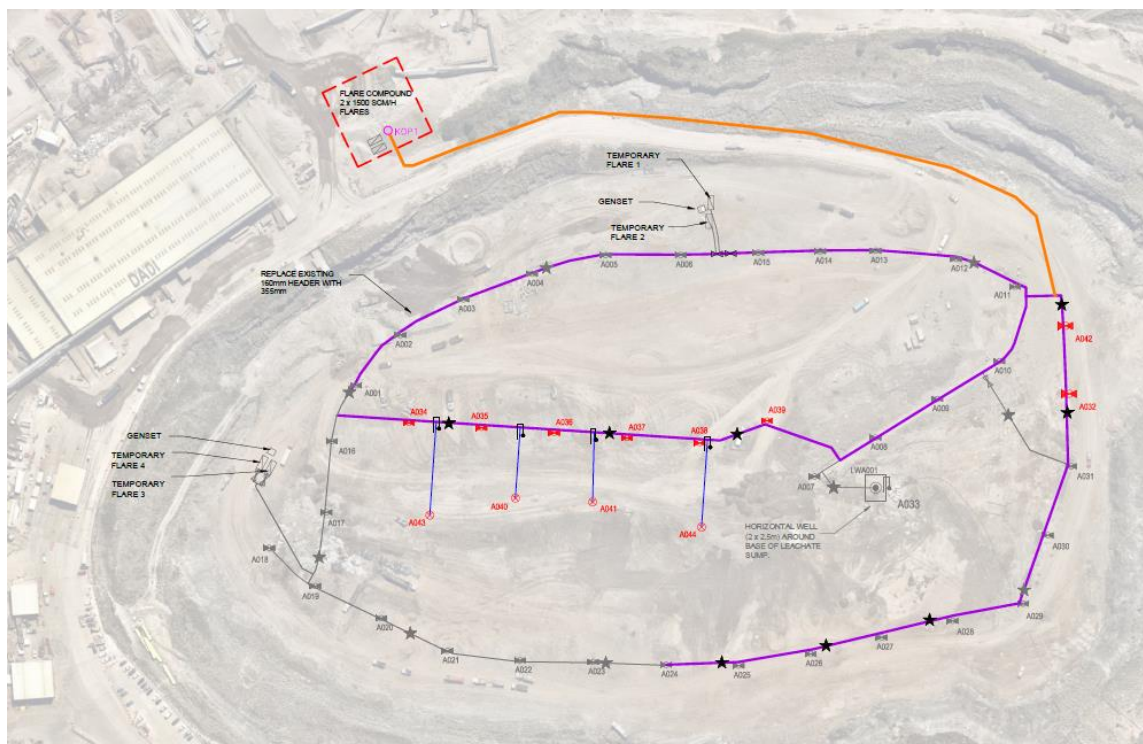
The flares are designed to incinerate biogas with a methane composition between 10-60%. Ignition is established using an interrupted LPG gas pilot. The flares will be connected to an existing three phase power source.

The flares will be connected to the existing gas collection system via a 450 mm main header line. Biogas enters the flares via a stainless-steel knock-out pot and is drawn into the biogas blower. Electric motors, with direct-drive arrangement to a gas booster, will be capable of delivering 1,500 m³/hr to each flare.

The stainless-steel condensate knockout pot will be located prior to the entry of the gas booster to ensure that no airborne liquids can pass into the gas booster.

The flares will be automatically and remotely controlled using the Horner flare Programmable Logic Controller (PLC) and will have automatic shutdown and restart with remote dial in telemetry. The flare unit provides industry best practice control over combustion air to facilitate elevated temperatures, whilst ensuring complete combustion. All flaring equipment on site will be compliant with the relevant Australian and international standards, including AS3814/AG 501-Industrial and Commercial Gas-fired Appliances.

Figure 2-2 : Proposed flare compound location (red dashed line). Orange line is a proposed 450mm main header line. Purple line, existing 160mm header line to be replaced and extended with a new 355mm header line. Grey line, existing 280mm header line.



RWDI#2200609
 27 November 2021

Figure 2-3: Flare compound layout

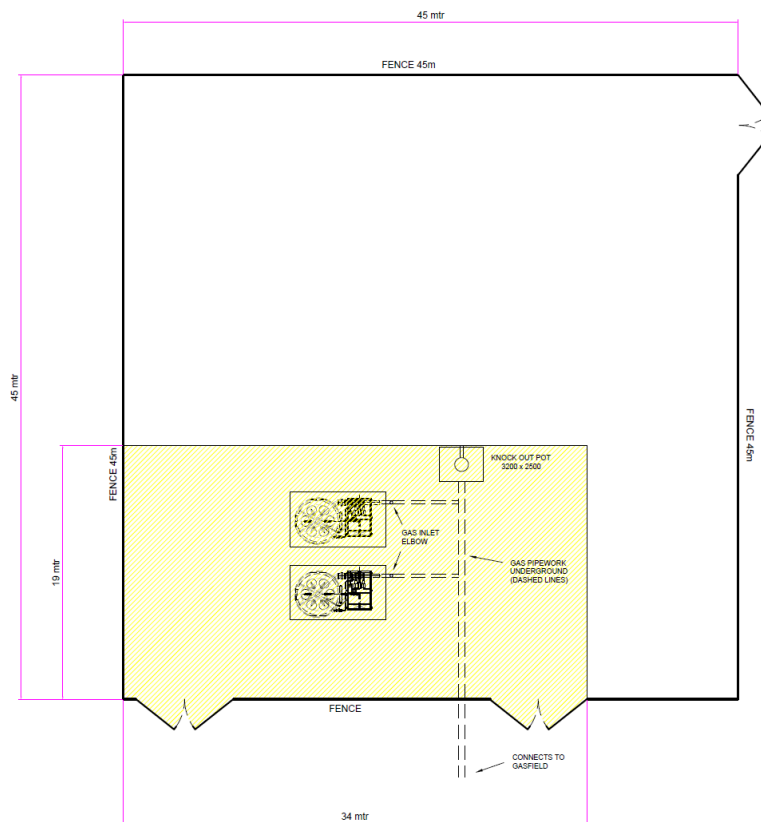
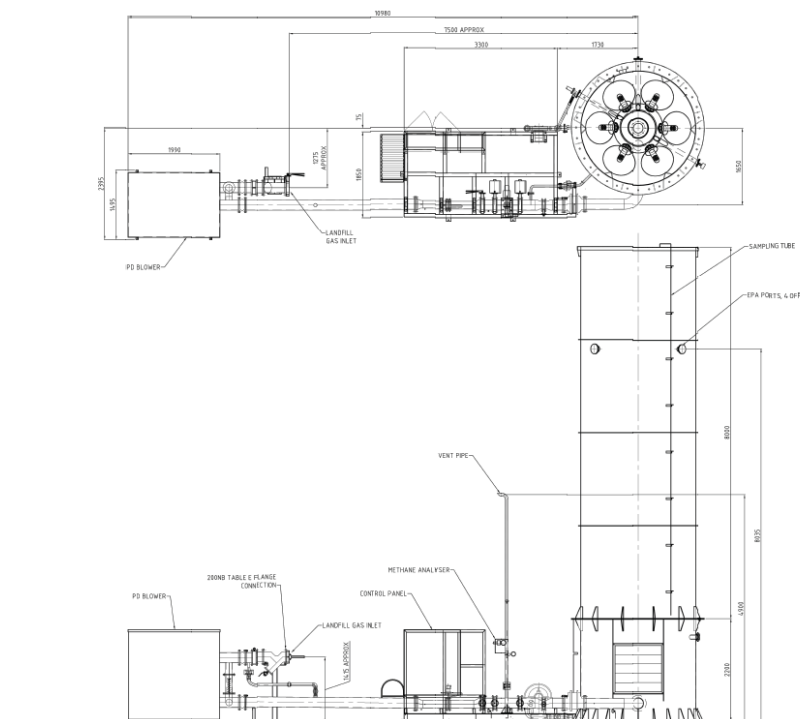


Figure 2-4: Flare general arrangement



2.2 Construction Works

Key elements of the construction of the Proposal would include:

- Earthworks and civil works to establish the hardstand for the permanent flare location;
- Erection of the permanent flare structure (incorporating flare stack, blowers and acoustic enclosure);
- Connection pipework and headworks; and
- Installation of gas collection wells and associated collection infrastructure within the landfill.

Subject to final staging and any weather delays, it is anticipated that installation works will be completed over a period of approximately 6 months.

The proposed installation works will utilise Kangaroo Avenue via Honeycomb Drive for access to and egress from the Project area.

As part of the development, the four existing temporary LFG flares will be decommissioned.

In addition to the existing 31 wells currently installed on site, twelve (12) additional gas collection wells will be installed in the waste mass under the existing approval. The installation of the additional wells is not included in the Scope of Works for the proposed development modification or covered by the SEE as these works are approved under MP06_0139.

2.2.1 Construction hours

Construction will be carried out within the approved construction hours as shown in Table 1-2.

Construction works outside the standard construction hours may be undertaken in the following unlikely circumstances:

- for the delivery of materials required outside the standard construction hours for safety reasons; or
- where it is required in an emergency to avoid the loss of lives, property and/or to prevent environmental harm.

2.3 Noise sensitive receivers

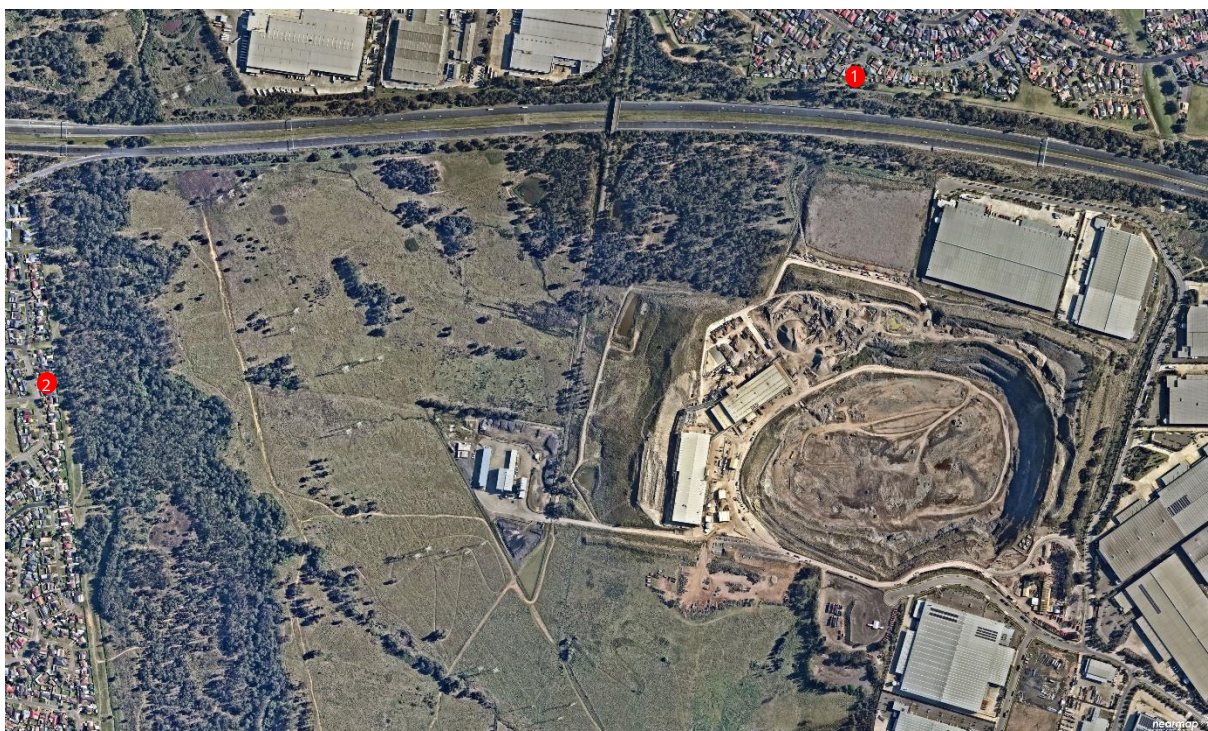
The nearest representative noise sensitive locations to the site as identified in the Approval are identified in Table 2-1 hereafter referred to in this report as assessment locations. The assessment locations are shown in Figure 2-5.

These locations were identified through the previous Approval process as representing the most impacted receivers in Minchinbury and Erskine Park. As such, they have been used in this assessment to investigate the potential impact of the proposed flare in Minchinbury and Erskine Park.

Table 2-1: Sensitive Receivers

| ID | Type | Description |
|----|-------------|-----------------------------------|
| 1 | Residential | 1-6 Eber Place, Minchinbury |
| 2 | Residential | 2-44 Warbler Street, Erskine Park |

Figure 2-5: Assessment Locations



3 REVIEW OF EXISTING NOISE LEVELS

3.1 Noise Monitoring & Compliance Reporting

Noise monitoring was carried out to validate the noise predictions of the noise impact assessment submitted to support the modification MP06 0139. This verification assessment was conducted consistent with condition 38 of the Approval and submitted to the Planning Secretary. The noise monitoring was conducted by RWDI.

Table 3-2 summarises the resultant noise levels measured at the representative receiver locations and any relevant observations. Noise from the site was inaudible during the entire monitoring period at all identified residential receivers.

The Project is subject to an additional maximum noise level for the morning shoulder and night-time periods. The results of the attended measurements addressing the $L_{A1,(1min)}$ noise criteria for the morning shoulder and night period is shown below in Table 3-1.

Table 3-1 Measured $L_{A1,(1min)}$ Noise Levels

| Time of Measurement / Period | Location | Estimated $L_{A1,(1min)}$ (dBA) Noise Contribution at Receiver | Noise Limit(s) $L_{A1,(1min)}$ (dBA) | Complies with Noise Limit? Yes/No |
|--|-----------------------------------|--|--------------------------------------|-----------------------------------|
| 13/10/2020 22:03 (Night) | 2-44 Warbler Street, Erskine Park | <42 | 44 | Yes |
| 13/10/2020 22:35 (Night) | 1-6 Eber Place, Minchinbury | <44 | 53 | Yes |
| 15/10/2020 04:39 (Night) | 1-6 Eber Place, Minchinbury | <47 | 53 | Yes |
| 15/10/2020 05:10 (Morning Shoulder) | 2-44 Warbler Street, Erskine Park | <44 | 44 | Yes |

The measured noise contribution at all receivers complied with the identified noise limits during all time periods for the noise monitoring carried out to validate the noise predictions of the noise impact assessment.

RWDI#2200609
27 November 2021

Additionally, compliance noise monitoring has been conducted consistent with the Eastern Creek REP Environmental Management Strategy on a six-monthly basis by Consulting Earth Scientists since 2016. A review of the compliance noise monitoring by RWDI indicates that noise from the site is continually inaudible at the two nearest residential receiver locations at Minchinbury and Erskine Park. As such, the compliance noise monitoring is consistent with the noise monitoring carried out to validate the noise predictions of the noise impact assessment.

Table 3-2 Measured L_{Aeq} Noise Levels

| Time of Measurement / Period | Location | Measured Ambient L_{Aeq} | Measured Ambient L_{A90} | Measured Ambient L_{Amin} | Observation Is the noise from the site audible? | Noise Contribution at Receiver $L_{Aeq,15min}$ (dBA) | Noise limit(s) (dBA) | Complies with Noise Limit? Yes/No |
|------------------------------|-----------------------------------|----------------------------|----------------------------|-----------------------------|--|--|----------------------|-----------------------------------|
| 13/10/2020 13:06 (Day) | 1-6 Eber Place, Minchinbury | 54.4 | 49.8 | 44.1 | Inaudible in a 50 dBA background noise environment made up of traffic and industrial noise | <40 | 48 | Yes |
| 13/10/2020 14:32 (Day) | 2-44 Warbler Street, Erskine Park | 45.9 | 42.7 | 40.3 | Inaudible in a 43 dBA background noise environment made up of traffic and industrial noise | <33 | 42 | Yes |
| 13/10/2020 22:03 (Night) | 2-44 Warbler Street, Erskine Park | 46.7 | 44.4 | 42.5 | Inaudible in a 44 dBA background noise environment made up of traffic and industrial noise | <34 | 39 | Yes |
| 13/10/2020 22:35 (Night) | 1-6 Eber Place, Minchinbury | 47.6 | 44.7 | 42.9 | Inaudible in a 45 dBA background noise environment made up of traffic and industrial noise | <35 | 44 | Yes |
| 14/10/2020 17:25 (Day) | 1-6 Eber Place, Minchinbury | 57 | 53.9 | 51.4 | Inaudible in a 54 dBA background noise environment made up of traffic and industrial noise | <44 | 48 | Yes |
| 14/10/2020 18:00 (Eve) | 2-44 Warbler Street, Erskine Park | 51.5 | 48.7 | 46.9 | Inaudible in a 49 dBA background noise environment made up of traffic and industrial noise | <42 | 42 | Yes |

STUDY TYPE: NOISE IMPACT ASSESSMENT
GAS COLLECTION SYSTEM & LANDFILL GAS FLARE – EASTERN CREEK RECYCLING ECOLOGY PARK

RWDI#2200609
 27 November 2021



| Time of Measurement / Period | Location | Measured Ambient L_{Aeq} | Measured Ambient L_{A90} | Measured Ambient L_{Amin} | Observation Is the noise from the site audible? | Noise Contribution at Receiver $L_{Aeq,15min}$ (dBA) | Noise limit(s) (dBA) | Complies with Noise Limit? Yes/No |
|--|-----------------------------------|-------------------------------|-------------------------------|--------------------------------|--|---|----------------------|-----------------------------------|
| 14/10/2020 18:49 (Eve) | 1-6 Eber Place, Minchinbury | 54.6 | 51.2 | 48.7 | Inaudible in a 51 dBA background noise environment made up of traffic and industrial noise | <41 | 47 | Yes |
| 15/10/2020 05:39 (Night) | 1-6 Eber Place, Minchinbury | 51.3 | 46.4 | 43.7 | Inaudible in a 46 dBA background noise environment made up of traffic and industrial noise | <36 | 44 | Yes |
| 15/10/2020 05:10 (Morning Shoulder) | 2-44 Warbler Street, Erskine Park | 50.7 | 49.1 | 47.7 | Inaudible in a 49 dBA background noise environment made up of traffic and industrial noise | <39 | 39 | Yes |
| 21/10/2020 14:23 (Day) | 2-44 Warbler Street, Erskine Park | 56.4 | 50.5 | 48.5 | Inaudible in a 51 dBA background noise environment made up of traffic and industrial noise | <41 | 42 | Yes |
| 21/10/2020 21:08 (Eve) | 2-44 Warbler Street, Erskine Park | 53.3 | 49.4 | 44.3 | Inaudible in a 49 dBA background noise environment made up of traffic and industrial noise | <39 | 42 | Yes |
| 21/10/2020 21:38 (Eve) | 1-6 Eber Place, Minchinbury | 51.3 | 49 | 46.8 | Inaudible in a 49 dBA background noise environment made up of traffic and industrial noise | <39 | 47 | Yes |

4 NOISE ASSESSMENT

Noise impacts associated with the Modification include both an operational noise and construction noise assessment. Methodologies for the assessment of both operational noise and construction noise are outlined below.

4.1 Operational Noise Assessment

The assessment requires the estimation of the total noise at each assessment location resulting from the flare operation and the existing facility. To account for this the operational noise levels as a result of the new flares at nearby receivers have been calculated using the CadnaA, a proprietary computer program using the CONCAWE noise algorithms. This modelling software is recommended by the NPfI and has previously been accepted by the EPA for use in environmental noise assessments.

The following information was provided to facilitate noise modelling:

- Topographic information covering the general area and including all relevant noise-sensitive receivers.
- Location of the flares.

The sound power level of the flare plant has been provided by the manufacturer/ supplier (Run Energy Pty Ltd). The main noise source of the flare plant is the blower which is proposed to be installed with silencers on both inlet and outlet and with a noise reduction enclosure. The sound power level of the blower enclosure was provided as being 89dBA. The noise level from the flare burning was taken from site noise measurements conducted by RWDI from the existing temporary flare facility. The sound power level of the of the flare burning is assumed to be 97dBA. The flare operates continuously and therefore there are no expected maximum noise level events expected from the plant. As such maximum noise levels have not been considered any further in this assessment.

It was assumed that the Flares would operate on a 24-hour basis. Therefore, operational noise levels associated with the Modification were predicted for the day (7.00am-6.00pm), evening (6.00pm-10.00pm), night (10.00pm-5.00am) and morning shoulder (5.00am-7.00am) assessment periods.

The operational noise levels from the flare facility and the existing noise levels conservatively estimated from measurements (highest levels presented in Table 3-2) were added to provide the total noise of the facility. The resultant total noise levels were then compared against the relevant noise limits set in the Project Approval 06_0139 to determine whether any potential increase in noise associated with the Modification would occur.

At relatively large distances from a source, the resultant noise levels at receivers can be influenced by meteorological conditions, particularly temperature inversions and gradient winds. Where these factors are a feature of an area, their effect on resultant noise levels should be taken into account.

In accordance with the NPfI, the following default conditions have been modelled to account for potential noise enhancing meteorology:

- Stability category D with 3.0 m/s source-to-receiver winds during the daytime and evening
- Stability category F with 2.0 m/s source-to-receiver winds during the night time.

The CadnaA noise modelling software includes a feature that allows the model to be run with the “worst-case wind direction”. This option produces the highest noise level for each receiver due to noise-enhancing winds and has been used in the modelling.

Predicted noise levels associated with both standard meteorological conditions (“calm”) and noise enhancing (“NE”) meteorological conditions are presented in this assessment.

The predicted site noise emissions for the Eastern Creek REP with the flare operating is presented in Table 4-1.

STUDY TYPE: NOISE IMPACT ASSESSMENT
GAS COLLECTION SYSTEM & LANDFILL GAS FLARE – EASTERN CREEK RECYCLING ECOLOGY PARK

RWDI#2200609
 27 November 2021



Table 4-1 : Predicted site noise emissions for the Eastern Creek REP including the flares.

| Assessment location | Period | Existing Site noise | Flares operating | Total noise from the site | Existing Site noise | Flares operating | Total noise from the site | Approval Noise Limit | Complies |
|---------------------|------------------|---------------------|------------------|---------------------------|---------------------|------------------|---------------------------|----------------------|----------|
| | | Calm | | | NE | | | | (Yes/No) |
| 1 | Day | 44 | <15 | 44 | 44 | <15 | 44 | 48 LAeq,15 minute | Yes |
| | Evening | 41 | <15 | 41 | 41 | <15 | 41 | 47 LAeq,15 minute | Yes |
| | Night | 36 | <15 | 36 | 36 | <15 | 36 | 44 LAeq,15 minute | Yes |
| | Morning Shoulder | 44 | <15 | 44 | 44 | <15 | 44 | 47 LAeq,15 minute | Yes |
| 2 | Day | 41 | <15 | 41 | 41 | <15 | 41 | 42 LAeq,15 minute | Yes |
| | Evening | 42 | <15 | 42 | 42 | <15 | 42 | 42 LAeq,15 minute | Yes |
| | Night | 34 | <15 | 34 | 34 | <15 | 34 | 39 LAeq,15 minute | Yes |
| | Morning Shoulder | 39 | <15 | 39 | 39 | <15 | 39 | 39 LAeq,15 minute | Yes |

The predicted operational noise levels for the Eastern Creek REP with the flare operating, presented Table 4-1, shows compliance with the operational approval noise limits at all assessment locations. The flare noise contribution is so low that it does not contribute to the overall.

4.2 Construction Noise Assessment

Key elements of the construction of the Proposal would include:

- Earthworks and civil works to establish hardstand for the permanent flare location;
- Erection of the permanent flare structure (incorporating flare stack, blowers and acoustic enclosure);
- Connection pipework and headworks; and
- Installation of gas collection wells and associated collection infrastructure within the landfill.

Subject to final staging and any weather delays, it is anticipated that installation works will be completed over a period of approximately 6 months.

Various types of plant and equipment would be required for the various construction activities of the Modification Proposal. A summary of the plant and equipment that are likely to be used during the construction of the Modification Proposal is provided in Table 4-2 split up into three noise modelling scenarios. Table 4-2 presents the sound power levels for individual items of construction equipment and overall activity sound power levels.

The activity sound power is considered to represent the typical worst-case level in a given 15-minute period. It is important to note that this sound power level is unlikely to be sustained at such a level for the duration of the activity. As a result, construction noise emissions during many 15-minute periods will be at lower levels.

Table 4-2: Indicative Construction Activities and Equipment for the Modification Proposal with their Sound Power Level

| Activity | Equipment | Qty | Individual SWL (dBA) | Activity SWL (dBA) |
|--|------------|-------------|----------------------|--------------------|
| Scenario 1 | | | | |
| Earthworks and establishment of levelled hardstand | Excavator | 1 | 113 | 119 |
| | Grader | 1 | 113 | |
| | Dump truck | 1 | 112 | |
| | Compactor | 1 | 110 | |
| | Dozer | 1 | 106 | |
| | Hand tools | As required | 105 | |
| Scenario 2 | | | | |
| | Hand tools | As required | 105 | 111 |

| Activity | Equipment | Qty | Individual SWL (dBA) | Activity SWL (dBA) |
|--|--------------|-------------|----------------------|--------------------|
| Erection of the permanent flare structure (incorporating flare stack, blowers and acoustic enclosure); | Mobile Crane | 1 | 105 | |
| | Road truck | 1 | 108 | |
| Scenario 3 | | | | |
| Connection pipework and headworks, Installation of gas collection wells and associated collection infrastructure within the landfill | Mobile Crane | 1 | 105 | 111 |
| | Road truck | 1 | 108 | |
| | Hand tools | As required | 105 | |

Typically, construction noise is assessed consistent with the ICNG, however as construction associated with the new flares would not be discernible from normal site operations, construction noise was conservatively assessed cumulatively with operational noise in this noise assessment. Therefore, the assessment requires the estimation of the total noise at each assessment location resulting from the construction activities and the existing facility.

Noise levels associated with the proposed construction works have been predicted using the same modelling approach as used for the operational noise assessment.

Based on the construction activities and plant SWL presented above, the predicted $L_{Aeq,15min}$ construction noise levels at assessment locations from the various construction activities during the standard recommended hours are presented in Table 4-3 for clam meteorological conditions and noise enhancing conditions in Table 4-4.



Table 4-3: Predicted site noise emissions for the Eastern Creek REP including the flare construction activities (Calm meteorological conditions).

| Assessment location | Scenario 1 | | | Scenario 2 | | | Scenario 3 | | | Approval Noise Limit | Complies (Yes/No) |
|---------------------|---------------------------------|--------------------------------------|------------------|---------------------------------|--------------------------------------|------------------|---------------------------------|--------------------------------------|------------------|----------------------|-------------------|
| | Existing Noise level LAeq,15min | Construction Contribution LAeq,15min | Total LAeq,15min | Existing Noise level LAeq,15min | Construction Contribution LAeq,15min | Total LAeq,15min | Existing Noise level LAeq,15min | Construction Contribution LAeq,15min | Total LAeq,15min | | |
| 1 | 44 | 22 | 44 | 44 | <15 | 44 | 44 | <15 | 44 | 48 LAeq,15 minute | Yes |
| 2 | 41 | <15 | 41 | 41 | <15 | 41 | 41 | <15 | 41 | 42 LAeq,15 minute | Yes |

Table 4-4: Predicted site noise emissions for the Eastern Creek REP including the flare construction activities (Noise Enhancing conditions).

| Assessment location | Scenario 1 | | | Scenario 2 | | | Scenario 3 | | | Approval Noise Limit | Complies (Yes/No) |
|---------------------|---------------------------------|--------------------------------------|------------------|---------------------------------|--------------------------------------|------------------|---------------------------------|--------------------------------------|------------------|----------------------|-------------------|
| | Existing Noise level LAeq,15min | Construction Contribution LAeq,15min | Total LAeq,15min | Existing Noise level LAeq,15min | Construction Contribution LAeq,15min | Total LAeq,15min | Existing Noise level LAeq,15min | Construction Contribution LAeq,15min | Total LAeq,15min | | |
| 1 | 44 | 27 | 44 | 44 | 19 | 44 | 44 | <15 | 44 | 48 LAeq,15 minute | Yes |
| 2 | 41 | <15 | 41 | 41 | <15 | 41 | 41 | <15 | 41 | 42 LAeq,15 minute | Yes |

Typically, construction noise is assessed consistent with the ICNG, however as construction associated with the new flares would not be discernible from normal site operations, construction noise was conservatively assessed cumulatively with operational noise in this noise assessment. Therefore, the assessment requires the estimation of the total noise at each assessment location resulting from the construction activities and the existing facility.

The predicted construction noise levels associated with the construction of the flares and the existing Eastern Creek REP, presented in Table 4-3 and Table 4-4, shows compliance with the operational approval noise limits.

5 CONCLUSION

Noise impacts associated with the construction and operation of the Modification Proposal have been assessed in accordance with the following NSW Government guidelines and policies:

- *Interim Construction Noise Guideline*
- *Noise Policy for Industry*

The predicted operational and construction noise predictions associated with the Modification Proposal comply with the site's operational approval noise limits.

The Eastern Creek REP has an Environmental Management Strategy (February 2021) that stipulates the noise monitoring requirements. The Environmental Management Strategy states:

- Six monthly monitoring will be undertaken;
- Monitoring would be conducted by an appropriately qualified environmental consultant;
- The monitoring would be conducted at residential locations to the north and west of the site, in and around McFarlane Drive, and Barossa Drive in Minchinbury and Swamphen Street and Roper Road in Erskine Park; and
- Noise monitoring would be conducted in accordance with the relevant requirements and exemptions (including certain meteorological conditions) of the NSW Industrial Noise.

It is proposed to continue with the noise monitoring requirements in the Environmental Management Strategy.



6 REFERENCES

1. DECC (2009) *Interim Construction Noise Guideline*, Department of Environment and Climate Change NSW, July 2009.
2. EPA (2017) *Noise Policy for Industry*, Environment Protection Authority, October 2017.