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SUEZ RECYCLING & RECOVERY AUSTRALIA

ENVIRONMENTAL NOISE COMPLIANCE KEMPS CREEK SAWT FACILITY

REFERENCE NO. S10432-R1

AUGUST 2018

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Hibbs & Associates Pty Ltd.

REPORT

for

ENVIRONMENTAL NOISE COMPLIANCE

KEMPS CREEK SAWT FACILITY

1725 ELIZABETH DRIVE

KEMPS CREEK NSW 2178

Prepared for

SUEZ RECYCLING & RECOVERY AUSTRALIA

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by

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August 2018

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Date: 06/08/2018

EXECUTIVE SUMMARY

SUEZ Recycling & Recovery Australia (SUEZ) commissioned an Environmental Noise Compliance Assessment of the SUEZ Advanced Waste Treatment (SAWT) facility at Kemps Creek from Hibbs & Associates Pty Ltd (H&A). The principal objectives of this study are to compare noise emissions from the site with the noise criteria set out in the Project Approval (06_0185) and Environmental Protection Licence (EPL) 12889. This report provides the results of the Environmental Noise Compliance assessment based on site measurements made on 25 July 2018.

The results of the noise assessments indicate that the noise impacts do not exceed the EPL noise limits at most receptors most of the time for both the upper level and common assessments. The noise impact at 1669A Elizabeth Drive could exceed the EPL noise limits by about 2 dB during the mornings between 06:00 and 07:00 hours. We suggest it is reasonable and feasible for SUEZ to avoid operating more than one trommel and one loader in the open area between 06:00 and 07:00 hours to minimise the noise impact. In conclusion, the site is compliant with the conditions of its EPL and Project Approval as interpreted with the EPA's intention that the NPI conveys.

KEMPS CREEK SAWT FACILITY
ENVIRONMENTAL NOISE COMPLIANCE

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1.0 INTRODUCTION

SUEZ Recycling & Recovery Australia (SUEZ) commissioned an Environmental Noise Compliance Assessment of the SUEZ Advanced Waste Treatment (SAWT) facility at Kemps Creek from Hibbs & Associates Pty Ltd (H&A). The principal objectives of this study are to compare noise emissions from the site with the noise criteria set out in the Project Approval (06_0185) and Environmental Protection Licence (EPL) 12889. This report provides the results of the Environmental Noise Compliance assessment based on site measurements made on 25 July 2018.

The study follows the procedures and methodology outlined in our approved SQ7315 *Proposal for Noise Assessment, Kemps Creek SAWT Facility*, July 2018 and was authorised by Kelly Gee, Compliance Manager at SUEZ Recycling & Recovery Australia. Mr Toby Dudman MAAS MIOA AASA, Principal Acoustics Engineer from H&A conducted the site work and assessment. We wish to acknowledge, and express our gratitude, for the assistance provided by Kelly Gee and all the staff at Kemps Creek SAWT Facility with conducting the surveys and assessments.

2.0 REPORT LIMITATIONS AND DISCLAIMER

This report was prepared for SUEZ Recycling & Recovery Australia solely for the purposes set out herein and it is not intended that any other person use or rely on the contents of the Report. The information contained in this report is based on a limited review of the site, interviews with site personnel and review of documentation provided to Hibbs & Associates Pty Ltd at the time of the review. Whilst the information contained in the Report is accurate to the best of our knowledge and belief, Hibbs & Associates Pty Ltd cannot guarantee the completeness or accuracy of any of the descriptions or conclusions based on the information supplied to it or obtained during the investigations, site surveys, visits and interviews. Furthermore, conditions can change within limited periods of time, and this should be considered if the Report is to be used after any elapsed period after its issue.

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3.0 SITE AND SURROUNDINGS

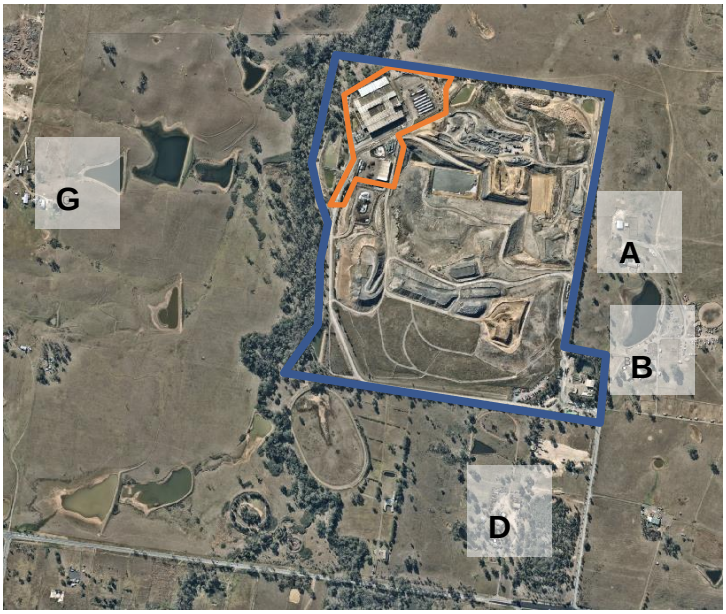
3.1 Kemps Creek SAWT Facility

SUEZ Recycling & Recovery Australia is a resource recovery, recycling and waste management company that operates over 100 sites in Australia. Their website [1] describes Kemps Creek SAWT Facility as follows:

> *SUEZ developed the SAWT facility in Kemps Creek, NSW to manage two different waste streams - food and garden organics from Penrith City Council (PCC) and mixed solid waste (MSW) from Liverpool City Council (LCC). The SAWT facility is a mechanical and biological treatment facility with two separate processing lines. One is dedicated to processing MSW and small amounts of commercial & industrial waste by separating organic material from the waste using trommels (large rotating cylindrical sieves), then recovering ferrous (iron-based) metals (mainly aluminium) using overbelt magnets and eddy current separators. The second processing line is dedicated to removing contaminants from source-separated food and garden organics to prepare it for composting.*
>
> *The organic material from each line is rapidly composted to produce mixed source and source-separated recycled organics products. This is achieved using sophisticated tunnel composting technology, which controls those elements of the composting process with the greatest impact on breakdown of the organic waste: temperature, moisture content, and aeration. Tunnel composting is followed by refinement of the material, with any contaminants (usually plastic) sifted out of the composted organics using a large trommel.*
>
> *…*
>
> *The Kemps Creek SAWT Facility is currently licenced to process up to 134,000 tonnes of waste per annum, with approximately 55% of incoming material diverted from landfill.*

Figure 1 shows a plan of site and the four Noise Sensitive Receptors (NSRs) listed in the EPL and Project Approval. The SAWT is in the northwest corner of the Kemps Creek Resource Recovery Precinct. The Elizabeth Drive smart cell (landfill) occupies the rest of the precinct. Table 1 lists the consented operational hours contained within the EPL.

1 SUEZ Recycling & Recovery Australia company website. http://www.sita.com.au/facilities/map-of-australia/kemps-creek/ [Accessed 26/07/2018]



▲ North

Legend	
	SAWT
	Kemps Creek Resource Recovery Precinct

NSR	Address
A	1669A Elizabeth Drive
B	Caretakers Residence, 1669A Elizabeth Drive
D	1745 Elizabeth Drive
G	McGarvie Smith Farm

Figure 1: Site Plan and NSRs

The land outside the precinct is predominantly flat. The landfill is a large and deep bowl to the southeast of the SAWT and a hill on the southern boundary of the precinct. Figure 2 shows the locations of the key noise sources at the SAWT. The most significant noise sources are:

- Plant room
- Trommels and vehicles in the open area
- Plant on the eastern façade of the composting tunnels in the open area

Figure 2: SAWT and Noise Sources

Table 1: Consented Operational Hours

Activity	Day	Hours
Waste Receipt, outdoor operations and product dispatch	Monday - Friday	6 am – 6 pm
Waste Receipt, outdoor operations and product dispatch	Saturday	8 am -5 pm
Waste Receipt, outdoor operations and product dispatch	Sunday	8 am – 4 pm
Outdoor operations (See Note 1)	Monday - Friday	6 pm -10 pm
Outdoor operations	Public Holidays	7 am – 4 pm
Indoor Operations	Monday - Saturday	7 am – 11 pm
Emergency	Monday - Sunday	Anytime

Note 1: Outdoor operations between the hours of 6pm – 10pm Monday to Friday must be limited to 10 trips by a 6-tonne truck (that is 20 movements) and 12 trips by a front-end loader (that is 24 movements)

4.0 NOISE ASSESSMENT

Appendix 1 contains a brief conceptual introduction to environmental noise and noise impact assessments.

4.1 Methodology

This assessment uses a site-specific 3D noise model built using iNoise software implementing International Standard methods [2 and 3] as cited by the Noise Policy for Industry (NPI) [4]. We derived source definitions from on-site measurements and weighbridge data. We verified the model with the results of an attended noise survey on 25 July 2018.

Table 2 contains the noise criteria set out in Project Approval 06_0185 and EPL 12889. The EPL states that the noise limits apply under the metrological conditions of wind speed up to 3 m/s at 10 metres above the ground level or during a temperature inversion. The EPL does not state a wind direction. Figure 3 provides a wind rose for wind speeds less than 5 m/s obtained from the Western Sydney Airport Usability Report [5]. The model for assessment adopts a worst-case wind speed of 3 m/s, the most common wind direction of 230 degrees and temperature inversion conditions when appropriate.

Table 2: Noise Criteria

Location	Day, $L_{Aeq,15min}$ (dB)	Evening, $L_{Aeq,15min}$ (dB)	Night, $L_{Aeq,15min}$ (dB)	Night, L_{Amax} (dB)	Morning Shoulder, $L_{Aeq,15min}$ (dB)
A: 1669A Elizabeth Drive	38	38	35	Na	38
B: Caretakers Residence 1669A Elizabeth Drive	42	42	38	53	42
D: 1745 Elizabeth Drive	41	40	37	47	40
G: McGarvie Smith Farm	42	39	35	Na	39

2 ISO 9613-2:1996 Acoustics -- Attenuation of sound during propagation outdoors -- Part 2: General method of calculation.

3 CONCAWE Report 4/81. (1981) The Propagation of Noise from Petroleum and Petrochemical Complexes to Neighbouring Communities.

4 Environmental Protection Agency (2017) *NSW Noise Policy for Industry* (NPI) replaced Environmental Protection Agency (2000) *NSW Industrial Noise Policy* (INP)

5 Western Sydney Airport Usability Report Meteorological Impacts (2015) Head of Aviation and Defence Weather Services Bureau of Meteorology

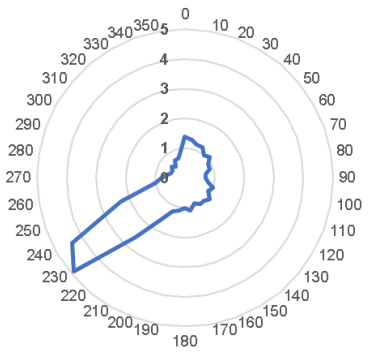


Figure 3: Wind Rose (1 to 5 m/s)

The noise criteria are low. For comparison, the NPI recommends amenity noise levels of 50, 40 and 35 $L_{Aeq,15min}$ and stipulates minimum project intrusiveness noise levels of 40, 35 and 35 dB $L_{Aeq,15min}$ during the daytime, evening and night-time, respectively. Furthermore, the NPI clarifies the EPA's on project noise levels as follows:

> *The project noise trigger level provides a benchmark or objective for assessing a proposal or site. It is not intended for use as a mandatory requirement. The project noise trigger level is a level that, if exceeded, would indicate a potential noise impact on the community, and so 'trigger' a management response; for example, further investigation of mitigation measures.*

4.2 Results

Table 3 provides the upper level noise impact assessment. That model includes two trommels and two loaders working continuously in the open area and windrow turning in the maturation area. This assessment represents the worst case and infrequent noise impact. The maximum (L_{Amax}) noise level prediction is of truck horns during the night-time. The only period of the night-time during which the EPL permits truck movements is the morning shoulder between 06:00 and 07:00 hours.

Table 4 provides the most common noise impact assessment. That model includes one trommel and one loader working intermittently in the open area, no windrow turning and no truck horns between 06:00 and 07:00 hours. This assessment represents the noise impact occurring most often and for most of the operational hours.

Both models contain continuous noise emission from the SAWT, plant room, open area open area composting tunnel fans, all aeration lagoons and delivery trucks. The night-time assessment applies to the period between 22:00 and 23:00 hours. No plant or activity runs on the site between 23:00 and 06:00 hours. The evening and shoulder assessments of both models include meteorological conditions favourable to acoustic propagation commensurate with a temperature inversion.

Table 3: Upper Level Noise Impact

Location	Day, $L_{Aeq,15min}$ (dB)	Evening, $L_{Aeq,15min}$ (dB)	Night, $L_{Aeq,15min}$ (dB)	Night, L_{Amax} (dB)	Morning Shoulder, $L_{Aeq,15min}$ (dB)
A: 1669A Elizabeth Drive	38	35	33	25	40
B: Caretakers Residence 1669A Elizabeth Drive	37	33	28	27	39
D: 1745 Elizabeth Drive	33	28	25	24	32
G: McGarvie Smith Farm	37	34	33	30	36

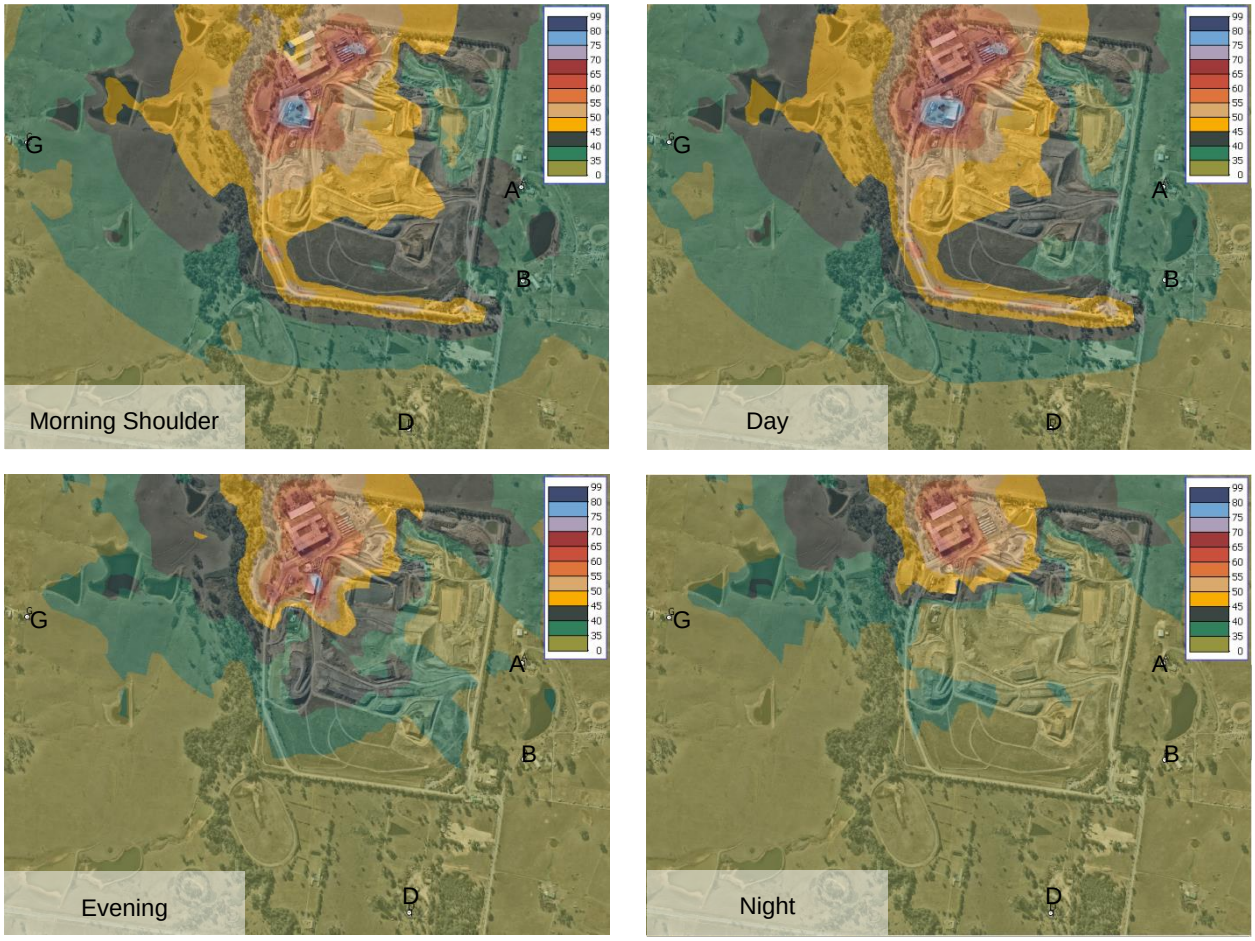


Figure 4: Noise Contours (Upper Level Impact)

Table 4: Common Noise Impact

Location	Day, $L_{Aeq,15min}$ (dB)	Evening, $L_{Aeq,15min}$ (dB)	Night, $L_{Aeq,15min}$ (dB)	Night, L_{Amax} (dB)	Morning Shoulder, $L_{Aeq,15min}$ (dB)
A: 1669A Elizabeth Drive	35	35	33	0	34
B: Caretakers Residence 1669A Elizabeth Drive	34	33	28	0	34
D: 1745 Elizabeth Drive	30	28	25	0	27
G: McGarvie Smith Farm	34	34	33	0	29

4.3 Discussion

Significant temporal variability in environmental noise immissions is inevitable. ISO 9613-2:1998 suggests that the prediction method is accurate to around ±3 dB for long-term averages of immission and situations with approximately flat terrain and no screening. We estimate the variations in source emission due to activity to be around ±3 to 5 dB. We have adopted meteorological conditions favourable to acoustic propagation for these assessments and expect the results of our models to tend towards over-estimation.

The results of the noise assessments indicate that the noise impacts do not exceed the EPL noise limits at most receptors most of the time for both the upper level and common assessments. The results of the upper level assessment indicate that the noise impact at 1669A Elizabeth Drive could exceed the EPL noise limits by about 2 dB during the mornings between 06:00 and 07:00 hours. The exceedance is from the open area, which assumes two trommels and two loaders operating continuously. We consider this high activity level unlikely.

Based on the above, the site is compliant with the conditions of its EPL and Project Approval as interpreted with the EPA's intention that the NPI conveys. Nevertheless, the NPI requires that operators implement controls to achieve EPL limits if reasonable and feasible. We suggest it is reasonable and feasible for SUEZ to avoid operating more than one trommel and one loader in the open area between 06:00 and 07:00 hours to minimise the noise impact.

5.0 CONCLUSION

The results of the noise assessments indicate that the noise impacts do not exceed the EPL noise limits at most receptors most of the time for both the upper level and common assessments. The noise impact at 1669A Elizabeth Drive could exceed the EPL noise limits by about 2 dB during the mornings between 06:00 and 07:00 hours. We suggest it is reasonable and feasible for SUEZ to avoid operating more than one trommel and one loader in the open area between 06:00 and 07:00 hours to minimise the noise impact. In conclusion, the site is compliant with the conditions of its EPL and Project Approval as interpreted with the EPA's intention that the NPI conveys.

Appendix 1 ENVIRONMENTAL NOISE

Acousticians commonly define noise as ‘unwanted sound’. The seminal Wilson Report [6] adopted a similar definition:

> *For the purposes of this Report we accept the definition of noise as "sound which is undesired by the recipient.*

In Guidelines for Community Noise [7], the WHO defined environmental (or community) noise as follows:

> *Community noise includes the primary sources of road, rail and air traffic, industries, construction and public works and the neighbourhood.*

Unlike many other pollutants, noise pollution depends not just on the physical aspects of the sound itself, but also the human reaction to it. An environmental noise assessment must consider not only the level of noise but also its temporal and acoustic characteristics in the context of those of the background acoustic environment, as experienced by people, and what that means to them. This approach is the consideration of soundscape as defined in ISO 12913-1:2014 [8].

Noise may audible at a level significantly lower than that likely to cause measurable health effects, such as sleep disturbance. The attitude of the receptor to the source can affect the outcomes of noise intrusion, such as annoyance. In some circumstances, receptors can moderate adverse effects by adopting realistic expectations of the acoustic environment. That is, by accepting that some noise impact to some people for some of the time is an inevitable and tolerable consequence of a technologically developed society.

Notwithstanding the above, the most effective method of impact reduction is to control the source. Responsible operators of noise-generating sites should minimise their noise impacts by the appropriate combination of noise management tools and engineering design of the source. The Polluter Pays Principle (PPP) states that those who create pollution should bear the costs of it. The PPP is a principle of international environmental law and is a fundamental policy of the Organisation for Economic Co-operation and Development. Quiet is vital resource that is necessary for a healthy society. In some circumstances, operators need to accept that there are places and/or times into which regulators should not permit noise to intrude.

6 Committee on the Problem of Noise. *Noise – Final Report*. HMSO 1963.

7 Berglund B. *et al*. (eds.) *Guidelines for Community Noise*. WHO 1999.

8 International Standard. ISO 12913-1:2014. *Acoustics — Soundscape — Part 1: Definition and conceptual framework*.