REPORT

SUEZ ADVANCED WASTE TREATMENT FACILITY

1725 ELIZABETH DRIVE, KEMPS CREEK, NSW, 2178

COMPLIANCE NOISE MONITORING
RWDI # 2101167.02
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SUBMITTED TO

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1 INTRODUCTION

RWDI Australia (RWDI) was commissioned by SUEZ Recycling and Recovery (SUEZ) to conduct compliance noise measurements of the SUEZ Advanced Waste Treatment (SAWT) Facility located in the Kemps Creek Resource Recovery Park at 1725 Elizabeth Drive, Kemps Creek.

This report summarises the results of the compliance noise measurements conducted on Thursday, 2 December and Friday, 3 December 2021 and assesses them against the noise limits set out in the Environment Protection Authority (EPA) POEO Environment Protection Licence (EPL) 12889 (Conditions L4.1).

Although the SAWT Facility and the SUEZ Elizabeth Drive landfill coexist within the SUEZ Kemps Creek Resource Recovery Park, both operations operate under separate licenses with different noise limits. As such, noise contribution associated with the landfill operation was excluded from the compliance noise assessment.

Figure 1 provides a locality plan of the SAWT Facility and its surroundings including the most potentially exposed noise sensitive receivers.

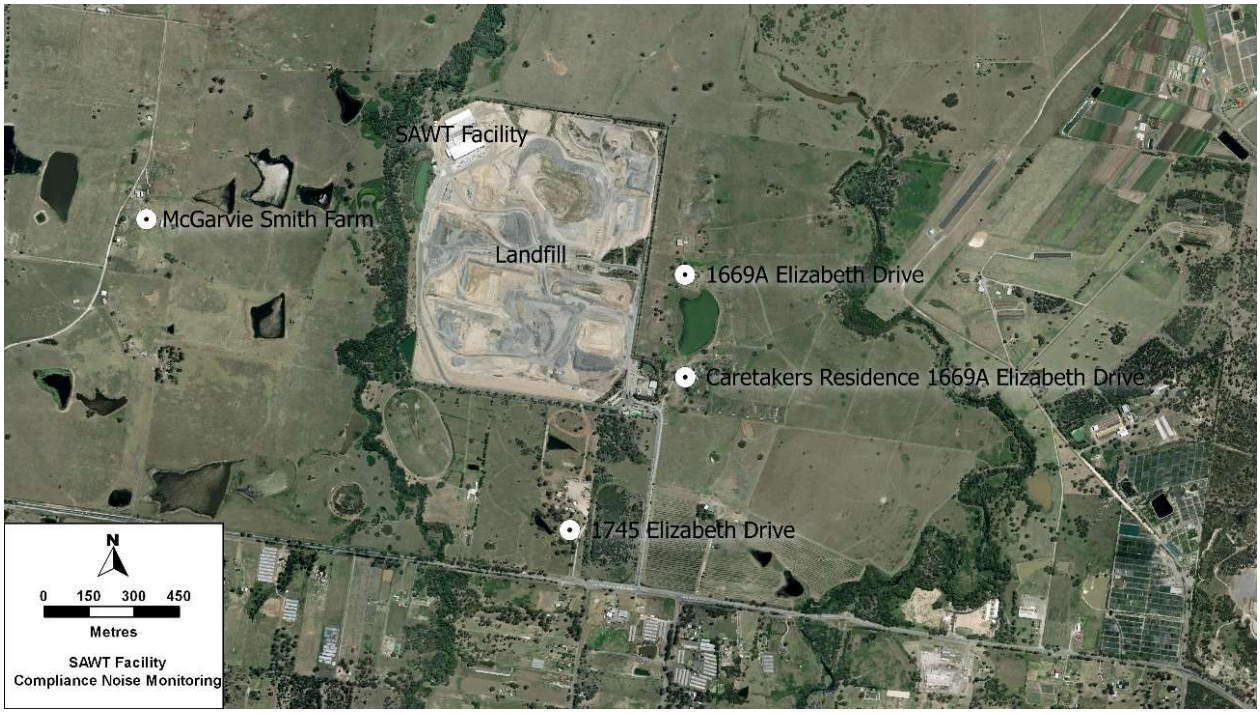

Figure 1: Locality Plan

2 NOISE LIMITS & NOISE SENSITIVE RECEIVERS

The EPL Limit Condition (L4.1) sets the relevant noise limits for the Project. These are applicable to the most potentially exposed noise sensitive receivers, namely McGarvie Smith Farm, 1745 Elizabeth Drive, 1669A Elizabeth Drive, and Caretakers Residence 1669A Elizabeth Drive.

The EPL Limit Condition (L4.1) has been reproduced below.

L4.1 Noise generated from the premises must not exceed the noise limits presented in the table(s) below. The noise limits in the table(s) represent the noise contribution from the premises.

Location	Day ($L_{Aeq,15min}$)	Evening ($L_{Aeq,15min}$)	Night ($L_{Aeq,15min}$)	Night (L_{Amax})
McGarvie Smith Farm	42	39	35	n/a
1745 Elizabeth Drive	41	40	37	47
1669A Elizabeth Drive	38	38	35	n/a
Caretakers residence 1669A Elizabeth Drive	42	42	38	53

Location	Morning Shoulder Period ($L_{Aeq,15min}$)
McGarvie Smith Farm	39
1745 Elizabeth Drive	40
1669A Elizabeth Drive	38
Caretakers residence 1669A Elizabeth Drive	42

Notes:

- *Where L_{Aeq} means the equivalent continuous noise level – the level of noise equivalent to the energy-average of noise levels occurring over a measurement period;*
- *Morning Shoulder is defined as 6am to 7am, Monday to Friday;*
- *Noise from the premises is to be measured at the most affected point or within the residential boundary or at the most affected point within 30 metres of the dwelling (rural situations) where the dwelling is more than 30 metres from the boundary to determine compliance with $L_{Aeq,15min}$ noise level;*
- *The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable;*
- *The noise limits identified above apply under the following meteorological conditions:*
  - *Wind speed up to 3m/s at 10m above ground level; or*
  - *Temperature inversion conditions.*

3 MONITORING METHODOLOGY

Noise monitoring was conducted between approximately 10:00 am and 1:00 am on Thursday, 2 December 2021 and between 6:00 am and 7:30 am on Friday, 3 December 2021 during typical SAWT operations. Meteorological conditions were deemed suitable for noise monitoring.

3.1 Monitoring Locations

Due to access restrictions, monitoring was not possible at the identified receivers and instead had to be carried out within the SUEZ Kemps Creek Resource Recovery Park.

As mentioned in Section 1, the SAWT Facility and the SUEZ Elizabeth Drive landfill operation coexist within the SUEZ Kemps Creek Resource Recovery Park and as such, care was taken to ensure noise associated with the landfill operations was excluded from the measurement results.

Landfill operations only occur during the morning shoulder period (6:00 am – 7:00 am) and day (7:00 am – 6:00 pm). For this reason, daytime and morning shoulder period measurements conducted had to be carried out in close proximity to the SAWT Facility (within 100 metres [m]) in order to minimise interfering noise associated with the landfill operation. Evening (6:00 pm – 10:00 pm) and night (10:00 pm – 11:00 pm) measurements were possible further away from the SAWT Facility and were conducted as far away as possible from the Facility within the SUEZ Kemps Creek Resource Recovery Park.

Corrections were applied to all measured levels to account for the additional distance separating the various monitoring locations and the corresponding receivers.

Figure 2 shows the monitoring locations.

Figure 2: Monitoring Locations

3.2 Monitoring Periods

One measurement was conducted for each of the identified receivers during morning shoulder, day, evening, and night periods to address waste receipt, outdoor operations, indoor operations and product dispatch activities.

3.3 Monitoring Equipment

All measurements were conducted using a Norsonic Type 140 Sound Level Meter. This sound level meter conforms to Australian Standard 1259 *Acoustics – Sound Level Meters* as a Type 1 Precision Sound Level Meter which has an accuracy suitable for field and laboratory use. The A-Weighting filter of the meter was selected and the time weighting was set to "Fast". The calibration of the meter was checked before and after the measurements with a Brüel & Kjær Type 4231 sound level calibrator and no significant drift was noted.

The Norsonic Type 140 and Brüel & Kjær Type 423 have been laboratory calibrated within the previous two years in accordance with our in-house Quality Assurance Procedures.

4 MONITORING METHODOLOGY

Table 1 summarises the resultant L_{Aeq} noise levels at the receivers due to the SAWT Facility including all associated vehicle movements.

Table 1: Measured L_{Aeq} Noise Levels

Assessment Period	Time Period	Receiver	L_{Aeq} Noise Level at Receiver (dBA)	L_{Aeq} Noise Limit (dBA)	Comply with Noise Limit? Y/N
Morning Shoulder Period	5:46 am – 6:01 am	McGarvie Smith Farm	<40	39	Y
	6:04 am – 6:19 am	1745 Elizabeth Drive	<35	40	Y
	6:21 am – 6:44 am	Caretakers Residence	<40	42	Y
	6:38 am – 6:55 am	1669A Elizabeth Drive	<35	38	Y
Day	10:25 am – 10:40 am	McGarvie Smith Farm	<40	42	Y
	10:48 am – 11:02 am	1745 Elizabeth Drive	<35	41	Y
	11:02 am – 11:17 am	Caretakers Residence	<40	42	Y
	11:19 am – 11:34 am	1669A Elizabeth Drive	<35	38	Y
Evening	7:42 pm – 7:57 pm	McGarvie Smith Farm	<35	39	Y

	8:10 pm – 8:25 pm	1745 Elizabeth Drive	<35	40	Y
	8:27 pm – 8:42 pm	Caretakers Residence	<40	42	Y
	8:45 pm – 9:00 pm	1669A Elizabeth Drive	<35	38	Y
Night	11:42 pm – 11:57 pm	McGarvie Smith Farm	<35	35	Y
	12:02 am – 12:17 am	1745 Elizabeth Drive	<35	37	Y
	12:22 am – 12:37 pm	Caretakers Residence	<39	38	Y
	12:40 am – 12:55 am	1669A Elizabeth Drive	<35	35	Y

L_{Amax} noise levels for 1745 Elizabeth Drive and the Caretakers Residence were found to comply with the relevant night L_{Amax} noise criteria.

Therefore, noise measurement results show that all noise levels at the identified receivers comply with the EPL noise limits.

5 CONCLUSIONS

WM was commissioned by SUEZ to conduct compliance noise measurements of the SUEZ Advanced Waste Treatment (SAWT) Facility. The results of the compliance noise measurements conducted Thursday, 2 December and Friday, 3 December 2021 were summarised and assessed against the noise limits set out in the POEO EPL 12889 (Conditions L4.1).

Although the SAWT Facility and the SUEZ Elizabeth Drive landfill coexist within the SUEZ Kemps Creek Resource Recovery Park, both operations operate under separate licenses with different noise limits. As a result, care was taken to ensure noise contribution associated with the landfill operation was excluded from the compliance noise assessment.

Based on the measured noise levels generated by the SAWT operation, noise levels were conservatively calculated at each of the identified receivers and levels were found to comply with the EPL noise limits.

APPENDIX A: GLOSSARY OF ACOUSTIC TERMINOLOGY

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 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.

dB(A) – A-weighted decibels. The ear is not as effective in hearing low frequency sounds as it is hearing high frequency sounds. That is, low frequency sounds of the same dB level are not heard as loud as high frequency sounds. The sound level meter replicates the human response of the ear by using an electronic filter which is called the "A" filter. A sound level measured with this filter switched on is denoted as dB(A). Practically all noise is measured using the A filter.

Frequency – Frequency is synonymous to pitch. Sounds have a pitch which is peculiar to the nature of the sound generator. For example, the sound of a tiny bell has a high pitch and the sound of a bass drum has a low pitch. Frequency or pitch can be measured on a scale in units of Hertz or Hz.

Impulsive Noise – Having a high peak of short duration or a sequence of such peaks. A sequence of impulses in rapid succession is termed repetitive impulsive noise.

Intermittent Noise – The level suddenly drops to that of the background noise several times during the period of observation. The time during which the noise remains at levels different from that of the ambient is one second or more.

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.

Sound Absorption – The ability of a material to absorb sound energy through its conversion into thermal energy.

Sound Level Meter – An instrument consisting of a microphone, amplifier and indicating device, having a declared performance and designed to measure sound pressure level.

Sound Pressure Level – The level of noise, usually expressed in decibels, as measured by a standard sound level meter with a microphone.

Tonal Noise – Containing a prominent frequency and characterised by a definite pitch.