

# Swadlincote Energy Recovery Facility (SERF)

## **Noise and Vibration Assessment**

on behalf of R&P Clean Power Limited

**Application for Environmental Permit**

May 2024

Prepared by Stantec

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## 1 Introduction

### 1.1 Noise Assessment

This assessment follows the preparation of a Noise Assessment as prescribed in BS 4142:2014+ A1:2019. This method requires the assessment of the specific noise source relative to existing background levels.

The noise assessment was prepared by Inacoustic for the planning application for the SRRP<sup>2</sup>. Swadlincote Energy Recovery Facility (SERF) details have been utilised from that assessment to specifically support the proposed operational phase of the SERF.

The baseline measurements to ascertain the background noise levels were undertaken via a survey undertaken conducted during both daytime and night-time periods between Thursday 15th October and Tuesday 20th October 2020. In addition, an updated survey was undertaken between Monday 5th and Monday 12th July 2021 at one of the monitoring points. All noise measurement were undertaken in accordance with the principles of BS7445.

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<sup>1</sup> Environment Agency (2004) Horizontal Guidance Note IPPC H3 (part 2)

<sup>2</sup> Inacoustic, Swadlincote Resource Recovery Park, Environmental Statement – Chapter 9 Noise and Vibration, September 2022

## 2 Site Setting

The proposed SERF (the 'Facility') is located in South Derbyshire at Cadley Hill. Approximately 2km west of Swadlincote, Derbyshire. The Facility is centred at National Grid Reference SK 268 190, with the nearest postcode at DE11 9EN. The surrounding area is characterised by a mix of rural and residential land. Immediately adjacent land uses include; Willshee's Materials Recycling Facility (MRF); Stanton Sewage Works and the A444 (Burton Road) to the north and east respectively; residential properties to the north and south; and arable farmland to the west and south. See Figure 1 for the site location.

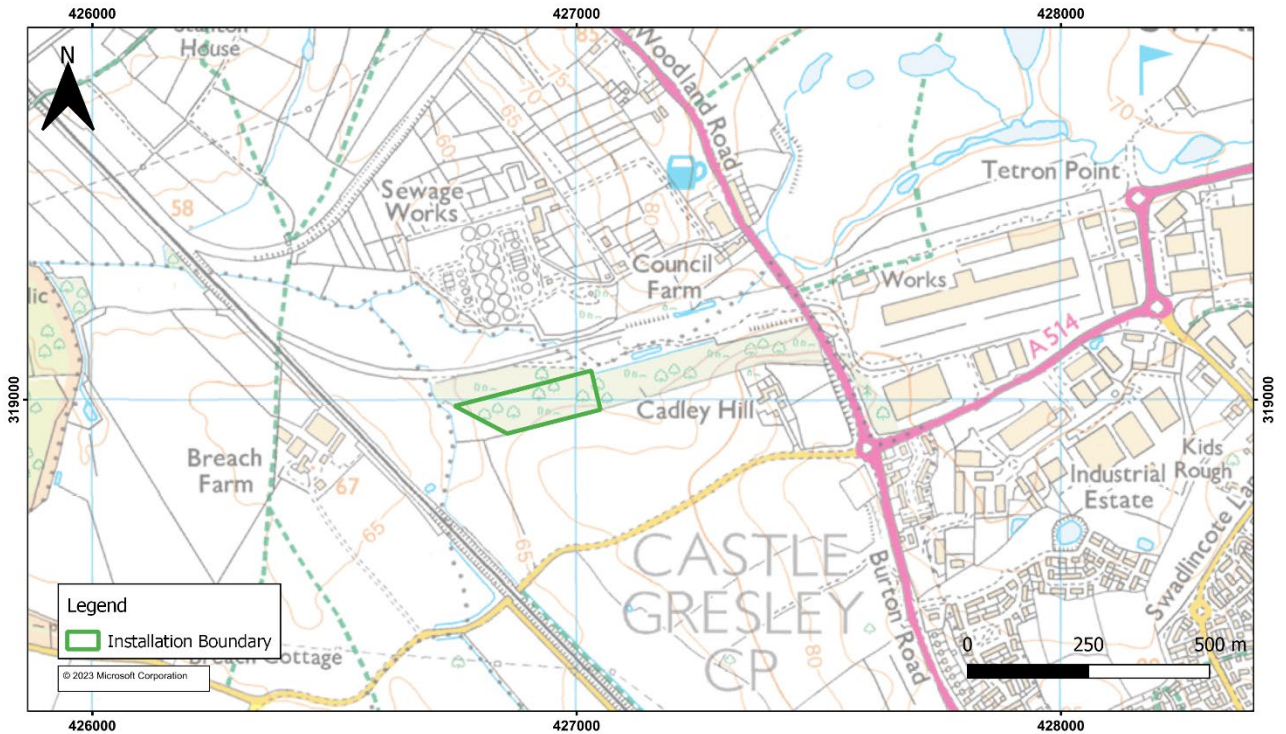


Figure 1: Site Location

### 3 Noise Sources

The operations proposed for the Facility include a number of noise emitting equipment, as well as noise from non-fixed plant. The noise assessment provides a comprehensive list of the sources of noise, and this is reproduced in Table 1.

The reference numbers are allocated in accordance with the General Layout Plan as part of the wider Environmental Permit application in Section IV as Figure 2.

**Table 1: Noise Emission Sources**

Ref.	Description	Location	Operational Profile
-	Lorry movements	External	5 per hour
4	Steam turbine drain tank	Steamturbine room	Continuous
5	Combustion section	Steam generator room	Continuous
6	Boiler	Steam generator room	Continuous
8	Bag filter	External	Continuous
9	Flue gas extraction fan	External	Continuous
10	Exhaust stack	External	Continuous
11	Lime dosing system	External	Continuous
13	Atmospheric blowdown	Steam generator room	Continuous
14	Chemical dosing station for boiler & water cycle	Steamturbine room	Continuous
15	Deaerator	Steamturbine room	Continuous
16	Boiler feed water pumps	Steamturbine room	Continuous
22	Raw water pumps	Steam generator room	Continuous
25	Demi water pumps	Steam generator room	Continuous

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26	Diesel tank for diesel generator	External	Emergency
27	Emergency diesel generator	External	Emergency
28	Steam turbine	Steamturbine room	Continuous
30	Hot well extraction pumps	External	Continuous
31	Dry cooler circulation pumps	External	Continuous
32	Air cooled condenser	External	Continuous
34	Gland steam condenser	Steamturbine room	Continuous
35	Process clean drain pumps	Steamturbine room	Continuous
36	IBA & boiler fly ash collection basin	External	4 hrs/ per day
36	IBA & boiler fly ash collection basin	Steam generator room	Continuous
42	Primary air fans	Steam generator room	Continuous
43	Secondary air fan	External	Continuous
45	Dry cooler system	External	Continuous
59	Fire pumps enclosure	External	Emergency
64	Fly ash from FGT silo	External	Continuous
73	Activated carbon dosing system	External	Continuous

## 4 Noise Impact Assessment

A noise impact assessment was completed for the planning application for the wider site that the SERF sits within. This section contains reference to the assessment, and details of the noise assessment results.

### 4.1 Residential Receptors

The closest affected properties are located at Sandown House to the north of the Facility and Cadley Hill to the southeast, the distances from the Facility are outlined in Table 2. These are the closest residential receptors to the Facility, and therefore considered to have the highest potential for impact from noise emissions. It is important to note that both Sandown House and Cadley Hill are at a higher topographical level, and therefore both areas overlook the Facility.

**Table 2: Residential Receptors**

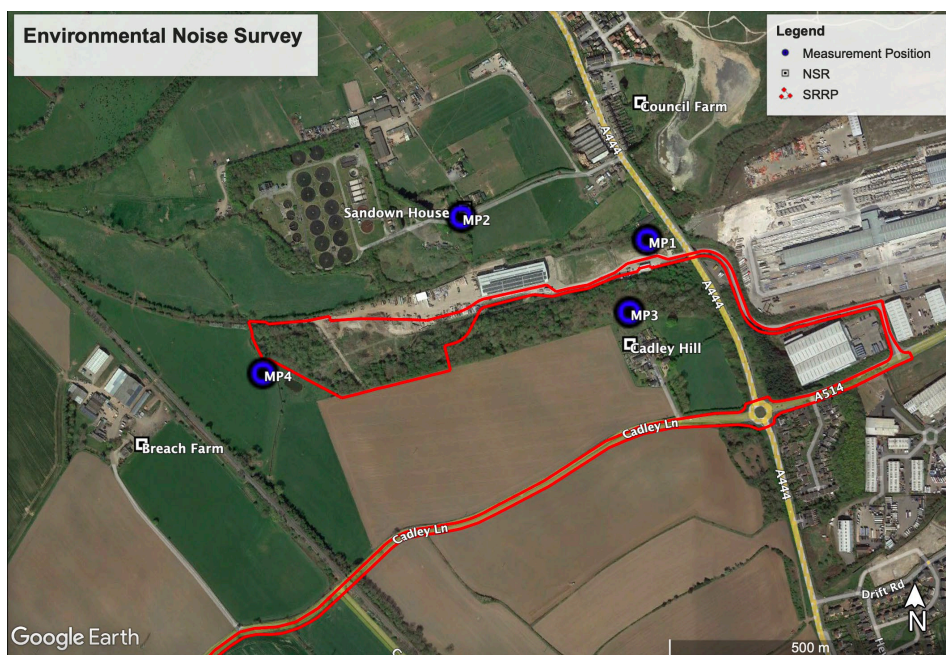
Address	Distance from Facility
Sandown House	125 m
Cadley Hill	230 m

### 4.2 Background Noise Level Survey

The baseline measurements to ascertain the background noise levels were undertaken via a survey undertaken conducted during both daytime and night-time periods between Thursday 15th October and Tuesday 20th October 2020 at all NSRs. In addition, an updated survey was undertaken between Monday 5th and Monday 12th July 2021 at Sandown House. All noise measurements were undertaken in accordance with the principles of BS 7445. Figure 2 shows the monitoring point locations. The monitoring locations were chosen to represent the two closest residential receptors.



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**Figure 2: Monitoring Point Locations<sup>5</sup>**

Table 3 provides a description of the noise assessment monitoring positions (MP).

<sup>5</sup> Inacoustic, Swadlincote Resource Recovery Park, Environmental Statement – Chapter 9 Noise and Vibration, September 2022

Table 3: Noise Assessment Monitoring Locations<sup>6</sup>

Measurement Positions	Description
MP1 – Representative of Council Farm	An unattended daytime and night-time measurement of sound under free-field conditions, at a height of 1.5 metres above local ground level, located adjacent to the dog kennels, and representative of those residential receptors at Council Farm, to the north-east of the Proposed SRRP. The residual sound environment was noted to be maintained by road traffic noise, birdsong, and wind-induced vegetation sound. When Wilshee’s MRF was operating, this site was noted to be occasionally audible.
MP2 – Sandown House	An unattended daytime and night-time measurement of sound under free-field conditions, at a height of 1.5 metres above local ground level, located to the front of Sandown House and representative of the northern residential properties to the Proposed SRRP. The residual sound environment was noted to be tranquil, with very distant road traffic noise, birdsong, and wind-induced vegetation sound. The ambient sound levels were influenced by Wilshee’s MRF during its operational hours.
MP3 – Representative of Cadley Hill	An unattended daytime and night-time measurement of sound under free-field conditions, at a height of 1.5 metres above local ground level, located to the north of Cadley Hill, and is representative of those residential receptors. The residual sound environment was noted to be maintained by road traffic noise, birdsong, and wind-induced vegetation sound. When Wilshee’s MRF was operating, this site was noted to be audible.
MP4 – Representative of Breach Farm	An unattended daytime and night-time measurement of sound under free-field conditions, at a height of 1.5 metres above local ground level, located to the east of Breach Farm and representative of the western residential properties to the Proposed SRRP. The residual sound environment was noted to be tranquil, with very distant road traffic noise, birdsong, and wind-induced vegetation sound. When Wilshee’s MRF was operating, this site was noted to be a significant contributory factor.

### 4.3 Noise Assessment Results

The predicted results of the noise assessment upon the identified receptors are provided in Table 4. The contribution of the ERF to the cumulative noise levels is assessed, alongside the wider sites MRF sound levels. The results show that the magnitude of impact is negligible at all four receptors.

<sup>6</sup> Inacoustic, Swadlincote Resource Recovery Park, Environmental Statement – Chapter 9 Noise and Vibration, September 2022

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**Table 4: Predicted Noise Assessment Results<sup>7</sup>**

<b>NSR</b>	<b>MRF Sound Levels (dB)</b>	<b>ERF Sound Levels (dB)</b>	<b>Cumulative Noise Levels (dB)</b>	<b>Noise Level Change (dB)</b>	<b>Magnitude of Impact</b>
NSR1 - Council Farm	45	31	45.2	+0.2	Negligible
NSR2 – Sandown House	53	41	53.3	+0.3	Negligible
NSR3 – Cadley Hill	46	39	46.8	+0.8	Negligible
NSR4 – Breach Farm	45	36	45.5	+0.5	Negligible

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<sup>7</sup> Inacoustic, Swadlincote Resource Recovery Park, Environmental Statement – Chapter 9 Noise and Vibration, September 2022

## 5 Repairs, Maintenance, and Monitoring

### 5.1 Maintenance Strategy

The Facility will be inspected daily by the Operator by means of a visual check and will be serviced and maintained by competent on-site staff and third-party providers at regular intervals in accordance with the operational manual and manufacturer's instructions. Results of the daily visual check will be recorded in the Facility logbook. Records of all servicing and maintenance visits will be held on-site.

A separate log of any controls and checks relating to failures or abnormal operating events will be kept at the on-site office.

### 5.2 Monitoring

Noise monitoring will be undertaken once the facility is operational. This will be undertaken by a trained surveyor and records will be recorded in a logbook. The route of the survey will be along the Facility boundary. Logbook entries will comprise the following details:

- Time and date of test;
- Name of surveyor;
- Weather conditions, including wind direction; and
- Intensity and nature of the noise at various test locations. This should include notes on the duration of the test and whether the noise was constant or intermittent during that period, as well as a description of the noise and the likely source.

## 6 Staff Competency and Training

The Operator of the Facility will be fully trained by the technology provider, or a chosen training provider, in the correct operation of all elements of the ERF. The Facility operator will be equipped with an operations manual which will support them during the day to day running of the plant. It will also contain all the necessary details regarding inspection and maintenance intervals and contact details of contractors.

In addition, all staff will be trained in emergency and incident response relating to the operation of the facility. Training records will be held at the Facility as part of the operations manual.