

# SUNDERLAND UTR FACILITY ENVIRONMENTAL PERMIT APPLICATION

**Noise Management Plan**  
Prepared for: Wastefront AS

SLR Ref: 416.V11075.00004  
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SLR 

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## 1.0 Introduction

Wastefront AS has appointed SLR Consulting Ltd. (SLR) to undertake a noise assessment for a permitted Tyre Processing Facility (Site) in Sunderland.

Due to the potential for the new plant to increase noise levels in the area the Environment Agency (EA) has requested that the permit application includes:

- A Noise Impact Assessment; and a
- A Noise Management Plan.

The Noise Management Plan is presented in this Report. The Noise Impact Assessment has been presented in SLR Report 416.11075.00004.

This Noise Management Plan will refer to the results of the Noise Impact Assessment.

The Noise Management Plan should be undertaken in accordance with the EA guidance document *Noise and vibration management: environmental permits* (NVM).

### 1.1 Report Structure

This report presents:

- The Objectives and Status of a Noise Management Plan.
- A description of the applicable guidance.
- The Site setting and background.
- Noise predictions from the Noise Impact Assessment.
- Appropriate measures to minimise the generation of noise and an updated BS4142:2014+A1:2019 assessment.
- The maintenance program.
- Noise surveillance program.
- The complaints procedure.

Whilst reasonable effort has been made to ensure that this report is easy to understand, it is technical in nature; to assist the reader, a glossary of terminology is included in Appendix 01.

## 2.0 Objectives and Status of the Plan

### 2.1 Objectives

This Noise Management Plan serves to aid the decision-making process on the choice of controls, general site design, and operational practice in line with current industry best practice. The Plan is a working document with the specific aim of ensuring:

- noise and vibration impacts are considered as part of routine operations;
- minimising the risk of unplanned 'noisy' events that could result in offsite complaints;
- noise and vibration is primarily controlled at source by good operational practices, the correct use and maintenance of plant, and operator training; and
- 'all appropriate measures' are taken to prevent or, where that is not reasonably practicable, to minimise noise emanating from the facility.

### 2.2 Status

This Noise Management Plan is a controlled document, and forms part of the site's Management System.

The specification for the periodic review and update of this Plan will be set out within the Management System and will be on an annual basis, as a minimum.

However, this Plan should be reviewed as required should the following occur:

- Significant changes are made to the plant or operational practices;
- The EA requests that the Noise Management Plan is updated, in their role as regulator; or
- Complaints are received, which on subsequent investigation result in the identification of further control measures or remedial action, in addition to those set out within this Noise Management Plan.

## 3.0 Guidance

### 3.1 Noise and vibration management: environmental permits

The Environment Agency (EA) released the guidance document *Noise and vibration management: environmental permits* (NVM) in July 2021 (updated in January 2022), replacing the previous guidance presented in *Horizontal Guidance for Noise (H3) parts 1 and 2*. The NVM details when a noise assessment is required, the competency required to undertake an assessment and how to carry out a noise impact assessment.

The guidance includes the section *Noise management plans (NMP)* and describes the following considerations that should be included as a minimum:

- a clear statement that you understand and accept your responsibilities for controlling noise impact, and that you will regularly review the effectiveness of your NMP
- a commitment that either you, or your contractors or subcontractors, will make sure that any noise control equipment is designed, operated and maintained appropriately so it controls noise effectively at all times
- a risk assessment of noise problems from normal and abnormal situations, including worst case scenarios due to, for example, weather, temperature, breakdowns and accidents
- details of the appropriate controls (both physical and management) needed to manage the identified risks
- confirmation of the level of monitoring that should be in place
- details of the actions you will take, contingencies, and responsibilities, when problems arise (it is particularly important that you include expected actions resulting from exceptional circumstances or where serious pollution may occur)
- confirmation of the procedures in place to consider reducing or stopping operations to avoid serious noise pollution
- a procedure for engaging with neighbours to minimise their concerns and respond to complaints.

## 4.0 Site Location, and Predicted Noise Levels

### 4.1 Site Location

The site location, receptors, and the noise monitoring locations to be referred to in this Plan have been shown in Figure 4-1. The surrounding area can be described as mixed industrial / commercial / residential use.

**Figure 4-1**  
**Site Location**



### 4.2 Noise Assessment Submitted with Permit Application

SLR prepared a Noise Impact Assessment (report reference 416.11075.00004) to be submitted to the EA for the permit application.

#### 4.2.1 Noise from new plant

Table 4-1 and 4-2, show the predicted internal plant noise levels, and external plant noise levels, which were used to form the Noise Impact Assessment. The method of modelling is detailed in Section 5 of Report 416.11075.00004.



**Table 4-1**  
**Internal plant noise levels**

Sound Source	Internal Reverberant Noise Level dB(A)	Source Type / Description	Source Height (m)
Tyre Shredding Building	81.6	Modelled as reverberant building with two Raspers, each with a sound power level of 101.5dB(A), surface volume of 7792m <sup>2</sup> , abs coefficient of 0.1, and building fabric SRI of 24dB(A). 100% on-time. Assumed indoor reverberant level	14m
Pyrolysis Area Building	77.0	Modelled as reverberant building with four Reactors, each with a sound power level of 93.0dB(A), surface volume of 6370m <sup>2</sup> , abs coefficient of 0.1, and building fabric SRI of 24dB(A). 100% on-time. Assumed indoor reverberant level	14m
Paletizer Area	71.2	Modelled as reverberant building with one Palletizer, with a sound power level of 88.0dB(A), surface volume of 6370m <sup>2</sup> , abs coefficient of 0.1, and building fabric SRI of 24dB(A). 100% on-time. Assumed indoor reverberant level	14m

**Table 4-2**  
**External Plant Noise Levels**

Sound Source	Frequency Hz									dB(A)	Source Type	Source Height (m)	Description
	31.5	63	125	250	500	1000	2000	4000	8000				
Engine Generators – Container (side and top)	94.1	100.8	92.7	84.1	78.7	75.1	72.8	71.0	67.7	83.5	Vertical and Area	2.9m	100% on-time <sup>1</sup>
Engine Generators – Container (end)	92.5	92.0	84.6	76.8	74.0	73.7	69.7	69.2	71.3	79.4	Vertical	2.9m	100% on-time <sup>2</sup>
Engine Generators – Cooling Fan	83.2	77.6	78.2	70.2	70.1	67.6	64.0	58.4	49.9	72.6	Point	4.5m	100% on-time <sup>3</sup>
Engine Generators – Stack	102.6	112.4	105.0	93.5	95.7	84.9	85.7	85.7	81.0	96.7	Point	7m	100% on-time <sup>4</sup>
Pumps	-	-	-	-	-	-	-	-	-	93.0	Point	1m	Pumps area, water pump. 100% on-time <sup>5</sup> . Assumed
Stack Exhaust	-	66.0	76.0	84.0	85.0	84.0	78.0	73.0	68.0	89.8	Point	30m	100% on-time. Assumed

<sup>1</sup> Based on SLR measured data for similar plant.

<sup>2</sup> Based on SLR measured data for similar plant.

<sup>3</sup> Based on SLR measured data for similar plant.

<sup>4</sup> Based on SLR measured data for similar plant.

<sup>5</sup> Exception pump at tanker bay. Daytime only and on-time 50% in hour (when filling tanker). Height at 2m for this pump.

Sound Source	Frequency Hz									dB(A)	Source Type	Source Height (m)	Description
	31.5	63	125	250	500	1000	2000	4000	8000				
Stack Fan	93.5	92.9	90.8	82.3	79.3	74.3	73.5	68.7	55.5	82.2	Point	2.5m	100% on-time <sup>6</sup>
Air cooled condensers	-	-	-	-	-	-	-	-	-	85.0	Point	3m	Cooling water area. 100% on-time <sup>7</sup>
Scrubber	-	-	-	-	-	-	-	-	-	78.0	Point	3m	100% on-time <sup>8</sup>
HGV	-	95.4	91.8	89.5	88.1	88.4	86.9	81.3	70.0	97.9	Moving point	1.5m	2 per hour <sup>9</sup>
Diesel Forklift	84.7	80.6	81.8	77.1	78.5	72.5	71.5	68.1	59.0	79.5	Moving point	1m	60 movements per hour. Tyre storage and shredding areas <sup>10</sup>

<sup>6</sup> Based on manufacturer's data used within previous SLR assessment for pyrolysis plant.

<sup>7</sup> Based on manufacturer's data.

<sup>8</sup> Based on SLR measured data for similar plant.

<sup>9</sup> Based on SLR measured data. Movements taken from Planning Statement. Four movements an hour, 2 in, 2 out. No movements at night.

<sup>10</sup> Based on SLR measured data.

## 4.2.2 Noise predictions

The predicted specific level for the proposed plant emissions, are presented in Table 4-3.

The specific sound level for new plant has been based on sound data from Table 4-1 and 4-2 above.

**Table 4-3**  
**Measured Background Sound Level and Predicted Specific Noise Level at Receptors**

Location	Period	Predicted Sound Level, $L_{Aeq,T}$
Seafarers Way	Daytime	39.2
	Night-Time	39.7
The Quadrant	Daytime	37.4
	Night-Time	38.0
Prospect Row	Daytime	32.9
	Night-Time	33.4
Old Mill Road	Daytime	41.0
	Night-Time	41.7
Commercial Road	Daytime	35.7
	Night-Time	38.6

## 4.2.3 Rating Sound Level

The character of each noise source, and the correction that will be applied in the BS4142:2014+A1:2019 assessment are as follows:

- **Tonality:** SLR has not undertaken the BS4142:2014+A1:2019 Objective method for assessing the audibility of tones in south. However, it is not expected that any sound from the Site would be tonal. Therefore, no tonal correction is required.
- **Impulsivity:** It is not anticipated that any of the noise sources would be impulsive provided it is well maintained.
- **Other sound characteristics:** It is not anticipated that the identified noise sources would have any other identifiable sound characteristics that differ to those associated within the surrounding area, for example road traffic and commercial and industrial sound.
- **Intermittentness:** As noise sources at the site would be intermittent a 3dB correction is included in the assessment.

In total a 3dB character correction will be added to the calculated specific sound level at each receptor.

The results of the BS4142 assessment are presented in Table 4-4 below.

**Table 4-4**  
**BS4142 Assessment, dB**

Receptor	Assessment	Predicted Specific Sound Level, $L_{Aeq,T}$	Predicted Rating Level, $L_{Ar,T}$	Background Sound Level $L_{A90}$	Difference between Background Sound Level and Rating Level
Seafarers Way	Daytime (07:00 – 23:00)	39	42	34	+ 8
	Night-Time (23:00 – 07:00)	40	43	30	+ 13
The Quadrant	Daytime (07:00 – 23:00)	37	40	34	+ 6
	Night-Time (23:00 – 07:00)	38	41	30	+ 11
Prospect Row	Daytime (07:00 – 23:00)	33	36	34	+ 2
	Night-Time (23:00 – 07:00)	33	36	30	+ 6
Old Mill Road	Daytime (07:00 – 23:00)	41	44	40	+ 4
	Night-Time (23:00 – 07:00)	42	45	32	+ 13
Commercial Road	Daytime (07:00 – 23:00)	36	39	40	- 1
	Night-Time (23:00 – 07:00)	39	42	32	+ 10

It can be seen from Table 4-4 that:

- During the daytime, the predicted rating level at the receptors is between 1dB below and 8dB above the corresponding background sound level. Mitigation will be required and will be discussed further in this Noise Management Plan.
- During the night-time, the predicted rating level at the receptors is between 6dB and 13dB above the corresponding background sound level. Mitigation measures are discussed in Section 5 of this Noise Management Plan.

## 5.0 Appropriate Measures to Minimise Noise

### 5.1 Mitigation measures

From a review of the partial noise levels at each Receptor the following queries were raised with Wastefront AS:

1. Will the CHPs have individual stacks?
2. Do the pumps have a sound power level of 93dB(A). It was assumed the 85dB(A) quoted was at 1m. If the 85dB(A) is a sound power the model can be updated to reflect this.
3. Are the pumps at ground level? In the model each pump emission point is at a height of 1m.

The responses received were as follows:

1. No each CHP will exhaust to the main 30m stack. The model has therefore been updated to remove the two CHP engine generator stacks. The noise level of the main stack has been updated with a sound power level of 99.7dB(A).<sup>11</sup>
2. Sound power level of each pump of 85dB(A) confirmed. Model updated.
3. Confirmed pump height at 0.5m. Model updated.

In addition to the above a barrier has been added to shield the western most pump, and the façade reduction of the tyre shredding building has been improved from 24dB to 27dB, which will be achieved by a steel sheet with double trapezoidal corrugations 190mm<sup>12</sup>.

With the above measures included in the noise model the updated specific sound levels can be seen in Table 5-1. A screenshot of the daytime model can be seen in Figure 5-1 and a screenshot of the night-time model can be seen in Figure 5-2.

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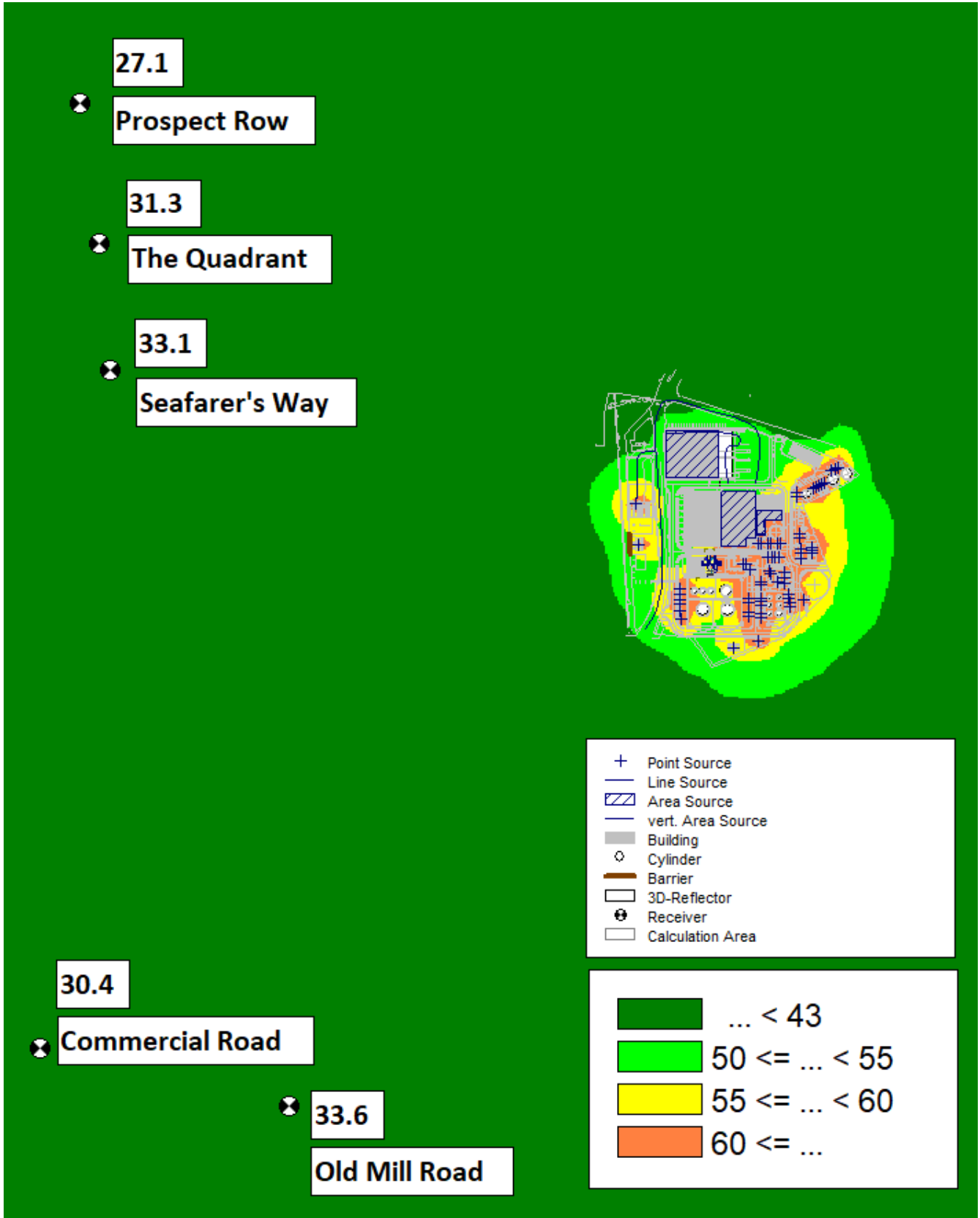
<sup>11</sup> Each stack had a separate stack emission point of 96.7dB(A). This has been doubled to 99.7dB(A) to account for 2 emission points at the one location. The original 30m Stack exhaust has been updated from 89.8dB(A) to 99.7dB(A). Indicated in model by 89.8 plus a correction of 9.9 on the point source at the top of the 30m stack.

<sup>12</sup> CADNA reference R27.

**Table 5-1**  
**Mitigated Specific Sound Levels dB(A)**

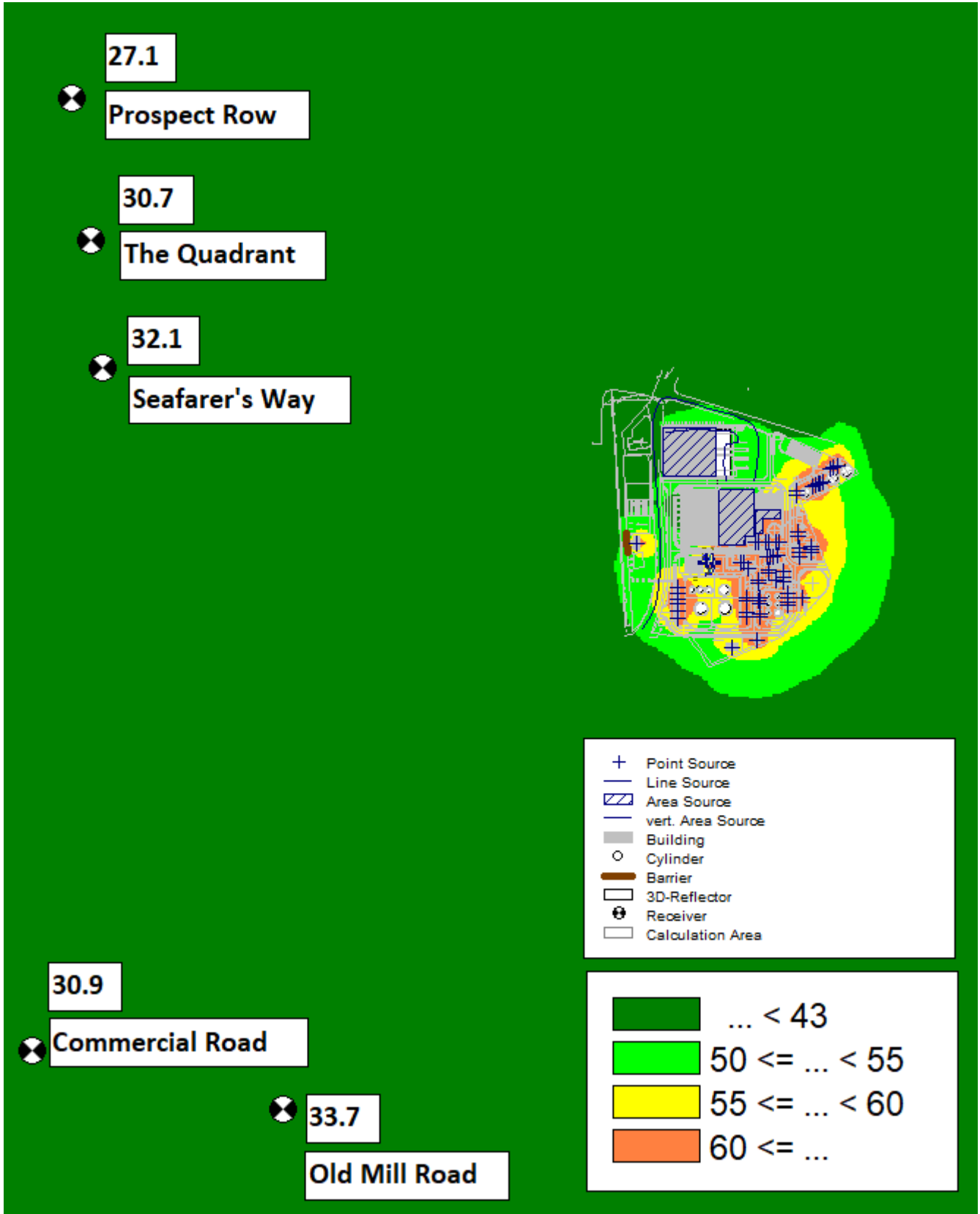
Location	Period	Predicted Sound Level, L <sub>Aeq,T</sub>
Seafarers Way	Daytime	33.1
	Night-Time	32.1
The Quadrant	Daytime	31.3
	Night-Time	30.7
Prospect Row	Daytime	27.1
	Night-Time	27.1
Old Mill Road	Daytime	33.6
	Night-Time	33.7
Commercial Road	Daytime	30.4
	Night-Time	30.9

**Figure 5-1**  
**Daytime Specific Sound Level at a Receiver Height of 1.5m**





**Figure 5-2**  
**Night-Time Specific Sound Level at a Receiver Height of 4m**



The BS4142 assessment can be seen in Table 5-2. A 3dB(A) character correction has been included.

**Table 5-2**  
**BS4142 Assessment dB(A)**

Receptor	Assessment	Predicted Specific Sound Level, $L_{Aeq,T}$	Predicted Rating Level, $L_{Ar,T}$	Background Sound Level $L_{A90}$	Difference between Background Sound Level and Rating Level
Seafarers Way	Daytime (07:00 – 23:00)	33	36	34	+2
	Night-Time (23:00 – 07:00)	32	35	30	+5
The Quadrant	Daytime (07:00 – 23:00)	31	34	34	0
	Night-Time (23:00 – 07:00)	31	34	30	+4
Prospect Row	Daytime (07:00 – 23:00)	27	30	34	-4
	Night-Time (23:00 – 07:00)	27	30	30	0
Old Mill Road	Daytime (07:00 – 23:00)	34	37	40	-3
	Night-Time (23:00 – 07:00)	34	37	32	+5
Commercial Road	Daytime (07:00 – 23:00)	30	33	40	-7
	Night-Time (23:00 – 07:00)	31	34	32	+2

From a comparison between Table 4-4 and Table 5-2, with the mitigation detailed in section 5-1, the calculated difference between the baseline background sound levels and the rating level has improved and is reduced by between 6dB(A) and 8dB(A).

During the daytime, the rating level does not exceed the background sound level, and at night the difference will be no more than 5dB(A).

In terms of context, the Application Site and the NSRs are within a dense mixed-use area, and the prevailing noise climate is already subject to significant noise contributions from road traffic, and surrounding commercial and industrial uses, which is audible at all receptors.

With reference to Table 5-3 below, it is considered that during the daytime period the Site will have a low noise impact and noise is not significant. At night, at Seafarers Way, The Quadrant, and Old Mill Road, site noise may be approaching a level that may have an impact, but as appropriate measures have been implemented into the Site design to minimise noise to a level that is no more than 5dB(A) above the background sound level; it is anticipated that residents are unlikely to be impacted by noise from Site.

**Table 5-3**  
**NVM Assessment**

NVM Result	BS4142 Descriptor	Next Stage
Unacceptable level of audible or detectable noise	The closest corresponding BS 4142 descriptor is 'significant adverse impact'	You must take further action or you may have to reduce or stop operations. The environment agencies will not issue a permit if you are likely to be operating at this level.
Audible or detectable noise	The closest corresponding BS 4142 descriptor is 'adverse impact'	Your duty is to use appropriate measures to prevent or, where that is not practicable, minimise noise. You are not in breach if you are using appropriate measures. But you will need to rigorously demonstrate that you are using appropriate measures.
No noise, or barely audible or detectable noise	The closest corresponding BS 4142 descriptor is 'low impact or no impact'	Low impact does not mean there is no pollution. However, if you have correctly assessed it as low impact under BS 4142, the environment agencies may decide that taking action to minimise noise is a low priority.

## 6.0 Maintenance Programme

An important part of the Noise Management Plan is plant maintenance.

Table 6-1 details the processes and checks that must be carried out to minimise noise emission from operations at the site.

**Table 6-1**  
**Processes and Checks Carried out to Minimise Noise Emission from Operations**

Noise Source	Minimisation Technique
New mechanical plant: gas engine, boiler, steam generator.	Regular inspections by the Site Manager or designated personnel should be made to ensure that the equipment is well maintained. Maintenance records should be kept up to date and be available upon request. Regular maintenance will be carried out periodically at the end of each week as a minimum. Maintenance records should be kept up to date and be available upon request.
	Carry out periodic maintenance checks, in accordance with the manufacturer's instructions, to ensure efficient running of engine machinery. E.g., lubrication of moving parts to reduce noise.
	Commission plant to operate at suitable duty levels, to minimise noise emissions as far as practicable.
	Carry out periodic checks of plant operation, to ensure that plant is running at the appropriate (lowest) operating duty.

## 7.0 Noise Surveillance Programme

An essential part of any Noise Management Plan is to monitor noise from the Site regardless of whether a complaint has been received.

The purpose of noise surveillance is to demonstrate to the EA that the new plant is being operated in such a manner as to minimise the noise impact at nearby noise-sensitive receptors. In the event that complaints are received, noise monitoring would prompt remedial actions to ensure ongoing future compliance.

It is recommended that post-installation plant noise measurements are carried by a suitably qualified acoustic consultant, to verify the plant installation and noise levels. Subsequent periodic checks are recommended to be carried out by the site team, to ensure that noise levels are not increasing.

## 8.0 Complaint Procedure

As part of the Noise Management Plan, a procedure must be in place to deal with complaint.

If a complaint is received from a local resident, an investigation shall be instigated within one working day to identify the cause of the complaint. The Noise Complaint Form detailed in Appendix 02 will be filled in and appropriate action will be taken to remedy the problem should the complaint be validated.

A complaint investigation may involve the identification and cessation of the activity or activities considered to be the cause of the complaint and/or the investigation of mitigation measures to reduce the noise emission levels from the activity or activities. For example, this could include the replacement of noisy plant with quieter alternatives and/or reviewing the recommended mitigation measures described in Section 5 of this report.

If it is not possible to identify the source of the complaint, it may be necessary to undertake a noise survey. If this is needed, a suitably qualified person should be employed to undertake the required survey work.

# APPENDIX 01

## Glossary of Terminology

In order to assist the understanding of acoustic terminology and the relative change in noise, the following background information is provided.

The human ear can detect a very wide range of pressure fluctuations, which are perceived as sound. In order to express these fluctuations in a manageable way, a logarithmic scale called the decibel, or dB scale is used. The decibel scale typically ranges from 0dB (the threshold of hearing) to over 120dB. An indication of the range of sound levels commonly found in the environment is given in the following table.

**Table 01-1**  
**Sound Levels Commonly Found in the Environment**

Sound Level	Location
0dB(A)	Threshold of hearing
20 to 30dB(A)	Quiet bedroom at night
30 to 40dB(A)	Living room during the day
40 to 50dB(A)	Typical office
50 to 60dB(A)	Inside a car
60 to 70dB(A)	Typical high street
70 to 90dB(A)	Inside factory
100 to 110dB(A)	Burglar alarm at 1m away
110 to 130dB(A)	Jet aircraft on take off
140dB(A)	Threshold of Pain

### Acoustic Terminology

dB (decibel)	The scale on which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure ( $2 \times 10^{-5} \text{Pa}$ ).
dB(A)	A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e. 'A' weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.
$L_{Aeq}$	$L_{Aeq}$ is defined as the notional steady sound level which, over a stated period of time, would contain the same amount of acoustical energy as the A - weighted fluctuating sound measured over that period.
$L_{10}$ & $L_{90}$	If a non-steady noise is to be described it is necessary to know both its level and the degree of fluctuation. The $L_n$ indices are used for this purpose, and the term refers to the level exceeded for n% of the time. Hence $L_{10}$ is the level exceeded for 10% of the time and as such can be regarded as the 'average maximum level'. Similarly, $L_{90}$ is the 'average minimum level' and is often used to describe the background noise. It is common practice to use the $L_{10}$ index to describe traffic noise.
$L_{Amax}$	$L_{Amax}$ is the maximum A - weighted sound pressure level recorded over the period stated. $L_{Amax}$ is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the overall $L_{eq}$ noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.



## APPENDIX 02

### Complaint Form

Item	Date Recorded:	Reference No:
Name and address of caller		
Telephone		
Location of caller in relation to site		
Time and date of complaint		
Date, time and duration of offending noise		
Callers description of noise		
Has the caller any other comments on noise?		
Weather conditions		
Wind strength and direction		
Any previous complaints relating to this noise?		
Any other relevant information?		
Potential sources that could give rise to the complaint		
Operating conditions at the time of the offending noise		
Follow up – date and time caller contacted		
Action taken		
Amendment requirement to Noise Management Plan		
Form completed by (print)		Signed and date

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