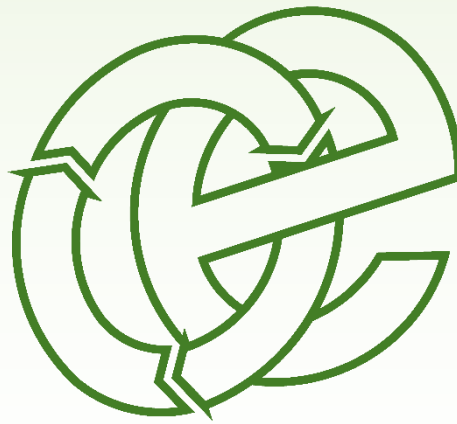


RESPONSE TO REQUEST FOR FURTHER INFORMATION

Kaug Refinery Services Limited

VERSION:	1.0	DATE:	19 TH JULY 2024		
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CONTENTS

DOCUMENT HISTORY:1

CONTENTS2

LIST OF APPENDICES:.....3

SUMMARY4

1 RESPONSE TO QUESTION 15

2 RESPONSE TO QUESTION 25

3 RESPONSE TO QUESTION 36

4 RESPONSE TO QUESTION 47

List of Appendices:

Appendix I - Updated Noise Impact Assessment

Appendix II - Updated Noise and Vibration Management Plan

Summary

This document provides responses to the Request for Further Information (RFI) Notice issued by the Environment Agency (EA), dated 24/06/2024, requesting additional information for the application for a bespoke installation at Merse Road, Redditch (application ref: EPR/BP3421SC/A001).

1 Response to Question 1

1.1 EA Question

Confirm if any of the waste streams to be received on the site will be processed with the intention of recovering a marketable commodity other than a precious metal, and if so, confirm the type of compound e.g. metal salt.

1.2 Response

None of the waste streams that are to be processed onsite will generate any marketable commodity other than a precious metal.

2 Response to Question 2

2.1 EA Question

Separately list the waste streams (including EWC codes) intended for each processing route, for the following activities:

- i) Physical treatment only (sorting, bulking up, shredding etc.) ahead of removal of waste offsite*
- ii) Physical treatment ahead of precious metals recovery*
- iii) Physical treatment ahead of recovery of metals compounds (if this processing route occurs on site)*

2.2 Response

The following outlines the waste streams intended for physical treatment only:

- EWC Code 20 01 40 – Assorted base metal scrap (aluminium sheet, copper foil etc.) from UK circuit board manufacturers (sorting & batching for onward transmission only); and,
- EWC Code 16 02 16 – Frames & unpopulated boards from UK circuit board manufacturers (shredding & batching for onward transmission only).

2.3 No material will be subject to physical treatment ahead of precious metal recovery. The barreling/grinding/blending/sieving operations are post chemical or thermal treatment to ensure that precipitates and ash are in a uniform and homogeneous state for sampling and assay.

2.4 As outlined above, the process will produce precious metals, not compounds.

3 Response to Question 3

3.1 Question

For identified application activities:

- i) With reference to the recovery of precious metals, clarify the number of “lines” of plant and equipment in use at any one time, providing process flow diagrams if necessary.*
- ii) With reference to any processes on site associated with the recovery of metal compounds, clarify the number of “lines” of plant and equipment in use at any one time, providing process flow diagrams if necessary*

Response

3.2 The operations for recovery of precious metals will not include any continuous processes, all are very small scale batch operated processes. Process ‘lines’ will be in use only when there is a batch or batches of material requiring processing by that method and frequently all ‘lines’ will have times/days when they are not in use. Equally there will be times in the day when there may be up to 2 or 3 ‘lines’ operational at the same time.

3.3 In the case of the alkaline and acid processing ‘lines’, the metal precipitates extracted from these processes are dried in ovens which are shared between the processes and if required, melted in the same melting appliances. Furthermore, a single steam generator is used to raise steam for these processes and the operator has advised that it does not have the capacity to raise steam for all the acid and alkaline processing ‘lines’ simultaneously. Notwithstanding the small scale and infrequent nature of these

operations, It is argued that the above means that the acid and alkaline processing lines should be considered to be a single 'line', since they share common plant and equipment as part of the metal recovery activities and these 'lines' cannot be operated completely simultaneously.

3.4 As outlined above, the processes on-site produce precious metals, not compounds.

4 Response to Question 4

4.1 Reference should be made to Appendix I for an Updated Noise Impact Assessment and Appendix II for updated Noise and Vibration Management Plan. These have addressed all the questions and points raised in the EA RFI Notice.

Appendix I

Updated Noise Impact Assessment

NOISE IMPACT ASSESSMENT

10 Merse Rd, Moons Moat North Industrial Estate, Redditch B98 9HF

Kaug Refinery Services Ltd

Version:	1.6	Date:	19th July 2024		
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Client No:	2765	Job No:	010		



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1.0	13/12/2022	TB	DY	Internal draft
1.1	06/01/2023	TB	DY	Application copy
1.2	15/03/2023	TB	DY	Limited revisions to Noise Model
1.3	14/04/2023	TB	DY	Submitted to LPA with planning application
1.4	17/08/2023	TB	DY	Revision to model and proposed operating hours
1.5	18/07/2024	JC/JU	DY	Amendments as part of response to EA RFI Notice
1.6	19/07/2024	JC/JU	DY	Internal amendments

Key Technical Personnel & Qualifications

Author	Description
Thomas Benson	BSc AMIOA MIEEnvSc + 10 years' experience
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Josh Ulyatt	BSc, CCENM +1 year experience

Contents:

Document History:	i
Key Technical Personnel & Qualifications	i
Contents:	ii
List of Appendices:	iii
1 INTRODUCTION	1
1.1 General	1
1.2 Site Description and Proposed Development	1
1.3 Hours of Operation	2
1.4 Environmental Regulation	2
2 RELEVANT NOISE GUIDANCE	3
2.1 Environment Agency Guidance	3
2.2 Noise Policy Statement for England	3
2.3 National Planning Policy Framework.....	4
2.4 Planning Practice Guidance – Noise	5
3 NOISE ASSESSMENT CRITERIA	6
3.2 BS8283:2014	6
3.3 BS4142	6
3.4 WHO Guidelines for Community Noise	7
4 BACKGROUND NOISE MONITORING	9
4.1 Procedure and Monitoring Locations	9
4.2 Oaktree Equipment Used During the Survey	10
4.3 NOVA Acoustics Equipment used during the survey.....	10
4.4 Oaktree Background survey weather	11
4.5 NOVA background survey meteorological conditions.....	11
4.6 Oaktree Background Survey Results.....	12
4.7 NOVA Background Survey Results	13
4.8 Existing Noise Climate.....	19
4.9 Control of Uncertainty.....	19
5 NOISE IMPACT ASSESSMENT	20
5.1 Introduction	20
5.2 Background Levels	20
5.3 BS4142: Assessment	21
6 BEST AVAILABLE TECHNIQUES	50
6.1 Summary & Recommendations	50
7 CONCLUSION	52
7.1 Summary & Recommendations.....	52

List of Appendices:

Appendix I - Drawings

Drawing No. 2765/010/02 – Permit Boundary Plan

Drawing No. 2765/010/03 – Proposed Layout Plan

Appendix II - Nova Acoustics Background data

1 Introduction

1.1 General

- 1.1.1 Oaktree Environmental have been commissioned by Kaug Refinery Services Ltd to undertake a Noise Impact Assessment (NIA) for site situated at 10 Merse Rd, Moons Moat North Industrial Estate, Redditch B98 9HF.
- 1.1.2 The operation comprises a specialist facility for the recovery and recycling of precious metals from various metal containing waste. Up to a maximum of 250 tonnes per annum of metal containing wastes will be imported to site. Various processing operations will be undertaken to recover precious metals from the waste streams.
- 1.1.3 The purpose of this document is to accompany an application for the sites Environmental Permit (EP). The previous revision of this report was submitted in support of the EP and the planning application, however, the planning permission has now been granted with the noise assessment being accepted by the Worcestershire County Council.

1.2 Site Description and Proposed Development

- 1.2.1 The application site is located at 10 Merse Road, Redditch, B98 9HL, at national grid reference SP 07345 68860. The site consists of an existing building comprising industrial and office use with associated parking area. The site is located within a wider industrial estate/area and therefore suitable for this type of development. It is understood the existing building has been in recent active industrial/commercial use. At present, parking for staff and visitors is provided to the South-Western and North-Western side of the building. The site is accessed via Merse Road, via dedicated access point.
- 1.2.2 Reference should be made to Drawing No. 2765-010-02 for proposed permit boundary area. All references to 'the site' in this statement shall mean this area.

1.3 Hours of Operation

1.3.1 The site will routinely operate during the following hours;

- 06:00am – 17:00am (Monday – Friday)
- No operations (Saturday)
- No operations (Sundays)

1.3.2 The abatement plant (scrubber) serving the acid processing area and the alkaline process area extraction system will both be run for 24 hours per day, consistent with operations at the applicants existing site. This is to ensure that any residual fumes are abated/dispersed whilst the system is cooling down. However, there will be no operation of processing plant, including chemical, physical and thermal processing, nor delivery or export of materials to and from site outside of the above hours.

1.4 Environmental Regulation

1.4.1 An EP will be required to be in place for the site, with day-to-day operations regulated by the Environment Agency (EA). Potential impacts on air, land and water will be fully controlled and regulated under the EP.

2 Relevant Noise Guidance

2.1 Environment Agency Guidance

2.1.1 This document has been produced in accordance with the EA's guidance "Noise and vibration management: environmental permits" updated 31 January 2022.

2.2 Noise Policy Statement for England

2.2.1 The Noise Policy Statement for England (NPSE), March 2010, sets out the Government's long-term noise policy, the aims of which are:

"Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

- *Avoid significant adverse effects on health and quality of life;*
- *Mitigate and minimise adverse effects on health and quality of life;*
- *Where possible, contribute to the improvement of health and quality of life."*

2.2.2 The first aim of the NPSE is to avoid significant adverse effects, considering the shared UK principles of sustainable development.

2.2.3 The second aim provides guidance on the scenario when the potential noise impact falls between the LOAEL (Lowest Observed Adverse Effect Level) and the SOAEL (Significant Observed Adverse Effect Level), in which case it is stated, *"all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development"*. However, it is also stated, *"This does not mean that such adverse effects cannot occur"*.

2.2.4 With regards to the SOAEL, the document states, *"It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations"*, thus acknowledging that this is very much dependent on the noise source, the receptor, and the time of day. Therefore, the NPSE provides the necessary policy flexibility until further guidance / evidence is available.

2.2.5 Other guidance will need to be taken into account when applying the principles of the NPSE, as well the nature of the proposed development and its specific circumstances.

2.3 National Planning Policy Framework

2.3.1 The National Planning Policy Framework, revised in December 2023, states that Planning policies and decisions should also ensure that new development is appropriate for its location, taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

- Mitigate and reduce to a minimum potential adverse impact resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;
- Identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

2.3.2 Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed.

2.3.3 The revised document also makes reference to the Noise Policy Statement for England.

2.4 Planning Practice Guidance – Noise

2.4.1 Further to the guidance set out in the NPPF advises that the Local Authority should consider the following when decision making:

- Whether or not a significant adverse effect is occurring or likely to occur.
- Whether or not an adverse effect is occurring or likely to occur.
- Whether or not a good standard of amenity can be achieved.

2.4.2 As previously discussed within the NPSE, the guidance discusses the LOAEL and SOAEL and provides scenarios that could be expected for the perception level of noise, plus the associated activities that may be required to bring about the desired outcome. Again, as with the NPSE, no objective noise levels are provided for LOAEL or SOAEL.

2.4.3 It is stated that “the subjective nature of noise means that there is not a simple relationship between noise levels and the impact on those affected. This will depend on how various factors combine in any particular situation”. These factors include:

- The absolute noise level of the source and the time of day it occurs.
- Where the noise is non-continuous (intermittent), the number of noise events along with any patterns of occurrence.
- The frequency of content and acoustic characteristics (tonality etc.) of the noise.
- The effects of noise on the surrounding wildlife.
- The acoustic environment of external amenity areas provided as an intrinsic part of the overall design.
- The impact of noise from certain commercial developments such as night clubs and pubs where activities are often at their peak during the evening and night.

3 Noise Assessment Criteria

3.1 To assess the impacts of existing road traffic and industrial noise from the proposed development, the following documents have been used:

- BS8233:2014
- BS4142:2014+A1:2019 (BS4142)
- World Health Organisation (WHO) Guidelines on Community Noise

3.2 BS8283:2014

3.2.1 This document provides guidance on the relevant level of sound insulation required by a variety of building types affected by general environmental noise and provides recommendations for appropriate internal ambient noise level criteria for a variety of different situations including residential dwellings. The table below includes the proposed noise criteria within BS8283:2014 with regards to residential properties:

Table 3.1 - BS8233:2014 Internal Criteria

Activity	Location	07:00 – 23:00	23:00 – 7:00
Resting	Living rooms	35dB LAeq, 16hour	-
Dining	Dining room	40dB LAeq, 16hour	-
Sleeping	Bedroom	35dB LAeq, 16hour	30dB LAeq, 16hour

3.3 BS4142

3.3.1 BS4142 provides a method for “assessing and rating industrial sound” of an industrial/commercial nature. The method described in the standard uses the rating level from a noise source and the existing background noise level to assess the potential effects of sound on the residential premises upon which sound is incident.

3.3.2 Using this method, the background sound level is subtracted from the rating level. The resulting figure is assessed using the following guidance from the document:

- The greater the difference between the background sound level and the rating level, the greater the impact on the receptor.
- An exceedance of the background level of around 10dB, or more, is likely to be an indication of a significant adverse impact, dependent on the context.
- An exceedance of the background level of around 5dB is likely to be an indication of an adverse impact, dependent on the context.
- The lower the rating level compared to the existing background level, the less likely an adverse impact, or a significant adverse impact. Where the rating level does not exceed the background level, this is indicative of a low impact, dependent on context.

3.3.3 The document introduces a requirement to consider and report the uncertainty in the data as well as also including guidance for applying a correction/penalty for certain adverse acoustic features such as tonality, impulsivity or intermittency. The following table summarises the corrections based on the subjective assessment of the noise.

Table 3.2 - BS4142:2014 Corrections and Penalties

	Tonality	Impulsivity	Other characteristics
Just perceptible	+ 2dB	+ 3dB	
Clearly perceptible	+ 4dB	+ 6dB	
Highly perceptible	+ 6dB	+ 9dB	
Readily Distinctive against Residual Environment			+ 3dB

3.4 WHO Guidelines for Community Noise

3.4.1 The WHO Guidelines (1999) recommends indoor night-time guidelines in order to avoid sleep disturbance, the document states these to be 30 dB (LAeq) and 45 dB (LA_{fmax}) for continuous and individual noise events respectively.

3.4.2 The document states that the number of noise events should also be considered and that individual noise events should not exceed 45 dB (LA_{fmax}) more than 10 – 15 times per night.

- 3.4.3 The WHO document also recommends that steady, continuous noise levels should not exceed 55 dB (LAeq) for outdoor living areas (balconies, terraces etc.). However, in order protect the majority of individuals from moderate annoyance, external noise levels should not exceed 50 dB (LAeq)

4 Background Noise Monitoring

4.1 Procedure and Monitoring Locations

- 4.1.1 For previous submissions, a background noise survey was completed on the 27th July, 5th August, 25th September as well as 14th-15th August 2023 in accordance with BS 7445-1:2003 by Thomas Benson of Oaktree Environmental Ltd.
- 4.1.2 Following on from this and to address comments made by the EA, additional monitoring has been conducted by NOVA Acoustics Ltd dating between the 4th-8th of July 2024 which includes unattended monitoring to gather sufficient nighttime and daytime data.
- 4.1.3 The locations were chosen in order to be representative of the nearest noise sensitive receptors. Access could not be gained to the gardens closest to the site. For background monitoring to be representative of the existing soundscape the site needs to have either pre agreed shutdown periods or not be operating. This is to ensure that background data measures the background noise level when the site is not in operation
- 4.1.4 The measurement locations are shown in Figure 4.1, below:

Figure 4.1 - Site location and noise monitoring positions



4.2 Oaktree Equipment Used During the Survey

4.2.1 Details of the equipment used during the survey are shown in the table below, these have since been calibrated from the date of survey:

Table 4.1 - Survey Equipment

Description	Model	Manufacturer	Serial No.	Calibration Date
Class 1 Sound Analyser	NOR 150	Norsonic	15030504	October 2020
Microphone	Norsonic Type 1225	Norsonic	305208	October 2020
Field Calibrator	NOR 1251	Norsonic	35205	June 2020

4.3 NOVA Acoustics Equipment used during the survey

4.3.1 Details of the equipment used during the background survey conducted by NOVA Acoustics Ltd and the calibration drift values with the traceable calibrated signal are detailed in the below tables.

Equipment	Long term Locations	Manufacturer	Model	Serial No.	Pre Calibration	Post Calibration
SLM	Measurement Point 1 (NMP 1)	Svantek	971A	143583	93.8	93.78
Stoke Cali 1		Cesva	CB006	901927		
SLM	Measurement Point 2 (NMP 2)	Svantek	971A	127628	93.13	94.14
Stoke Cali 1		Cesva	CB006	901927		

4.4 Oaktree Background survey weather

4.4.1 The weather during the background surveys is summarised in the table below:

Table 4.2 – Weather Conditions during noise monitoring

Date	Wind Speed (max)	Cloud Cover	Temperature	Precipitation
Wednesday 27/07/2022	Generally very still, max gusts of 1.3m/s.	100-%	17 ^{oc} -19 ^{oc}	None recorded whilst onsite.
Friday 05/08/2022	Generally very still, with max gusts of 3.9m/s	5-10%	15 ^{oc} -17 ^{oc}	None recorded whilst onsite.
Sunday 25/09/2022	Generally very still, max gusts of 4.4m/s	80-100%	10 ^{oc} -12 ^{oc}	None recorded whilst onsite.

4.5 NOVA background survey meteorological conditions

4.5.1 As the environmental noise survey was carried out over a long unmanned period no localised records of weather conditions were taken. However, all measurements have been compared with met office weather data for the area, specifically closest weather station with data outlined in the table below. When reviewing the time history of the noise measurements, any scenarios that were considered potentially affected by local weather conditions have been omitted from the assessment. The analysis of the noise includes the Lamax levels as well as maximums and minimums of the vales measured which aids the preclusion of any periods of undesirable weather conditions. The weather conditions were deemed suitable for measurement of environmental noise in accordance with BS7445:

Description and Measurement of Environmental Noise. The table below presents the average weather conditions (temperature, wind speed, rainfall, prevailing wind direction). Stated in table are the occurrences of wind speed above the 5m/s which is the thresholds above which the wind speed or windshield on the microphone does not attenuate the wind according to BS7455.

Table 4.3 – Weather Conditions during noise monitoring

Date	Wind Speed (max m/s)	Wind Direction	Cloud Cover	Temperature (C)	Precipitation (inch)
04/07/2024	8 (03:20)	W	0-25%	11-17	0.0
05/07/2024	4	SW	50%	12-20	Light rain from 18:20
06/07/2024	6 (18:20)	WNW	50-75%	10-16	0.0 (Light rain until 19:50)
07/07/2024	7 (16:20) majority below	SW to N	50%	11-16	0.0 (Showers past 10:20)
08/07/2024	4	ESE to S	25%	7-17	0.0 (showers past 19:20)

4.6 Oaktree Background Survey Results

4.6.1 The results of the background noise monitoring survey that had been conducted by Oaktree within the previous submission are detailed below in Tables 4.4 to 4.5.

Table 4.4 -Weekday background monitoring results for NMP 1

Measurement Time	Le _a (dB)	LA _{max} (dB)	LA ₉₀ (dB)	LA ₁₀ (dB)
06:10-07:10	43.3	65.7	36.7	43.7
07:10-08:10	57.4	88.5	37.7	49.9
08:10-09:10	52.1	77.0	37.8	49.4
09:14-10:14	45.9	76.1	36.7	44.1
18:20-19:20	46.0	72.2	33.8	42.1
19:42-20:42	41.8	67.3	32.2	39.3
20:45-21:45	42.8	68.4	31.5	37.6
21:45-22:45	34.8	67.3	31.4	34.9

Table 4.5 -Weekend background monitoring results for NMP 1

Measurement Time	LA _{eq} (dB)	LA _{max} (dB)	LA ₉₀ (dB)	LA ₁₀ (dB)
19:10-20:10	41.7	63.7	37.4	42.7
20:10-21:10	39.1	60.5	35.6	39.7
21:20-22:10	40.7	64.1	35.5	40.8

4.7 NOVA Background Survey Results

4.7.1 The results of the unattended long-term monitoring conducted by NOVA Acoustics Ltd are summarised below in Tables 4.6-4.13, in order to get reference value for a 1-hour period the 15 minute breakdown or results which are held in Appendix II of this report were used. In order to calculate the LA90,1hour the equivalent continuous sound pressure level addition of the 4no. 15-minute sound pressure levels taken within the hour period were used. In order to choose a specific LA90,1hour sound pressure level which is the reference time for daytime monitoring the occurrence of each pressure level across the lowest background LA90 within that hour was assessed, this therefore provides a conservative approach.

Table 4.6. Weekday Background data for daytime hours (07:00-23:00). NMP 1.

Measurement Time	LA _{eq} (dB)	LA _{max} (dB)	LA ₉₀ (dB)	Lowest background La ₉₀ 1hour (dB)
Day 1-04/07/2024				
12:00-13:00	51.2	65.5	46.8	45
13:00-14:00	49.3	72.3	45.4	45
14:00-15:00	48.2	64.5	44.3	43.4
15:00-16:00	51.4	77.9	45.5	44.3
16:00-17:00	50.6	69.7	45.7	45.0
17:00-18:00	49.9	71.5	46.3	46.0
18:00-19:00	48.6	67.1	45.4	44.5
19:00-20:00	46.4	65.5	43.4	42.4
20:00-21:00	45.4	65.7	42.3	41.4
21:00-22:00	45.1	59.0	41.8	39.8
22:00-23:00	43.4	62.5	39.6	39.0
Day 2-05/07/2024				
07:00-08:00	59.8	88.1	37.5	35.9
08:00-09:00	56.4	86.1	36.9	35.1
09:00-10:00	41.0	64.2	35.1	34.3
10:00-11:00	40.2	66.5	34.7	34.4
11:00-12:00	42.5	69.2	35.2	34.2
12:00-13:00	42.3	68.5	36.0	35.5
13:00-14:00	40.7	57.0	36.9	36.1
14:00-15:00	53.5	79.8	39.6	38.4
15:00-16:00	45.6	66.7	40.3	39.1
16:00-17:00	45.3	71.2	40.6	39.3
17:00-18:00	45.0	66.3	39.3	38.0
18:00-19:00	45.2	67.0	41.8	41.2
19:00-20:00	43.0	60.5	39.4	38.3
20:00-21:00	48.3	72.4	43.3	37.6
21:00-22:00	43.7	67.8	36.9	33.2
22:00-23:00	38.2	65.6	33.1	32.5
Day 5-08/07/2024				
07:00-08:00	44.8	68.7	39.4	37.9

Measurement Time	LA _{eq} (dB)	LA _{max} (dB)	LA ₉₀ (dB)	Lowest background La ₉₀ _{1hour} (dB)
08:00-09:00	43.6	67.0	38.9	37.6
09:00-10:00	45.4	72.8	37.3	36.3
10:00-11:00	44.8	68.6	38.0	37.5
Most frequently occurring LA90 background data value: 39dB				

Table 4.7. Weekday Background data for nighttime hours (23:00-07:00). NMP 1.

Measurement Time	LA _{eq} (dB)	LA _{max} (dB)	LA ₉₀ (dB)	Lowest background La ₉₀ _{1hour} (dB)
Day 1-04/07/2024				
23:00-00:00	39.3	54.8	36.5	36.1
00:00-01:00	39.3	51.5	34.5	33.0
01:00-02:00	36.8	53.7	33.1	31.9
02:00-03:00	35.8	53.8	31.7	31.3
03:00-04:00	33.8	48.2	31.0	30.4
04:00-05:00	38.3	57.3	34.2	32.5
05:00-06:00	41.6	68.6	37.0	35.8
06:00-07:00	42.2	75.5	37.2	36.2
Day 2-05/07/2024				
23:00-00:00	33.2	48.0	30.3	29.4
00:00-01:00	31.9	48.4	28.9	27.7
01:00-02:00	34.6	53.6	29.9	28.6
02:00-03:00	41.5	61.3	34.9	31.0
03:00-04:00	43.3	57.9	39.2	33.6
04:00-05:00	38.8	60.1	34.4	34.0
05:00-06:00	40.1	66.8	34.6	33.9
06:00-07:00	41.1	61.8	37.2	36.2
Most frequently occurring LA90 background data value: Between 31dB and 36 Db. 31dB chosen				

Table 4.8. Weekend Background data for daytime hours (07:00-23:00). NMP 1.

Measurement Time	LA _{eq} (dB)	LA _{max} (dB)	LA ₉₀ (dB)	Lowest background La ₉₀ _{1hour} (dB)
Day 3-06/07/2024				
07:00-08:00	41.6	63.5	38.6	38.2
08:00-09:00	44.8	65.2	41.0	39.9
09:00-10:00	47.5	69.2	43.5	42.1
10:00-11:00	49.3	74.4	41.4	41.0
11:00-12:00	62.6	93.6	42.5	41.1
12:00-13:00	46.6	79.4	40.8	39.0
13:00-14:00	46.3	68.9	42.1	41.6
14:00-15:00	46.7	77.7	41.0	40.2
15:00-16:00	46.6	66.2	42.3	41.4
16:00-17:00	45.5	65.1	41.0	40.4
17:00-18:00	50.1	81.1	42.2	41.2
18:00-19:00	47.4	71.1	41.4	39.6

Measurement Time	LA _{eq} (dB)	LA _{max} (dB)	LA ₉₀ (dB)	Lowest background La ₉₀ _{1hour} (dB)
19:00-20:00	44.2	68.5	40.5	39.1
20:00-21:00	43.0	63.5	39.9	39.2
21:00-22:00	43.5	72.3	40.3	39.7
22:00-23:00	41.9	53.5	40.6	40.2
Day 4-07/07/2024				
07:00-08:00	43.8	75.6	38.9	38.3
08:00-09:00	44.4	73.8	39.5	38.9
09:00-10:00	50.7	74.9	41.7	40.9
10:00-11:00	46.2	69.3	42.4	41.5
11:00-12:00	47.8	69.2	42.4	41.5
12:00-13:00	46.3	73.3	41.0	40.7
13:00-14:00	46.9	72.3	42.3	40.2
14:00-15:00	43.0	69.1	37.8	37.3
15:00-16:00	45.0	66.1	40.8	40.1
16:00-17:00	46.0	73.6	37.7	36.7
17:00-18:00	45.8	65.2	39.3	38.5
18:00-19:00	43.9	74.5	36.3	33.7
19:00-20:00	46.8	68.6	35.5	35.2
20:00-21:00	52.1	80.0	38.5	36.2
21:00-22:00	42.2	63.9	38.6	38.0
22:00-23:00	40.2	63.4	36.3	35.2
Most frequently occurring LA90 background data value: Between 40-41dB. 40dB				

Table 4.9. Weekend Background data for nighttime hours (23:00-07:00). NMP 1.

Measurement Time	LA _{eq} (dB)	LA _{max} (dB)	LA ₉₀ (dB)	Lowest background La ₉₀ _{1hour} (dB)
Day 3-06/07/2024				
23:00-00:00	42.7	63.4	39.6	39.1
00:00-01:00	41.1	51.6	37.9	36.0
01:00-02:00	39.1	55.6	35.3	34.6
02:00-03:00	38.3	51.5	33.2	32.3
03:00-04:00	37.2	49.5	32.7	31.9
04:00-05:00	40.3	56.5	35.7	34.5
05:00-06:00	40.8	57.9	36.8	35.1
06:00-07:00	40.1	56.3	38.4	37.8
Day 4-07/07/2024				
23:00-00:00	36.3	50.2	32.7	32.1
00:00-01:00	35.9	49.8	32.2	31.7
01:00-02:00	34.6	47.0	30.6	29.0
02:00-03:00	34.3	48.1	29.8	27.3
03:00-04:00	39.2	69.1	32.5	32.3
04:00-05:00	42.2	55.0	38.4	35.8
05:00-06:00	45.9	58.2	43.6	42.0
06:00-07:00	46.2	71.6	42.2	41.7
Most frequently occurring LA90 background data value: 32dB				

Table 4.10. Weekday Background data for daytime hours (07:00-23:00). NMP 2.

Measurement Time	LA _{eq} (dB)	LA _{max} (dB)	LA ₉₀ (dB)	Lowest background La ₉₀ 1hour (dB)
Day 1-04/07/2024				
14:00-15:00	64.3	79.9	61.2	60.7
15:00-16:00	64.0	82.9	60.8	60.5
16:00-17:00	65.1	87.0	61.1	60.4
17:00-18:00	65.4	96.2	61.4	61.2
18:00-19:00	62.9	79.7	61.1	60.9
19:00-20:00	63.2	88.9	61.1	61.0
20:00-21:00	62.8	80.9	61.2	61.0
21:00-22:00	52.0	79.2	45.7	45.0
22:00-23:00	43.0	58.8	45.0	45.0
Day 2-05/07/2024				
07:00-08:00	63.5	79.6	60.5	59.9
08:00-09:00	64.0	80.6	60.8	60.4
09:00-10:00	64.7	92.7	60.6	60.3
10:00-11:00	63.6	83.6	60.6	60.3
11:00-12:00	63.8	85.9	60.6	60.3
12:00-13:00	63.4	77.5	60.5	60.3
13:00-14:00	63.5	86.2	60.6	60.2
14:00-15:00	63.4	80.0	60.4	60.3
15:00-16:00	63.3	85.0	57.1	46.2
16:00-17:00	59.8	78.3	48.1	47.3
17:00-18:00	58.4	79.6	46.6	46.0
18:00-19:00	54.1	77.6	47.8	47.2
19:00-20:00	52.6	79.0	44.7	42.9
20:00-21:00	55.5	77.1	49.4	44.1
21:00-22:00	53.5	78.9	42.7	39.2
22:00-23:00	48.4	80.5	38.3	37.1
Day 5-08/07/2024				
07:00-08:00	63.9	79.6	61.3	61.1
08:00-09:00	64.9	83.7	61.4	61.1
09:00-10:00	63.8	82.7	60.9	60.5
10:00-11:00	63.3	79.8	60.9	60.5
Most frequently occurring LA ₉₀ background data value: Majority site between 60-65dB therefore 60dB used				

Table 4.11. Weekday Background data for nighttime hours (23:00-07:00). NMP 2.

Measurement Time	LA _{eq} (dB)	LA _{max} (dB)	LA ₉₀ (dB)	Lowest background La ₉₀ 1hour (dB)
Day 1-04/07/2024				
23:00-00:00	54.2	81.5	44.5	43.3
00:00-01:00	49.4	76.8	43.4	43.2
01:00-02:00	47.7	74.6	41.5	40.7
02:00-03:00	43.5	58.0	40.1	39.5
03:00-04:00	44.5	70.4	39.1	38.2
04:00-05:00	51.6	79.7	39.0	38.3
05:00-06:00	57.5	80.2	43.9	40.0
06:00-07:00	63.2	81.9	60.4	60.1

Measurement Time	LA _{eq} (dB)	LA _{max} (dB)	LA ₉₀ (dB)	Lowest background La ₉₀ 1hour (dB)
Day 2-05/07/2024				
23:00-00:00	52.5	79.1	36.5	35.9
00:00-01:00	41.3	70.2	34.1	33.2
01:00-02:00	48.1	76.1	33.0	32.1
02:00-03:00	44.1	72.0	36.3	34.0
03:00-04:00	53.1	76.0	47.8	45.8
04:00-05:00	47.8	77.9	39.4	38.4
05:00-06:00	56.7	79.7	39.6	39.1
06:00-07:00	62.0	83.6	59.2	58.7
Most frequently occurring LA90 background data value: Majority sit between 35-40dB, therefore 35dB used				

Table 4.12. Weekend Background data for daytime hours (07:00-23:00). NMP 2.

Measurement Time	LA _{eq} (dB)	LA _{max} (dB)	LA ₉₀ (dB)	Lowest background La ₉₀ 1hour (dB)
Day 3-06/07/2024				
07:00-08:00	62.1	79.4	59.8	59.3
08:00-09:00	61.9	82.4	60.0	59.4
09:00-10:00	62.5	77.9	60.3	60.2
10:00-11:00	62.5	78.8	60.4	60.2
11:00-12:00	62.8	81.9	59.7	58.7
12:00-13:00	55.8	79.6	44.3	42.2
13:00-14:00	56.6	80.0	47.7	47.1
14:00-15:00	50.6	74.7	45.5	44.6
15:00-16:00	55.0	79.2	47.3	45.1
16:00-17:00	54.2	77.7	46.3	45.8
17:00-18:00	57.0	84.6	46.8	45.4
18:00-19:00	54.9	79.5	46.7	45.7
19:00-20:00	52.5	77.8	44.9	43.5
20:00-21:00	51.0	73.9	44.7	43.5
21:00-22:00	53.5	80.3	45.8	45.0
22:00-23:00	50.1	75.2	44.4	43.8
Day 4-07/07/2024				
07:00-08:00	54.1	80.1	44.8	43.1
08:00-09:00	52.9	78.7	44.3	43.3
09:00-10:00	55.7	82.3	47.0	46.2
10:00-11:00	53.8	76.7	49.1	48.4
11:00-12:00	54.9	79.6	48.1	47.8
12:00-13:00	52.3	76.4	47.3	46.8
13:00-14:00	53.5	76.9	47.0	45.2
14:00-15:00	51.4	77.8	43.4	42.3
15:00-16:00	55.2	80.7	46.3	44.7
16:00-17:00	54.6	81.9	43.5	41.5
17:00-18:00	51.8	76.8	44.1	43.0
18:00-19:00	50.8	76.3	41.7	38.2
19:00-20:00	52.7	77.0	38.2	37.0
20:00-21:00	52.5	75.6	41.1	40.0
21:00-22:00	52.5	80.3	41.3	40.6
22:00-23:00	50.3	76.7	39.9	39.0

Measurement Time	LA _{eq} (dB)	LA _{max} (dB)	LA ₉₀ (dB)	Lowest background La ₉₀ 1hour (dB)
Most frequently occurring LA90 background data value: Majority between 40-45dB so 40dB used				

Table 4.13. Weekend Background data for nighttime hours (23:00-07:00). NMP 2.

Measurement Time	LA _{eq} (dB)	LA _{max} (dB)	LA ₉₀ (dB)	Lowest background La ₉₀ 1hour (dB)
Day 3-06/07/2024				
23:00-00:00	54.6	82.1	43.4	42.4
00:00-01:00	47.8	73.1	42.6	41.9
01:00-02:00	50.6	78.3	38.9	37.8
02:00-03:00	45.7	73.9	38.4	37.3
03:00-04:00	48.8	75.3	37.3	37.0
04:00-05:00	46.4	72.6	38.5	37.6
05:00-06:00	51.4	79.5	39.2	37.7
06:00-07:00	54.0	77.6	41.7	40.6
Day 4-07/07/2024				
23:00-00:00	52.1	78.5	38.7	38.2
00:00-01:00	43.2	72.9	35.5	34.5
01:00-02:00	48.8	77.2	34.2	32.8
02:00-03:00	37.1	56.2	33.1	32.9
03:00-04:00	48.3	76.3	35.3	33.6
04:00-05:00	49.7	79.1	38.8	35.3
05:00-06:00	58.2	79.2	47.6	41.4
06:00-07:00	62.7	79.0	60.0	59.6
Most frequently occurring LA90 background data value: 37dB used				

- 4.7.2 The representative background level used for NMP 1 for weekday daytime is 39Db, for weekday nighttime the value used is 31Db. For weekend the representative figure used for daytime at NMP1 is 40dB and for nighttime 32dB.
- 4.7.3 For weekday daytimes, a figure of 60dB is representative for the background at NMP2, for the nighttime on weekdays, a figure of 35Db is appropriate. For weekend daytimes at NMP2, a value of 40dB is used, for the nighttime background a figure of 37dB is seen to be representative.
- 4.7.4 Should It be required, photographs and videos can be provided, along with the noise measurement files to corroborate the above observations. These are available upon request by the EA and other parties i.e. the Local Authority.

4.8 Existing Noise Climate

4.8.1 The existing noise climate/soundscape at the noise sensitive receptors (NSRs) at NMP1 is low in level and the noise profile dominated by nonanthropogenic sources, such as bird song and tree rustling. At NMP2, a continuous hum was audible (most likely from fixed plant associated with the site opposite side of the road). HGV movements were also present throughout the setup and collection of the equipment.

4.9 Control of Uncertainty

4.9.1 Uncertainty in this assessment was controlled via the following precautions/procedures:

- Both the sound level meter and calibrator have a traceable laboratory calibration and the meter was field-calibrated both before and after the measurements. The field calibrator is set to 114.0Db at a frequency of 1kHz, which at the time of monitoring had drifted from this calibrated value at the most by 0.2dB. The field calibrator used by NOVA Acoustics Ltd is set to a traceable reference signal of 94dB at a frequency of 1kHz, the drift from the calibrated value is detailed above in Section 4.3.
- The monitoring equipment used by NOVA Acoustics included additional mitigation to outdoor interference including the use of windshield, bird spikes etc.
- The measurement locations are considered representative of the existing noise climate outside the nearest residential dwellings to the proposed development.
- Background monitoring was undertaken during favourable weather conditions (e.g. dry and under 5m/s wind speed).
- The weather was recorded by NOVA using a Davis Pro Vantage weather station which the values for the times when weather is affecting the sound pressure levels recorded were not taken into account in particular periods of wet conditions. This was overcome by the long period of continuous monitoring.

5 Noise Impact Assessment

5.1 Introduction

5.1.1 It is considered the most significant noise sources associated with the development are:

- The loading and operation of the printed circuit board (PCB) shredder;
- Noise arising from the 4no. flues associated with internal extraction systems and acid scrubbing unit;
- Operation of the internal forklift; and,
- Operation of other plant items inside and outside the building, listed in Table 5.1, below.

5.1.2 Additional noise sources are located within the buildings such as grinders and gas scrubbers and the caustic scrubber located externally.

5.2 Background Levels

5.2.1 With regards to background levels, BS4142:2014 states that “the objective is not simply to ascertain a lowest measured background sound level, but to quantify what is typical during particular time periods” and also “In practice there is no “single” background sound level as this is a fluctuating parameter. However, the level for the assessment should be representative of the period being assessed”.

5.2.2 The assessment will utilise the range of levels from the results tables in section 4.7 the background data taken by NOVA Acoustics. In order to choose a representative LA90_{1HOUR} (reference time interval) favourable conditions where the weather had least impact on the sound pressure levels recorded were assessed.

5.2.3 From review of the measured background levels, the LA90 levels are markedly higher during the weekend measurements than those taken on the weekday. It is anticipated that this is due to the difference in road traffic levels which were observed to be slightly higher

during the weekend monitoring along with observable agricultural activity and the local hunt. Wind speed was also very slightly higher (whilst still being low enough as per BS7445).

5.3 BS4142: Assessment

5.3.1 The CadnaA noise models were constructed using OS mapping Opendata and Google Earth satellite imagery, whilst topographical data was imported as a digital terrain model obtained from DEFRA.

5.3.2 The model has been based on the updated Drawing No. 2765/010/03 and has been assessed over a one hour period.

5.3.3 The following assumptions/parameters are made within the models:

- The intervening land between the site boundary and residential properties was modelled with $G = 1.0$ as it was considered that the land is predominantly acoustically absorbent. This is with the exception of the ground the site is on which is hard and reflective acoustically modelled at $G=0.0$.
- Table 5.1 details the assumed “on-times” of each source. Source heights were chosen to be representative of each piece of plant
- Buildings were set as acoustically reflective, with a reflection loss of 0.5 dB. A maximum order of reflection of 3.0 has been assumed. The main building has been modelled with an absorption coefficient that is indicative of trapezoidal steel sheeting (45mm) in thickness. This is likely a worst-case approach as there is brick to a height of 2.2m surrounding the building plus the internal structures of the building with surrounding plasterboard.
- There is no pump associated with the external 700 litre alkaline effluent tanks and therefore noise generated from these tanks is considered negligible. Further to this, after consulting with the operator, it has been confirmed that there are no pumps associated with external areas of the site.
- Receiver heights have been placed at 1.5m (ground floor) and 4.0m (first floor) as per EA guidance. The receivers have been snapped to the facades of the NSRs at a distance 0.05m in order to observe the free field level incident on the facades.

- The predicted grid noise levels were free-field, A-weighted, sound pressure levels. The noise contours generated within the model have been generated at a height 1.5m and 4.0m based on the above point.
- Surrounding residential properties were modelled at a height of 7.0m. Commercial building heights have been taken from observations and information taking from planning public access where available.
- Barrier heights, perimeter walls and waste storage bays have also been modelled based on the proposals within this document and within documents supported under the relevant permitting applications. These have been modelled as being hard and reflective (i.e. concrete). Barrier heights and additional building within the proposed model have been added as per Drawing No. 2765/010/03.

5.3.4 Table 5.1 below includes the measured noise levels for the anticipated activities, which have either been measured by Oaktree Environmental Ltd or provided by the manufacturer. Octave and 1/3 Octave bands have been used where possible. It is to be noted that whilst there are HGV vehicles on site, they are extremely infrequent, circa 3 two-way rigids per week and 6 articulated lorries per year. It has not been deemed necessary to include these in the assessment as the impact will be insignificant, when considering the site is located within an industrial area which is likely to have HGV movements much more frequently.

Table 5.1 – Measured levels of activities

Activity	Sound Power Level (dBA)	Height of Source (m)	On time per hour (mins)	Comments
Steam Boiler Flue	84.7	9.44	60	Measurement by Oaktree of similar flue at a different site
Thermal Flue	84.7	9.44	60	Measurement by Oaktree of similar flue at a different site
Alkali Flue	89.9	9.44	60	Measurement by Oaktree of similar flue at a different site

Activity	Sound Power Level (dBA)	Height of Source (m)	On time per hour (mins)	Comments
Acid Scrubbing Flue	78.8	10.44	60	Measurement by Oaktree of similar flue at a different site
Acid scrubbing	78.6	1.0	60	Measurement by Oaktree of similar scrubber at a different site
Shredding	84	1.0	60	Manufacturer data
Gas Furnace	90.2	1.0	60	Manufacturer data
Chiller	75	1.0	60	Manufacturer data
Extraction Unit	75.8	1.6	60	Manufacturer data
Compressor	102	1.0	5	Manufacturer data. A 5 minute on time correction has been chosen as the noise source is infrequent and for short bursts
Metal Crusher	105	1.0	5	CadnaA library data of similar activity as manufacturer data was not available. The crusher is run infrequently and so a 5 minute on time has been chosen. It is also likely an overestimate as the crusher used on site is a small piece of equipment just used for crushing precious metals on a small scale
Forklift	77	1.0	5 movements per hour	Modelled as a moving line source using measurements taken by Oaktree at a similar site

5.3.5 With regards to acoustic correction features/penalties as per B24142:2014, some occasional bangs/crashes are associated with the operation of the sites forklift(scraping on

the floor, reversing alarms, falling material etc), however, considering that the forklift will be located within the building with the roller shutter doors shut most of the time for security reasons, this is considered to be inaudible at those sensitive receptors. However, there will be a tonal element to the noise emanating from the site coming from the internal shredder and external flue systems and therefore a +2dB penalty is deemed necessary to add to the predicted specific sound level as will likely be just perceptible at the NSRs, in particular at the houses to the west of the site at NMP 1. It is considered that based on the residual acoustic environment and distance from source to receptor NMP2 no acoustic correction/penalty is warranted.

5.3.6 Tables 5.2-5.5 below outline the predicted noise levels in comparison to background associated with the application site for the proposed operations. These are based on the results of the modelling detailed below in Figures 5.1 to 5.4. The nighttime models detailed in Figures 5.2 and 5.4 show the effect on sensitive receptors with the flues, chiller and acid scrubber in operation.

Figure 5.1 – Modelling of typical daytime noise sources associated with the site as per the proposed layout (all sources active and shutter doors open), 1.5m height

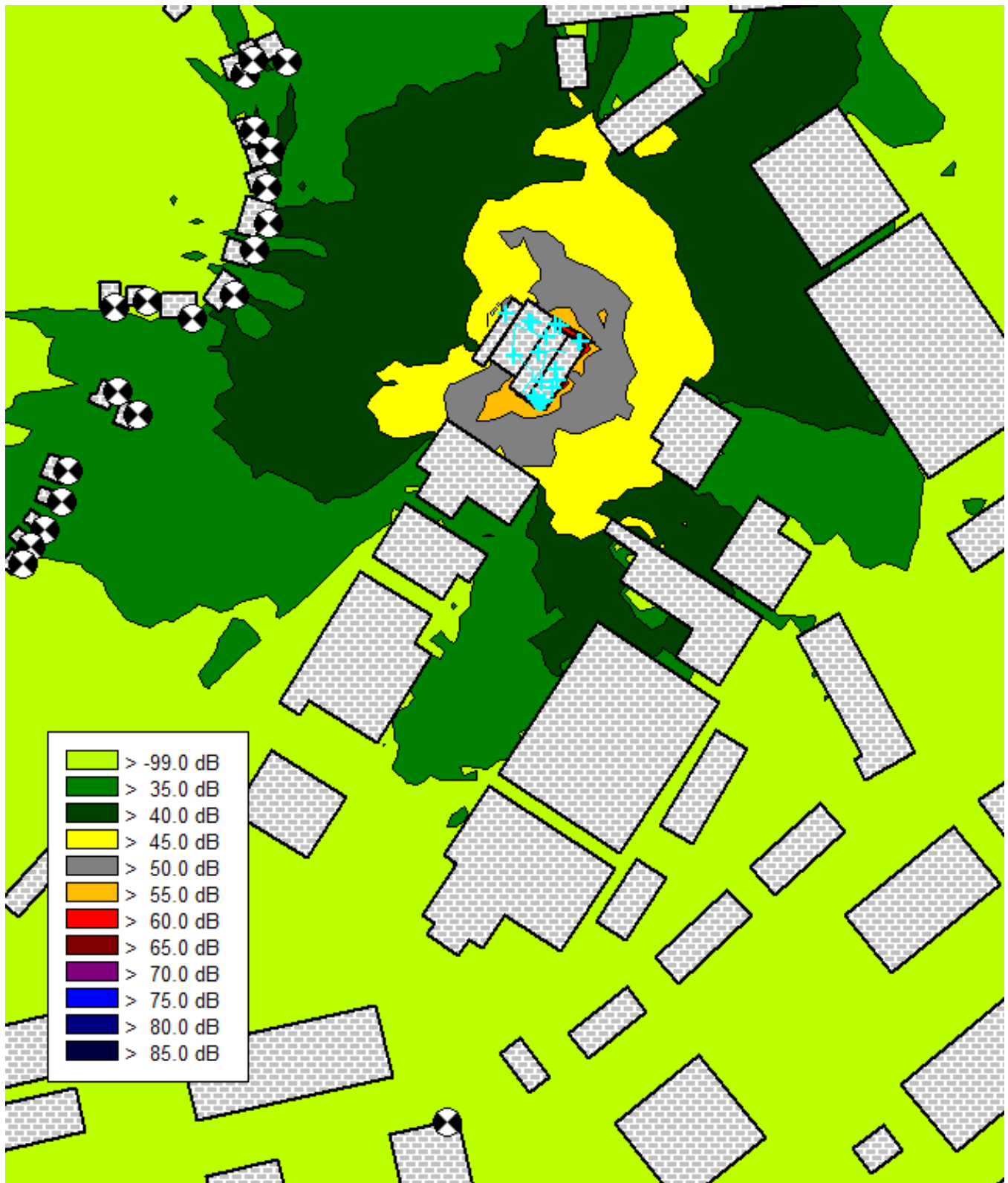


Figure 5.2 – Modelling of typical nighttime noise sources associated with the site as per the proposed layout (all sources active), 4.0m height

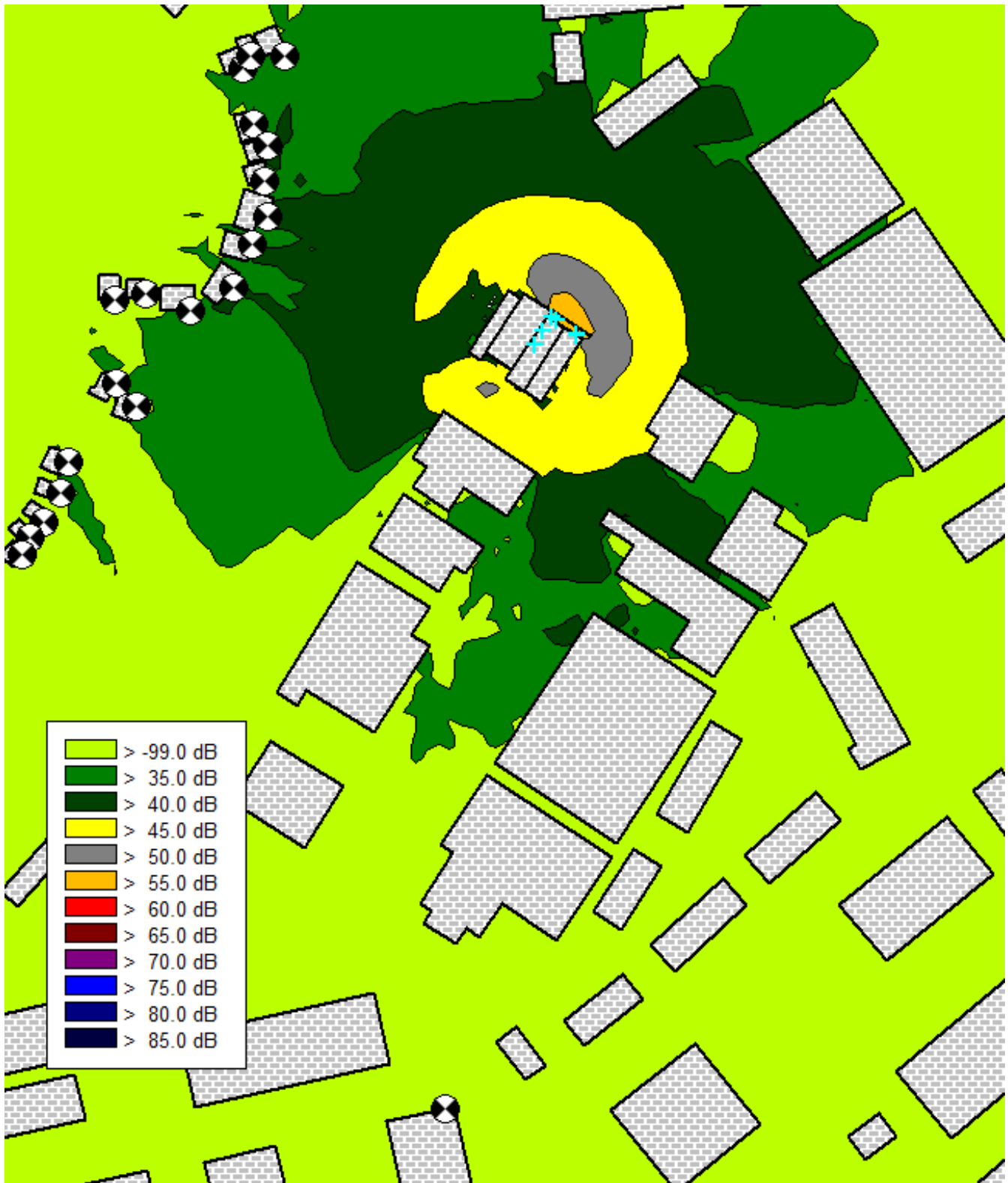


Figure 5.3 – Modelling of mitigated typical daytime noise sources associated with the site as per the proposed layout (all sources active and shutter doors open), 1.5m height

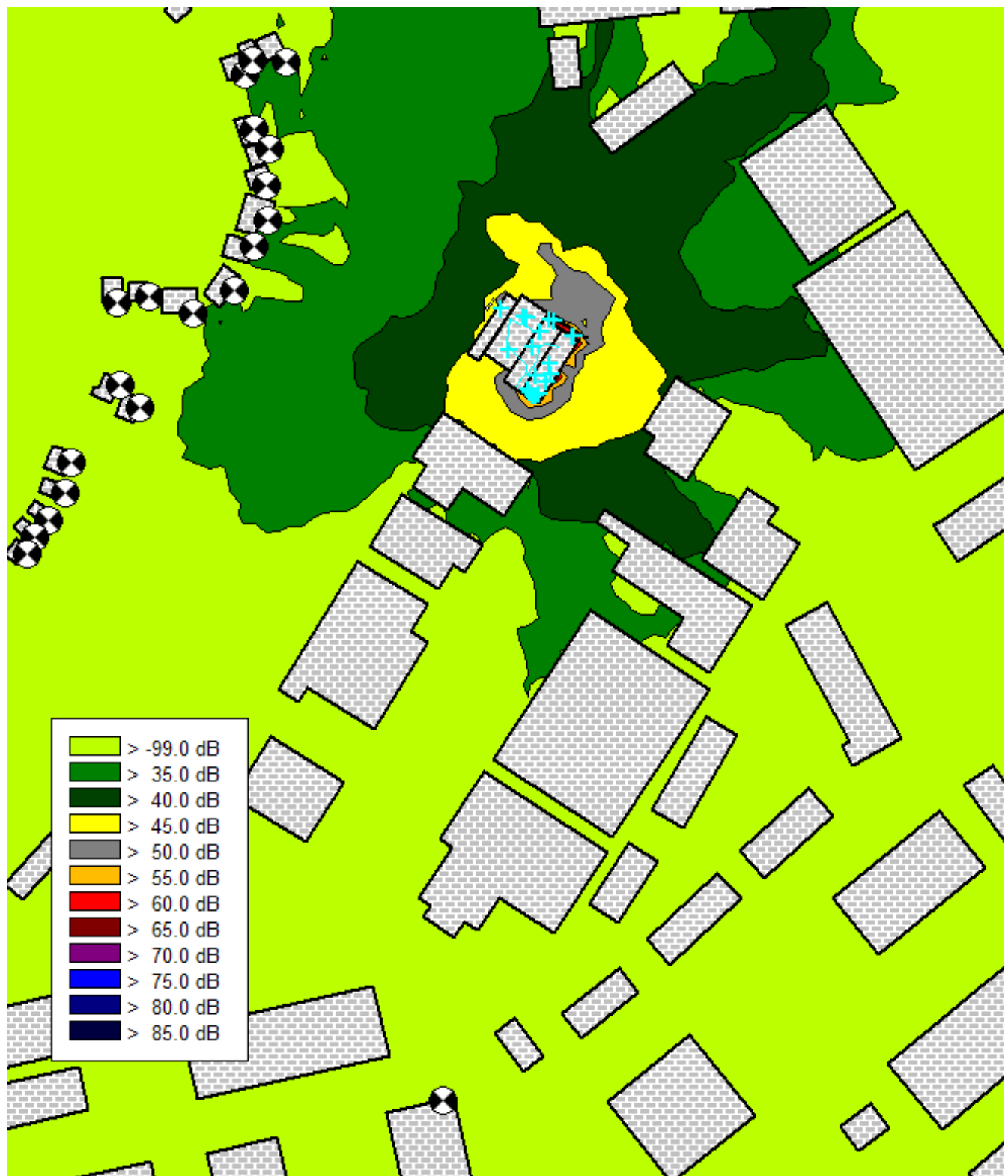


Figure 5.4 – Modelling of mitigated typical nighttime noise sources associated with the site as per the proposed layout (all sources active), 4.0m height

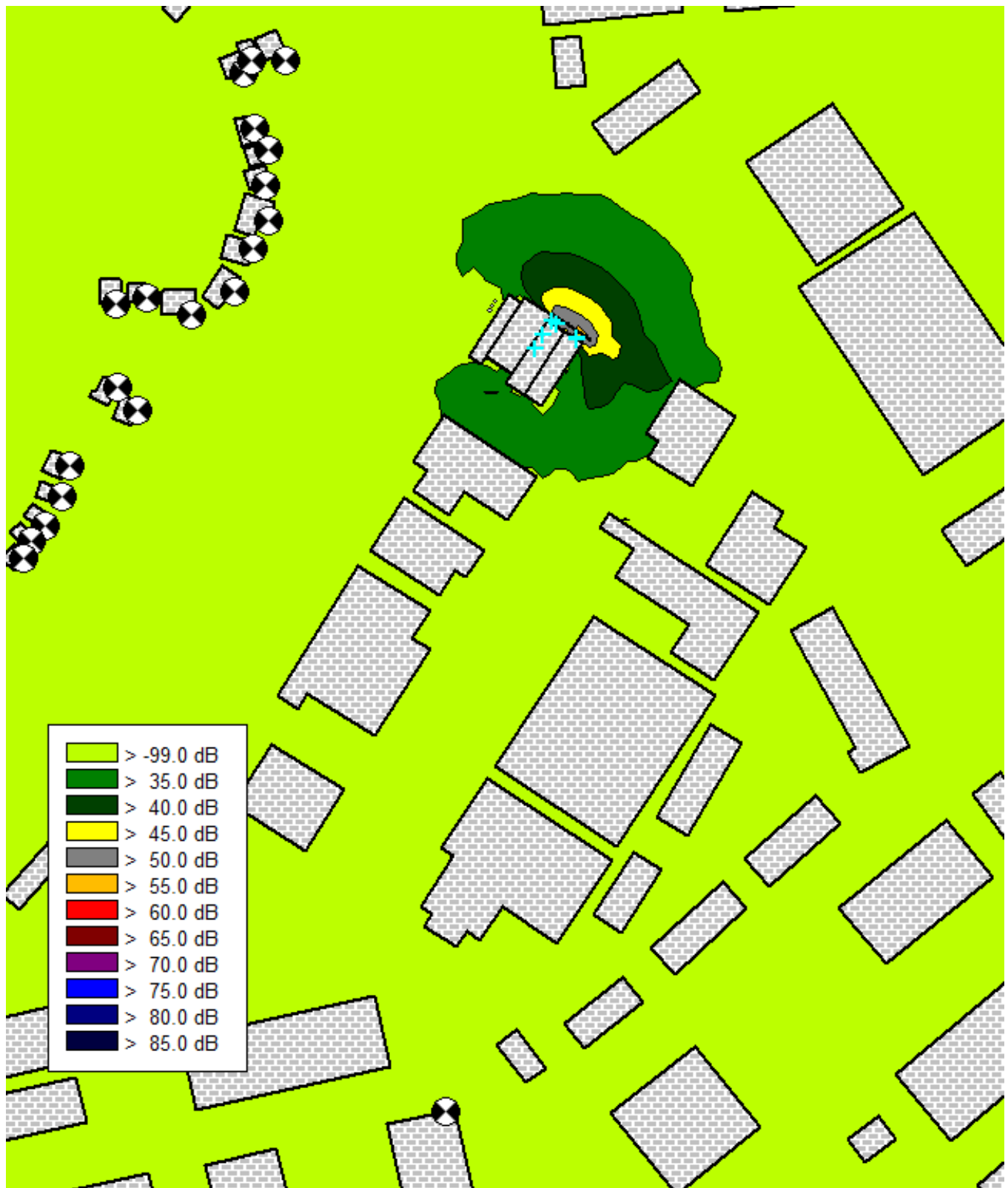


Table 5.2 – Assessment of typical daytime noise sources associated with the site with roller shutter doors open, as per BS4142:2014 derived from above figures. Weekday.

Noise sensitive receptor name	Floor	Sound pressure level at receiver (dBA)	Penalty added	Rating level (dBA)	Background (dB A)	Difference with background (dBA)	Assessment of impact as per BS4142
1	GF	37.7	2	39.7	39	0.7	Low Impact
1	1F	38.9	2	40.9	39	1.9	Low Impact
2	GF	37.9	2	39.9	39	0.9	Low Impact
2	1F	39.0	2	41.0	39	2.0	Low Impact
3	GF	36.6	2	38.6	39	-0.4	No Impact
3	1F	37.7	2	39.7	39	0.7	Low Impact
4	GF	36.9	2	38.9	39	-0.1	No Impact
4	1F	37.8	2	39.8	39	0.8	Low Impact
5	GF	38.2	2	40.2	39	1.2	Low Impact
5	1F	39.4	2	41.4	39	2.4	Low Impact
6	GF	38.6	2	40.6	39	1.6	Low Impact
6	1F	39.8	2	41.8	39	2.8	Low Impact
7	GF	39.3	2	41.3	39	2.3	Low Impact
7	1F	40.5	2	42.5	39	3.5	Low Impact
8	GF	40.2	2	42.2	39	3.2	Low Impact
8	1F	41.4	2	43.4	39	4.4	Low Impact
9	GF	37.9	2	39.9	39	0.9	Low Impact

Noise sensitive receptor name	Floor	Sound pressure level at receiver (dBA)	Penalty added	Rating level (dBA)	Background (dB A)	Difference with background (dBA)	Assessment of impact as per BS4142
9	1F	39.1	2	41.1	39	2.1	Low Impact
10	GF	37.6	2	39.6	39	0.6	Low Impact
10	1F	38.6	2	40.6	39	1.6	Low Impact
11	GF	33.6	2	35.6	39	-3.4	No Impact
11	1F	36.4	2	38.4	39	-0.6	No Impact
12	GF	27.5	2	29.5	39	-9.5	No Impact
12	1F	29.8	2	31.8	39	-7.2	No Impact
13	GF	29.7	2	31.7	39	-7.3	No Impact
13	1F	31.7	2	33.7	39	-5.3	No Impact
14	GF	37.6	2	39.6	39	0.6	Low Impact
14	1F	38.6	2	40.6	39	1.6	Low Impact
15	GF	37.8	2	39.8	39	0.8	Low Impact
15	1F	38.8	2	40.8	39	1.8	Low Impact
16	GF	36.3	2	38.3	39	-0.7	No Impact
16	1F	37.3	2	39.3	39	0.3	Low Impact
17	GF	36.3	2	38.3	39	-0.7	No Impact
17	1F	37.3	2	39.3	39	0.3	Low Impact
18	GF	35.8	2	37.8	39	-1.2	No Impact

Noise sensitive receptor name	Floor	Sound pressure level at receiver (dBA)	Penalty added	Rating level (dBA)	Background (dB A)	Difference with background (dBA)	Assessment of impact as per BS4142
18	1F	37.1	2	39.1	39	0.1	Low Impact
19	GF	35.6	2	37.6	39	-1.4	No Impact
19	1F	37.9	2	39.9	39	0.9	Low Impact
20	GF	34.8	2	36.8	39	-2.2	No Impact
20	1F	37.3	2	39.3	39	0.3	Low Impact
21 (NMP2)	GF	27.9	2	29.9	60	-30.1	No Impact
21 (NMP2)	1F	28.0	2	30.0	60	-30.0	No Impact

Table 5.3 – Assessment of typical nighttime noise sources associated with the site, as per BS4142:2014 derived from above figures. Weekday.

Noise sensitive receptor name	Floor	Sound pressure level at receiver (dB A)	Penalty added (dB)	Rating level (dB A)	Background (dB A)	Difference with background (dB A)	Assessment of impact as per BS4142
1	GF	34.8	2	36.8	31	5.8	Adverse
1	1F	36.2	2	38.2	31	7.2	Adverse
2	GF	36.4	2	38.4	31	7.4	Adverse
2	1F	37.7	2	39.7	31	8.7	Adverse
3	GF	33.9	2	35.9	31	4.9	Low Impact
3	1F	35.0	2	37.0	31	6.0	Adverse

Noise sensitive receptor name	Floor	Sound pressure level at receiver (dB A)	Penalty added (dB)	Rating level (dB A)	Background (dB A)	Difference with background (dB A)	Assessment of impact as per BS4142
4	GF	34.3	2	36.3	31	5.3	Adverse
4	1F	35.0	2	37.0	31	6.0	Adverse
5	GF	36.3	2	38.3	31	7.3	Adverse
5	1F	37.7	2	39.7	31	8.7	Adverse
6	GF	36.8	2	38.8	31	7.8	Adverse
6	1F	38.0	2	40.0	31	9.0	Adverse
7	GF	38.2	2	40.2	31	9.2	Adverse
7	1F	39.3	2	41.3	31	10.3	Significant Adverse
8	GF	39.1	2	41.1	31	10.1	Significant Adverse
8	1F	40.4	2	42.4	31	11.4	Significant Adverse
9	GF	36.4	2	38.4	31	7.4	Adverse
9	1F	37.5	2	39.5	31	8.5	Adverse
10	GF	35.2	2	37.2	31	6.2	Adverse
10	1F	36.1	2	38.1	31	7.1	Adverse

Noise sensitive receptor name	Floor	Sound pressure level at receiver (dB A)	Penalty added (dB)	Rating level (dB A)	Background (dB A)	Difference with background (dB A)	Assessment of impact as per BS4142
11	GF	28.7	2	30.7	31	-0.3	No Impact
11	1F	30.4	2	32.4	31	1.4	Low Impact
12	GF	24.4	2	26.4	31	-4.6	No Impact
12	1F	27.6	2	29.6	31	-1.4	No Impact
13	GF	26.7	2	28.7	31	-2.3	No Impact
13	1F	29.0	2	31.0	31	0.0	No Impact
14	GF	32.7	2	34.7	31	3.7	Low Impact
14	1F	34.2	2	36.2	31	5.2	Adverse
15	GF	33.1	2	35.1	31	4.1	Low Impact
15	1F	34.6	2	36.6	31	5.6	Adverse
16	GF	31.3	2	33.3	31	2.3	Low Impact
16	1F	32.9	2	34.9	31	3.9	Low Impact
17	GF	31.0	2	33.0	31	2.0	Low Impact
17	1F	32.6	2	34.6	31	3.6	Low Impact

Noise sensitive receptor name	Floor	Sound pressure level at receiver (dB A)	Penalty added (dB)	Rating level (dB A)	Background (dB A)	Difference with background (dB A)	Assessment of impact as per BS4142
18	GF	30.5	2	32.5	31	1.5	Low Impact
18	1F	32.1	2	34.1	31	3.1	Low Impact
19	GF	30.2	2	32.2	31	1.2	Low Impact
19	1F	31.8	2	33.8	31	2.8	Low Impact
20	GF	29.9	2	31.9	31	0.9	Low Impact
20	1F	31.5	2	33.5	31	2.5	Low Impact
21 (NMP2)	GF	25.5	2	27.5	35	-7.5	No Impact
21 (NMP2)	1F	23.8	2	25.8	35	-9.2	No Impact

Table 5.4 – Assessment of typical daytime noise sources associated with the site with roller shutter doors open, as per BS4142:2014 derived from above figures. Weekend.

Noise sensitive receptor name	Floor	Sound pressure level at receiver (dBA)	Penalty added (dB)	Rating level (dBA)	Background (dB A)	Difference with background (dBA)	Assessment of impact as per BS4142
1	GF	34.8	2	36.8	40	-3.2	No Impact
1	1F	36.2	2	38.2	40	-1.8	No Impact
2	GF	36.4	2	38.4	40	-1.6	No Impact
2	1F	37.7	2	39.7	40	-0.3	No Impact
3	GF	33.9	2	35.9	40	-4.1	No Impact

Noise sensitive receptor name	Floor	Sound pressure level at receiver (dBA)	Penalty added (dB)	Rating level (dBA)	Background (dB A)	Difference with background (dBA)	Assessment of impact as per BS4142
3	1F	35.0	2	37.0	40	-3.0	No Impact
4	GF	34.3	2	36.3	40	-3.7	No Impact
4	1F	35.0	2	37.0	40	-3.0	No Impact
5	GF	36.3	2	38.3	40	-1.7	No Impact
5	1F	37.7	2	39.7	40	-0.3	No Impact
6	GF	36.8	2	38.8	40	-1.2	No Impact
6	1F	38.0	2	40.0	40	0.0	No Impact
7	GF	38.2	2	40.2	40	0.2	Low Impact
7	1F	39.3	2	41.3	40	1.3	Low Impact
8	GF	39.1	2	41.1	40	1.1	Low Impact
8	1F	40.4	2	42.4	40	2.4	Low Impact
9	GF	36.4	2	38.4	40	-1.6	No Impact
9	1F	37.5	2	39.5	40	-0.5	No Impact
10	GF	35.2	2	37.2	40	-2.8	No Impact
10	1F	36.1	2	38.1	40	-1.9	No Impact
11	GF	28.7	2	30.7	40	-9.3	No Impact
11	1F	30.4	2	32.4	40	-7.6	No Impact
12	GF	24.4	2	26.4	40	-13.6	No Impact

Noise sensitive receptor name	Floor	Sound pressure level at receiver (dBA)	Penalty added (dB)	Rating level (dBA)	Background (dB A)	Difference with background (dBA)	Assessment of impact as per BS4142
12	1F	27.6	2	29.6	40	-10.4	No Impact
13	GF	26.7	2	28.7	40	-11.3	No Impact
13	1F	29.0	2	31.0	40	-9.0	No Impact
14	GF	32.7	2	34.7	40	-5.3	No Impact
14	1F	34.2	2	36.2	40	-3.8	No Impact
15	GF	33.1	2	35.1	40	-4.9	No Impact
15	1F	34.6	2	36.6	40	-3.4	No Impact
16	GF	31.3	2	33.3	40	-6.7	No Impact
16	1F	32.9	2	34.9	40	-5.1	No Impact
17	GF	31.0	2	33.0	40	-7.0	No Impact
17	1F	32.6	2	34.6	40	-5.4	No Impact
18	GF	30.5	2	32.5	40	-7.5	No Impact
18	1F	32.1	2	34.1	40	-5.9	No Impact
19	GF	30.2	2	32.2	40	-7.8	No Impact
19	1F	31.8	2	33.8	40	-6.2	No Impact
20	GF	29.9	2	31.9	40	-8.1	No Impact
20	1F	31.5	2	33.5	40	-6.5	No Impact
21 (NMP2)	GF	25.5	2	27.5	40	-12.5	No Impact

Noise sensitive receptor name	Floor	Sound pressure level at receiver (dBA)	Penalty added (dB)	Rating level (dBA)	Background (dB A)	Difference with background (dBA)	Assessment of impact as per BS4142
21 (NMP2)	1F	23.8	2	25.8	40	-14.2	No Impact

Table 5.5 – Assessment of typical nighttime noise sources associated with the site, as per BS4142:2014 derived from above figures. Weekend

Noise sensitive receptor name	Floor	Sound pressure level at receiver (dB A)	Penalty added	Rating level (dB A)	Background (dB A)	Difference with background (dB A)	Assessment of impact as per BS4142
1	GF	34.8	2	36.8	32	4.8	Low Impact
1	1F	36.2	2	38.2	32	6.2	Adverse
2	GF	36.4	2	38.4	32	6.4	Adverse
2	1F	37.7	2	39.7	32	7.7	Adverse
3	GF	33.9	2	35.9	32	3.9	Low Impact
3	1F	35	2	37	32	5	Adverse
4	GF	34.3	2	36.3	32	4.3	Low Impact
4	1F	35	2	37	32	5	Adverse
5	GF	36.3	2	38.3	32	6.3	Adverse
5	1F	37.7	2	39.7	32	7.7	Adverse
6	GF	36.8	2	38.8	32	6.8	Adverse

Noise sensitive receptor name	Floor	Sound pressure level at receiver (dB A)	Penalty added	Rating level (dB A)	Background (dB A)	Difference with background (dB A)	Assessment of impact as per BS4142
6	1F	38	2	40	32	8	Adverse
7	GF	38.2	2	40.2	32	8.2	Adverse
7	1F	39.3	2	41.3	32	9.3	Adverse
8	GF	39.1	2	41.1	32	9.1	Adverse
8	1F	40.4	2	42.4	32	10.4	Significant Adverse
9	GF	36.4	2	38.4	32	6.4	Adverse
9	1F	37.5	2	39.5	32	7.5	Adverse
10	GF	35.2	2	37.2	32	5.2	Adverse
10	1F	36.1	2	38.1	32	6.1	Adverse
11	GF	28.7	2	30.7	32	-1.3	No Impact
11	1F	30.4	2	32.4	32	0.4	Low Impact
12	GF	24.4	2	26.4	32	-5.6	No Impact
12	1F	27.6	2	29.6	32	-2.4	No Impact
13	GF	26.7	2	28.7	32	-3.3	No Impact

Noise sensitive receptor name	Floor	Sound pressure level at receiver (dB A)	Penalty added	Rating level (dB A)	Background (dB A)	Difference with background (dB A)	Assessment of impact as per BS4142
13	1F	29	2	31	32	-1	No Impact
14	GF	32.7	2	34.7	32	2.7	Low Impact
14	1F	34.2	2	36.2	32	4.2	Low Impact
15	GF	33.1	2	35.1	32	3.1	Low Impact
15	1F	34.6	2	36.6	32	4.6	Low Impact
16	GF	31.3	2	33.3	32	1.3	Low Impact
16	1F	32.9	2	34.9	32	2.9	Low Impact
17	GF	31	2	33	32	1	Low Impact
17	1F	32.6	2	34.6	32	2.6	Low Impact
18	GF	30.5	2	32.5	32	0.5	Low Impact
18	1F	32.1	2	34.1	32	2.1	Low Impact
19	GF	30.2	2	32.2	32	0.2	Low Impact
19	1F	31.8	2	33.8	32	1.8	Low Impact
20	GF	29.9	2	31.9	32	-0.1	No Impact

Noise sensitive receptor name	Floor	Sound pressure level at receiver (dB A)	Penalty added	Rating level (dB A)	Background (dB A)	Difference with background (dB A)	Assessment of impact as per BS4142
20	1F	31.5	2	33.5	32	1.5	Low Impact
21 (NMP2)	GF	25.5	2	27.5	37	-9.5	No Impact
21 (NMP2)	1F	23.8	2	25.8	37	-11.2	No Impact

5.3.7 As can be seen in the results in the tables above, there is low to no impact during the daytime periods for weekday and weekend. However, during the nighttime periods, there is a risk of adverse and significant adverse impacts. This is due to the noise from the flues. Therefore, scenarios have been modelled with attenuation on the flues of 11dB and the results are shown in tables 5.6-5.8, below. The value of 11dB is the lowest value of mitigation required to decrease the noise impacts to a significant level. Ultimately, it will require a conversation with the manufacturers to attain suitable attenuation. Any improvement on 11dB attenuation would obviously benefit the site so it is recommended that any attenuation to the flues be as robust as possible. Weekend daytime has not been assessed as the predicted rating level shows no impact.

Table 5.6 – Assessment of mitigated typical daytime noise sources associated with the site with roller shutter doors open, as per BS4142:2014 derived from above figures. Weekday.

Noise sensitive receptor name	Floor	Sound pressure level at receiver (dBA)	Penalty added (dB)	Rating level (dBA)	Background (dB A)	Difference with background (dBA)	Assessment of impact as per BS4142
1	GF	33.3	2	35.3	39	-3.7	No Impact
1	1F	34.2	2	36.2	39	-2.8	No Impact
2	GF	33.2	2	35.2	39	-3.8	No Impact
2	1F	34.0	2	36.0	39	-3.0	No Impact

Noise sensitive receptor name	Floor	Sound pressure level at receiver (dBA)	Penalty added (dB)	Rating level (dBA)	Background (dB A)	Difference with background (dBA)	Assessment of impact as per BS4142
3	GF	33.7	2	35.7	39	-3.3	No Impact
3	1F	34.8	2	36.8	39	-2.2	No Impact
4	GF	34.0	2	36.0	39	-3.0	No Impact
4	1F	35.1	2	37.1	39	-1.9	No Impact
5	GF	34.2	2	36.2	39	-2.8	No Impact
5	1F	35.1	2	37.1	39	-1.9	No Impact
6	GF	34.6	2	36.6	39	-2.4	No Impact
6	1F	35.8	2	37.8	39	-1.2	No Impact
7	GF	34.0	2	36.0	39	-3.0	No Impact
7	1F	35.3	2	37.3	39	-1.7	No Impact
8	GF	34.8	2	36.8	39	-2.2	No Impact
8	1F	35.8	2	37.8	39	-1.2	No Impact
9	GF	33.4	2	35.4	39	-3.6	No Impact
9	1F	34.7	2	36.7	39	-2.3	No Impact
10	GF	34.4	2	36.4	39	-2.6	No Impact
10	1F	35.7	2	37.7	39	-1.3	No Impact
11	GF	31.7	2	33.7	39	-5.3	No Impact
11	1F	35.1	2	37.1	39	-1.9	No Impact

Noise sensitive receptor name	Floor	Sound pressure level at receiver (dBA)	Penalty added (dB)	Rating level (dBA)	Background (dB A)	Difference with background (dBA)	Assessment of impact as per BS4142
12	GF	24.7	2	26.7	39	-12.3	No Impact
12	1F	26.2	2	28.2	39	-10.8	No Impact
13	GF	26.8	2	28.8	39	-10.2	No Impact
13	1F	28.4	2	30.4	39	-8.6	No Impact
14	GF	33.5	2	35.5	39	-3.5	No Impact
14	1F	34.3	2	36.3	39	-2.7	No Impact
15	GF	33.5	2	35.5	39	-3.5	No Impact
15	1F	34.4	2	36.4	39	-2.6	No Impact
16	GF	33.1	2	35.1	39	-3.9	No Impact
16	1F	34.0	2	36.0	39	-3.0	No Impact
17	GF	33.3	2	35.3	39	-3.7	No Impact
17	1F	34.2	2	36.2	39	-2.8	No Impact
18	GF	32.8	2	34.8	39	-4.2	No Impact
18	1F	34.2	2	36.2	39	-2.8	No Impact
19	GF	32.6	2	34.6	39	-4.4	No Impact
19	1F	35.9	2	37.9	39	-1.1	No Impact
20	GF	32.4	2	34.4	39	-4.6	No Impact
20	1F	35.7	2	37.7	39	-1.3	No Impact

Noise sensitive receptor name	Floor	Sound pressure level at receiver (dBA)	Penalty added (dB)	Rating level (dBA)	Background (dB A)	Difference with background (dBA)	Assessment of impact as per BS4142
21 (NMP2)	GF	24.1	2	26.1	60	-33.9	No Impact
21 (NMP2)	1F	25.3	2	27.3	60	-32.7	No Impact

Table 5.7 – Assessment of typical mitigated nighttime noise sources associated with the site, as per BS4142:2014 derived from above figures. Weekday.

Noise sensitive receptor name	Floor	Sound pressure level at receiver (dB A)	Penalty added (dB)	Rating level (dB A)	Background (dB A)	Difference with background (dB A)	Assessment of impact as per BS4142
1	GF	23.9	2	25.9	31	-5.1	No Impact
1	1F	25.3	2	27.3	31	-3.7	No Impact
2	GF	25.5	2	27.5	31	-3.5	No Impact
2	1F	26.7	2	28.7	31	-2.3	No Impact
3	GF	23.7	2	25.7	31	-5.3	No Impact
3	1F	24.8	2	26.8	31	-4.2	No Impact
4	GF	24.2	2	26.2	31	-4.8	No Impact
4	1F	25.0	2	27.0	31	-4.0	No Impact
5	GF	25.5	2	27.5	31	-3.5	No Impact
5	1F	26.8	2	28.8	31	-2.2	No Impact

Noise sensitive receptor name	Floor	Sound pressure level at receiver (dB A)	Penalty added (dB)	Rating level (dB A)	Background (dB A)	Difference with background (dB A)	Assessment of impact as per BS4142
6	GF	26.1	2	28.1	31	-2.9	No Impact
6	1F	27.3	2	29.3	31	-1.7	No Impact
7	GF	27.4	2	29.4	31	-1.6	No Impact
7	1F	28.5	2	30.5	31	-0.5	No Impact
8	GF	28.3	2	30.3	31	-0.7	No Impact
8	1F	29.5	2	31.5	31	0.5	Low Impact
9	GF	25.7	2	27.7	31	-3.3	No Impact
9	1F	26.8	2	28.8	31	-2.2	No Impact
10	GF	25.5	2	27.5	31	-3.5	No Impact
10	1F	26.4	2	28.4	31	-2.6	No Impact
11	GF	17.8	2	19.8	31	-11.2	No Impact
11	1F	19.5	2	21.5	31	-9.5	No Impact
12	GF	14.0	2	16.0	31	-15.0	No Impact
12	1F	17.0	2	19.0	31	-12.0	No Impact

Noise sensitive receptor name	Floor	Sound pressure level at receiver (dB A)	Penalty added (dB)	Rating level (dB A)	Background (dB A)	Difference with background (dB A)	Assessment of impact as per BS4142
13	GF	15.9	2	17.9	31	-13.1	No Impact
13	1F	18.1	2	20.1	31	-10.9	No Impact
14	GF	21.8	2	23.8	31	-7.2	No Impact
14	1F	23.3	2	25.3	31	-5.7	No Impact
15	GF	22.3	2	24.3	31	-6.7	No Impact
15	1F	23.7	2	25.7	31	-5.3	No Impact
16	GF	20.4	2	22.4	31	-8.6	No Impact
16	1F	22.0	2	24.0	31	-7.0	No Impact
17	GF	20.1	2	22.1	31	-8.9	No Impact
17	1F	21.7	2	23.7	31	-7.3	No Impact
18	GF	19.6	2	21.6	31	-9.4	No Impact
18	1F	21.2	2	23.2	31	-7.8	No Impact
19	GF	19.3	2	21.3	31	-9.7	No Impact
19	1F	20.8	2	22.8	31	-8.2	No Impact

Noise sensitive receptor name	Floor	Sound pressure level at receiver (dB A)	Penalty added (dB)	Rating level (dB A)	Background (dB A)	Difference with background (dB A)	Assessment of impact as per BS4142
20	GF	19.0	2	21.0	31	-10.0	No Impact
20	1F	20.6	2	22.6	31	-8.4	No Impact
21 (NMP2)	GF	14.6	2	16.6	35	-18.4	No Impact
21 (NMP2)	1F	12.9	2	14.9	35	-20.1	No Impact

Table 5.8 – Assessment of mitigated typical nighttime noise sources associated with the site, as per BS4142:2014 derived from above figures. Weekend

Noise sensitive receptor name	Floor	Sound pressure level at receiver (dBA)	Penalty added (dB)	Rating level (dBA)	Background (dB A)	Difference with background (dBA)	Assessment of impact as per BS4142
1	GF	23.9	2	25.9	32	-6.1	No Impact
1	1F	25.3	2	27.3	32	-4.7	No Impact
2	GF	25.5	2	27.5	32	-4.5	No Impact
2	1F	26.7	2	28.7	32	-3.3	No Impact
3	GF	23.7	2	25.7	32	-6.3	No Impact
3	1F	24.8	2	26.8	32	-5.2	No Impact
4	GF	24.2	2	26.2	32	-5.8	No Impact
4	1F	25	2	27	32	-5	No Impact
5	GF	25.5	2	27.5	32	-4.5	No Impact
5	1F	26.8	2	28.8	32	-3.2	No Impact

Noise sensitive receptor name	Floor	Sound pressure level at receiver (dBA)	Penalty added (dB)	Rating level (dBA)	Background (dB A)	Difference with background (dBA)	Assessment of impact as per BS4142
6	GF	26.1	2	28.1	32	-3.9	No Impact
6	1F	27.3	2	29.3	32	-2.7	No Impact
7	GF	27.4	2	29.4	32	-2.6	No Impact
7	1F	28.5	2	30.5	32	-1.5	No Impact
8	GF	28.3	2	30.3	32	-1.7	No Impact
8	1F	29.5	2	31.5	32	-0.5	No Impact
9	GF	25.7	2	27.7	32	-4.3	No Impact
9	1F	26.8	2	28.8	32	-3.2	No Impact
10	GF	25.5	2	27.5	32	-4.5	No Impact
10	1F	26.4	2	28.4	32	-3.6	No Impact
11	GF	17.8	2	19.8	32	-12.2	No Impact
11	1F	19.5	2	21.5	32	-10.5	No Impact
12	GF	14	2	16	32	-16	No Impact
12	1F	17	2	19	32	-13	No Impact
13	GF	15.9	2	17.9	32	-14.1	No Impact
13	1F	18.1	2	20.1	32	-11.9	No Impact
14	GF	21.8	2	23.8	32	-8.2	No Impact
14	1F	23.3	2	25.3	32	-6.7	No Impact

Noise sensitive receptor name	Floor	Sound pressure level at receiver (dBA)	Penalty added (dB)	Rating level (dBA)	Background (dB A)	Difference with background (dBA)	Assessment of impact as per BS4142
15	GF	22.3	2	24.3	32	-7.7	No Impact
15	1F	23.7	2	25.7	32	-6.3	No Impact
16	GF	20.4	2	22.4	32	-9.6	No Impact
16	1F	22	2	24	32	-8	No Impact
17	GF	20.1	2	22.1	32	-9.9	No Impact
17	1F	21.7	2	23.7	32	-8.3	No Impact
18	GF	19.6	2	21.6	32	-10.4	No Impact
18	1F	21.2	2	23.2	32	-8.8	No Impact
19	GF	19.3	2	21.3	32	-10.7	No Impact
19	1F	20.8	2	22.8	32	-9.2	No Impact
20	GF	19	2	21	32	-11	No Impact
20	1F	20.6	2	22.6	32	-9.4	No Impact
21 (NMP2)	GF	14.6	2	16.6	37	-20.4	No Impact
21 (NMP2)	1F	12.9	2	14.9	37	-22.1	No Impact

5.3.8 As per Tables 5.7 to 5.9, with the proposed mitigation, the rating level associated with the operation of the site is at or below background noise levels for all scenarios. Therefore, provided the suggested mitigation is put in place, there should be no risk of noise impact from the site.

5.3.9 It should of course be observed that the assessment comprises a potential over estimation of the rating level, with numerous worst-case assumptions being made, for example the orders of reflection and “on-times” assumed within the model are unlikely to be representative of the typical day to day operation of the site as all sources won’t be running simultaneously.

6 Best Available Techniques

6.1 Summary & Recommendations

6.1.1 The following will be considered when operating the site:

- Prevent generation of noise by good design and maintenance
- Daily maintenance checks – operational and maintenance staff
- Preventative maintenance schedule – based on manufactures guidance and historical data, experience. Pro-active and pre-emptive maintenance
- Noise monitoring and audits – noise monitoring as part of the daily site inspection, any abnormal findings are recorded in the site log and reported to the site supervisor. Rattles, hums, squeaks, relief valves, irregular sounds recorded etc
- Prioritising maintenance activities – short and long-term action plans, monitor reliability.
- Critical spares or supplier identified – spares available on demand.
- Daily operational checks - external doors are closed when not in use, hatchways or access doors left open, acoustic hoods not attached/fixed correctly, engines idling when not in use, suitable PPE being used as required.
- Daily operational checks – perimeter checks to assess noise levels, changes in level tone, intermittent noise, nuisance noise. This noise assessment is subjective, dependent on experience, familiarisation.
- Records – site logs record operational and maintenance issues/findings.
- Communication – open 2-way communication, listen to concerns raised, investigate as required and feedback to group or individual.
- Procurement – equipment selection, noise rating, inclusive attenuation, replacement policy, life cycle of product
- Signage – Appropriate signage denoting noise control areas and quiet zones.

6.1 Site specific noise control techniques include the following:

- Attenuate the flues
- Majority of operations are internal with the roller shutter door only being open at times of deliveries which are infrequent.
- Barrier around the principal noise source (acid scrubber, external) this will lessen the affect at NMP 1 in particular.

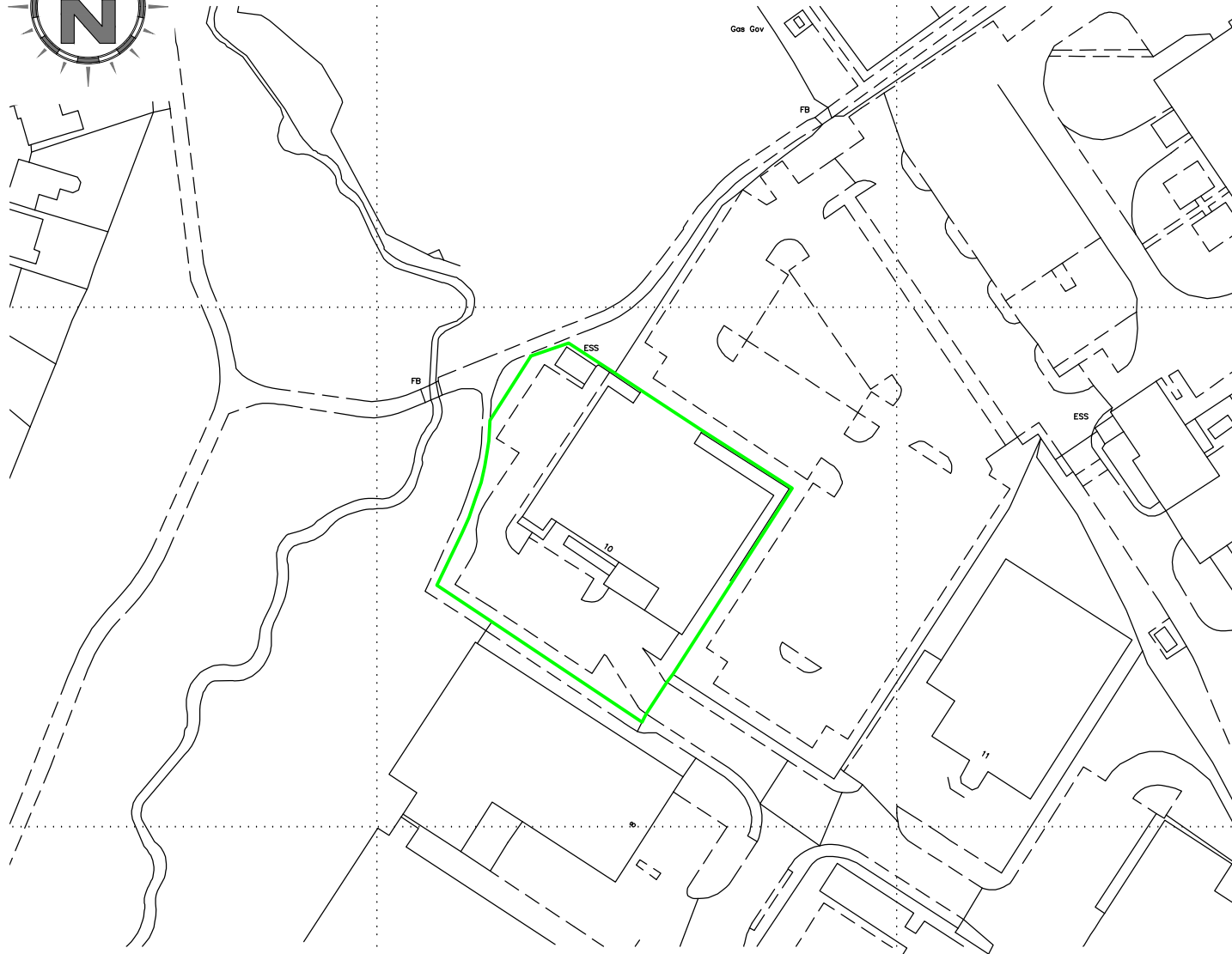
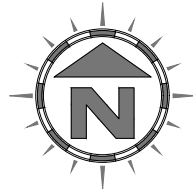
7 Conclusion

7.1 Summary & Recommendations

- 7.1.1 Oaktree Environmental Limited have undertaken an NIA for the proposed operation of a facility for the recovery of precious metals from wastes, to be situated at 10 Merse Rd, Moons Moat North Industrial Estate, Redditch B98 9HF.
- 7.1.2 The primary receptors are the residential dwellings on Hillmorton Close to the West.
- 7.1.3 The NIA has been updated to include additional background noise monitoring data, additional information and review of previous assumptions, in response to a Request for Further Information from the EA.
- 7.1.4 The NIA includes details of the site layout. Currently the site is arranged as per Drawing No. 2765-010-03 rev G.
- 7.1.5 The NIA found that with the site operating as proposed (without additional mitigation) there would be potential for significant adverse impacts at some of the noise receptors. However, mitigation strategies have been suggested and with the implementation of the mitigation there will be no impact as a result of noise from the site.
- 7.1.6 Reference should be made to Tables 5.7, 5.8 and 5.9 which demonstrate a significant reduction in noise impact at the NSRs following the proposed mitigation.
- 7.1.7 The proposed layout of the site has been designed with acoustic issues in mind and the site has been assessed with regards to BS4142 and in conjunction with BS8233 for the external amenity areas. The NIA has demonstrated that with appropriate/recommended mitigation in place, resulting noise levels will be equal to or below background levels at sensitive receptor locations.

Appendix I

Drawings



NOTES

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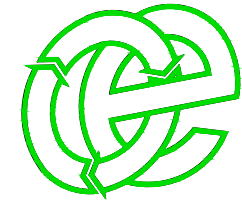
REVISION HISTORY

Rev:	Date:	Init:	Description:
-	05.12.22	JH	Initial drawing
A	05.01.23	IA	Address update
B	17.04.23	IA	Drawing title change

KEY:

 EP Permit boundary

Oaktree Environmental Ltd
Waste, Planning and Environmental Consultants



DRAWING TITLE
EP PERMIT BOUNDARY PLAN

CLIENT
Kaug Refinery Services Ltd

PROJECT/SITE
10 Merse Road, North Moons Moat, Redditch, B98 9HL

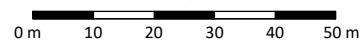
SCALE @ A4	CLIENT NO	JOB NO
1:1,250	2765	010

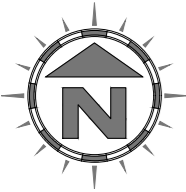
DRAWING NUMBER	REV	STATUS
2765-010-02	B	Issued

DRAWN BY	CHECKED	DATE
JH/IA	RS	17.04.23

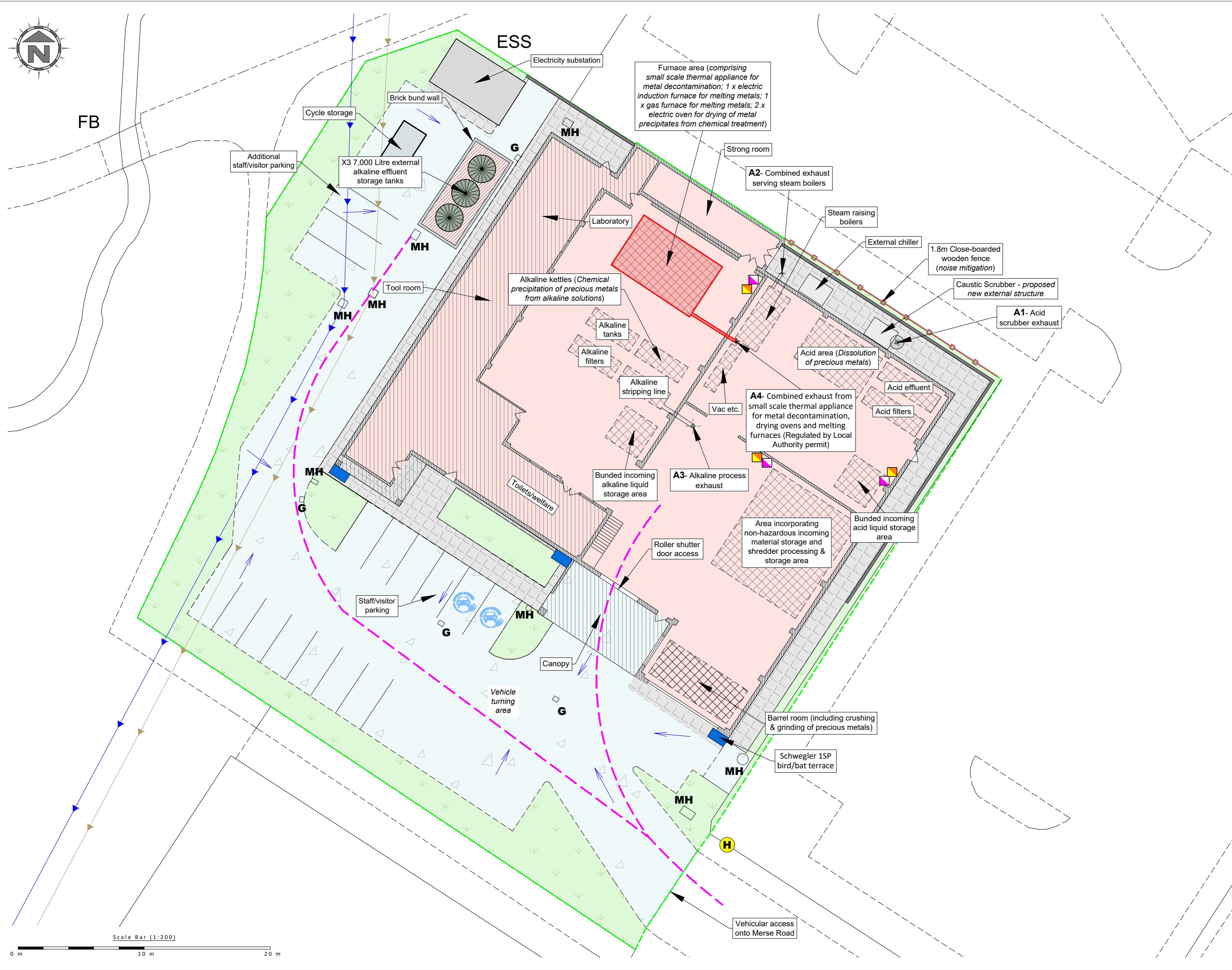
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Scale Bar (1:1,250)





FB

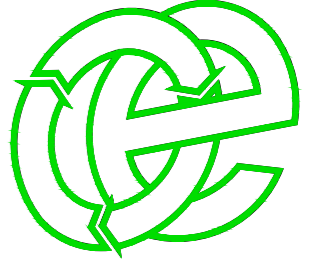


NOTES
 Site survey undertaken using Intel Falcon 8+ drone in September 2022. Ordnance Survey data reproduced with the permission of the controller of H.M.S.O. Crown copyright licence No. 100022432. This drawing is copyright and property of Oaktree Environmental Ltd.

Rev:	Date:	Init:	Description:
-	05.12.22	JH	Initial drawing
A	15.12.22	IA/JH	Drawing amendments
B	05.01.23	IA	Address update
C	22.03.23	IA	Layout changes
D	17.04.23	IA	Drawing amendments
E	04.05.23	IA	EA comments
F	28.07.23	IA	Drawing amendments
G	22.01.24	IA	Application resubmission

- KEY:**
- Waste EP Permit boundary (regulated by Environment Agency)
 - Part B Permit boundary (regulated by Local Authority)
 - Sealed buildings
 - Concreted areas
 - Spill kit
 - Firefighting equipment
 - Access routes for emergency vehicles
 - H Hydrant
 - MH** Manhole
 - G** Gully
 - Fall direction arrows
 - Paved areas
 - Un-surfaced areas

Oaktree Environmental Ltd
 Waste, Planning and Environmental Consultants



DRAWING TITLE
 SITE LAYOUT PLAN

CLIENT
 Kaug Refinery Services Ltd

PROJECT/SITE
 10 Merse Road, North Moons Moat, Redditch, B98 9HL

SCALE @ A2 1:200 **CLIENT NO** 2765 **JOB NO** 010

DRAWING NUMBER 2765-010-03 **REV** G **STATUS** Issued

DRAWN BY JH/IA **CHECKED** RS/DY **DATE** 22.01.24

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Appendix II

Nova Acoustics Background data (separate excel spreadsheet)

Appendix II

Updated Noise and Vibration Management Plan

NOISE & VIBRATION MANAGEMENT PLAN

10 Merse Road, Redditch

Kaug Refinery Services Limited

Version:	1.7	Date:	19/07/2024		
Doc. Ref:	2765-010-NVMP	Author(s):	JU/JC	Checked:	DY
Client No:	2765	Job No:	010		



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Document History:

Version	Issue date	Author	Checked	Description
1.0	15/12/2022	TB	DY	Internal draft
1.1	06/01/2023	TB	DY	Amended following client comment
1.2	14/04/2023	TB	DY	Submitted to LPA with planning application
1.3	13/07/2023	IA/TB	DY	Submitted to EA
1.4	18/08/2023	TB	DY	Operational hours amended Noise management table amended
1.5	29/08/2023	TB	DY	Submitted to LPA
1.6	01/03/2024	TB	DY	Updated for permit application
1.7	19/07/2024	JU/JC	JC	Updated based on updated NIA and comments made by the EA.

CONTENTS

DOCUMENT HISTORY:	1
CONTENTS	2
LIST OF TABLES	3
LIST OF APPENDICES:	3
1 INTRODUCTION	4
1.1 SITE HISTORY / BACKGROUND	4
1.2 SITE LOCATION	4
1.3 HOURS OF OPERATION	5
1.4 ENVIRONMENTAL REGULATION	5
2 SENSITIVE RECEPTORS	6
2.1 SITE RECEPTORS	6
2.2 OTHER NOISE SOURCES	6
3 SITE OPERATIONS	7
3.1 WASTE DELIVERIES.....	7
3.2 PLANT AND EQUIPMENT.....	7
4 NOISE MANAGEMENT AND CONTROLS	9
4.1 NOISE SENSITIVE RECEPTORS	9
4.2 NOISE SOURCES	9
4.3 NOISE MANAGEMENT TABLE	9
4.4 RECORDING.....	14
4.5 EMERGENCIES.....	14
5 ACTIONS WHEN COMPLAINTS ARE RECEIVED	15
5.1 COMPLAINTS PROCEDURE	15
5.2 COMPLAINTS RECORDING	16
6 TRAINING	18
6.1 TRAINING REGIME.....	18
6.2 VEHICLE / PLANT PREVENTATIVE MAINTENANCE TRAINING	18
6.3 LIAISON WITH NEIGHBOURS.....	18

List of Tables

Table 2.1 – Distances to Selected, Representative Sensitive Locations.....	6
Table 3.1 – Plant and Machinery to be Used on Site	7

List of Appendices:

Appendix I	-	Drawings
		Drawing No. 2765/010/02 – Permit Boundary Plan
		Drawing No. 2765/010/03 – Proposed Layout Plan
Appendix II	-	Complaints Procedure and Recording Form

1 Introduction

1.1 Site history / background

1.1.1 Oaktree Environmental Ltd have prepared a Noise & Vibration Management Plan (NVMP) for a site situated at 10 Merse Road, Redditch. This has been prepared in support of an Environmental Permit (EP) application for the proposed operation of a facility for the recovery of precious metals from wastes. This has been updated following a recent request from the Environment Agency (EA) for more information, dated 24/06/2024.

1.1.2 The proposed operation comprises a specialist facility for the recovery and recycling of precious metals from various metal containing wastes. Up to 250 tonnes per annum of metal containing wastes will be imported to site. Various processing operations will be undertaken to recover precious metals from the waste streams.

1.1.3 This NVMP will assess risks arising from the operations and allow Kaug Refinery Services Limited to implement appropriate mitigation measures. The measures outlined in this NVMP will be put in place by site management of Kaug Refinery Services Limited to ensure noise and vibration is controlled using Best practicable means (BPM) to ensure the receptors listed in Section 2 below are not affected by the above proposals.

1.2 Site location

1.2.1 The site includes an existing building comprising industrial and office use with associated parking area. The site is located within a wider industrial estate/area and therefore suitable for this type of development. It is understood that the existing building has been in recent active industrial/commercial use. At present, parking for staff and visitors is provided to the South-Western and North-Western side of the building. The site is accessed via Merse Road, via a dedicated access point.

- 1.2.2 Reference should be made to Drawing No. 2765-010-02 for the general location of the site and permit boundary. All references to 'the site' in this statement shall mean this area.

1.3 Hours of Operation

- 1.3.1 The site will routinely operate during the following hours:

Monday to Friday	06:00 – 17:00
Saturdays	No operations
Sundays and Bank Holidays	No operations

- 1.3.2 The abatement plant (scrubber) serving the acid processing area and the alkaline process area extraction system will both be run for 24 hours per day, consistent with operations at the applicant's existing site. This is to ensure that any residual fumes are abated/dispersed whilst the system is cooling down. However, there will be no operation of waste processing plant, including chemical, physical and thermal processing, nor delivery or export of materials to and from site outside of the above hours.

1.4 Environmental Regulation

- 1.4.1 An EP will be required to be in place for the site, with day-to-day operations regulated by the EA. Potential impacts on air, land and water will be fully controlled and regulated under the EP.

2 Sensitive Receptors

2.1 Site receptors

2.1.1 The receptors are detailed in the table below with approximate distances outlined. Receptors which are over 500m from the site have not been included within the table below as it is considered that they will not be affected by any potential noise pollution arising from the site.

Table 2.1 – Distances to Selected, Representative Sensitive Locations

Boundary	Receptor	Approximate distance from boundary of site (m)
West	Dwellings off Hillmorton Close	90
West	Dwellings off Latchford Close	140
West	Dwellings off Fairford Close	225
South west	Offices located on the Industrial estate/Off Eagle Road	400

2.2 Other noise sources

2.2.1 There are numerous additional noise sources within the vicinity of the site given its location within the Moons Moat North Industrial Estate. These include but are not limited to; several warehouses, manufacturing processes, metal fabricators and truck repair services.

3 Site Operations

3.1 Waste deliveries

3.1.1 Waste will be delivered and removed from the site via the existing access to the south of the site. Upon arrival, an operative will direct the driver to access the building via the roller shutter along the southern façade. This will only be open at time of delivery.

3.1.2 Deliveries/removals from the site will primarily consist of Kaug Refinery Services Limited’s own vehicles/contracts in the form of transit vans and LGVs.

3.2 Plant and equipment

3.2.1 The table below details the plant/equipment to be used on site. Only trained operators will be permitted to drive/operate the plant/equipment listed below.

Table 3.1 – Plant and Machinery to be Used on Site

Type of plant/equipment	No.
Air compressor	1
Steam raising boiler	2
Shredder	1
Barrelling/sieving equipment	1
Acid fume scrubbing system	1
Acid effluent storage tanks	5
Water chilling system	1
Gas fired thermal appliance for metal contamination with fume scrubbing system	1
Gas fired furnace	1
Induction furnace	1
Electric dying oven	1
Alkali extraction system	1
Alkali cyanide stripping line with barrel and hoist	1
Alkaline effluent storage tanks	3
Exhaust flues	4

3.2.2 The vast majority of plant is considered negligible however has been included in the noise model.

- 3.2.3 All plant on site will be subject to annual manufacturer maintenance to ensure in proper working order. This will be in the form of service contracts, as applicable.

4 Noise Management and Controls

4.1 Noise Sensitive Receptors

4.1.1 The site lies within an industrial setting with the nearest noise sensitive residential receptors located 90m to the west. The layout of the site has been planned in order to contain all the required operations and activities within the site, thus limiting the impacts from noise on the above receptors.

4.1.2 In terms of potential noise impact, whilst the development proposed will be operated using the Best Practicable Means at all times, this site-specific NVMP has been prepared in order to ensure the noise levels at the site can be managed appropriately and reduce any impact on the surrounding receptors.

4.2 Noise Sources

4.2.1 The main sources of noise which could arise from the site operations are as follows:

- a) Ventilation noise associated with the 4no. flues.
- b) Operation of the PCB shredder,
- c) Small vehicles travelling to and from the site (e.g. staff and visitor's cars, courier van deliveries etc.)
- d) Repairs
- e) Caustic scrubber (external)

4.3 Noise Management Table

4.3.1 A site-specific NVMP table overleaf details the above noise sources and how the current and proposed infrastructure on site will reduce the impact of noise to surrounding properties.

4.3.2 In addition to the existing controls in this NVMP, the complaints procedure further discussed in section 5 will be used if any noise complaints are received. If a noise complaint is received and the applicant has been made aware, immediate action will

take place reviewing and identifying whether any changes to existing procedures are required or if new procedures need to be put in place. Any changes which may be required will be implemented immediately.

Source(s)	Receptor(s)	Consequence	Magnitude of noise source	Characteristic of noise source	Probability of noise disturbance	Remedial Action / Recommendations / Comments	Assessment Outcome following actions / recommendations
LGVs travelling to and from the site for delivery / collection of waste	See Section 2	Noise pollution	Low	Continuous (Low Pitch)	Low	<p>Engines will be switched off when the vehicles are not being used.</p> <p>The existing access road to the operational area site will be maintained in good state of repair to prevent unnecessary noise being generated.</p> <p>Implementation of a 5mph speed limit onsite.</p> <p>All drivers are required to enter and exit the site with due consideration for neighbours.</p> <p>All mobile plant and other vehicles used will benefit from white noise reverse alarms.</p> <p>A no idling policy will be in place and staff/third party drivers will be told not to rev engines.</p>	Low
Operation of the PCB shredder	See Section 2	Noise pollution	Low	Continuous (Low Pitch)	Low	<p>Management will ensure that all plant operated by Kaug Refinery Services Limited is functioning suitably i.e. moving parts to be regularly lubricated.</p> <p>Any malfunctions in plant i.e. missing screws/bolts which result in excessive noise will be de-commissioned until an alternative loading plant sourced.</p> <p>Roller shutter doors to remain closed outside of times when materials are delivered/exported to and from site.</p>	Low

Source(s)	Receptor(s)	Consequence	Magnitude of noise source	Characteristic of noise source	Probability of noise disturbance	Remedial Action / Recommendations / Comments	Assessment Outcome following actions / recommendations
Extraction system	See Section 2	Noise pollution	Low	Continuous (Low Pitch)	Low	Mitigation of noise from the associated flues will be implemented to ensure noise is controlled to an acceptable level. Noise will need to be attenuated by 11dB (to be confirmed by the manufacturer). Any malfunctions in plant i.e. missing screws/bolts which result in excessive noise will be de-commissioned until an alternative loading plant sourced.	Low
Small vehicles travelling to and from the site (e.g. staff and visitor's cars, courier van deliveries, forklifts etc.)	See Section 2	Noise pollution	Low – Very Low	Intermittent (Low Pitch)	Low	All those working on and visiting the site to be made aware of need for considerate driving and keeping vehicles well maintained. Small vehicles are not considered to be an issue in relation to excessive noise which could cause a complaint. Implementation of a 5mph speed limit onsite. All drivers are required to enter and exit the site with due consideration for neighbours.	Very Low / Negligible
Repairs	See Section 2	Noise pollution	Very Low	Occur at a specific time (Low Pitch)	Low	If repairs to the site are required, the work is to be undertaken with due regard for the possible noise nuisance and during working day hours. In the event of major repair work being undertaken which is likely to cause significant noise and disruption, neighbouring residents and the Environment Agency will be notified in advance and would not commence without agreement unless in extenuating circumstances i.e. to minimise a fire occurring.	Very Low / Negligible
Other plant items	See Section 2	Noise pollution	Low	Continuous (Low Pitch)	Low	Management will ensure that all plant operated by Kaug Refinery Services Limited is functioning suitably i.e. moving parts to be regularly lubricated. Any malfunctions in plant i.e. missing screws/bolts which result in excessive noise will be de-commissioned until an alternative loading plant sourced. Roller shutter doors to remain closed outside of times when materials are delivered/exported to and from site.	Low

Source(s)	Receptor(s)	Consequence	Magnitude of noise source	Characteristic of noise source	Probability of noise disturbance	Remedial Action / Recommendations / Comments	Assessment Outcome following actions / recommendations
Compressor and grinder/crusher	See Section 2	Noise pollution	Low	Intermittent	Low	<p>Management will ensure that all plant operated by Kaug Refinery Services Limited is functioning suitably i.e. moving parts to be regularly lubricated.</p> <p>Any malfunctions in plant i.e. missing screws/bolts which result in excessive noise will be de-commissioned until an alternative loading plant sourced.</p> <p>Roller shutter doors to remain closed outside of times when materials are delivered/exported to and from site.</p>	Low

4.4 Recording

4.4.1 Site management will record complaints in the site diary or complaints report form in Appendix II and contact the EA within 24 hours if a complaint is received.

4.4.2 Site management will be required to make a note of any unavoidable events such as plant failure, in the site diary, rather than just actual complaints received and notify the EA within 24 hours. This will ensure that if complaints are received retrospectively from either the EA or directly, any circumstances which led to that complaint as a result of elements outside of the operator's control would be able to be attributed (or, at least, in part) to the cause of the complaint. Where all appropriate measures fail to prevent an activity causing unacceptable levels of noise pollution, the activity will be stopped.

4.5 Emergencies

4.5.1 In the event of any unforeseen circumstances i.e. faulty equipment, the site manager will make an assessment of whether to cease activities/all operations with the main emphasis on site being to reduce any noise impacts.

5 Actions when complaints are received

5.1 Complaints procedure

- 5.1.1 If any noise complaints are received, site management will complete a 'complaints and events log' using complaints forms (in Appendix II), both of which will be kept for inspection on request by the LA, EA or third parties. Details of information to be completed are dates, nature of complaint, weather conditions at the time of the complaint, investigation details, action taken and a signature (as a minimum).
- 5.1.2 Noise complaints will be prioritised and investigated without delay or by end of working day only in extenuating circumstances. This will also apply to complaints received both directly and via other sources (e.g. EA or local authority). Where investigation substantiates the complaint, fully or partially, then remedial action will be taken immediately and if measures taken fail to stop the pollution, then the activity must be stopped and not restarted unless and until additional measures have been implemented to prevent the emission causing pollution. The EA will be contacted in the event the complaint cannot be escalated. Following a complaint and if it is deemed correct following investigation, the appropriate action will be taken to prevent the issue from reoccurring i.e. evaluation of current abatement measures, site operations, additional abatement measures and re-training of staff via toolbox talks.
- 5.1.3 The operator will make a note of any unavoidable events plant/equipment malfunctions in the site diary, rather than just actual complaints received. This will ensure that if complaints are received retrospectively from either the Council/EA or third parties, any circumstances which led to that complaint as a result of elements outside of the operator's control would be able to be attributed to the cause of the complaint.
- 5.1.4 It must be noted that the site lies adjacent to several activities with potential for noise generation, so in the event of a complaint, the operator will substantiate the complaint to identify whether the complaint is valid. If the complaint is valid, the site will implement the complaint procedures check and if required, amend site operations,

and provide additional attenuation around the site. This would typically involve using a level 2 sound meter and comparing this information from the background levels recorded from the recent Noise Impact Assessment.

5.1.5 If the source cannot be ascertained with 100% confidence, site management will either suspend or reduce the likely noise generating activities, i.e. mechanical treatment plant.

5.1.6 If the source is within the site's control, site management will take appropriate action to ensure the issue has been rectified. This may take the form of the following:

a) Investigating the source to prevent a re-occurrence.

b) Suspending operations which are giving rise to excessive noise due to potential plant malfunction

c) Investigate noise mitigation measures

d) Logging findings of a – c in the site diary / complaints form and also in the reporting template within the EP.

e) Report actions to the complainant and/or EA within 24 hours.

f) If following the above complaints are still received, the site will cease operations until the issues have been rectified.

5.1.7 The EA will be notified by email of any third-party noise complaints received within 24 hours including the complainant and the outcome of the investigation. Where complaints are substantiated as causing or likely to cause significant noise pollution, then the EA will be notified.

5.2 Complaints recording

5.2.1 Any complaints received in relation to noise and vibration will be recorded on the form shown in Appendix II. This form will normally be completed, signed and dated by site management. If they are not available, this will be completed by another suitably trained staff member.

5.2.2 The following details as a minimum will be completed on the form:

- a) The name, address and telephone number of the caller will be requested.
- b) Each complaint will be given a reference number.
- c) The caller will be asked to give details of:
 - the nature of the complaint;
 - the time;
 - how long it lasted;
 - how often it occurs;
 - is this the first time the problem has been noticed; and,
 - what prompted them to complain.
- d) The person completing the form will then, if possible, make a note of:
 - the weather conditions at the time of the problem (rain snow fog etc.)
 - strength and direction of the wind; and,
 - the activity on the installation at the time the noise, dust or odour was detected, particularly anything unusual.
- e) The reason for the complaint will be investigated and a note of the findings added to the report.
- f) The caller will then be contacted with an explanation of the source of the complaint if identified and the action taken to prevent a recurrence of the problem in future.
- g) If the caller is unhappy about the outcome or unwilling to identify themselves the caller will be referred to the appropriate department of the EA or Local Council.
- h) Following any complaint, the complaints procedure will be reviewed to see if any changes are required or if new procedures need to be put in place.

6 Training

6.1 Training regime

6.1.1 All employees and sub-contractors of Kaug Refinery Services Limited involved with potentially noisy operations will receive training in noise and vibration monitoring and complaint reporting.

6.1.2 Training will be given to all relevant persons to make sure they are competent in completing noise and vibration survey forms, noise and vibration complaint report forms and the site diary to ensure sufficient monitoring of noise and vibration can be carried out and any problems addressed correctly.

6.1.3 When selecting new plant and equipment, consideration shall be given to the need to meet all legislation and statutory guidance on noise levels and to minimise levels of noise from selected equipment.

6.2 Vehicle / plant preventative maintenance training

6.2.1 This training is provided specifically for the vehicle and plant operators in order to ensure that all plant and machinery is checked regularly to prevent any occurrences which may lead to any adverse impacts on the environment or human health.

6.2.2 Training will be based on the preventative maintenance schedule supplied by the plant/equipment manufacturer.

6.2.3 The same training will be provided to senior management enabling a dual-level maintenance programme.

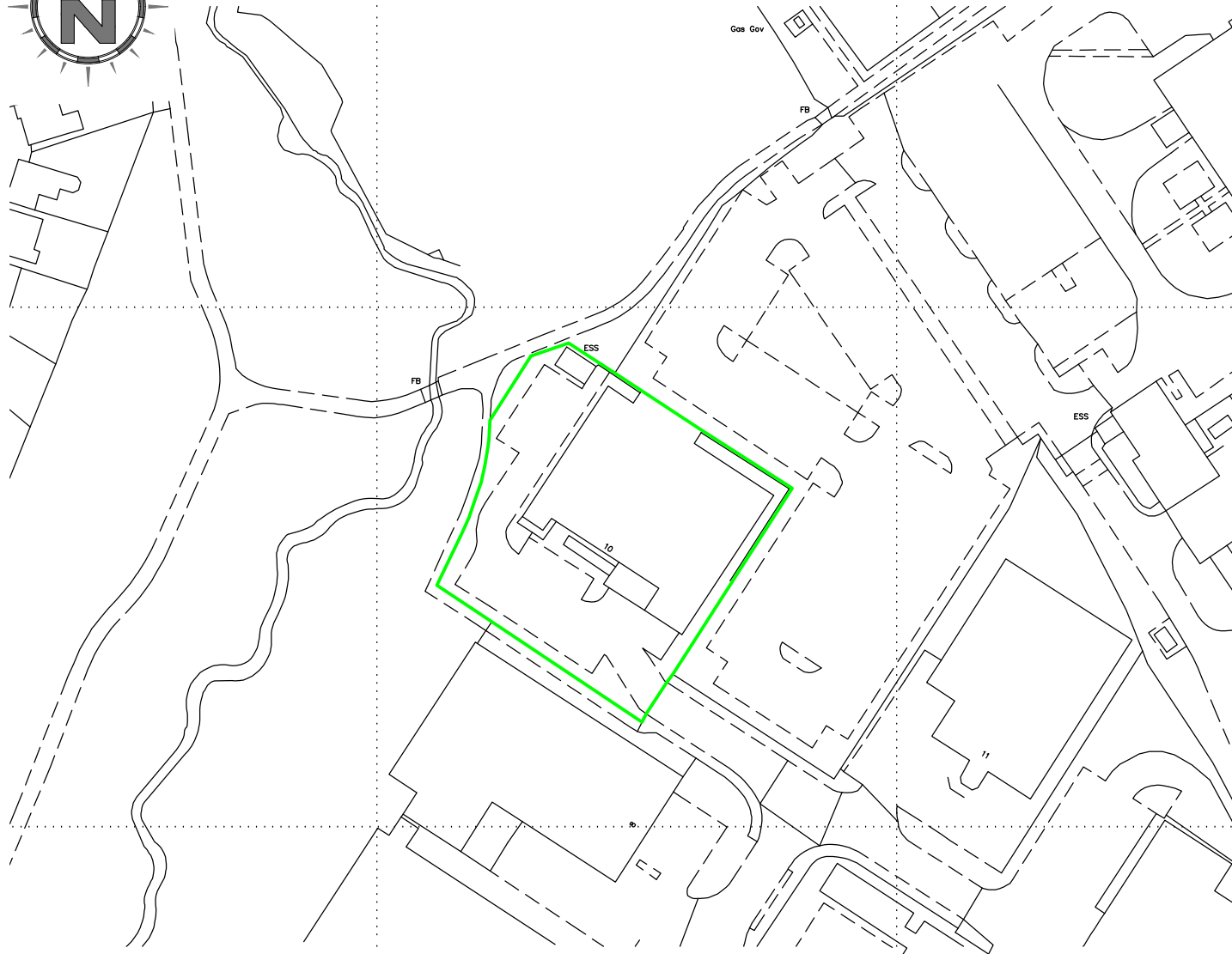
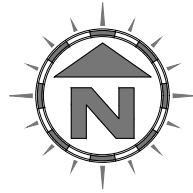
6.3 Liaison with Neighbours

6.3.1 In the extreme event of a significant, but temporary, increase in noise and vibration from the site, neighbours will be contacted to advise them of the occurrence and action being taken to remediate the issue on site.

- 6.3.2 An open-door policy will be encouraged by the operator to enable any complaints from neighbouring premises (if received) to be dealt with immediately. The complainant will then be supplied with remedial actions taken and any procedures or measures put in place by the operator to reduce or ideally eradicate the likelihood of a subsequent complaint.

Appendix I

Drawings



NOTES

Drawing for indication only. Reproduced with the permission of the controller of H.M.S.O. Crown copyright licence No. 100022432. This drawing is copyright and property of Oaktree Environmental Ltd.

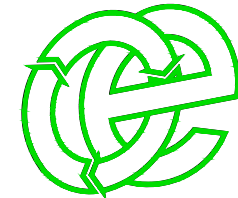
REVISION HISTORY

Rev:	Date:	Init:	Description:
-	05.12.22	JH	Initial drawing
A	05.01.23	IA	Address update
B	17.04.23	IA	Drawing title change

KEY:

 EP Permit boundary

Oaktree Environmental Ltd
Waste, Planning and Environmental Consultants



DRAWING TITLE
EP PERMIT BOUNDARY PLAN

CLIENT
Kaug Refinery Services Ltd

PROJECT/SITE
10 Merse Road, North Moons Moat, Redditch, B98 9HL

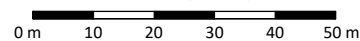
SCALE @ A4	CLIENT NO	JOB NO
1:1,250	2765	010

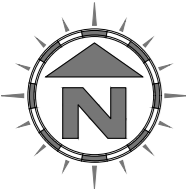
DRAWING NUMBER	REV	STATUS
2765-010-02	B	Issued

DRAWN BY	CHECKED	DATE
JH/IA	RS	17.04.23

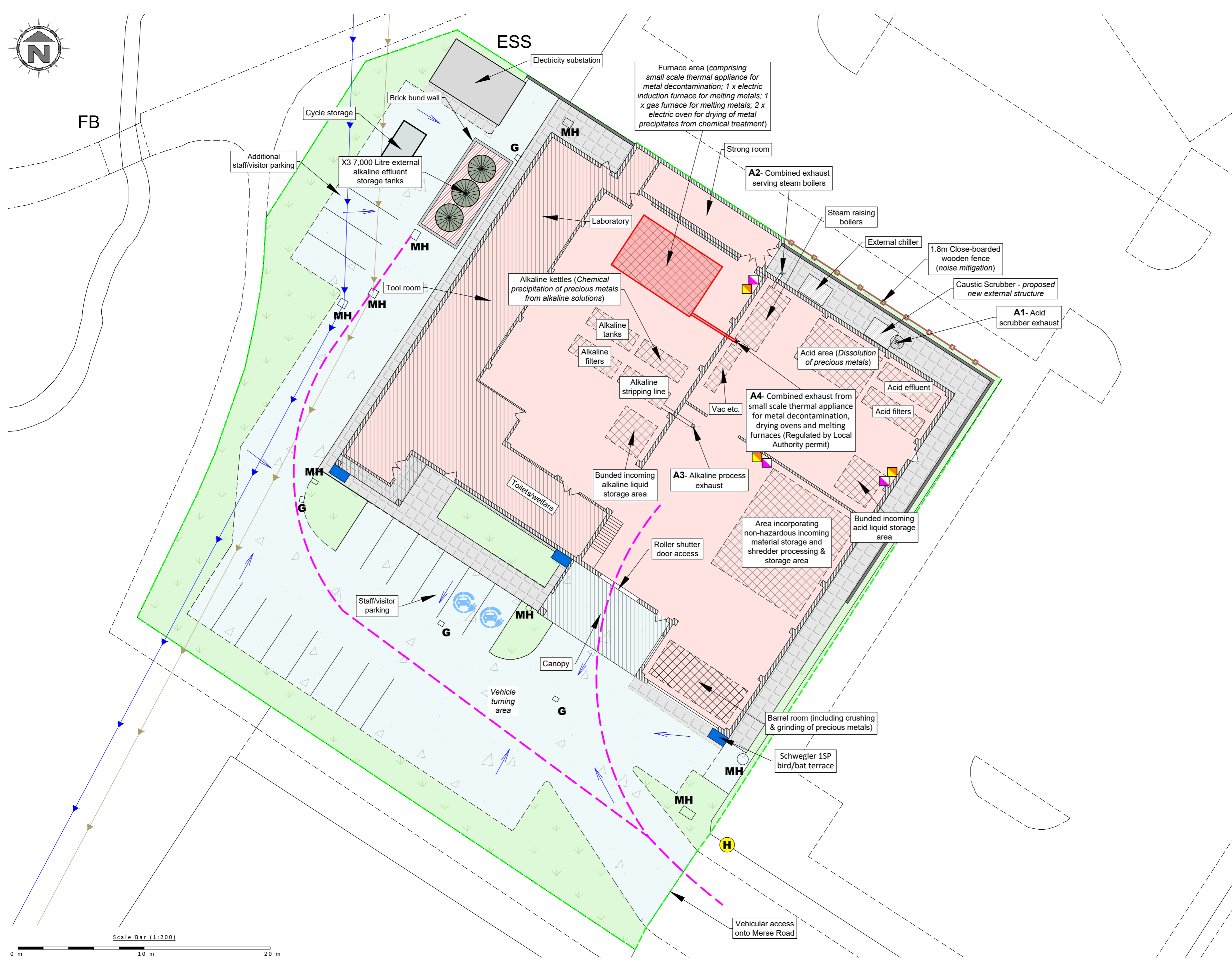
Lime House, Road Two, Winsford, Cheshire, CW7 3QZ
t: 01606 558833 | e: sales@oaktree-environmental.co.uk

Scale Bar (1:1,250)





FB

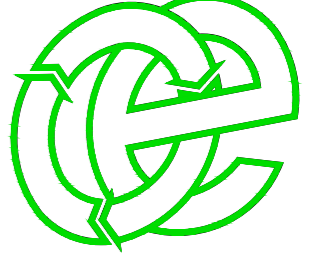


NOTES
 Site survey undertaken using Intel Falcon 8+ drone in September 2022. Ordnance Survey data reproduced with the permission of the controller of H.M.S.O. Crown copyright licence No. 100022432. This drawing is copyright and property of Oaktree Environmental Ltd.

Rev:	Date:	Init:	Description:
-	05.12.22	JH	Initial drawing
A	15.12.22	IA/JH	Drawing amendments
B	05.01.23	IA	Address update
C	22.03.23	IA	Layout changes
D	17.04.23	IA	Drawing amendments
E	04.05.23	IA	EA comments
F	28.07.23	IA	Drawing amendments
G	22.01.24	IA	Application resubmission

- KEY:**
- Waste EP Permit boundary (regulated by Environment Agency)
 - Part B Permit boundary (regulated by Local Authority)
 - Sealed buildings
 - Concreted areas
 - Spill kit
 - Firefighting equipment
 - Access routes for emergency vehicles
 - H Hydrant
 - MH** Manhole
 - G** Gully
 - Fall direction arrows
 - Paved areas
 - Un-surfaced areas

Oaktree Environmental Ltd
 Waste, Planning and Environmental Consultants



DRAWING TITLE
 SITE LAYOUT PLAN

CLIENT
 Kaug Refinery Services Ltd

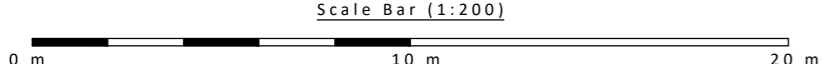
PROJECT/SITE
 10 Merse Road, North Moons Moat, Redditch, B98 9HL

SCALE @ A2 1:200 **CLIENT NO** 2765 **JOB NO** 010

DRAWING NUMBER 2765-010-03 **REV** G **STATUS** Issued

DRAWN BY JH/IA **CHECKED** RS/DY **DATE** 22.01.24

Lime House, Road Two, Winsford, Cheshire, CW7 3QZ
 t: 01606 558833 | e: sales@oaktree-environmental.co.uk



Appendix II

Complaints Report Form

COMPLAINTS PROCEDURE

- 1) Any complaints received in relation to noise and vibration will be recorded on the form below. This form will normally be completed, signed and dated by the site operator, if they are not available, the Office Manager will complete the form.
- 2) The name, address and telephone number of the caller will be requested.
- 3) Each complaint will be given a reference number.
- 4) The caller will be asked to give details of:
 - the nature of the complaint;
 - the time;
 - how long it lasted;
 - how often it occurs;
 - is this the first time the problem has been noticed; and,
 - what prompted them to complain.
- 5) The person completing the form will then, if possible, make a note of:
 - the weather conditions at the time of the problem (rain snow fog etc.)
 - strength and direction of the wind; and,
 - the activity on the site at the time the noise was detected, particularly anything unusual.
- 6) The reason for the complaint will be investigated and a note of the findings added to the report.
- 7) The caller will then be contacted with an explanation of the source of the complaint if identified and the action taken to prevent a recurrence of the problem in future.
- 8) If the caller is unhappy about the outcome or unwilling to identify themselves the caller will be referred to the EA.
- 9) Following any complaint the complaints procedure will be reviewed to see if any changes are required or if new procedures need to be put in place.

Complaints Report Form	
Date Recorded	Reference Number
Name and address of caller	
Telephone number of caller	
Time and Date of call	
Nature of complaint (noise, vibration) (date, time, duration)	
Weather at the time of complaint (rain, snow, fog, etc.)	
Wind (strength, direction)	
Any other complaints relating to this report	
Any other relevant information	
Potential reasons for complaint	
The operations being carried out on site at the time of the complaint	
Follow Up	
Actions taken	
Date of call back to complainant	
Summary of call back conversation	
Recommendations	
Change in procedures	
Changes to Noise & Vibration Management Plan	
Date changes implemented	
Form completed by	
Signed	
Date completed	