

ENVIRONMENTAL NOISE ASSESSMENT

Shaw Lane, Carlton, Barnsley, S71 3HJ

ASH Waste Services

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1 Introduction

1.1 Background to Report

1.1.1 Oaktree Environmental have been commissioned by ASH Waste Services to undertake an environmental noise assessment for a site at Shaw Lane, Carlton, Barnsley, S71 3HJ.

1.1.2 This report is to be submitted in support of an application for a bespoke environmental permit.

1.2 Site Location

1.2.1 The site is situated at Shaw Lane, Carlton, Barnsley, S71 3HJ. All references to 'the site' in this document shall mean this area and the associated infrastructure, plant and equipment.

1.2.2 The nearest noise sensitive receptors comprise the residential dwellings off Shaw Lane, approximately 190m northeast and 275m west of the site.

1.3 Hours of operation

1.3.1 The waste site will be open during the following hours for all waste operations, i.e. depositing, sorting, moving, storing and removing waste:

Monday to Friday	06:00 – 18:00
Saturday	Closed
Sundays, Bank/Public holidays	Closed

1.3.2 On rare occasions it may be required to operate on a Saturday, however this is likely to be very infrequent and to a much lower intensity than would be the case on a weekday. In addition, the site may be open public holidays (except Christmas and New Year), dependent on demand.

2 Planning Policy

2.1 Noise Policy Statement for England

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

2.1.2 “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.”

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

2.1.4 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”.

2.1.5 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”, 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.

2.1.6 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.

2.2 **National Planning Policy Framework**

2.2.1 The NPPF, revised in 2021, replaces the Planning Policy Guidance Note 24 (PPG 24) and does not make reference to any other relevant noise guidance, other than the NPSE.

2.2.2 With regards to noise, the NPPF states the planning process should “contribute and enhance the natural and local environment”, with regards to noise this means “preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affect by unacceptable levels” of, amongst other things, noise.

2.2.3 The NPPF 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:

a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life,

b) 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 **Planning Practice Guidance – Noise**

2.3.1 It is important to set out the appropriate guidance set out in the NPPF which 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.

2.3.2 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.

2.3.3 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 Overview

3.1.1 In order to assess the impacts of existing road traffic and industrial noise on the proposed development, the following documents have been used:

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

3.2 BS8233:2014

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	35 LAeq, 16hour	-
Dining	Dining room	40 LAeq, 16hour	-
Sleeping	Bedroom	35 LAeq, 16hour	30 LAeq, 16hour

3.3 BS4142:2014

3.3.1 BS4142:2014 provides a method for assessing and rating 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 exceedence 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 exceedence 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) on 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 Existing Noise Climate and Background Levels

4.1 Procedure and Monitoring Locations

4.1.1 A background noise survey was completed on the 15th June 2022 in accordance with BS 7445-1: 2003 by Thomas Benson of Oaktree Environmental Ltd. Attended background level measurements were taken at locations representative of the nearest noise sensitive receptors within the vicinity of the site.

4.1.2 Locations were chosen in order to be representative of the closest residential dwellings as well as the external amenity areas associated with these locations. The measurement locations are presented within the Noise Monitoring Plan within Figure 4.1 below:

Figure 4.1 - Site location and noise monitoring positions



4.2 Weather conditions

4.2.1 The weather during the background surveys is summarised in the table below, this was recorded via a mixture of an anemometer and ongoing onsite observations:

Table 4.1 – Weather conditions

Date	Wind Speed (max)	Cloud Cover	Temperature	Precipitation
15/06/2022	Max gusts of 1.6m/s although generally very still	25-50%	17-23 ^o C	None recorded whilst onsite

4.3 Equipment Used During the Survey

4.3.1 Details of the equipment used during the survey are shown in the table below:

Table 4.2 - 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	April 2022

4.4 Results

4.4.1 The results of the background noise monitoring survey are tabulated below in tables 4.3-4.4.

Table 4.3 - Weekday Measurement Results for Noise Monitoring Position A

Measurement Time	LA _{eq}	LA _{max}	LA ₉₀	LA ₁₀
08:01-09:01 15/06/2022	48.4	69.0	40.5	51.6
10:10-11:10 15/06/2022	47.4	71.6	37.9	49.1
12:40-13:40 15/06/2022	50.8	80.9	38.1	51.8

Table 4.4 - Weekday Measurement Results for Noise Monitoring Position B

Measurement Time	LA_{eq}	LA_{max}	LA₉₀	LA₁₀
09:05-10:05 15/06/2022	64.2	84.3	42.9	69.5
11:15-12:15 15/06/2022	64.2	86.5	42.0	69.2
13:43-14:43 15/06/2022	64.7	81.6	43.4	70.1

2.4 Existing Noise Climate

4.4.2 During the attended background measurements at NMP A the existing noise climate was observed to comprise the following sources;

- Road traffic along the A road to the north,
- Distant industrial noise from the east including audible crashes and bangs, envisaged to originate from the operation of the scrap metal recycling yards,
- Birdsong,
- Movements associated with local residents and courier deliveries etc.

4.4.3 With regards to NMP B, noise sources contributing to the background level were largely similar to that of NMP A, however due to the shorter distance between the receptor and the carriageway, the contribution from road traffic was much greater.

4.4.4 Road traffic was observed to comprise a mixture of; HGVs, LGVs, agricultural vehicles and smaller private vehicles.

5 Noise Impact Assessment

5.1 Introduction

5.1.1 The operation of the site will generally include the removal of wastes from bins and RCVs within the waste reception area located within the main building. The waste will then be initially sorted via a loader/excavator prior to separated factions will be loaded into a HGV for removal from the site.

5.1.2 It is envisaged that once the site is established, a shredder may potentially be located within the waste reception building to allow for the resizing of material. This will not operate constantly, however site management assume this may operate between 2-3 hours per day, dependent on demand.

5.1.3 In addition to the noise sources above, limited amounts of wastes will be stored in the external bays. These are likely to comprise recyclable materials such as glass. However, site management have stated that materials are only to be tipped in these bays twice a day with material being removed from site once a month. Considering the extremely short duration of this noise source (i.e. typically 10 seconds maximum, twice a day) these have not been included within the noise model. However, this noise source is included within the accompanying NVMP.

5.1.4 Table 5.1 below includes the noise sources associated with the proposed operation of the site based on the above. These have either been measured onsite by Oaktree Environmental, taken from relevant literature or provided by the manufacturer.

Table 5.1 - Noise levels Associated with Waste Operations

Activity	Noise Level (LAeq)	Source
Operation and loading Shredder	88.6 at 2m	Oaktree measurement at of similar activity.
Tipping of material	72.6 at 8m	Oaktree measurement at of similar activity.
Loading of HGV with material	76.4 at 3m	Oaktree measurement at of similar activity.

Loading shovel moving/sorting material	77.4 at 3m	Oaktree measurement at of similar activity.
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5.1.5 To assess the potential noise impacts associated with the installation of the facility on the on the nearby noise sensitive receptors, noise models have been created using CadnaA. The software package utilises standardised noise prediction methodologies and algorithms in order to predict the propagation of noise from source to receiver.

5.1.6 The CadnaA noise model was constructed using OS mapping Opendata and Google Earth satellite imagery whilst topographical data has been obtained from DEFRA in the form of a digital terrain model (DTM).

5.1.7 The following assumptions/parameters are made within the model:

- 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.
- Noise sources are assumed to be constant with no significant variation,
- Buildings were set as acoustically reflective, with a reflection loss of 1 dB.
- Noise levels were determined on a grid and at residential properties representing the nearest residential facades. The height of each receiver was 2.0 m, consistent with the height of a typical first storey window.
- The predicted noise levels were free-field, A-weighted, sound pressure levels. The noise contours generated within the model are also at a height of 2.0 m, assumed to be the worst-case scenario.
- Surrounding building heights have been taken from observations and information provided from the Local Authority public access where available.
- The building fabric is assumed to comprise 45mm steel sheeting with trapezoidal corrugations whilst the roof is assumed to comprise 6mm acrylic glass (commensurate with the roof lighting). Roller shutters are modelled open.
- The reception and treatment building is assumed to be 10m tall whilst roller shutters are assumed to be 8x8m.

5.1.8 In order to adequately represent the site operations, 2no. models have been produced, the first representative of typical operations (including tipping, sorting/movement of wastes and loading of HGVs) whilst the second includes the operation of the shredder.

5.1.9 Figures 5.2 to 5.3 overleaf details the predicted noise levels (in dB A) associated with the proposed operations at the relevant receptors.

Figure 5.2 – Preliminary noise model with regards to typical operations (i.e. all noise sources active except shredder, roller shutters open)

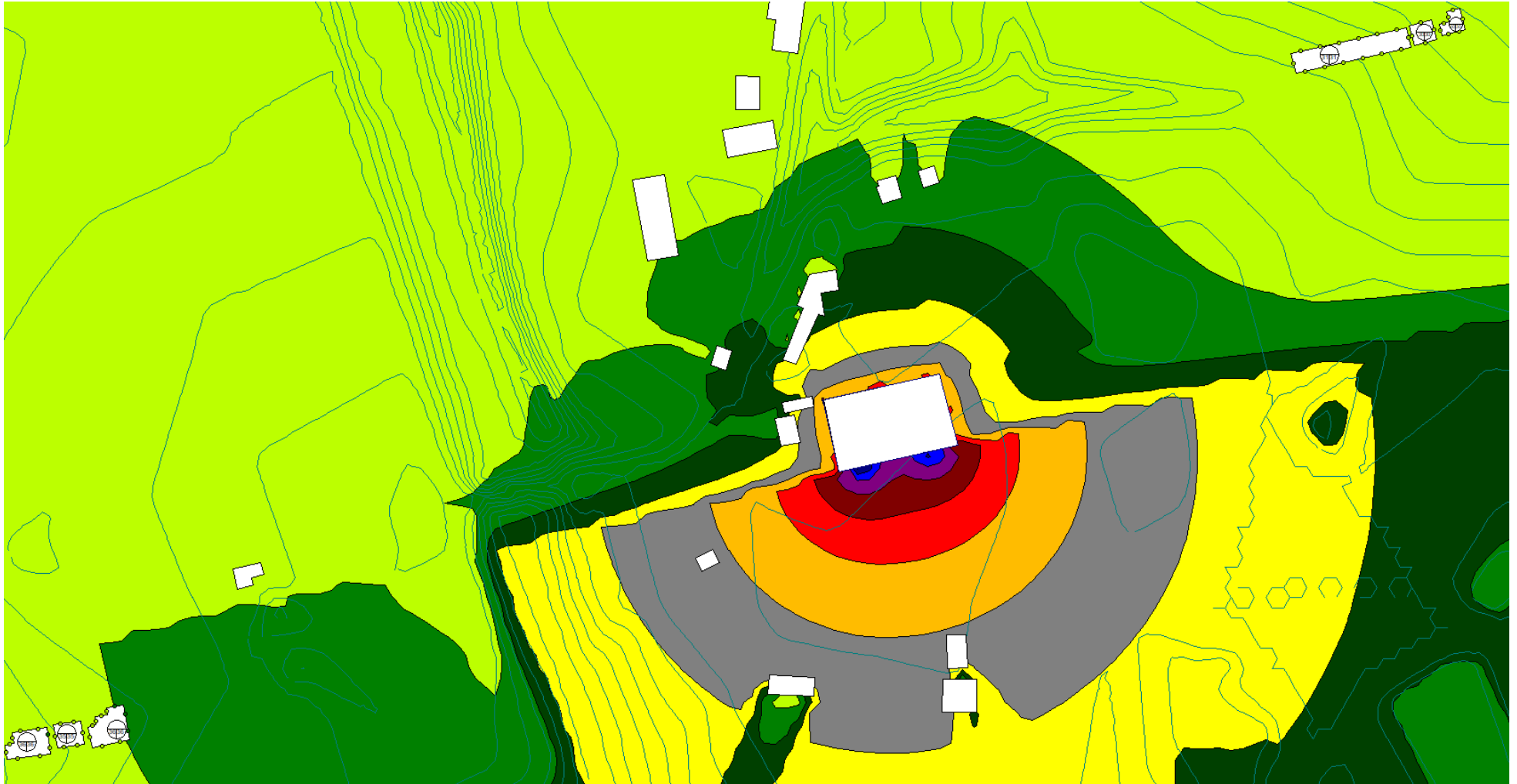
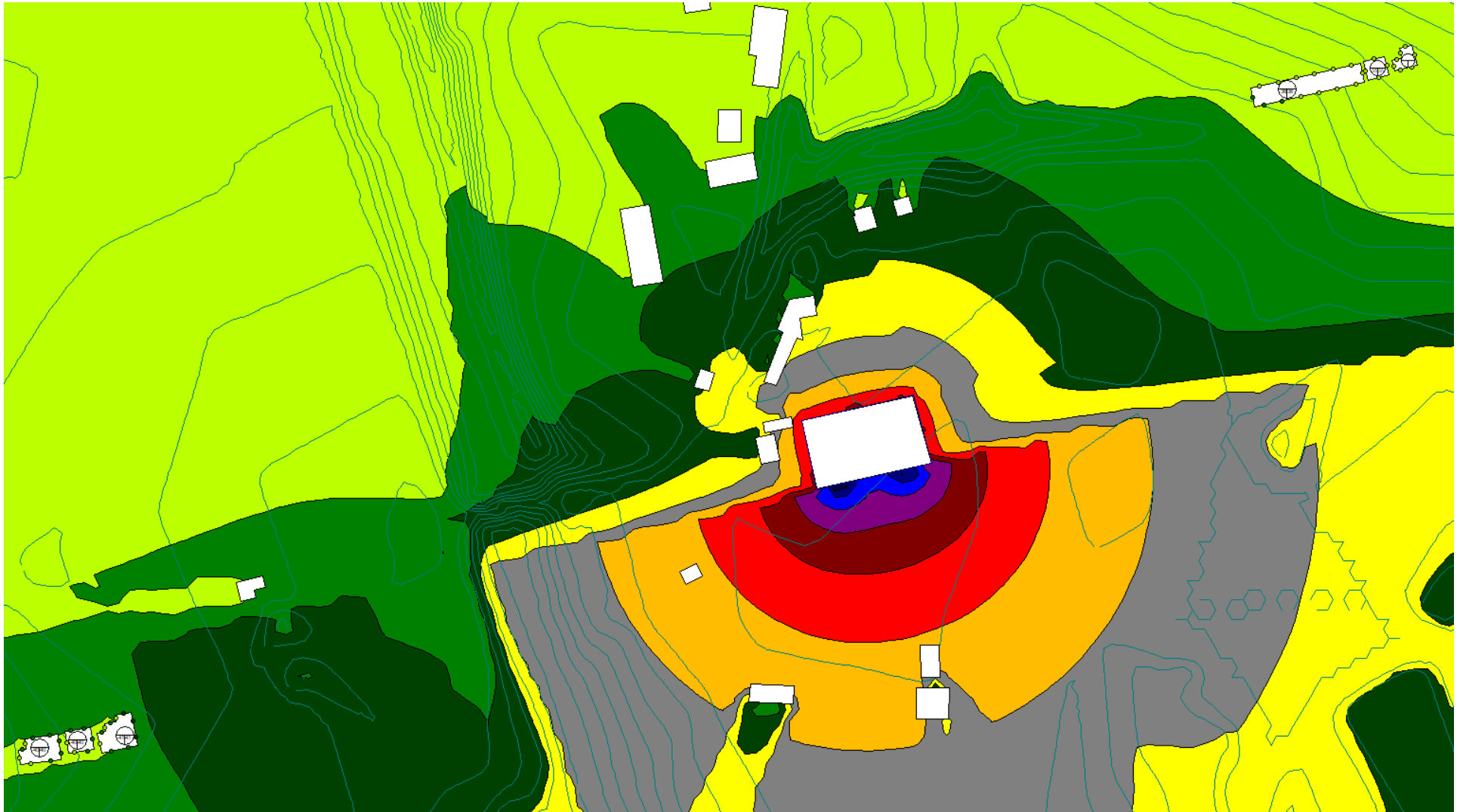


Figure 5.3 – Preliminary noise model with regards to operations including shredder with roller shutters open



5.2 Discussion

5.2.1 With consideration to impulsive and tonal penalties, the tonal element of the shredding is unlikely to be perceptible given the distance to receptors and prevalence of road traffic as a contributor to the background sound level.

5.2.2 With regards to impulsive penalties, tipping will primarily be from RCVs, with a smaller portion comprising skips and therefore drop heights can be controlled so as to lessen the impact of falling material. Loading and sorting operations will also be contained within the building which will lessen the impact of any bangs/crashes. Considering the existing background which contains numerous bangs/crashes from the surrounding industrial uses, it is considered that a +3dB penalty is appropriate. GLASS

5.2.3 Tables 5.3 and 5.4 provide an assessment of noise levels as per BS4142:2014.

Table 5.4 – Preliminary BS4142:2014 assessment with regards to typical operations (i.e. all noise sources except shredder with roller shutter doors open)

	Calculated noise level at dwellings off Shaw Lane to the west	Calculated noise level at dwellings off Shaw Lane to the east	Comments
Calculated noise level as per figure 5.2-5.3	36	31	
Addition of relevant penalties as per BS4142:2014	+3	+3	As per Section 5.2.1-5.2.2
Comparison to lowest measured weekday background level	39.0 – 37.9 = 1.1 below	34.0 – 42.0 = 8.0 below	Low impact as per BS4142:2014

Table 5.5 – Preliminary BS4142:2014 assessment with regards to operations including shredder with roller shutters open

	Calculated noise level at dwellings off Shaw Lane to the west	Calculated noise level at dwellings off Shaw Lane to the east	Comments
Calculated noise level as per figure 5.2-5.3	41	36	
Addition of relevant penalties as per BS4142:2014	+3	+3	As per Section 5.2.1-5.2.2
Comparison to lowest measured weekday background level	$44 - 37.9 = 6.1$ above	$39 - 42.0 = 3.0$ below	Low impact as per BS4142:2014

- 5.2.4 Therefore, the preliminary assessment shows that with regards to the proposed operations, the rating level will be below the background level for the majority of the working day.
- 5.2.15 At times when the roller shutters will be open, the rating level is 6.1dB (A) above the lowest measured background level at the closest façade of the dwellings to the west. This may be indicative of a negative impact as per BS4142:2014, however it is stressed that this is dependent on context. It should be noted that the excess falls to 3.5dB (A) above the background level when measured against the highest hourly LA90 figure.
- 5.2.16 Considering the limited exceedance of the +5dB threshold, nature of the existing noise climate and industrial nature of the area, the resultant assessment outcome is low.
- 5.2.17 It should be noted that the model makes several worst-case assumptions with regards to the noise sources, building fabric etc. For example, it is assumed that noise sources are constant within the building. For some sources such as HGV loading and tipping of bin lorries this is unlikely to be the case, however these assumptions have been made to ensure that the model is representative of a worst-case scenario so as to provide a robust assessment.

5.3 **Uncertainty**

5.3.1 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 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).

6 Conclusion

6.1 Summary & Recommendations

6.1.1 Oaktree Environmental have undertaken a noise impact assessment for a site at Shaw Lane, Carlton, Barnsley, S71 3HJ.

6.1.2 The primary receptors are considered to be the residential dwellings off Shaw Lane to the east and west.

6.1.3 The rating level of the proposed operations at the nearest residential receptors are considerably below the background level or below the threshold at which adverse impacts may occur (i.e. 5 above background) whilst roller shutter doors are closed and therefore the result of the proposed operation of the site at these times are negligible/low.

6.1.4 At times when roller shutter doors are open, the rating level marginally exceeds the +5dB threshold at the closest façade of the dwellings to the west. This may be indicative of a negative impact as per BS4142:2014. It should be noted that the exceedance of the rating level over the background level falls below this threshold when measured against the other hourly LA90 figures at this location.

6.1.5 In addition, noise emissions will be controlled and regulated via the Noise Management Plan also produced by Oaktree Environmental. The NMP comprises a stand alone document to be used in the regulation and management of the site by both site management and the Environment Agency.

Appendix I

Drawings