ENVIRONMENTAL NOISE ASSESSMENT

Elliott Environmental Drainage Ltd

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1.7	13/06/2024	JU	JC	Layout change amendments
1.8	07/08/2024	JU	JC	Amendments based on change in operational hours
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1 Introduction

1.1 Overview

1.1.1 Oaktree Environmental have been commissioned by Elliott Environmental Drainage Ltd to undertake an Environmental Noise Assessment for a site at St. Michaels Close, Aylesford ME20 7XE. This report is being submitted in support of planning and permit applications for the operation of a facility for the repackaging and treatment of hazardous and non-hazardous wastes. Planning permission was originally granted in 2020, the consent having been subsequently implemented. However, a reconfiguration to internal and external layout has been proposed, requiring a further planning application. The planning application is being submitted to Kent County Council (KCC). An Environmental Permit (EP) is also required for the operation. An EP application is being submitted to the Environment Agency (EA).

1.1.2 Relevant findings of the assessments are incorporated into the management plan which will outline the methods by which Elliott Environmental Drainage Ltd will assess and minimise the potential impacts of noise generated through the operation of the site.

1.1.1 The report has been produced by Joshua Ulyatt and reviewed by Jack Caton of Oaktree Environmental Ltd, who has 7+ years experience with the appropriate certificate of competence in environmental noise measurement, with relevant experience, which suits the relevant competency standards. Certificates are available upon request.

1.2 Site Description and Proposed Development

1.2.1 The application site is located at St. Michaels Close, Aylesford ME20 7XE, as shown within the drawings submitted in support of the permit/planning application and held in Appendix I of this report. The site consists of a warehouse type building which is surrounded by concrete apron with sealed drainage system and former clay pit face to the east. The site is contained within and surrounded by the wider Industrial Estate. The national grid reference for the site is TQ 74458 59176.

1.2.2 The site is located in a predominantly industrial location, however, the land surrounding the industrial estate may be considered rural. Other than the village of Aylesford, the nearest significant settlement is the town of Maidstone which is approximately 1.4km south east of the site.

1.3 Hour of operation

1.3.1 The proposed development will be operated during the following hours:

Monday to Saturday	24 hours per day
Sunday/Bank holidays	Closed

1.4 Noise Sensitive receptors

1.4.1 It is considered that the nearest noise sensitive receptors comprise the residential dwellings off Pratling Street, approximately 370m to the north and the residential dwellings located >500m to the northeast.

1.5 Environmental Regulation

1.5.1 An EP is required to be in place for the operation, falling under regulation by the EA. The EP will contain conditions for control of emissions to air, land and water and the site will be required to be operated in accordance with a detailed Environmental Management System (EMS), which will be a requirement within the EP for the site.

1.5.2 National Planning Policy for Waste (NPPW) directs that when determining waste planning applications, planning authorities should concern themselves with implementing the planning strategy in the Local Plan and not with the control of processes which are a matter for the pollution control authorities and that they should work on the assumption that the relevant pollution control regime will be properly applied and enforced. The above policy effectively means there should be no duplication of regulation across planning and permitting.

1.5.3 As the operations on site will be regulated under an EP, potential emissions, including noise, will be controlled under the EP.

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 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."*

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

2.1.3 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"*.

2.1.4 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.

2.1.5 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.

2.2 National Planning Policy Framework

2.2.1 The National Planning Policy Framework, revised in 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.

2.2.2 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.

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

2.3 Planning Practice Guidance – Noise

2.3.1 Further to the guidance set out in the NPPF, Planning Practice Guidance 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 from the proposed development, the following documents have been used:

- BS8233:2014
- BS4142:2014+A1:2019
- 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 BS8233:2014 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, $L_{Aeq, 16hour}$	-
Dining	Dining room	40dB, $L_{Aeq, 16hour}$	-
Sleeping	Bedroom	35dB $L_{Aeq, 16hour}$	30dB, $L_{Aeq, 16hour}$

3.3 BS4142:2014+A1:2019

3.3.1 BS4142:2014+A1:2019 (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 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) recommend 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 to protect the majority of individuals from moderate annoyance, external noise levels should not exceed 50 dB (LAeq).

4 Background Noise Monitoring

4.1 Monitoring Procedure and Monitoring Locations

4.1.1 An attended background noise survey was completed over the course of several days between the 2nd and 3rd of February 2024 in accordance with BS 7445-1: 2003 by Joshua Ulyatt of Oaktree Environmental Ltd.

4.1.2 A further background survey has been conducted by NOVA Acoustics as the site is seeking to be operational for 24 hours per day and therefore a further unattended background survey was conducted between the 15th-19th of August 2024 to obtain longer term data including nighttime data. The site is currently not operating during the nighttime period and therefore all nighttime survey data collected is in the absence of any noise emanating from the site.

4.1.3 Locations chosen were representative of the nearest noise sensitive receptors. The National Grid reference for monitoring location NMP 1 was TQ 74158 59339 and for NMP 2 was TQ 74261 59444.

4.1.4 The measurement locations are shown in Figure 4.1, below:

Figure 4.1 - Site location and noise monitoring positions

4.1.5 Attended measurements were undertaken, as BS4142:2014 stresses the importance of context, stating that to *"fully understand the context in which the sound from an industrial and/or commercial source(s) is being assessed, describe and report the sources of sound which comprise the acoustic environment".* The methodology allows for a subjective impression of the acoustic environment to be made and a representative description of the area to be produced.

4.1.6 Following a change in the clients proposed operational hours for the facility to be 24 hours per day it was decided that a further unattended background survey was to be conducted by NOVA Acoustics to obtain weekday and weekend monitoring periods, in particular to obtain data for the weekend and weekday nighttime periods.

4.2 Equipment Used During the Survey by Oaktree Environmental Ltd

4.2.1 Details of the equipment used during the survey undertaken by Oaktree Environmental Limited are shown in the table below:

Table 4.1 - Survey Equipment

Description	Model	Manufacturer	Serial No.	Calibration Date
Class 1 Sound Analyser	NOR 150	Norsonic	15030504	October 2024
Microphone	Norsonic Type 1225	Norsonic	305208	October 2024
Field Calibrator	NOR 1251	Norsonic	35205	June 2025
Precision Sound Analyser	NOR 145	Norsonic	14530082	May 2025
Pre-amplifier 1	NOR 1209	Norsonic	23775	May 2025
Microphone 1	NOR 1227	Norsonic	527239	May 2025

4.3 Equipment used by NOVA Acoustics Ltd

4.3.1 The equipment used by NOVA Acoustics Ltd is listed below and the drift from the field calibrated value is also detailed in the table. NOVA use a field calibrator of which they calibrate before the survey and post survey, the drift from the traceable signal of 114.0dB was 0.2dB.

Table 4.2 - Survey Equipment

Description	Model &Make	Serial Number	Pre calibration (dB)	Post Calibration (dB)
Class 1 Sound Analyser	SVANTEK SV971A	141420	113.9	114.1

4.4 Weather during the background survey conducted by NOVA Acoustics

4.4.1 Weather data was obtained by NOVA Acoustics upon the set up and the collection of the equipment. The weather has been described on the set up of the equipment as a moderate wind speed less than 5m/s with overcast skies and temperature of 22 degrees Celsius, the weather at the collection of the equipment has been described as light wind speeds <3m/s with overcast skies and a temperature of 22 degrees Celsius.

4.5 Weather during background survey conducted by Oaktree Environmental

4.5.1 The weather during the background surveys undertaken by Oaktree Environmental is summarised in the table below:

Table 4.3 – Weather Conditions during noise monitoring

Date	Wind Speed (max)	Cloud Cover	Temperature	Precipitation
02/02/2024	Maximum gusts up to 3.5 m/s	0-50%	5-11^{o}C	None recorded whilst onsite.
03/02/2024	Generally, very still, max gusts of 0.7m/s	50-100%	4-9 ^{o}C	None recorded whilst onsite.

4.5.2 Wind speed and temperature measurements were made via a handheld anemometer whilst precipitation and cloud cover were reported via onsite observation.

4.6 Oaktree background noise monitoring results

4.6.1 The results of the background noise monitoring survey are tabulated below in Tables 4.4-4.7. Commentary on the background level and survey is included further on within this section.

Table 4.4 - Weekday Background monitoring results for NMP A

Measurement Time and date	LA_{eq} (dB)	LA_{90} (dB)	LA_{10} (dB)	LA_{max} (dB)
07:19-08:19 02/02/2024	56.1	51	55.8	83.3
08:19-09:19 02/02/2024	51	49.5	54.5	81.7
09:19-10:19 02/02/2024	52.8	48.9	55.4	86.3

Table 4.5 – Weekday Background monitoring results for NMP B

Measurement Time and date	LA_{eq} (dB)	LA_{90} (dB)	LA_{10} (dB)	LA_{max} (dB)
07:17-08:17 02/02/2024	34.2	49.7	58.8	79.3
08:17-09:17 02/02/2024	59.4	48.2	55	77.5
09:17-10:17 02/02/2024	48.4	47.6	52.8	76.9

Table 4.6 – Weekend Background monitoring results for NMP A

Measurement Time and date	LA_{eq} (dB)	LA_{90} (dB)	LA_{10} (dB)	LA_{max} (dB)
07:16-08:16 03/02/2024	53.2	48.3	53.5	83.1
08:16-09:16 03/02/2024	49.6	47.8	53.4	83.3

Table 4.7 – Weekend Background monitoring results for NMP B

Measurement Time and date	LA_{eq} (dB)	LA_{90} (dB)	LA_{10} (dB)	LA_{max} (dB)
07:09-08:09 03/02/2024	54.5	45.8	54.2	72.8
08:09-09:09 03/02/2024	46.4	58.6	54.5	73.6

4.6.2 Should It be required, photographs and videos can be provided, along with the noise measurement files in order to corroborate the above observations. These are available upon request by the LA/EA.

4.7 LA90 Breakdown of results

Table 4.8 – LA90 Breakdown of results weekday for NMP A

Measurement Time	Date	LA_{90} (dB)
07:19-07:34	02/02/2024	52.0
07:34-07:49	02/02/2024	51.5
07:49-08:04	02/02/2024	51.1
08:04-08:19	02/02/2024	50.2
08:19-08:34	02/02/2024	50.2
08:34-08:49	02/02/2024	49.8
08:49-09:04	02/02/2024	49.3
09:04-09:19	02/02/2024	49.0
09:19-09:34	02/02/2024	48.8

Measurement Time	Date	LA_{90} (dB)
09:34-09:49	02/02/2024	48.4
09:49-10:04	02/02/2024	49.4
10:04-10:19	02/02/2024	49.4

Table 4.9 – LA90 Breakdown of results weekday for NMP B

Measurement Time	Date	LA_{90} (dB)
07:17-07:32	02/02/2024	50.5
07:32-07:47	02/02/2024	50.6
07:47-08:02	02/02/2024	49.5
08:02-08:17	02/02/2024	49.0
08:17-08:32	02/02/2024	48.7
08:32-08:47	02/02/2024	48.4
08:47-09:02	02/02/2024	47.8
09:02-09:17	02/02/2024	48.1
09:17-09:32	02/02/2024	47.2
09:32-09:47	02/02/2024	47.8
09:47-10:02	02/02/2024	48.0
10:02-10:17	02/02/2024	47.6

Table 4.10 – LA90 Breakdown of results weekend for NMP A

Measurement Time	Date	LA_{90} (dB)
07:16-07:31	03/02/2024	48.4
07:31-07:46	03/02/2024	48.1
07:46-08:01	03/02/2024	48.3
08:01-08:16	03/02/2024	48.0
08:16-08:31	03/02/2024	49.0
08:31-08:46	03/02/2024	49.0
08:46-09:01	03/02/2024	47.6
09:01-09:16	03/02/2024	47.0

Table 4.11 – LA90 Breakdown of results weekend for NMP B

Measurement Time	Date	LA_{90} (dB)
07:09-07:24	03/02/2024	46.0
07:24-07:39	03/02/2024	46.0
07:39-07:54	03/02/2024	45.6
07:54-08:09	03/02/2024	45.8
08:09-08:24	03/02/2024	45.6
08:24-08:39	03/02/2024	46.5
08:39-08:54	03/02/2024	45.6
08:54-09:09	03/02/2024	45.0

4.8 NOVA Acoustics background data

4.8.1 A long-term unattended background survey was conducted by NOVA Acoustics between the 15th of August and 19th August 2024, the results of the background survey are tabulated below. The tables below show the nighttime data collected for both weekday and weekend operations. To work out the LA90 results, the LA90 15-minute results were combined to form an hourly equivalent continuous sound level for that hour reference period. To choose the LA90 which is representative of the background level at MP1, the most frequently occurring value was chosen.

4.8.2 NOVA Acoustics Ltd, have described the noise climate at the site as occasional HGV movement turning into Beddow Way (access point to the industrial sites). Low frequency humming was just perceptible in the general background noise, possibly from HGV movement and/or some from of machinery coming from the adjacent business. The primary noise sources included HGV movement. Nearer the site were works going on at Tufnell's Parcel Express, which included forklift movements, lifting of crates and leaf blower operating as well as HGV movements, which were quite regular, entering and exiting existing industrial warehouses. No notable works were present in the proposed site location.

Table 4.12 - Weekday Background data for daytime hours (23:00:00-07:00) at NMP1 (Indicative of the background at NMP 1 and NMP 2).

Measurement Time	LA_{eq} (dB)	LA_{max}(dB)	LA_{90}(dB)	Lowest background $La90_{1hour}$(dB)
Day 1-15-16/08/2024				
23:00-00:00	48.6	67.9	45.2	44.8
00:00-01:00	48.5	68.5	45.2	44.9
01:00-02:00	49.3	71.6	46.2	44.5
02:00-03:00	47.1	63.0	45.0	44.3
03:00-04:00	47.0	69.2	43.6	43.2
04:00-05:00	53.1	81.7	46.0	45.1
05:00-06:00	55.2	80.9	45.6	44.5
06:00-07:00	59.2	88.9	46.9	44.5
23:00-00:00	48.6	75.9	41.3	39.8
Day 5-19/08/2024				
00:00-01:00	47.1	69.9	42.6	42.0

Measurement Time	LA_{eq} (dB)	LA_{max}(dB)	LA_{90}(dB)	Lowest background $La90_{1hour}$(dB)
01:00-02:00	46.0	65.5	43.0	42.2
02:00-03:00	45.9	61.9	43.1	42.7
03:00-04:00	49.2	79.1	43.2	42.2
04:00-05:00	51.0	79.0	44.3	43.4
05:00-06:00	56.4	83.1	47.9	47.1
06:00-07:00	57.0	77.0	48.7	48.2

Table 4.13 - Weekend Background data for daytime hours (23:00:00-07:00) at NMP 1 (Indicative of the background at NMP 1 and NMP 2).

Measurement Time	LA_{eq}(dB)	LA_{max}(dB)	LA_{90}(dB)	Lowest background $La90_{1hour}$(dB)
Day 3 (17/08/2024)				
00:00-01:00	44.1	64.0	40.3	40.0
01:00-02:00	51.6	77.3	42.4	41.2
02:00-03:00	46.5	71.5	43.1	42.9
03:00-04:00	52.0	84.6	44.5	43.6
04:00-05:00	47.7	68.9	44.3	43.8
05:00-06:00	55.9	86.7	45.2	44.1
06:00-07:00	53.4	76.0	44.7	43.3
Day 3 and 4 (17/08/2024 and 18/08/2024)				
23:00-00:00	48.7	75.0	43.6	43.2
00:00-01:00	48.7	74.2	42.8	42.3
01:00-02:00	46.4	71.3	42.9	41.5
02:00-03:00	45.7	56.4	44.0	43.0
03:00-04:00	44.6	61.0	41.8	40.6
04:00-05:00	49.4	79.8	41.6	40.3
05:00-06:00	48.7	65.5	44.1	43.3
06:00-07:00	49.0	75.7	43.7	43.1
23:00-00:00	47.3	71.7	42.2	41.6

4.8.3 The representative background level chosen for the weekday background is 44Db which is the most frequently occurring lowest LA90 background level for the 15-minute measurements. The representative background level chosen for the weekend background data is 43Db.

4.9 Existing Noise Climate

4.9.1 During the attended background measurements, it was evident that the existing noise climate at the closest residential receptors on Pratling Street is dominated by distant road traffic possibly coming from the south of the site from the M20 motorway. Secondary noise sources include occasional bangs and crashes from the adjacent business's located on the industrial estate. Other noise contributors include some construction noise, bird song and noise from local residents.

4.9.2 Noise sources at NMP A are similar to those described above and the noise generated from adjacent Industrial estate.

4.9.3 Noise sources at NMP B are similar to those at NMP A however there was additional noise coming from the adjacent business Car Audio Medics- Repair workshop.

4.10 Control of Uncertainty

4.10.1 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 Precision south analyser is calibrated pre and post monitoring survey with the calibrator given from the manufacturer which has a calibrated value of 114dB (A), the value is then noted down pre survey and post survey to establish the drift from the value. The drift during the monitoring survey was 0.2dB.
- 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).

5 Noise Impact Assessment

5.1 Introduction

5.1.1 It is considered that the most significant noise sources associated with the development of the site is the onsite pumps shown in Drawing. No. 2499-002-05. However, the main waste processing is held internally.

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 In addition, it is stated; "*For this purpose, the objective is not simply to ascertain a lowest measured background sound level, but rather to quantify what is typical during particular time periods".*

5.2.3 With this in mind, the assessment will utilise the range of levels from the tables above.

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 downloaded from DEFRA in the form of a digital terrain model.

5.3.2 The sludge waste tanks are proposed to be operated as a source in steady state. However, they will be held internally. All operations are held internally inside the buildings labelled on Drawing No. 2499-002-05.

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 = 0.0 as it was considered that the land is predominantly acoustically reflective. Onsite buildings are set to have absorption coefficient of 0.6 reminiscent of steel sheeting added in the form of octave bands.
- The calculation grid has been produced as a 10x10m spacing, the receiver heights are modelled at 1.5m and snapped to the buildings at a distance greater than 3.5m in order to obtain a level with the absence of reflection. An additional receiver was placed at 4.0m to measure the affects at first floor height.
- HGVs are based on the consented movements, which is to be no more than 20 goods vehicle movements between the operational hours, which equates to 10 in 10 out which will be roughly 2 per hour for weekdays and 4 per hour for weekend operations.
- Forklift movements have been modelled to operate for 2 movements per hour across the line source for weekday and 4 per hour for weekend operations.
- Noise sources associated with the waste reception building (Building 2) and main waste processing building (Building 1) have all been modelled as sources in steady state as an area source with associated building surface areas stated in the model.
- The roller shutter doors located on Building 1 have been modelled as all of these being open for access and egress to the building. These have been modelled as vertical area sources in steady state during the operational hours. The rest of the building has been modelled as 45mm trapezoidal steel sheeting which surrounds the perimeter of the building and the roof.
- Building 2 has been modelled as open fronted on the north-west facing façade and the other building facades have been modelled as 45mm trapezoidal steel sheeting which surrounds the perimeter and the roof of the building.
- Buildings were set as acoustically reflective, with a absorption co efficient of 0.6, which utilises octave bands for the fabric of the building.
- As Shown on Drawing No.2499-002-05, there is a 1 meter high impervious bund area located adjacent to building 1, within which the tanks have been placed within, together with the 2no. external pumps.
- Surrounding the perimeter of the site is a concrete block wall 1.2m in height which surrounds the southern and eastern boundary.

- Noise levels were determined at receiver's representative of residential properties representing the nearest residential façade to the site as well as grid noise levels which are free-field, A-weighted, sound pressure levels.
- Surrounding residential properties were modelled at a height of 4.0m for the majority of residential dwellings. Commercial building heights have been taken from observations and information obtained from planning public access where available.
- The fabric, height and internal absorption of the onsite buildings is detailed within Table 5.1.
- Octave bands have been utilised where possible.

5.3.4 Table 5.1 below includes the measured noise levels for the anticipated activities, which have either been measured by Oaktree Environmental at an existing operational site or provided by the technology provider.

Table 5.1 – Measured noise levels of activities

Activity	Sound Pressure Level (LAeq)	Source	Notes on Geometry etc. within the model
Feeding tank (Internal inside Building 1)	58.8dB at 6m	Measurement made by Oaktree Environmental at an existing site. Octave bands available.	Modelled as a point source of 2m height. Internal sources inside Building 1, modelled as an area source. Operating as source in steady state.
DAF (Dissolved air flotation system) internal inside building 1.	78.6dB at 1m	Measurement taken from client.	Modelled as an area source inside building 1. Operating as a source in steady state.

Activity	Sound Pressure Level (LAeq)	Source	Notes on Geometry etc. within the model
CDE G Max. (Internal inside building 2)	88dB at 1m	Measurement taken from manufacturer specification.	Modelled as an area source adjacent to the CDE Hydro tip. Inside building 2. Operating as a source in steady state.
CDE Hydro Tip (Internal inside building 2)	90.8dB at 1m	Measurement taken from manufacturer specification.	Modelled as an area source inside building 2. Operating as source in steady state.
Conveyor (Internal inside building 2 processing building)	82.3dB at 1m	Measurement taken from manufacturer specification	Modelled as an area source inside building 2. Operating as a source in steady state.
HGV movements	53.8dB at 5m	Measurement made by Oaktree Environmental at an existing site. Octave bands available.	Rate of the HGV movements will be roughly one per hour (1 in, 1 out) during weekdays and 2 loads per hour on Saturdays (2 in, 2 out). Single correction added number per hour.
Forklift Movements	68dB at 1m	Measurements taken from similar site. Octave bands available	These have been modelled as a line source at a height of 1.5m. and assumed as a source in steady state with a Q value of 1.0. These have been modelled as 2 movements across the line source per hour for weekday and 4 per hour for weekend operations. Single correction added number per hour.

Activity	Sound Pressure Level (LAeq)	Source	Notes on Geometry etc. within the model
Pumps (Internal /External)	65dB at 1m, power level used at 73dB	Measurement taken from client.	Located internally inside building 1 and 2 and above ground located between building 1 and building 2. Sources added as an area source operating as a source in steady state.
Flue	65.0dB at 1m	Measurement made by Oaktree Environmental at an existing site	Noise source assumed to be 12.954m high based on elevations provided. This will be located as part of the odour abatement system. Located at the back of building 1. Modelled as a point source external to the odour abatement system.
Centrifuge. (Internal inside building 1)	84dB at 1m	Provided to Oaktree Environmental by the Technology provider.	This has been modelled inside Building 1 as part of the area source with subsequent sound power level included. Modelled as source in steady state.
Flocculator (Internal inside in building 1)	75dB at 1m	Measurement provided by the client	Located internally inside building 1, assumed to be a source in steady state.
Odour Abatement system	79dB at 1m, power level used at 87dB	Measurement provided by manufacturer.	This has been modelled as a point source at the back of building 1 at a height of 1m. Modelled as a source in steady state.

Activity	Sound Pressure Level (LAeq)	Source	Notes on Geometry etc. within the model
Loading /unloading of vacuum tanker(Building 2)	83.7dB at 10m	Measurement made by Oaktree Environmental of a similar plant.	Modelled as an area source as being pumped into building 2 .(Open fronted building) into the CDE system. Modelled as a source in steady state.

5.3.5 There are other noise sources shown on the site layout plan (Drawing No. 2499-002-05). However, these have been excluded from the assessment as they are adjacent to other noise emitting sources that will mask and contribute more to the onsite noise climate. Building 3 will only be a storage area for wastes to be repackaged and therefore considered not to be a significant noise generating activity and therefore no sources added.

5.3.6 With regards to penalties/corrections as per BS4142:2014, it is considered that the impulsive nature of the noise associated with the CDE plant/pumps and general operation of the site will be just perceptible at the nearest residential dwellings given the nature of the existing noise climate and therefore a 3dB penalty may be applied at these times.

5.3.7 With regards to the process, the tonal element of the plant is likely to be just perceptible at the nearest residential dwellings therefore a 2dB penalty may be applied at these times.

5.3.8 Tables 5.2 and 5.5 detail the predicted noise levels associated with the application site at the relevant receptors. These are based on the results of the modelling provided overleaf in Figures 5.1-5.2, which includes a weekend model and a weekday model. The predicted levels at the receivers located at the sensitive receptors have been compared to the range of LA90 background levels presented in the tables within Section 4.

5.3.9 Table 5.4 and 5.5 below details the nighttime background data collected by NOVA Acoustics compared to the modelling displayed in the figures below.

5.3.10 The tanks themselves have not been included in the model as noise sources (for example the Non Haz and Haz tanks located externally to building 1) as it is considered that the pumps are the predominant noise sources in relation to processes involving the tanks.

Figure 5.1 – Assessment of typical daytime/nighttime noise sources associated with the weekday operations at the site – grid at 1.5m height

Figure 5.2 – Assessment of typical daytime/nighttime noise sources associtaed with typical weekend operations at the site – grid at 1.5m height

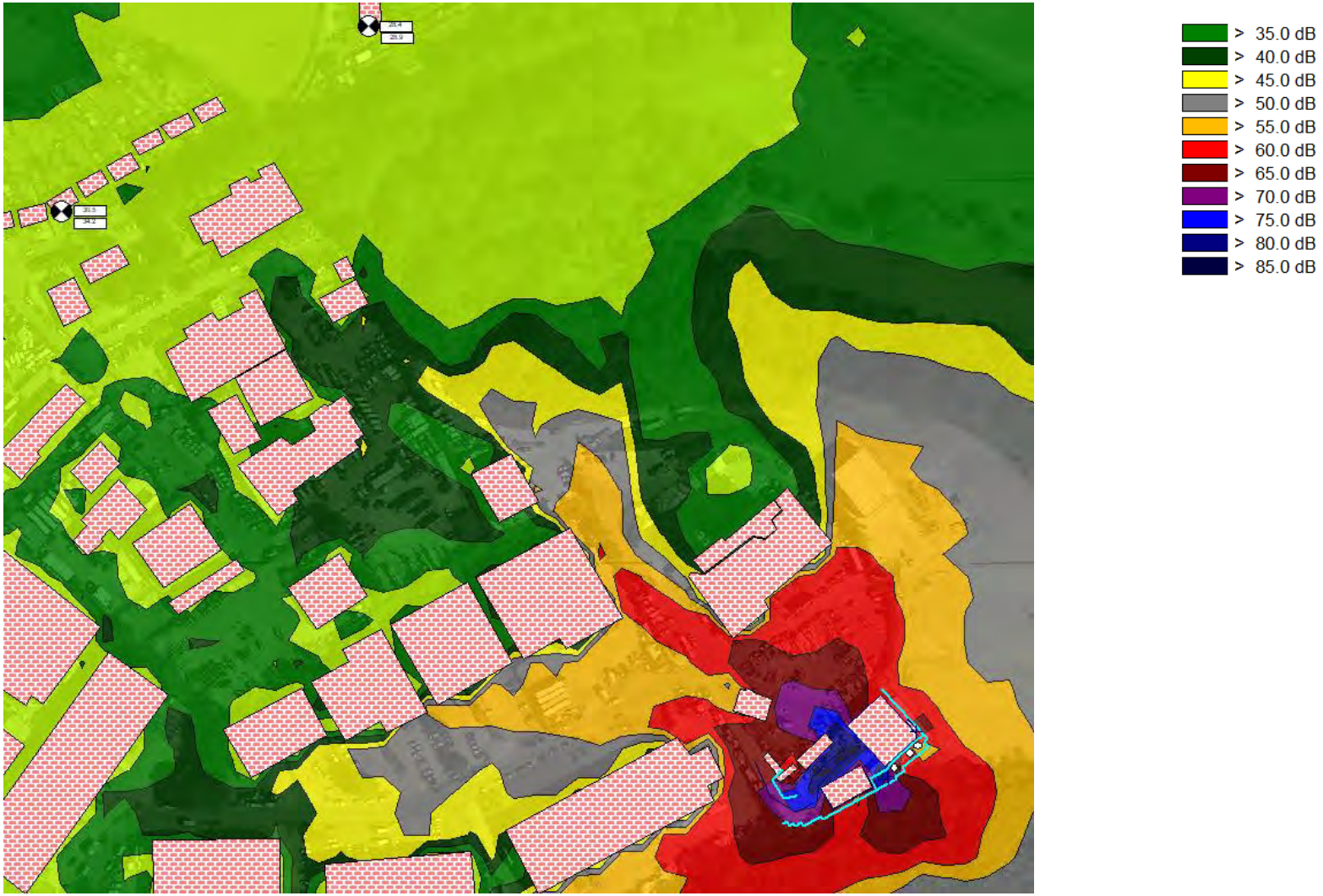


Table 5.2 – Assessment of typical weekday noise sources associated with the site as per BS4142:2014

	Calculated noise level at dwellings located off Pratling Street, dB (NMP A)	**Calculated noise level at dwellings located just north of Pratling Street, dB (NMP B)**	**Comments**
Calculated noise level as per figure 5.1 (1.5m receiver)	30.0	24.7	
Calculated noise level as per Figure 5.1 (4.0 m receiver)	33.9	27.8	
Addition of relevant penalties as per BS4142:2014 (4.0m)	+5 = 38.9	+5 = 32.8	As per Section 5
Addition of relevant penalties as per BS4142:2014 (1.5m)	+5 = 35.0	+ 5= 29.7	
Comparison to background levels (4m)	38.9-48.4/52.0= 9.5 to 13.1 below	32.8-47.2/50.6=14.4 to 17.8 below	See discussion within Section 5
Comparison to background levels (1.5m)	35-48.4/52.0= 13.4 to 17 below	29.7-47.2/50.6=17.2 to 20.9 below	

Table 5.3 – Assessment of typical weekend noise sources associated with the site as per BS4142:2014

	Calculated noise level at dwellings located off Pratling Street, dB(NMP A)	**Calculated noise level at dwellings located just north of Pratling Street, dB (NMP B)**	**Comments**
Calculated noise level as per figure 5.2 (1.5m receiver)	30.7	28.7	
Calculated noise level as per Figure 5.2 (4.0m receiver)	34.3	29.3	
Addition of relevant penalties as per BS4142:2014 (4.0m)	+5 = 39.3	+5 = 34.3	As per Section 5
Addition of relevant penalties as per BS4142:2014 (1.5m)	+5 = 35.7	+5 = 33.7	
Comparison to background levels (4m)	39.3-47.0/49.0= 7.7 to 9.7 below	34.3-4.07/49.0= 12.7 to 14.7 below	

	Calculated noise level at dwellings located off Pratling Street, dB(NMP A)	Calculated noise level at dwellings located just north of Pratling Street, dB (NMP B)	Comments
Comparison to background levels (1.5m)	35.7-47/49.0= 11.3 to 13.3 below.	33.7-45.0/46.5= 11.3 to 12.8 below	See discussion within Section 5

5.4 Comparison to Oaktree Background Results

5.4.1 As detailed within Table 5.2, the daytime rating level is below the range of LA90 figures or below the level at which an adverse impact is considered likely to occur and therefore negligible impacts are expected as a result of the proposed operations at these times.

5.4.2 With regards to weekend levels, the predicted rating level is well below that of the range of LA90 background figures. Therefore, negligible impacts are likely to occur as a result of the onsite operations.

5.4.3 With regards to night-time levels, the rating level is also below the level at which an adverse impact is considered likely to occur (i.e. +5dB threshold) and therefore no adverse impacts are expected as a result of the proposed operations at these times.

5.4.4 It should be noted that the assessment is a worst-case scenario and that noise levels will likely be lower than those calculated due to the application of tonal/impulsive penalties and the on times for the majority of the plant are assumed to be sources operating in steady state. With regards to Forklift movements, it is assumed that there will be 2 movements per hour across the line source. HGV movements are assumed to have 2 movements per hour across the line distance within the model.

5.5 Comparison to NOVA Background results

5.5.1 The comparison to the predicted nighttime sound pressure levels at the noise sensitive receptors to the nighttime background survey data collected by NOVA are displayed in the below Table 5.4.

Table 5.4 – Assessment of typical weekday noise sources associated with the site as per BS4142:2014. Nighttime

	Calculated noise level at dwellings located off Pratling Street, dB(NMP A)	Calculated noise level at dwellings located just north of Pratling Street, dB (NMP B)	Comments
Calculated noise level as per figure 5.2 (1.5m receiver)	30.0	24.7	
Calculated noise level as per Figure 5.2 (4.0m receiver)	33.9	27.8	
Addition of relevant penalties as per BS4142:2014 (4.0m)	+5 = 38.9	+5 = 32.8	As per Section 5
Addition of relevant penalties as per BS4142:2014 (1.5m)	+5 = 35.0	+ 5= 29.7	
Comparison to background levels (4m)	38.9-44= 5.1 below	32.8-44= 11.2 below	
Comparison to background levels (1.5m)	35.0-44= 9.0 below	29.7-44= 14.3 below	See discussion within Section 5

Table 5.5 – Assessment of typical weekend noise sources associated with the site as per BS4142:2014. Nighttime

	Calculated noise level at dwellings located off Pratling Street, dB(NMP A)	Calculated noise level at dwellings located just north of Pratling Street, dB (NMP B)	Comments
Calculated noise level as per figure 5.2 (1.5m receiver)	30.7	28.7	
Calculated noise level as per Figure 5.2 (4.0m receiver)	34.3	29.3	
Addition of relevant penalties as per BS4142:2014 (4.0m)	+5 = 39.3	+5 = 34.3	As per Section 5
Addition of relevant penalties as per BS4142:2014 (1.5m)	+5 = 35.7	+5 = 33.7	
Comparison to background levels (4m)	39.3-43= 3.7 below	34.3-43= 8.7 below	
Comparison to background levels (1.5m)	35.7-43= 7.3 below	33.7-43= 9.3 below	See discussion within Section 5

5.5.2 As per Tables 5.4 and 5.5 above the resultant impact when comparing the predicted noise levels emanating from the site to the nighttime background data for both weekday and weekend operations at the 2no. NSR's is considered to be low/negligible. Therefore, this does not warrant any further noise attenuation at the site.

6 Conclusions

6.1 Summary & Recommendations

6.1.1 Oaktree Environmental Limited have undertaken a noise impact assessment for the proposed waste treatment facility at St Michaels Close, Aylesford, ME20 7DH. The assessment was based on the guidance provided within BS4142:2014.

6.1.2 The primary receptors are considered to be the residential dwellings located on Pratling Street directly to the north of the site which includes a small cluster of dwellings north and further north east of the site.

6.1.3 The noise level arising from the proposed development has been calculated by constructing models. The CadnaA noise models were constructed using OS mapping Opendata and Google Earth satellite imagery, whilst topographical data was downloaded from DEFRA website in the form of digital terrain model. The model was populated using specific noise data which was either provided by the manufacturer or measured by Oaktree Environmental Ltd at a comparable site.

6.1.4 An acoustic correction based on the nature of the noise was applied to the noise levels calculated within the model in order to give an overall rating level for the proposed development at each noise sensitive receptor.

6.1.5 For the weekday and weekend models these have been modelled for the majority of noise sources at the site as operating as sources in steady state between the operational hours of the site, which provides a precautionary assessment due to breaks in between operations and maintenance of plant items.

6.1.6 The comparison of the noise level to the LA90 figures measured by Oaktree Environmental confirms that the impact of the proposed development will be negligible.

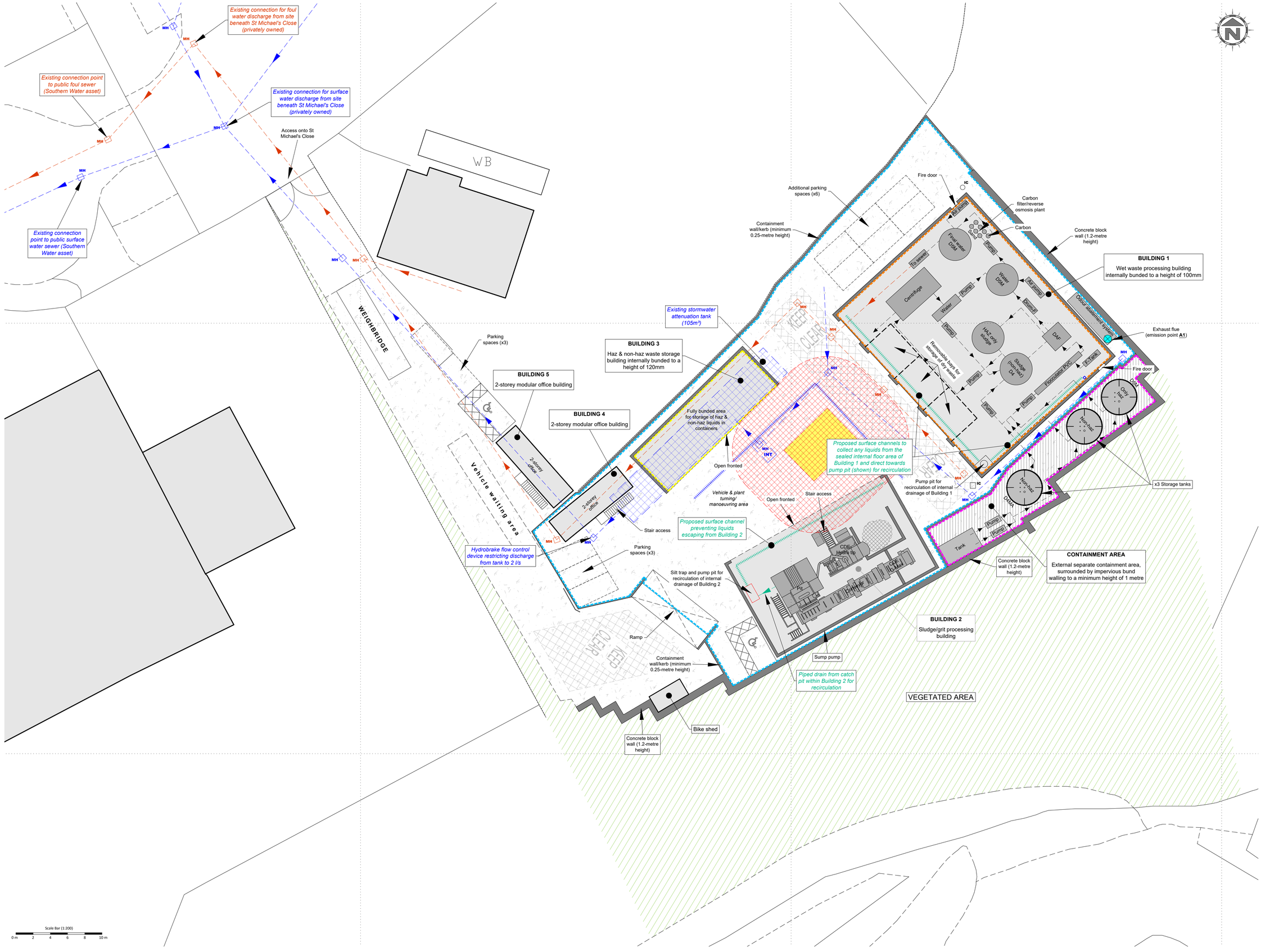
6.1.7 In addition, a subjective and contextual assessment has been provided as per the recommendations within BS4142:2014 which further confirms a negligible impact.

6.1.8 The comparison of NOVA Acoustics Background data to the predicted sound pressure levels have led to the resultant assessment concluding a low/negligible impact. As the predicted rating levels emanating from the site fall below that of the representative weekday/weekend background levels at both monitoring locations. Therefore, this does not warrant further assessment or requirement of onsite noise attenuation/mitigation at the site.

6.1.9 In addition, noise emissions will be controlled and regulated via the Noise Management Plan also produced by Oaktree Environmental. Therefore, considering the above, noise levels associated with the proposed development are acceptable and noise should not be considered an impediment to the grant of planning permission or the environmental permit.

APPENDIX I

DRAWINGS



NOTES

Drawing for indication only. Reproduced with the permission of the controller of H.M.S.O.

REVISION HISTORY

Rev:	Date:	Init:	Description:
-	18.09.24	RS/IA	Initial drawing

KEY:

- Containment Zone A (Building 1)
- Containment Zone B (Building 3)
- Containment Zone C (External tank storage area)
- Containment Zone D (Site-wide tertiary containment)
- INT — Full retention oil interceptor (fitted with penstock valve)
- Piped surface drainage (surface, foul, building)
- Linear surface channels (aco) - (surface, building)
- MH — Manhole (foul, surface)
- IC — Inspection cover (other services)
- Quarantine area (only used in the event of a fire and kept clear at all other times)
- 6 metre separation distance around the quarantine area where no other combustible wastes will be stored

Oaktree Environmental Ltd
Waste, Planning and Environmental Consultants

DRAWING TITLE
PROPOSED LAYOUT PLAN

CLIENT
Elliott Environmental Drainage Ltd

PROJECT/SITE
St Michael's Close, Aylesford, Kent

SCALE @ A1	CLIENT NO	JOB NO
1:200	2499	002

DRAWING NUMBER	REV	STATUS
2499-002-05	-	Issued

DRAWN BY	CHECKED	DATE
RS/IA	RS	18.09.24

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