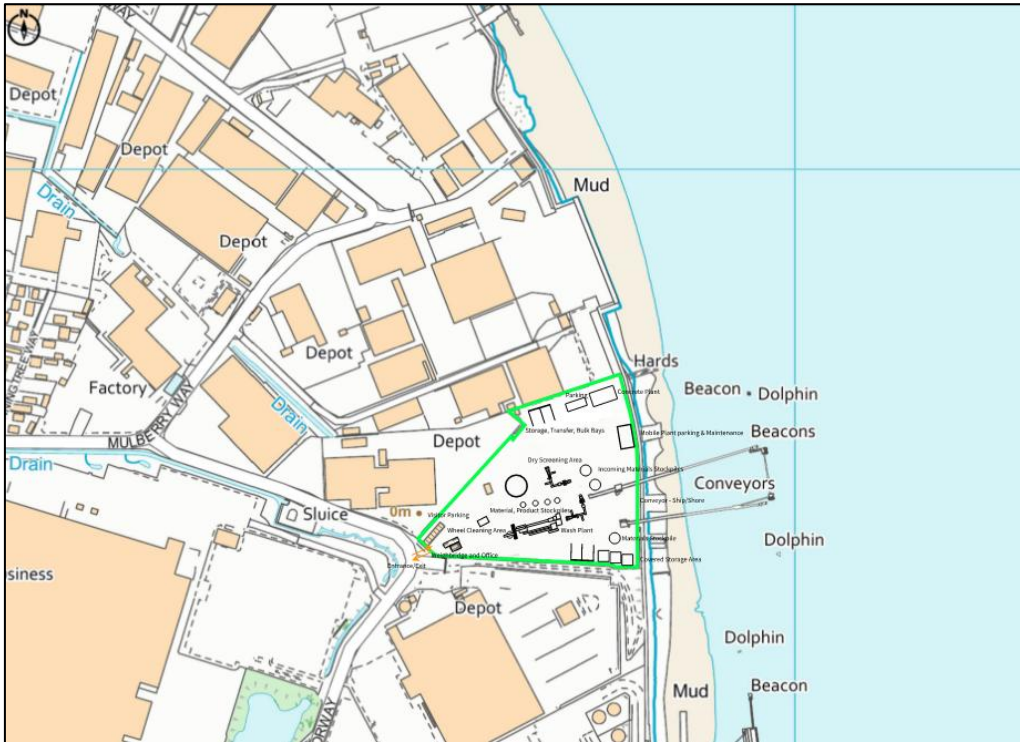


Erith Soil Treatment Facility, Erith DA8 1DE

784-B066441



Noise Impact Assessment

Hanson Quarry Products Europe Ltd

December 2024



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Appendix A – Acoustic Terminology

Appendix B – References

Acronyms/Abbreviations

Acronyms/Abbreviations	Definition
CADNA	Computer Aided Noise Abatement
DMRB	Design Manual for Roads and Bridges
HGV	Heavy Goods Vehicle
PPG	Planning Practice Guidance
UDP	Unitary Development Plan
UKAS	United Kingdom Accreditation Service

Executive Summary

A noise assessment has been undertaken in support of an Environmental Permit Application for a Soil Washing Facility and a Treatment of Non-Hazardous Waste Facility at Erith Soil Treatment Facility (the site) located at Hanson Quarry Products Ltd, Church Manorway, Erith, DA8 1DE.

The proposed facility will process a maximum of 800,000 tonnes per annum of non-hazardous soils. The activities on site will comprise of both dry recycling and soil washing to produce quality aggregates, soils and clay products for construction projects.

A baseline noise survey was undertaken to establish the background noise levels at the existing sensitive receptor locations during the weekday daytime and night-time periods as well as a Saturday daytime period which coincide with the proposed operational hours.

Predicted noise rating levels from the proposed operations are below the background noise levels at all existing sensitive receptors during the proposed operational hours. The BS 4142:2014 conclusion for a difference of this scale would be 'Low Impact' to 'No Impact' which corresponds to there being no noise or noise is barely audible or detectable.

This level of noise means that no action is needed beyond basic appropriate measures or Best Available Techniques (BAT) which will be implemented in accordance with the accompanying Operational Noise Management Plan.

1.0 Introduction

1.1 Purpose of this Report

This report presents the findings of a noise assessment to support an Environmental Permit Application for a Soil Washing Facility, and a Treatment of Non-Hazardous Waste Facility at Erith Soil Treatment Facility (the site) located at Hanson Quarry Products Ltd, Church Manorway, Erith, DA8 1DE.

The proposed facility will process a maximum of 800,000 tonnes per annum of non-hazardous soils. The activities on site will comprise both dry recycling and soil washing to produce quality aggregates, soils and clay products for construction projects.

A description of the existing noise environment in and around the site is provided. Noise surveys have been undertaken and the results used to verify predictions of the short-term and long-term effects of noise.

A list of acoustic terminology used in this report is provided in Appendix A.

1.2 Pre-Application Advice

Tetra Tech has undertaken a pre-application consultation with the Environment Agency. The advice received on 28th October 2024 (ref: EPR/AP3721SW/P002) following the consultation was that a Noise Impact Assessment is required due to the proposed night-time operations (between 23:00 – 07:00).

As such, this Noise Impact Assessment has been prepared in accordance with the below guidance.

- Noise and vibration management: environmental permits - GOV.UK (www.gov.uk).
- Supplementary pre-application advice on preparing a noise impact assessment

The regulation process for the Environment Agency is consistent with the aims of the Noise Policy Statement for England (NPSE), i.e. avoiding significant adverse noise impacts, mitigating and minimising adverse impacts on health, and contributing to the improvement of health and quality of life, where possible.

The Supplementary pre-application advice on preparing a noise impact assessment document further states the following with regards to Noise Impact Assessments.

“You must follow the criteria and reporting requirements of British Standard (BS) 4142 when submitting noise impact assessments (NIAs) in support of environmental permit applications.

This is because we regulate the impact of sound emissions from all of our sites in accordance with the methodology in BS 4142. Our standard permit condition which requires that the operator must “prevent or where that is not practicable, to minimise, the noise and vibration”, is in line with this.”

1.3 Acoustic Consultants’ Qualifications and Professional Memberships

The lead project Acoustic Consultant is Najwa Adnan-Smith. The report has been checked by Michaela Moffatt and verified by Dawit Abraham. Relevant qualifications, membership and experience are summarised in **Table 1.1**.

Table 1.1: Acoustic Consultants’ Qualifications & Experience

Name	Education	Experience in Undertaking Noise Assessments (Start date of working in noise & acoustics)	Attained Associate Membership of the Institute of Acoustics (date)	Attained Membership of the Institute of Acoustics (date)
Najwa Adnan-Smith	BSc 2016 PgDip 2024	Oct 2022	-	-
Michaela Moffatt	BSc 2015 PgDip 2016 MSc 2018	Nov 2015	Jan 2017	Dec 2022
Dawit Abraham	BSc 2008 MSc 2010	Oct 2010	Jan 2011	Jan 2015

2.0 Assessment Criteria

2.1 Noise and Vibration Management: Environmental Permits

Environmental permits have conditions that require operators to control pollution – this includes controlling noise and vibration.

The Environment Agency have produced a guidance to help holders and potential holders of permits to apply for, vary, and comply with their permits. When the term ‘environment agencies’ is used in the guidance, it is in reference to this organisation.

Table 2.1 considers the guidance of noise impact levels in relation to the document Noise and vibration management: environmental permits dated 31st January 2022. It provides the effect levels at sensitive receptors in relation to the closest corresponding BS 4142:2014+A1:2019 criteria for each defined level. A description of the level and the actions required dependant on the level is also included.

Table 2.1: Level of Noise Impact Criteria and Actions

Effect Level	Corresponding BS 4142 Criteria	Description / Actions
No noise, or barely audible or detectable noise	The closest Corresponding BS 4142 descriptor is ‘low impact or no impact’	This level of noise means that no action is needed beyond basic appropriate measures or Best Available Techniques (BAT). Low impact does not mean there is no pollution. However, if correctly assessed as low impact under BS 4142, the environment agencies may decide that taking action to minimise noise is a low priority.
Audible or detectable noise	The closest corresponding BS 4142 descriptor is ‘adverse impact’ (following consideration of the context).	This level of noise means that noise pollution is being (or is likely to be) caused at a receptor. At this level there is a duty to use appropriate measures to prevent or, where that is not practicable, minimise noise. You are not in breach if appropriate measures are used. There is a need to rigorously demonstrate that appropriate measures are being used.
Unacceptable level of audible or detectable noise	The closest corresponding BS 4142 descriptor is ‘significant adverse impact’ (following consideration of the context).	This level of noise means that significant pollution is being, or is likely to be, caused at a receptor (regardless of whether you are taking appropriate measures). You must take further action or you may have to reduce or stop operations. The environment agencies will not issue a permit if you are likely to be operating at this level.

2.2 Operational Noise – BS 4142:2014 Assessment Criteria

BS 4142:2014+A1:2019 sets down the following guidelines for assessing the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes, based upon difference between the measured background noise level and the rating level of the source under consideration. In particular, the standard states:

- a) Typically, the greater the difference, the greater the magnitude of the impact.
- b) A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.
- c) A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.
- d) The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

In addition to noise levels the significance of the impact depends on the individuals affected and to the acoustic features present which may be assessed subjectively or objectively as appropriate. Section 9 of BS 4142:2014 recommends that correction factors be applied to the specific noise level if the noise contains certain acoustic features such as:

- tonality;
- impulsivity;
- other sound characteristics which are readily distinctive; and
- intermittency.

3.0 Assessment Methodology

3.1 Site Operating Times

As confirmed by the client, the proposed activities will operate within the following time periods.

- Asphalt wastes and road plaining wastes delivery to site:
 - 24 hours Monday to Friday;
- Waste processing – dry recycling and soil washing:
 - 06:00 – 20:00 Monday to Friday;
 - 08:00 – 16:00 Saturday.

Considering the proposed operating times, the following scenarios are assessed within this Noise Impact Assessment.

1. Night-time (23:00 – 07:00) weekday deliveries to site;
2. Early morning (06:00 – 07:00) and daytime (07:00 – 20:00) weekday deliveries to site, and dry recycling and soil washing; and,
3. Daytime (08:00 – 16:00) Saturday deliveries to site, and dry recycling and soil washing.

3.2 Noise Modelling Methodology

Three-dimensional noise modelling has been undertaken based on the monitoring data to predict noise levels at a number of locations both horizontally and vertically. CADNA noise modelling software has been used. This model is based on ISO 9613-2 noise propagation methodology and allows for detailed prediction of noise levels to be undertaken for large numbers of receptor points and different noise emission scenarios both horizontally and vertically. The modelling software calculates noise levels based on the emission parameters and spatial settings that are entered. Input data and model settings as given in **Table 3.1** have been used.

Table 3.1: Modelling Parameters Sources and Input Data

Parameter	Source	Details
Horizontal distances – around site	Ordnance Survey	OS OpenMap
Ground levels – around site	DEFRA	LIDAR DTM 1m
Building heights – around site	Tetra Tech Observations	<ul style="list-style-type: none"> • 4.0m height for one-storey properties • 7.5 m height for two storey properties • +3.0m per additional storey
Receptor positions* (using Building Evaluation functionality on CADNA)	Tetra Tech	<ul style="list-style-type: none"> • 1.5 m for ground floor • +3.0 m per additional storey
Modelling Parameters	Tetra Tech	<ul style="list-style-type: none"> • Ground Absorption: 0.5 • Order of Reflections: 3 • Noise Contour Plot Grid Receiver Spacing: 7x7m
Proposed Plans	Tetra Tech	Drawing Title: Site Layout Plan Drawing No: ERI/B066441/LAY/01 Dated: 13 th June 2024
*All receptors modelled 1.0m from building façade unless otherwise stated.		

It is acknowledged that a number of the values of parameters chosen will affect the overall noise levels presented in this report. However, it should be noted that the values used, as identified above, are worst-case.

3.3 Model Input Data

Information regarding noise emissions from the proposed operations have been determined using a combination of Tetra Tech library and data from BS 5228-1:2009+A1:2014.

The sound level data used within the noise model are presented within **Table 3.2** and **Table 3.3**.

Table 3.2: Summary of Noise Input Data (Sound Pressure Levels) – Deliveries to Site

Noise Source	Details	Sound Pressure Level (dB(A))	Distance from Source (m)	Octave Band Sound Pressure Level (dB)								Source
				63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	
Articulated dump truck (tipping fill)	1no. point sources at 1m above ground Source modelled in a steady state	74.0 L _{Aeq}	10	80.0	76.0	73.0	70.0	69.0	66.0	63.0	58.0	BS 5228-1 Table C.2.32
Articulated dump truck* (movements)	28no. moving point sources at 1m above ground Source modelled in a steady state	81.0 L _{AFmax}	10	85.0	87.0	77.0	75.0	76.0	73.0	69.0	62.0	BS 5228-1 Table C.2.33

*Maximum noise level applied to moving point source to simulate vehicle movements.
All values are sound pressure levels in dBA re: 2×10^{-5} Pa.

Table 3.3: Summary of Noise Input Data (Sound Pressure Levels) – Dry Recycling and Soil Washing

Noise Source	Details	Sound Pressure Level (dB(A))	Distance from Source (m)	Octave Band Sound Pressure Level (dB)								Source
				63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	
Front end loading vehicle (loading)	1no. point source at 1m above ground Source modelled in a steady state	70.0 L _{Aeq}	10	70.2	64.8	65.5	73.0	61.2	58.6	58.2	47.9	Tetra Tech library
Front end loading vehicle* (movements)	2no. moving point sources at 1m above ground Source modelled in a steady state	73.6 L _{AFmax}	10	77.1	66.6	69.2	67.9	70.2	67.4	59.2	46.3	Tetra Tech library

Noise Impact Assessment

Noise Source	Details	Sound Pressure Level (dB(A))	Distance from Source (m)	Octave Band Sound Pressure Level (dB)								Source
				63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	
360 grab excavator (loading)	1no. point source at 1m above ground Source modelled in a steady state	70.8 L _{Aeq}	15	81.4	78.9	71.1	65.4	63.8	63.9	58.3	49.4	Tetra Tech library
Tractor bowser (discharging)	1no. point source at 1m above ground Source modelled at 50% operating time	81.0 L _{Aeq}	10	80.0	81.0	75.0	79.0	73.0	74.0	70.0	65.0	BS 5228-1 Table C.6.37
Tractor bowser* (towing water bowser)	2no. moving point source at 1m above ground Source modelled in a steady state	83.0 L _{AFmax}	10	78.0	86.0	84.0	78.0	78.0	77.0	70.0	69.0	BS 5228-1 Table C.6.38
Mobile screener	1no. point source at 2m above ground Source modelled at 75% operating time	85.5 L _{Aeq}	10	77.8	76.7	74.7	79.6	84.2	73.9	67.4	61.8	Tetra Tech library
Mobile crusher	1no. point source at 1m above ground Source modelled at 50% operating time	90.3 L _{Aeq}	5	91.7	85.9	84.6	86.4	85.0	83.4	81.6	73.5	Tetra Tech library

Noise Impact Assessment

Noise Source	Details	Sound Pressure Level (dB(A))	Distance from Source (m)	Octave Band Sound Pressure Level (dB)								Source
				63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	
Telehandler	1no. point source at 1m above ground Source modelled at 50% operating time	70.0 L _{Aeq}	10	82.0	72.0	63.0	65.0	67.0	64.0	56.0	49.0	BS 5228-1 Table C.4.55
CDE Processing Plant (wash plant)	2no. point sources on each end of the wash plant at 2m above ground Source modelled in a steady state	80.4 L _{Aeq}	10	87.9	75.1	73.8	75.4	72.9	73.1	73.7	70.6	Tetra Tech Library

*Maximum noise level applied to moving point source to simulate vehicle movements.
All values are sound pressure levels in dBA re: 2 x 10⁻⁵ Pa.

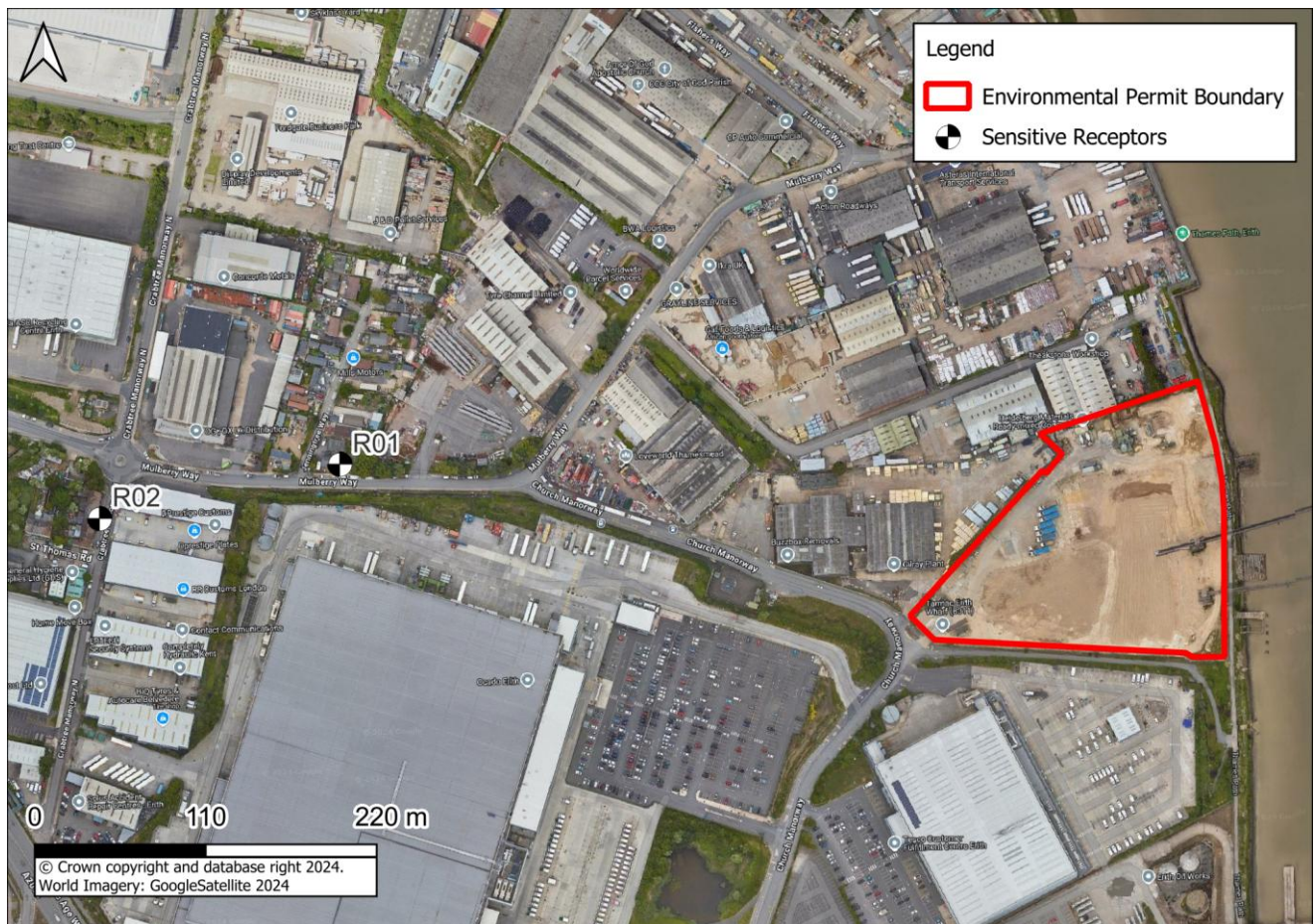
3.4 Sensitive Receptors

Table 3.4 summarises receptor locations that have been selected to represent worst-case sensitive receptors with respect to direct noise from the site. Façades of the nearest noise sensitive properties to the development site have been represented. The locations of the receptors are presented within Figure 3.1.

Table 3.4: Existing Sensitive Receptor Locations

Location	Description	Type of Use	Approximate Distance from Site Boundary (m)
R01	Jenningtree Way	Residential	380
R02	Crabtree Manorway North	Residential	527

Figure 3.1: Existing Sensitive Receptor Locations



4.0 Noise Survey

4.1 Noise Survey Details

A monitoring survey was undertaken to characterise baseline ambient noise levels currently experienced on the site and to establish the relative local background noise levels.

Equipment used during the survey included:

Rion NL-52	Environmental Noise Analyser	s/n	219905
Rion NC-75	Sound Calibrator	s/n	34580543
Rion NL-52	Environmental Noise Analyser	s/n	710471
Rion NC-75	Sound Calibrator	s/n	34145542

The measurement equipment was checked against the appropriate calibrator at the beginning and end of the measurements, in accordance with recommended practice. The accuracy of the calibrators can be traced to National Physical Laboratory Standards, calibration certificates for which are available on request.

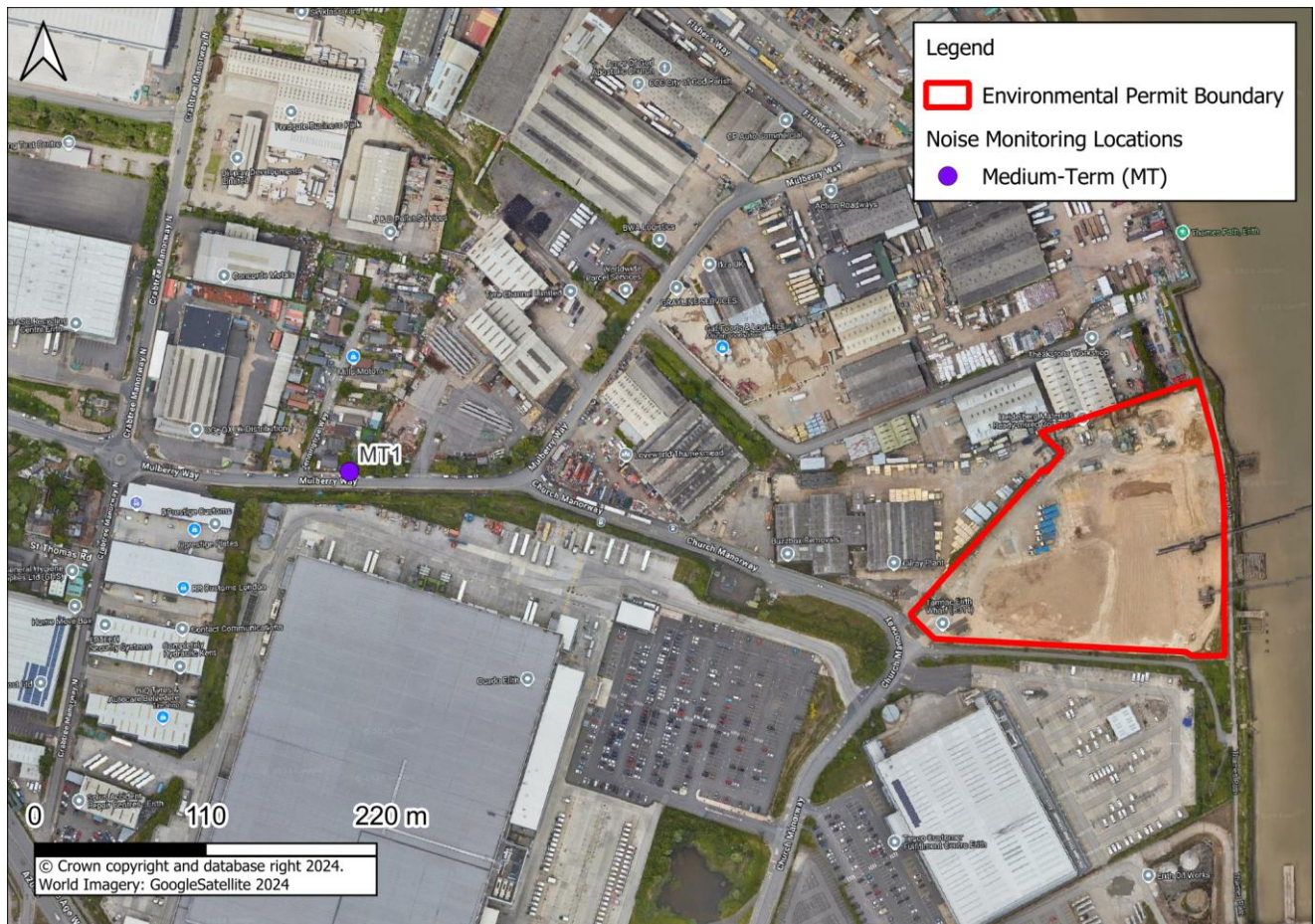
A baseline monitoring survey was undertaken at one location (as specified in **Table 4.1** and shown in **Figure 4.1**) on Saturday 16th November 2024 and on Monday 18th November 2024.

Measurements were taken in general accordance with BS 7445-1:2003 The Description and Measurement of Environmental Noise: Guide to quantities and procedures. Weather conditions during the survey period were observed as being dry. Anemometer readings confirmed that wind speeds were less than 5 ms⁻¹ at all times during the survey.

Table 4.1: Noise Monitoring Locations

Location	Description
MT1	Mulberry Way, near the entrance to Jenningsree Way.

Figure 4.1: Noise Monitoring Locations



4.2 Noise Survey Results

The dominant noise sources found in the area are the general industrial noise from the surrounding area including plant noise.

Ambient and background noise levels are usually described using the L_{Aeq} index (a form of energy average) and the L_{A90} index (i.e. the level exceeded for 90% of the measurement period) respectively. The presented $L_{Aeq,T}$ are average noise levels whilst the L_{A90} is the modal noise level of each 15-minute measurement over the stated survey period.

Table 4.2: Results of Baseline Noise Monitoring Survey

Period	Duration (T)	Monitoring Date and Times	Location	Temperature (°C)	Wind Speed (ms ⁻¹) and Direction	L _{Aeq,T} (dB)	L _{A90,T} (dB)
Weekday Daytime	1 Hour	Monday 18/11/2024 18:30 – 19:30	MT1	5	0-1 NW	65.7	50.0
Weekday Early Morning	1 Hour	Monday 18/11/2024 05:30 – 06:30		7	0-1 NW	67.2	49.0
Weekend Daytime	1 Hour	Saturday 16/11/2024 13:28 – 14:28		11	4 W	64.7	49.0

All values are sound pressure levels in dBA re: 2 x 10⁻⁵ Pa.

5.0 Assessment of Effects

5.1 Operational Phase

5.1.1 Scenario 1: Night-time (23:00 – 07:00) Deliveries to Site

This assessment compares the predicted noise levels from the proposed night-time deliveries to the site with the measured background noise levels L_{A90} at the surrounding existing residential receptors.

A correction of +3 dB has been applied at the nearest receptor locations (<500m from site boundary) to account for the impulsivity nature of the proposed delivery activities.

Table 5.1 presents the rating levels from the delivery activities on site against the representative background noise levels at the sensitive receptor locations.

Table 5.1: BS 4142:2014 Assessment – Night-time Deliveries to Site

Location	Existing Night-time Measured Background L_{A90}	Specific Noise Levels from Deliveries to Site L_{Aeq}	Noise Rating Levels $L_{Ar,Tr}$	BS 4142 Score
R01	49	36	39	-10
R02	49	35	35	-14

All values are sound pressure levels in dBA re: 2×10^{-5} Pa.

All calculations used to derive the above table (including averaging of background noise levels and predicted source noise levels) have been undertaken to 1 decimal place to avoid perpetuation of rounding errors. However, in accordance with BS4142 para 8.6 the levels are expressed as integers (with 0.5 dB being rounded up). This may mean that the arithmetic in the above table may appear to be up to 1 dB incorrect due to this rounding.

As demonstrated within **Table 5.1**, the results of the assessment indicate that the BS 4142 noise rating levels from the delivery activities on site are below the existing night-time background noise levels at all sensitive receptor locations. This is an indication that there would be **no adverse impact** resulting from the night-time delivery activities on site at the surrounding existing sensitive receptors.

5.1.2 Scenario 2: Weekday On-site Operations

This assessment compares the predicted noise levels from the proposed early morning and daytime weekday operations on site, inclusive of deliveries, dry recycling and soil washing activities, with the measured background noise levels L_{A90} at the surrounding existing residential receptors.

A correction of +3 dB has been applied at the nearest receptor locations (<500m from site boundary) to account for the impulsivity nature of the proposed activities.

Table 5.2 presents the rating levels from the on-site operations against the representative background noise levels at the sensitive receptor locations.

Table 5.2: BS 4142:2014 Assessment – Weekday On-site Operations

Location	Existing Measured Background L_{A90}		Specific Noise Levels from Deliveries to Site L_{Aeq}		Noise Rating Levels $L_{Ar,Tr}$		BS 4142 Score	
	Daytime	Early Morning	Daytime	Early Morning	Daytime	Early Morning	Daytime	Early Morning
R01	50	49	45	45	48	48	-2	-1
R02	50	49	44	44	44	44	-6	-5

All values are sound pressure levels in dBA re: 2×10^{-5} Pa.

All calculations used to derive the above table (including averaging of background noise levels and predicted source noise levels) have been undertaken to 1 decimal place to avoid perpetuation of rounding errors. However, in accordance with BS4142 para 8.6 the levels are expressed as integers (with 0.5 dB being rounded up). This may mean that the arithmetic in the above table may appear to be up to 1 dB incorrect due to this rounding.

As demonstrated within **Table 5.2**, the results of the assessment indicate that the BS 4142 noise rating levels from the weekday on-site operations are below the existing background noise levels at all sensitive receptor locations during the early morning (06:00 – 07:00) and daytime (07:00 – 20:00) operational periods. This is an indication that there would be **no adverse impact** resulting from the on-site operations during the weekday period at the surrounding existing sensitive receptors.

5.1.3 Scenario 3: Saturday On-site Operations

This assessment compares the predicted noise levels from the proposed Saturday operations on site, inclusive of deliveries, dry recycling and soil washing activities, with the measured background noise levels L_{A90} at the surrounding existing residential receptors.

A correction of +3 dB has been applied at the nearest receptor locations (<500m from site boundary) to account for the impulsivity nature of the proposed activities.

Table 5.3 presents the rating levels from the on-site operations against the representative background noise levels at the sensitive receptor locations.

Table 5.3: BS 4142:2014 Assessment – Saturday On-site Operations

Location	Existing Saturday Daytime Measured Background L_{A90}	Specific Noise Levels from Deliveries to Site L_{Aeq}	Noise Rating Levels $L_{Ar,Tr}$	BS 4142 Score
R01	49	45	48	-1
R02	49	44	44	-5

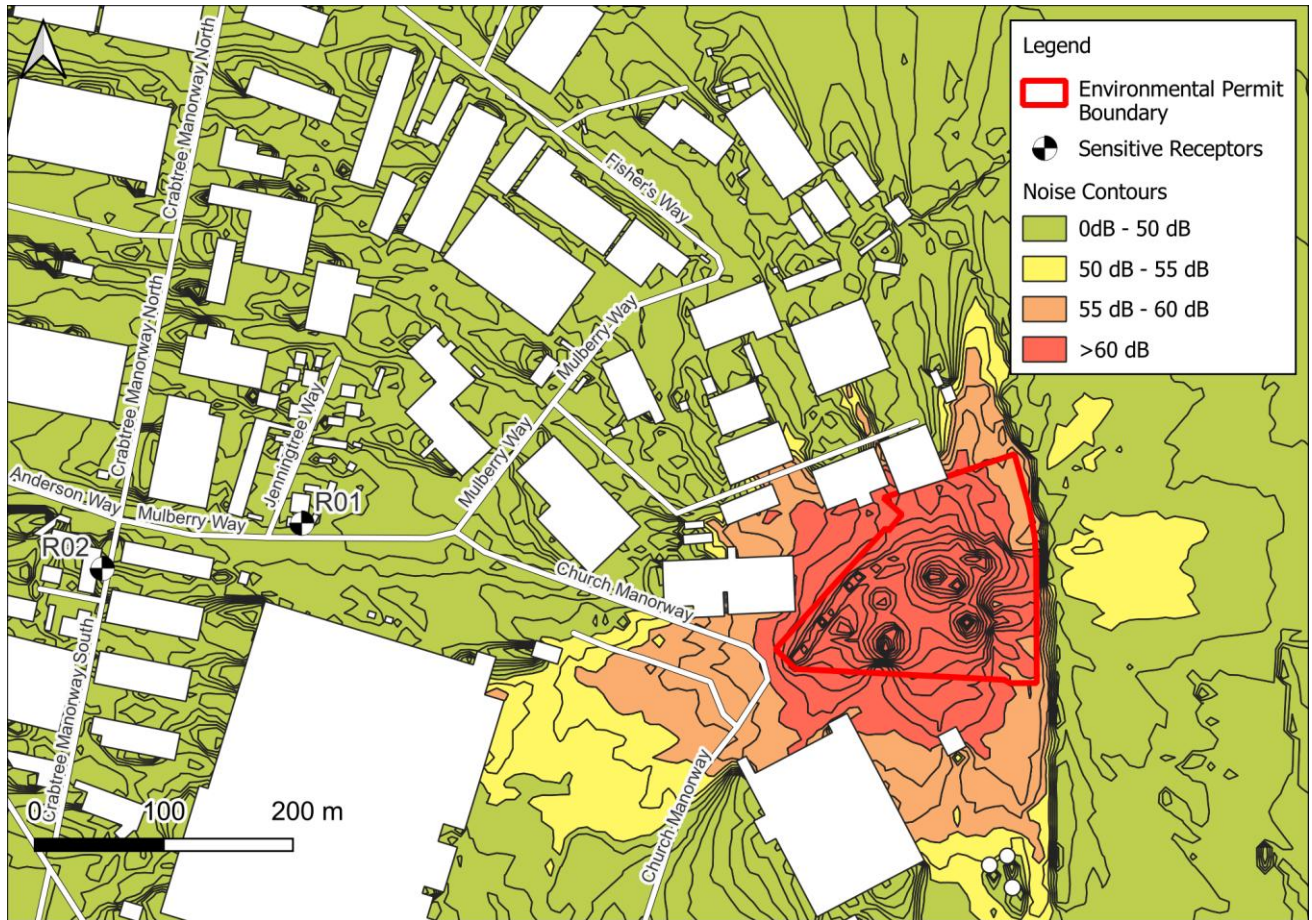
All values are sound pressure levels in dBA re: 2×10^{-5} Pa.

All calculations used to derive the above table (including averaging of background noise levels and predicted source noise levels) have been undertaken to 1 decimal place to avoid perpetuation of rounding errors. However, in accordance with BS4142 para 8.6 the levels are expressed as integers (with 0.5 dB being rounded up). This may mean that the arithmetic in the above table may appear to be up to 1 dB incorrect due to this rounding.

As demonstrated within **Table 5.3**, the results of the assessment indicate that the BS 4142 noise rating levels from the Saturday on-site operations are below the existing background noise levels at all sensitive receptor locations during the daytime (08:00 – 16:00) operational period. This is an indication that there would be **no adverse impact** resulting from the on-site operations during the Saturday operational period at the surrounding existing sensitive receptors.

For indicative purposes, the daytime noise contour plot from all proposed operations on site are shown in **Figure 5.1**.

Figure 5.1: Daytime LAeq,1hour Noise Contour Plot



6.0 Conclusion

A noise assessment has been undertaken in support of an Environmental Permit Application for a Soil Washing Facility and a Treatment of Non-Hazardous Waste Facility at Erith Soil Treatment Facility (the site) located at Hanson Quarry Products Ltd, Church Manorway, Erith, DA8 1DE.

The proposed facility will process a maximum of 800,000 tonnes per annum of non-hazardous soils. The activities on site will comprise of both dry recycling and soil washing to produce quality aggregates, soils and clay products for construction projects.

A baseline noise survey was undertaken to establish the background noise levels at the existing sensitive receptor locations during the weekday daytime and night-time periods as well as a Saturday daytime period which coincide with the proposed operational hours.

Predicted noise rating levels from the proposed operations are below the background noise levels at all existing sensitive receptors during the proposed operational hours. The BS 4142:2014 conclusion for a difference of this scale would be 'Low Impact' to 'No Impact' which corresponds to there being no noise or noise is barely audible or detectable.

This level of noise means that no action is needed beyond basic appropriate measures or Best Available Techniques (BAT) which will be implemented in accordance with the accompanying Operational Noise Management Plan.

Appendices

Appendix A – Acoustic Terminology

Acoustic Terminology

dB Sound levels from any source can be measured in frequency bands in order to provide detailed information about the spectral content of the noise, i.e. whether it is high-pitched, low-pitched, or with no distinct tonal character. These measurements are usually undertaken in octave or third octave frequency bands. If these values are summed logarithmically, a single dB figure is obtained. This is usually not very helpful as it simply describes the total amount of acoustic energy measured and does not take any account of the ear's ability to hear certain frequencies more readily than others.

dB(A) Instead, the dBA figure is used, as this is found to relate better to the loudness of the sound heard. The dBA figure is obtained by subtracting an appropriate correction, which represents the variation in the ear's ability to hear different frequencies, from the individual octave or third octave band values, before summing them logarithmically. As a result the single dBA value provides a good representation of how loud a sound is.

L_{Aeq} Since almost all sounds vary or fluctuate with time it is helpful, instead of having an instantaneous value to describe the noise event, to have an average of the total acoustic energy experienced over its duration. The $L_{Aeq, 07:00 - 23:00}$ for example, describes the equivalent continuous noise level over the 16-hour period between 7 am and 11 pm. During this time period the L_{pA} at any particular time is likely to have been either greater or lower than the $L_{Aeq, 07:00 - 23:00}$.

L_{Amin} The L_{Amin} is the quietest instantaneous noise level. This is usually the quietest 125 milliseconds measured during any given period of time.

L_{Amax} The L_{Amax} is the loudest instantaneous noise level. This is usually the loudest 125 milliseconds measured during any given period of time.

L_n Another method of describing, with a single value, a noise level which varies over a given time period is, instead of considering the average amount of acoustic energy, to consider the length of time for which a particular noise level is exceeded. If a level of x dBA is exceeded for say, 6 minutes within one hour, then that level can be described as being exceeded for 10% of the total measurement period. This is denoted as the $L_{A10, 1 \text{ hr}} = x \text{ dB}$.

The L_{A10} index is often used in the description of road traffic noise, whilst the L_{A90} , the noise level exceeded for 90% of the measurement period, is the usual descriptor for underlying background noise. L_{A1} and L_{Amax} are common descriptors of construction noise.

R_w The *weighted sound reduction index* determined using the above *measurement* procedure, but weighted in accordance with the procedures set down in BS EN ISO 717-1. Partitioning and building board manufacturers commonly use this index to describe the inherent sound insulation performance of their products.

Appendix B – References

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