Noise Impact Assessment

Otterpool Waste Transfer Station

Countrystyle Recycling Limited

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Basis of Report

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1.0 Introduction

Countrystyle Recycling Limited (CRL) has appointed SLR Consulting Ltd (SLR) to undertake a noise assessment for the proposed new Otterpool Waste Transfer Station (WTS) located in Ashford, Kent. The assessment is to be submitted as part of a planning application.

Due to the potential for the WTS to generate noise, a noise impact assessment has been completed to assess proposals in the context of the existing sound climate.

This Report includes:

- A Baseline Survey.
- A British Standard 4142:2014+A1:2019 *Methods for rating and assessing industrial and commercial sound* (BS 4142) assessment of the proposed operations associated with the proposal.

1.1 Report Structure

This Report presents:

- A description of the Site.
- A description of applicable guidance.
- The summary results of a baseline background sound survey at locations representative of the nearest noise-sensitive receptors relative to the proposed development.
- An assessment of proposed operations associated with the development, undertaken in accordance with BS 4142.

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

2.0 Site Description

2.1 Existing Site

The site is located on Ashford Road, Kent, TN25 6DA centred on National Grid Reference (NGR) TR 11237 36597. The town of Ashford is located approximately 11km north-west of the site.

The area surrounding the site comprises predominantly agricultural / open land. The English Channel is situated approximately 4.6km south / south-east, and the East Stour Rivers flows in a west-east direction approximately 320m north of the site at its closest point.

The site will be accessed via the A20 Ashford Road which runs adjacent to the site's northern EP boundary. The closest residential receptors are individual properties situated approximately 160m north west, 120m west, 220m south, and 240m east.

The site's location is illustrated on Drawing 01, and the Environmental Permit Boundary. Local receptors within a 500m radius of the site are shown on Drawing 02. All drawings are contained in Appendix B.

Table 2-1 below summarises the surrounding land uses.

Table 2-1: Surrounding Land Uses

Boundary	Description
North	Adjacent to the north is the A20 Ashford Road. Immediately beyond this is a commercial/industrial premises, followed by open ground, and the East Stour River.
East	Immediately to the east lies Otterpool Quarry Site of Special Scientific Interest (SSSI), followed by an individual residential property called Mink Farm. The land beyond this predominantly comprises open/agricultural land.
South	Otterpool Quarry SSSI lies immediately south of the site, followed by Upper Otterpool residential property. Open/agricultural land also lies in this direction.
West	The B2067 lies approximately 130m to the west. Land around this largely comprises open / agricultural land, in addition to Otterpool Manor, and Barrow Hill Farm Cottages residential properties, and a small commercial/industrial area.

The immediate surrounding land uses are described in further detail below.

2.1.1 Agricultural / Open Land

The area surrounding the site comprises predominantly agricultural / open land. The site is bounded to the eastern, southern and western EP boundaries by agricultural / open land.

2.1.2 Commercial and Industrial

Within 500m of the site, there are two commercial / industrial premises, as follows:

- Approximately 20m north of the site, across Ashford Road, lies a commercial premises belonging to SEVA Rail Service Limtied and 'The Airport Cafe'; and
- Approximately 180m west of the site is Invvu Construction Consultants, and stables.

2.1.3 Residential

There are a limited number of residential properties within 500m of the proposed site. The closest residential receptors are individual properties situated approximately 160m north west, 120m west, 220m south, and 240m east.

Residential properties located on the outskirts of Sellindge village are situated approximately 420m northwest of the site.

2.1.4 Local Transport Network

Ashford Road (A20) runs in an east-west direction adjacent to the site's northern EP boundary. In addition to this, Otterpool Lane (B2067) lies approximately 130m west of the site, and an unnamed track is approximately 100m east of the site.

2.2 Proposed Site

The proposed Otterpool WTS will accept up to 75,000 tonnes per annum (tpa) of predominantly non-hazardous mixed waste with a small proportion of that consisting of clinical waste (approximately 2,000 tpa) including nappies and sharps.

It is understood that all operations would occur during the daytime period between 07:00am and 18:00pm Monday to Sunday including bank holidays.

It is also understood that all waste will be accepted and stored within the enclosed WTS building.

All waste associated with the WTS would arrive by various types of vehicles, namely;

- Artic lorries, between 15 tonnes to 22 tonnes
- Roll on, Roll off containers, between 7.5 tonnes and 10 tonnes
  - These vehicles will be described as a Heavy Goods Vehicles (HGV) in the assessment.
- Dustcart, 7 tonnes
  - This vehicle will be described as a Light Good Vehicles (LGV) in the assessment.

2.2.1 Process Description

Non-hazardous waste will be accepted on site for storage and bulking up prior to transfer to a suitably permitted alternative facility for further recovery or disposal.

The proposed site will consist of a WTS building, housing designated concrete bays and containers for the storage of waste including co-mingled recyclable materials, bulky waste, paper and cardboard, residual waste, street sweepings, garden waste, clinical waste, and food waste, as illustrated on Drawing 03 in Appendix B.

Treatment of non-hazardous waste on site will consist of manual sorting and separation, storage and bulking up only.

3.0 Guidance

summary of the requirements outlined in the EA Guidance document, and the assessment methodology outlined in BS4142:2014+A1:2019 are provided below.

3.1 Noise and vibration management: environmental permits

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

The NVM references BS4142:2014+A1:2019 as the appropriate assessment methodology.

The NVM outlines how context should be taken into account in the assessment and notes that *"Whilst context allows you to interpret impact thresholds (to a degree), there are practical limits to the extent of the interpretation. It is unlikely you could adjust the assessment outcome beyond the next band (for example, modifying a BS 4142 outcome of more than 10dB to be less than an 'adverse impact')."*

Determining the outcome of the assessment the following should be considered:

- weekdays rather than weekends.
- what the sound 'means' – meaningful sound is one that conveys an unpleasant meaning beyond its mere acoustic content, for example noise from an abattoir.
- time of day.
- the absolute sound level.
- where the sound occurs.
- new industry or new residences.
- intrinsic links between the source and receptor, for example the source is the resident's place of work.
- local attitudes.
- the residual acoustic environment.
- the land use at the receptor (for example, gardens rather than yards).
- the exceedance (traditional BS 4142).
- whatever else might be particular to that individual situation.

Based on the results of the BS4142:2014+A1:2019 assessment the NVM has three distinct requirements as detailed in Table 3-1.

Table 3-1 NVM Assessment

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

3.2 British Standard 4142:2014+A1:2019

British Standard 4142:2014+A1:2019 *Methods for rating and assessing industrial and commercial sound* is intended to be used to assess the potential adverse impact of sound, of an industrial and/or commercial nature, at nearby noise-sensitive receptor locations within the context of the existing sound environment.

Where the specific sound contains tonality, impulsivity and/or other sound characteristics, penalties should be applied depending on the perceptibility. For tonality, a correction of either 0, 2, 4 or 6dB should be added and for impulsivity, a correction of either 0, 3, 6 or 9dB should be added. If the sound contains specific sound features which are neither tonal nor impulsive, a penalty of 3dB should be added.

In addition, if the sound contains identifiable operational and non-operational periods, that are readily distinguishable against the existing sound environment, a further penalty of 3dB may be applied.

The assessment of impact contained in BS4142:2014+A1:2019 is undertaken by comparing the sound rating level, i.e. the specific sound level of the source plus any penalties, to the measured representative background sound level immediately outside the noise-sensitive receptor location. Consideration is then given to the context of the existing sound environment at the noise-sensitive receptor location to assess the potential impact.

Once an initial estimate of the impact is determined, by subtracting the measured background sound level from the rating sound level, BS4142:2014+A1:2019 states that the following should be considered:

- typically, the greater the difference, the greater the magnitude of the impact;
- a difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context;

- a difference of around +5dB is likely to be an indication of an adverse impact, depending on the context; and
- 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. It is an indication that the specific sound source has a low impact, depending on the context.

BS4142:2014+A1:2019 notes that:

"Adverse impacts include, but are not limited to, annoyance and sleep disturbance. Not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact."

BS4142:2014+A1:2019 outlines guidance for the consideration of the context of the potential impact including consideration of the existing residual sound levels, location and/or absolute sound levels.

To account for the acoustic character of proposed sound sources, BS4142:2014+A1:2019 provides the following with respect to the application of penalties to account for *"the subjective prominence of the character of the specific sound at the noise-sensitive locations and the extent to which such acoustically distinguishing characteristics will attract attention".*

- **Tonality** – *"For sound ranging from not tonal to predominantly tonal the Joint Nordic Method gives a correction of between 0dB and +6dB for tonality. Subjectively, this can be converted to a penalty of 2dB for a tone which is just perceptible at the noise receptor, 4dB where it is clearly perceptible and 6dB where it is highly perceptible;*
- **Impulsivity** – *A correction of up to +9dB can be applied for sound that is highly impulsive, considering both the rapidity of the change in sound level and the overall change in sound level. Subjectively, this can be converted to a penalty of 3dB for impulsivity which is just perceptible at the noise receptor, 6dB where it is clearly perceptible, and 9dB where it is highly perceptible;*
- **Intermittency** – *When the specific sound has identifiable on/off conditions, the specific sound level ought to be representative of the time period of length equal to the reference time interval which contains the greatest total amount of on time. If the intermittency is readily distinctive against the residual acoustic environment, a penalty of 3dB can be applied; and*
- **Other Sound Characteristics** – *Where the specific sound features characteristics that are neither tonal nor impulsive, though otherwise are readily distinctive against the residual acoustic environment, a penalty of 3dB can be applied."*

Finally, BS4142:2014+A1:2019 outlines guidance for the consideration of the context of the potential impact, including consideration of the existing residual sound levels, location and/or absolute sound levels.

3.3 ISO 9613-2:1996

The levels of sound generated by the operation of the proposed Plant has been predicted in accordance with the prediction framework within ISO 9613-2:1996 *Acoustics – Attenuation of Sound during Propagation Outdoors– Part 2: General Method of Calculation*. This method of calculation takes into account the distance between the sound sources and the closest receptors, and the amount of attenuation due to atmospheric absorption. The methodology also assumes downwind propagation, i.e. a wind direction that assists the propagation of sound from the source to the receiver.

4.0 Baseline Sound Survey

4.1 Survey Date

To determine baseline sound levels in the vicinity of the proposed WTS, a noise survey was undertaken between Friday 1st December 2023 and Tuesday 5th December 2023.

4.2 Equipment

The noise survey monitoring equipment used during the survey is detailed in Table 4-1. All measurement instrumentation was calibrated before and after the measurements. No significant drift was observed. The calibration chain is traceable to National Standards held at the National Physical Laboratory.

Table 4-1 Survey Equipment

Location	Equipment	Serial Number
1. Land west of Proposed WTS	Cirrus CR:171B Class 1 Sound Level Meter	G079816
	Cirrus CR:515 Acoustic Calibrator	81268
2. Land north of proposed development	Cirrus CR:171B Class 1 Sound Level Meter	G300561
	Cirrus CR:515 Acoustic Calibrator	87922

4.3 Survey Locations

Whilst it was not possible to locate monitoring equipment on land associated with the nearest noise sensitive receptors, sound levels were utilised at two locations, considered representative of the nearest residential receptors to the site, as follows:

- Location 1: Location representative of noise sensitive receptor Barrow Hill Farm Cottages and Otterpool Manor
- Location 2: Location representative of noise sensitive receptor Mink Farm

Photographs of each survey position can be seen in Appendix C.

4.4 Soundscape

4.4.1 Location 1

The existing sound climate at Location 1 when setting up and collecting the sound monitoring equipment consisted of anthropogenic sound sources including road traffic noise from Ashford Road (A20) and Otterpool Lane. The road traffic noise was a mix of vehicles sitting and idling at the junction and vehicles passing through the junction.

Natural biophonic sounds such as birdsong and geophonic sound such as breeze in the foliage was audible.

4.4.2 Location 2

The existing sound climate at Location 2 when setting up and collecting the sound monitoring equipment consisted of anthropogenic sound sources including passing road traffic noise from A20.

Natural biophonic sounds such as birdsong and geophonic sound such as breeze in the foliage was audible.

The survey locations (in yellow) and the nearest sensitive receptor locations in green are shown in Figure 4-1.

Figure 4-1 Monitoring and Sensitive Receptor Locations

At the survey locations, the microphone was placed 1.5m above the local ground level in free-field conditions, i.e. at least 3.5m from the nearest vertical, reflecting surface. The following noise level indices were recorded:

- $L_{Aeq,T}$: The A-weighted equivalent continuous noise level over the measurement period.
- L_{A90}: The A-weighted noise level exceeded for 90% of the measurement period. This parameter is often used to describe background noise.

- L_{A10}: The A-weighted noise level exceeded for 10% of the measurement period. This parameter is often used to describe road traffic noise.
- L_{AFmax}: The maximum A-weighted noise level during the measurement period.

4.5 Weather Conditions

Weather conditions during the survey in the daytime periods were predominantly dry and settled with wind speeds considered to be less than 5 ms^{-1} throughout the majority of the survey period.

Temperatures ranged from 1 – 7°C.

It was forecasted that rainfall occurred between Sunday 3rd December and Monday 4th December.

From an analysis of the data presented later in this Section, it is evident that the baseline background sound levels during this period are within the range of measured background sound level during the time periods where dry conditions was forecasted.

Therefore, it is considered that the effect of the weather conditions upon the measured background sound level not significant and therefore valid for assessment purposes.

4.6 Baseline Sound Level Results

A summary of the survey results at Location One is shown in **Error! Reference source not found.**. The full survey results are available on request.

Table 4-2 Location 1 - Summary of Measured Sound Levels, free-field, dB

Date	Period	$L_{Aeq,T}$	Highest L_{Amax}	Median L_{A10}	Median L_{A90}
Friday 01/12/23	Daytime (from 11:15)	62	83	67	52
Saturday 02/12/23	Daytime	61	82	65	49
Sunday 03/12/23	Daytime	61	86	64	50
Monday 04/12/23	Daytime (until 18:00)[1]	62	88	67	51

A summary of the survey results at Location Two is shown in

[1] Note: The sound level meter at this location did not measure sound levels beyond 18:00 on Monday 4th December 2023 due to an issue with its power source.

Table 4-3. The full survey results are available on request.

Table 4-3 Location 2 - Summary of Measured Sound Levels, free-field, dB

Date	Period	$L_{Aeq,T}$	L_{Amax}	Median L_{A10}	Median L_{A90}
Friday 01/12/23	Daytime (from 11:45)	66	87	70	54
Saturday 02/12/23	Daytime	64	81	69	50
Sunday 03/12/23	Daytime	64	83	68	50
Monday 04/12/23	Daytime	66	92	71	51
Tuesday 05/12/23	Daytime (Until 18:00)	67	87	71	54

4.7 Baseline Background Sound Levels

Statistical analysis has been undertaken via production of a histogram of the daytime baseline background sound levels at all locations as provided in Appendix D.

From a review of the detailed daytime data, the following baseline background sound levels presented in Table 4-4 may be considered representative for the BS 4142 assessment.

Values have been rounded to the nearest decibel.

Table 4-4 Baseline Background Sound Levels

Monitoring Location	Noise Sensitive Receptor	Period	L_{A90} Range, dB	L_{A90} Selected, dB
1	Barrow Hill Farm Cottages & Otterpool Manor	Daytime	45-55	50
2	Mink Farm		45-56	50

4.7.1 Location 1

During the daytime, the background noise levels were in the range of 45 – 55 dB(A), with 50% of levels occupying the 49 – 51 dB(A) range. 50 dB(A) is therefore considered a robust representative value within the range.

4.7.2 Location 2

During the daytime, the background noise levels were in the range of 45 – 56 dB(A), with 41% of levels occupying the 49– 51 dB(A) range. 50 dB(A) is therefore considered a robust representative value within the range.

5.0 BS 4142 Assessment

5.1 Noise Model - Noise Sources

Noise sources and their usage has been confirmed based on correspondence between SLR and the client expectation of the Site activity.

In addition to this, the modelled proposed WTS activity noise levels are based on a worse case operational hour.

Where noise level data cannot be supplied by the client, manufacturer data product sheets have been used as the source of noise data used in the modelling.

It is assumed that all mobile plant movements associated with the movement of material, deliveries and loading of waste onto HGVs are conducted within the WTS building and with the WTS doors closed.

All noise sources contained in the model are described in Table 5-1.

Table 5-1: Noise Source Data

Noise Source	Description	Noise Source Location on Site	Number	dB L_{wA}	Time Period (per hour)
JCB 457 Dozer	Plant used to move material across site and to load HGVs. In constant use within the WTS building.	Internal, within WTS Building	2	102[2]	N/A
Liebherr LH 24 M	Plant used to move material across site and to load HGVs. In constant use within the WTS building		1	103[3]	N/A
Door Slam	Noise from door slams associated HGVs and LGVs	External, within yard area of WTS Building	N/A	95.2, Sound data from SLR measured Library	30 Seconds
Reverse Beeper	Reverse beeper associated with HGVs and LGVs			98.6, Sound data from SLR measured Library	3 Minutes
Air Brake	Air Brake associated with HGV and LGV			81.9, Sound data from SLR measured Library	3 Minutes

In addition to the noise sources described above, on-site vehicle movements associated with deliveries and export have also been included as follows:

- HGV
  - Height 1m.
  - Moving point source.
  - Speed 10mph.
  - Daytime 1-hour inward movements = 10.
  - Daytime 1-hour outward movements = 10
  - Sound Power 93dB(A)[4].

[2] Obtained from document titled “26899+Stage+V+457+WLS+PB+en-GB+Issue+1+LR.pdf” from official JCB website https://www.watling-jcb.com/wp-content/uploads/2021/03/26899-Stage-V-457-WLS-PB-en-GB-Issue-1-LR.pdf

[3] Obtained from document titled “NTB_LH24-LH26-Industry_G6_AGSV-IIIAkonform-Tier4f_enGB.pdf” from Liebherr website https://www.liebherr.com/external/products/products-assets/118674b5-3ee7-41f6-9b4f-fc81dc1ff579-2/NTB_LH24-LH26-Industry_G6_AGSV-IIIAkonform-Tier4f_enGB.pdf

[4] Sound Power level of a vehicle classed as a HGV at 10 mph measured by SLR.

- LGV
  - Height 1m.
  - Moving point source.
  - Speed 10mph.
  - Daytime 1-hour inward movements = 10.
  - Daytime 1-hour outward movements = 10
  - Sound Power 92dB(A)[5].
- Car
  - Height 1m.
  - Moving point source.
  - Speed 10mph.
  - Daytime 1-hour total movements = 10.
  - Sound Power 87.2dB(A)[6].

5.2 Noise Model Assumptions

The sound predictions in this assessment have been undertaken using a proprietary software-based noise model, CadnaA, which implements the full range of UK noise-based calculation methods. The calculation algorithms set out in ISO 9613-2:1996 Acoustics – Attenuation of sound during propagation outdoors – Part 2 General method of calculation have been used and the model assumes:

- A ground absorption factor of 0.5.
- 1 metre contour data to include OS terrain data.
- A reflection factor of 3.
- WTS building fabric providing a sound reduction index of 18dB dB R_w based on an assumed building construction makeup of 0.6mm thick steel cladding.

5.3 Sound Character Corrections

The character of each noise source, and the correction that will be applied in the BS 4142 assessment are as follows:

- Tonality: Where the overall level at the receptor has been predicted to be low, it has been considered unlikely for tonality to be perceptible in the residual sound climate influenced by existing industrial process noise. Therefore, no correction has been applied.
- Impulsivity: The noise sources are not known to exhibit significant impulsive characteristics based on well-maintained equipment and practice.
- Intermittency: The noise sources are not known to exhibit significant impulsive characteristics based on best practice.

[5] Sound Power level of vehicle classed as a LGV at 10 mph measured by SLR.

[6] Sound Power level of a typical car at 10 mph measured by SLR.

- Although dominated by existing road noise sources and where the mobile plant emissions may potentially be distinguishable in the residual sound climate, a precautionary +3dB penalty has been applied as tending towards worst-case assessment.

5.4 Results

The BS 4142 assessment is presented in Table 5-2 and are rounded to the nearest decibel. The daytime CADNA output images can be seen in Figure 5-1.

Table 5-2: BS 4142 Assessment

Receptor	Assessment Period	Predicted Specific Sound Level, $L_{Aeq,T}$	Predicted Rating Level, $L_{Ar,Tr}$	Referenced Background Sound Level $L_{A90,T}$	Difference	BS4142 Assessment
Barrow Hill Farm Cottages	Daytime	40	43	50	-7	Low Impact
Otterpool Manor		45	48	50	-2	Low Impact
Mink Farm		36	39	50	-11	Low Impact

Figure 5-1: Daytime BS 4142 Assessment

6.0 Assessment Discussion

At all receptor locations, the daytime cumulative rating level has been predicted to lie below the representative background sound level, ranging in the order of a -2 to -11 dB(A) difference. This is a positive indication of the development having a low noise impact where BS 4142 states:

In following BS 4142 guidance; the above numerical assessment has been considered robust as tending towards a likely worst-case when considering the assumptions and modelling techniques implemented (described in Section 5) and the precautionary +3dB acoustic character correction.

6.1 Context Discussion

The concept of "context" has been notably emphasised in Section 11 of BS 4142 when considering numerical impacts established from applying the standard.

"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."

All noise sources associated with the proposed development will occur during the daytime period when there is a lower likelihood of adverse impact compared to operations during more sensitive periods such as the night-time. In addition, existing background sound levels are found to be higher during this period from extraneous sources unrelated to the proposed development.

Furthermore, the proposed operations likely to generate noise emissions will take place within the WTS building which would reduce noise emanating from the site to the sensitive receptors.

Existing average ambient and background sound levels in the vicinity of the site are not low in magnitude during the daytime period.

Average ambient noise levels pre-development at Location 1 are in the range 61-62dB $L_{Aeq,T}$ and in the range 64-67dB $L_{Aeq,T}$ at Location 2 respectively, on the basis the predicted specific sound level emanating from the development would be at least 16dB below these levels (≤45dB $L_{Aeq,T}$), this is considered a positive indication of substantial noise masking from the existing ambient noise climate in the vicinity of the site reinforcing the assessment conclusion as "low impact" in context, and also infers that no significant noise change would be expected to occur as a result of the development.

In respect to EA guidance, it is considered that the assessment of "low impact" would remain valid, where the guidance states "no noise, or barely audible or detectable noise" would be anticipated.

The guidance further states: *"Low impact does not mean there is no pollution. However, if you have correctly assessed it as low impact under BS 4142, the environment agencies may decide that taking action to minimise noise is a low priority.".*

In line with the above no specific additional mitigation is proposed in respect to noise generated as a result of the proposed development operations, however a noise management plan accompanies this noise impact assessment as a reasonable and standard standard control measure for such development in line with best practicable means (BPM).

6.2 Uncertainty

Uncertainty inevitably limits the accuracy associated with all steps of any noise assessment, including measurement, calculation, or prediction. Factors include, but are not limited to:

- The inherent accuracy limitation of methodology in Standards and guidance.
- Variability in meteorological conditions.
- The accuracy of sound source input data of a calculation.

It is imperative to minimise the uncertainty to a level commensurate with the intention of the assessment objective. Measures taken in this assessment to minimise uncertainty are:

- Baseline sound levels have been measured over a reasonably long period and therefore provide a good indication of representative background and residual sound levels.
- Measurements were undertaken using a suitable logging period considered to provide representative background sound levels.
- Sound level measurements were undertaken in accordance with recognised Standards, using an industry standard environmental windshield and were undertaken during reasonable weather conditions e.g. acceptably low wind speeds and precipitation.
- A direct measurement location or appropriate proxy location was used and is considered to provide a representative basis for background noise levels at the nearest receiver locations to the development.
- Field calibration checks were undertaken before and after measurements to record very low levels of equipment drift (<+/-0.5dB). Instrumentation was appropriate and in accordance with Section 5 of BS 4142.
- Measurements were rounded to the nearest one decimal place before the final calculations as per industry guidance.
- The calculations are robust so as to not to under-predict the resulting impacts.
- Noise model assumptions are robust so as not to under-predict the resultant levels, including unfavourable wind vector.
- The measures have been considered to reduce uncertainty to a level considered not to have any significance to the outcome of this assessment.

7.0 Conclusion

This report presents a noise impact assessment for a proposed waste transfer station located in Ashford, Kent.

A survey has been carried out to establish the pre-development acoustic climate in the vicinity of the Site, including baseline background sound levels at locations representative of the nearest identified noise-sensitive receptors.

Noise emissions from the proposed development have been predicted using computer modelling techniques based on associated sound levels as agreed with the client.

The assumptions in the noise model and manufacturer, library or client supplied mobile plant and equipment sound pressure and power data are robust so as to not under-predict the noise emissions; the assessment is generally considered to therefore tend towards a worst-case.

An assessment of noise impact has been formed following industry standard assessment methodology from BS 4142.

The results of the numerical and contextual components of the assessment methodology have concluded an assessment of low impact remains valid for the development during the daytime period in context.

Appendix A Glossary of Terminology

A.1 Glossary of Terminology

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

Table A-1: Sound Levels Commonly Found in the Environment

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

A.2 Acoustic Terminology

dB (decibel) The scale on which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure (of 20 µPa).

dB(A) A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e. 'A' weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.

$L_{Aeq, T}$ $L_{Aeq, T}$ is defined as the notional steady sound level which, over a stated period T, would contain the same amount of acoustical energy as the A-weighted fluctuating sound measured over that period.

$L_{A10, T}$ & L_{A90} If a non-steady noise is to be described it is necessary to know both its level and the degree of fluctuation. The Ln indices are used for this purpose, and the term refers to the level exceeded for n% of the time. Hence LA10 is the level exceeded for 10% of the time and as such can be regarded as the 'average maximum level'. Similarly, LA90 is the 'average minimum level' and is often used to describe the background noise. It is common practice to use the LA10 index to describe traffic noise.

$L_{Amax(F)}$ $L_{Amax(F)}$ is the maximum A-weighted sound pressure level recorded over the period stated. L_{Amax} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the overall L_{eq} noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.

Appendix B Drawings

Noise Impact Assessment

Otterpool Waste Transfer Station

Countrystyle Recycling Limited

SLR Project No.: 402.065068.00001

12 January 2024

N

76.4m

A20 (Ashford Road)

Issues

Office

Car Park

74.8m

12
10.5
10.5
10.5
8.5
10.5
8.5
10.5
10.5
11.5
9.5
10.5
8.5
10.5

Waste Transfer Building

Weighbridge and Office

Water Tank

Attenuation Pond

Legend:

- Environmental Permit Boundary
- Quarantine Area

Storage Bays

- Comingled
- Bulky
- Paper and Cardboard
- Residual
- Street Sweepings
- Garden Waste
- Clinical Waste
- Bulky POPS's
- Food waste

0 10 20 30 40 50 60 70 80 90 100m

Scale 1:1,000

Rev	Amendments	Date	By	Chk	Auth

www.slrconsulting.com

Client: Countrystyle Recycling Limited

Project: Otterpool Waste Transfer Station
Environmental Permit Application

Figure Title: Environmental Permit Boundary and Site Layout

Scale	SLR Project No.
1:1000 @ A3	402.065068.00001

Designed	Drawn	Checked	Authorised
	TS	GS	
Date	Date	Date	Date
	Oct 2023	Oct 2023	

Figure Number: **02** Rev.: **0**

14/11/2023

\\slr.local\eu\Offices\UK\Cambridge\Admin\New Projects\0402_BOA\402.065068.00001_Otterpool_WTS\Tech\EMPCD\wgs\Working\402.065068.00001.0130.02.1_Env_Perm_Bdy&Layout.dwg

N

Park Wood

St John's Cottages

Tumulus

Barrow Hill Farm

Humblebee Lodge

Gallop

Drain

East Stour River

FB

Sewage Ppg Sta

Barrow Hill Farm Cottages

Mink Farm

Track

A20

ASHFORD ROAD

Red House Farm

Country Views

Benham Water Farm

Otterpool Manor

Upper Otterpool

Spr

Path

0 100 200 300 400 500m

Scale 1:5,000

Legend:

- Environmental Permit Boundary
- 500m Offset Boundary
- Local Road Network
- Commercial / Industrial
- Residential
- Open Ground / Woodland
- Open Water / Ditches

Rev	Amendments	Date	By	Chk	Auth

SLR

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Client: Countrystyle Recycling Limited

Project: Otterpool Waste Transfer Station
Environmental Permit Application

Figure Title: Local Receptors

Scale	SLR Project No.
1:5000 @ A3	402.065068.00001

Designed	Drawn	Checked	Authorised
	TS	MF	GS

Date	Date	Date	Date
	Oct 2023	Oct 2023	Oct 2023

Figure Number: 03

Rev.: 0

31/10/2023

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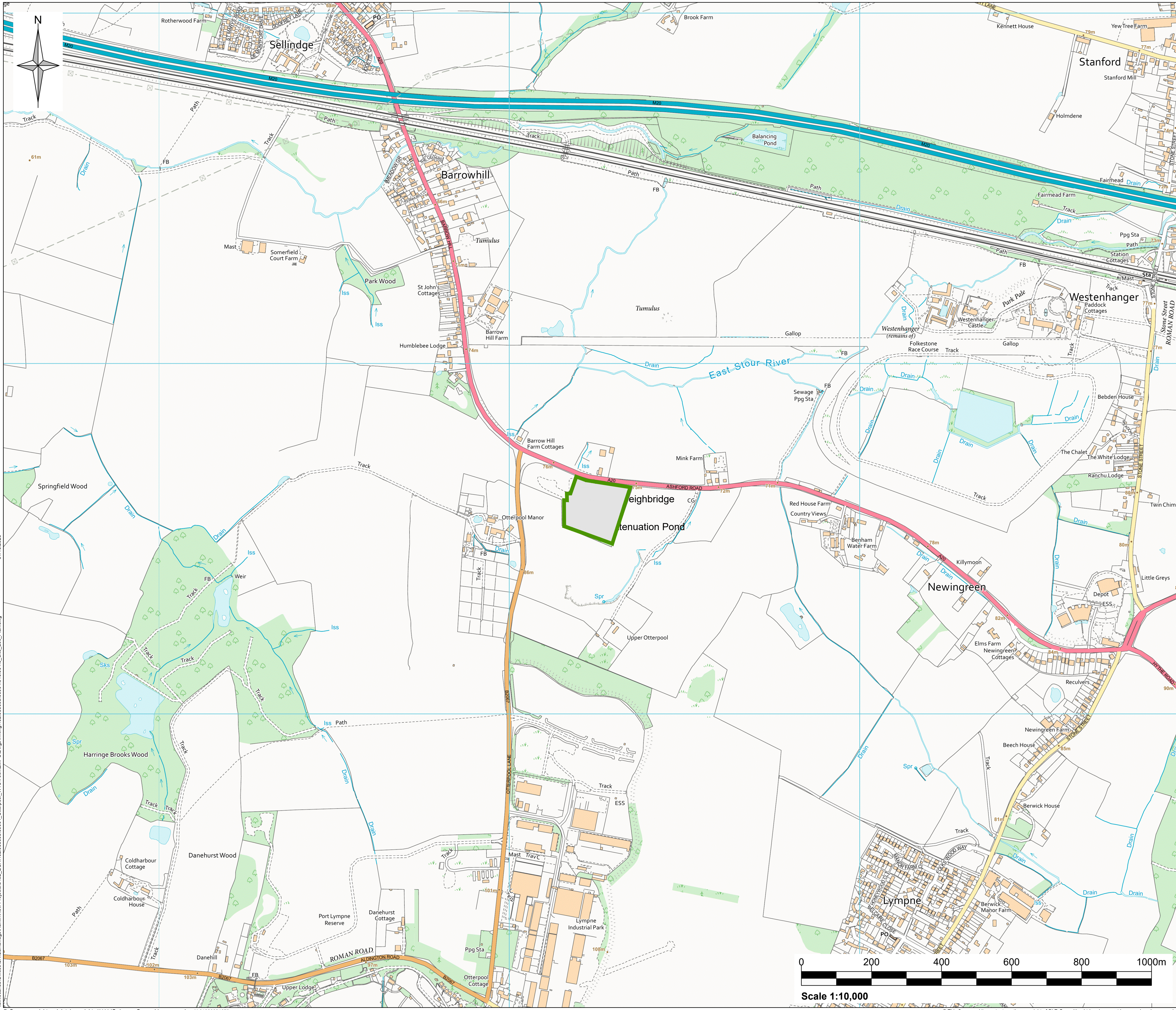

N
Sellindge
Rotherwood Farm
Brook Farm
Kennett House
Yew Tree Farm
Stanford
Stanford Mill
Holmdene
M20
Balancing Pond
Barrowhill
Tumulus
Mast
Somerfield Court Farm
Park Wood
St John's Cottages
Barrow Hill Farm
Humblebee Lodge
Gallop
East Stour River
Drain
Sewage Ppg Sta
Westenhanger
Westenhanger Castle
Folkestone Race Course
Paddock Cottages
Station Cottages
Fairmead Farm
Bebden House
The Chalet
The White Lodge
Ranchu Lodge
Barrow Hill Farm Cottages
Mink Farm
A20
ASHFORD ROAD
Weighbridge
Attenuation Pond
Otterpool Manor
Red House Farm
Country Views
Benham Water Farm
Killymoon
Newingreen
Twin Chimneys
Little Greys
Depot
Springfield Wood
Weir
Upper Otterpool
Elms Farm
Newingreen Cottages
Reculvers
Harringe Brooks Wood
Newingreen Farm
Beech House
Berwick House
OTTERPOOL LANE
Coldharbour Cottage
Danehurst Wood
Mast
Port Lympne Reserve
Danehurst Cottage
Lympne Industrial Park
Lympne
Berwick Manor Farm
Ppg Sta
Otterpool Cottage
Danehill
ROMAN ROAD
ALDINGTON ROAD
B2067
Upper Lodge
STONE STREET
HYTHE ROAD
0 200 400 600 800 1000m
Scale 1:10,000

Legend:

Environmental Permit Boundary

Rev	Amendments	Date	By	Chk	Auth

SLR

www.slrconsulting.com

Client
Countrystyle Recycling Limited

Project
Otterpool Waste Transfer Station
Environmental Permit Application

Figure Title
Site Layout Plan

Scale		SLR Project No.	
1:10,000 @ A3		402.065068.00001	
Designed	Drawn TS	Checked MF	Authorised GS
Date	Date Oct 2023	Date Oct 2023	Date Oct 2023
Figure Number 01			Rev. 0

Appendix C Survey Photos

Noise Impact Assessment

Otterpool Waste Transfer Station

Countrystyle Recycling Limited

SLR Project No.: 402.065068.00001

12 January 2024

Location 1

Location 2

Appendix D Statistical Histogram Analysis

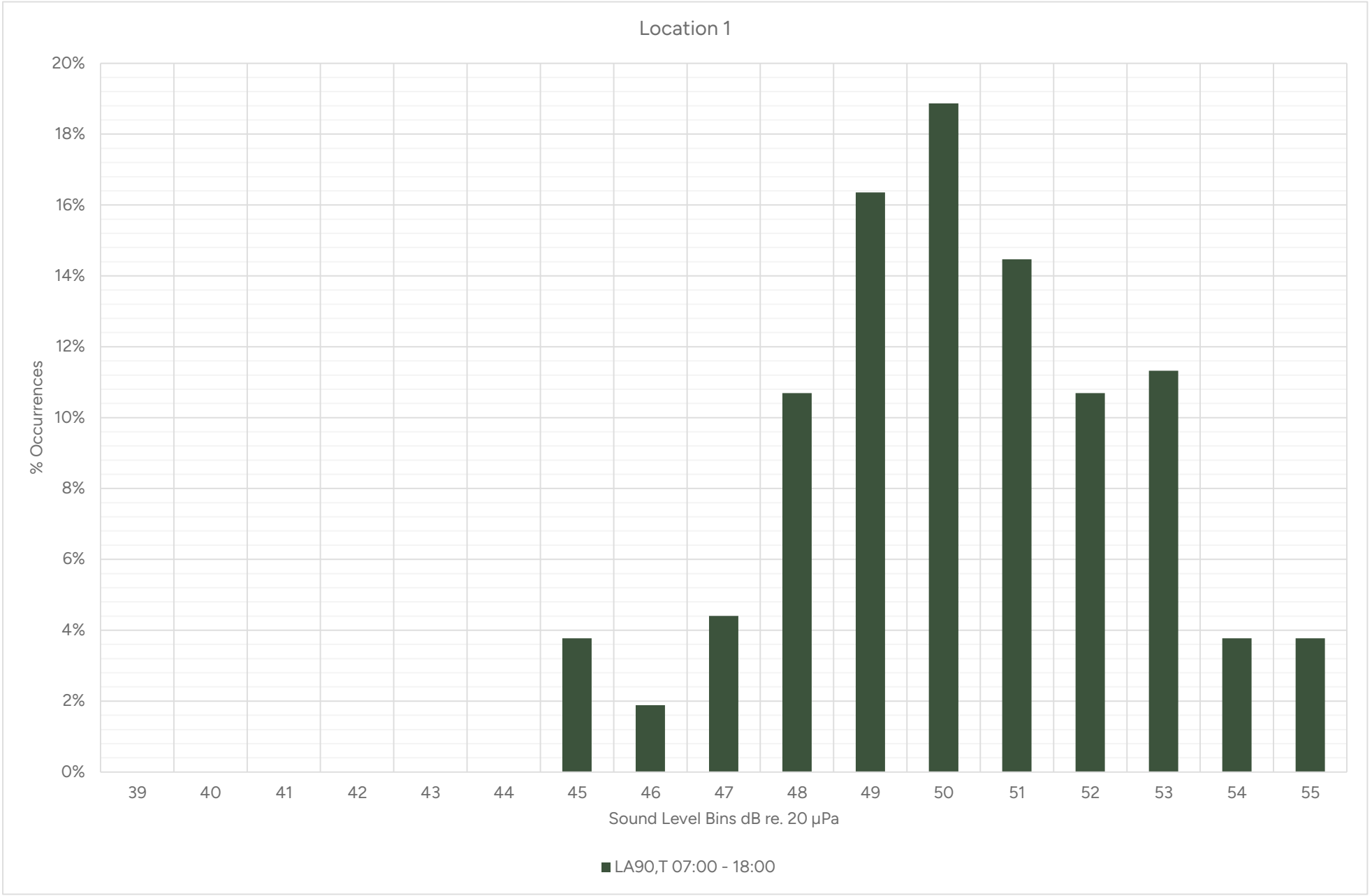
Noise Impact Assessment

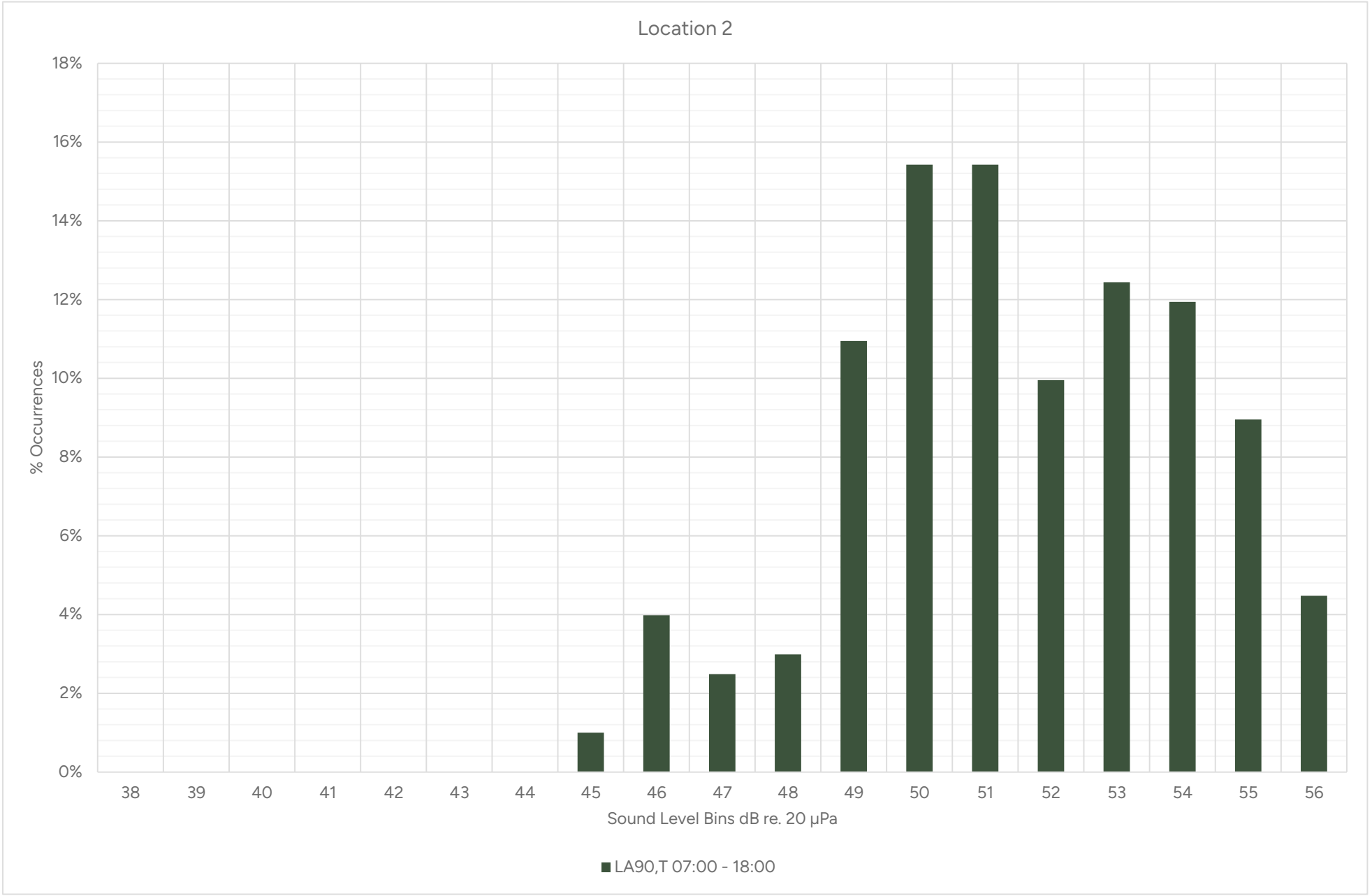
Otterpool Waste Transfer Station

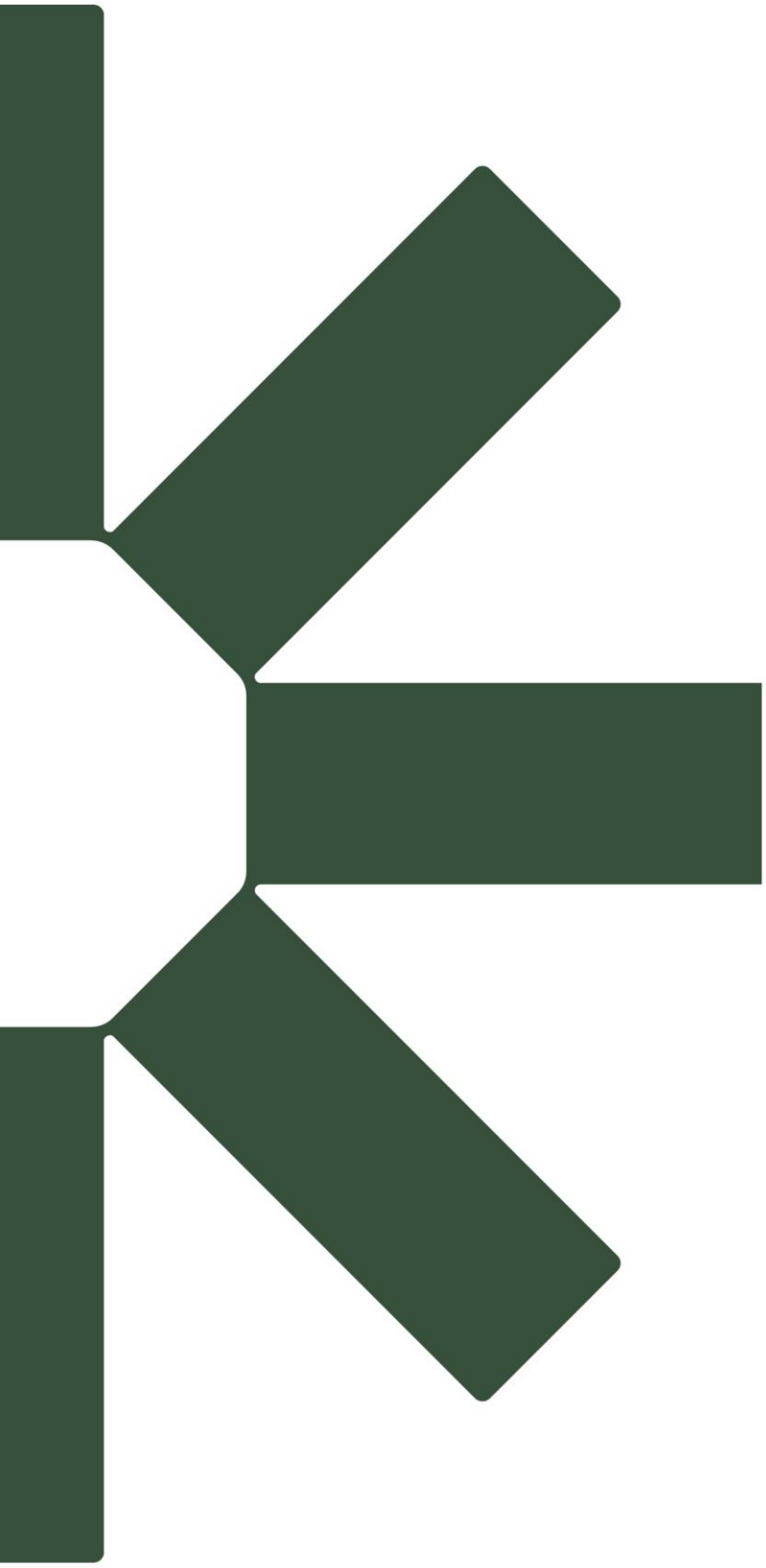
Countrystyle Recycling Limited

SLR Project No.: 402.065068.00001

12 January 2024


Location 1
20%
18%
16%
14%
12%
10%
8%
6%
4%
2%
0%
% Occurrences
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
Sound Level Bins dB re. 20 µPa
LA90,T 07:00 - 18:00


Location 2
18%
16%
14%
12%
10%
8%
6%
4%
2%
0%
% Occurrences
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
Sound Level Bins dB re. 20 µPa
LA90,T 07:00 - 18:00



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