4 ES ADDENDUM TO 2017 ES CHAPTER 9: NOISE AND VIBRATION

4.1 An Addendum to the 2017 ES Chapter 9: Noise and Vibration is provided in this section of the ES Addendum. As set out in Section 1, this addendum to 2017 ES Chapter 9 provides an updated operational phase assessment which is intended to replace the Chapter 9 of the 2017 ES in terms of the operational-phase assessment. The 2017 ES did not assess noise associated with the construction phase. That remains unchanged and is even less within the scope of EIA as the construction phase is reduced by the deletion of the previously proposed extension to the thermal treatment building. The ES Addendum should therefore be read alongside the 2017 ES.

4.2 The ES Addendum to the 2017 ES Chapter 9: Noise and Vibration is found over the page. Its appendices are found in ES Addendum Volume 2.

Introduction

4.3 This addendum presents the assessment of noise resulting from the existing operations, future operations with the Small Waste Incinerator Plant ('SWIP') and finally, the cumulative noise effects of all operations. It is considered that the 2017 Environmental Statement (the '2017 ES') provided adequate environmental information on noise and, albeit with some criticism, it was so assessed by the local planning authority. Notwithstanding that, this addendum considers the following information in contrast to 2017 ES:

- The ES did not consider the noise emissions of the existing operation in detail. The noise from the existing operations was included in the baseline in the assessment contained in the original ES on the ground that they are authorised by existing planning permissions. Nonetheless, this addendum includes the updated surveys of the existing operations and an update on existing noise levels at nearby noise sensitive receptors;
- The 2017 ES used generic noise source data for the SWIP and the soils and aggregates dryer. This was considered appropriate for an environmental statement. At that time specific plant had not been selected. Now that it has, this addendum considers actual noise emissions data for specific plant from the manufacturers as well as data from loading activities of both the dryer and the incinerator together with noise associated with the movement of refuse derived fuel (RDF) waste from the recycling shed to the SWIP building; and
- The ES had considered cumulative impacts of the new plant only whilst this addendum considers the cumulative effects of the existing operations as well as the new plant/activities.

4.4 The ES had concluded that the noise assessment from the new incinerator plant and dryer will not have a significant effect on the noise climate at the neighbouring noise sensitive receptors.

4.5 This addendum is necessarily technical in nature and contains terminology relating to acoustics and noise. Therefore, a glossary together with a brief introduction to the subject of noise, has been provided in Appendix 4.1.

Policy and Guidance

National Policy

4.6 The National Planning Policy Framework 'NPPF' (updated since the publication of the ES) sets out the Government's requirements for the planning system only to the extent that it is relevant, proportionate and necessary to do so. It provides a framework within which local people and their accountable councils, can produce their own distinctive local and neighbourhood plans, which reflect the needs and priorities of their communities.

4.7 Under Section 15; Conserving and enhancing the natural environment, the following is stated at paragraph 170 e):

"Planning policies and decisions should contribute to and enhance the natural and local environment by:

- *preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans"*

4.8 The NPPF goes on to state at paragraph 180 a) that planning policies and decisions should:

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

Local Policy

4.9 The current Development Plan comprises the Calderdale Replacement Unitary Development Plan, adopted in August 2006 (RUDP). The RUDP no longer contains any policies specific to noise but it does include Policy EP8 on other incompatible uses which provides:

"Where development proposals could lead to the juxtaposition of incompatible land-uses, they will be only permitted if they do not lead to an unacceptable loss of amenity caused by odour, noise or other problems. Where development is permitted, appropriate planning conditions and/or obligations will be added as necessary to provide landscaping, screening, bunding, physical separation distances or other mitigation measures"

4.10 The RUDP also contains a policy specific to incineration which provides (so far as is relevant to noise):

"Policy WM9

Incineration

Proposals for incinerators will only be permitted where they meet the following criteria:-

i. the development creates no unacceptable environmental, amenity, traffic, safety, or other problems;

ii. …….

vi. appropriate provision is made for the control of odour, visual impact, noise, dust and emissions to the air"

4.11 The emerging draft Calderdale Local Plan (2018) outlines in Policy EN1 'Pollution Control', the following so far as relevant to noise :

"The Council will seek to reduce the amount of new development that may reasonably be expected to cause pollution or be exposed to pollution. When determining planning applications, consideration will be given to the following issues:

- The likelihood of light, noise, smell, vibration or other emissions that pose an unacceptable risk to the amenity of the local area;
- Whether there are reasonable grounds to believe that human health may be affected by the proposal;
- The potential for pollution (including noise, light, water and air pollution) to affect biodiversity and sites of biological and geological importance";

4.12 Policy EN1 goes on to state:

"An appropriate impact assessment should be submitted with the planning application and should detail any mitigation measures needed to make the development acceptable. Development which does not incorporate suitable and sustainable mitigation measures which reduce pollution levels to an acceptable level will not be permitted."

Approach to Assessment

4.13 The measurement, prediction and assessment of noise and vibration levels associated with the Proposed Development and the significance of their potential impacts have been assessed in accordance with national guidance and recognised codes of practice for the main ES. This addendum only considers the operational phase of the Proposed Development. The operational noise guidance outlined in the ES, namely, BS 4142 'Method for rating and assessing industrial and commercial sound', has also been applied in this addendum. The significance of the operational noise effects is reproduced in Table 4.1. Table 4.1 also shows the significance effects of the change of magnitude derived from professional experience.

Table 4.1: Operation Noise Assessment Magnitude and Significance

BS 4142 Assessment Magnitude and Significance		
Excess of $L_{Ar,Tr}$ Rating Noise Levels above existing $L_{A90,T}$ Background Noise Level	**Description**	**Significance**
10 dB or more	Major Negative	High
5.1 – 10 dB	Moderate Negative	Moderate
0 – 5 dB	Minor Negative	Low
0 dB or less	Negligible	Negligible

4.14 To consider the noise emissions from the site either from the proposed SWIP and dryer operations or existing operations, a noise model has been constructed using the same methodology of the ES outlined below. The existing operations were not modelled in the ES but were included in the baseline studies. Due to the noise contribution from road traffic noise, it was not possible to separate the noise egress from the site activities from road traffic noise and hence the requirement for a validated noise model to describe the present noise effects.

4.15 The noise calculations have been carried out using the noise-modelling suite IMMI 2018, in accordance with the ISO 9613 'Acoustics - Attenuation of sound during propagation outdoors' prediction methodology. This methodology was also used for the noise assessment of the ES which describes a method for calculating the attenuation of sound during propagation outdoors in order to predict the levels of environmental noise at a distance from a variety of sources. The method predicts the equivalent continuous A-weighted sound pressure level (as described in ISO 1996) under meteorological conditions. This addendum also considers the noise associated with the movement of RDF waste to the SWIP as well as the existing movements of materials on site. This additional modelling uses the methodologies for 'haul routes' in accordance with BS 5228-

1:2009+A1,2014 'Code of practice for noise & vibration control on construction & open sites – Part 1: Noise'.

4.16 The input parameters included in the noise model are presented in Table 4.2.

Table 4.2: Noise Model Parameters

Noise Model Assignments		
Existing Operations (not in the ES)	**SWIP Operations**	**Comments/Observations**
Recycling Shed operations (an inventory of all significant noise sources is presented in Appendix 4.2)	An inventory of the SWIP including the potential noise egress from the haul route, the chimney, the dryer and the incinerator, heat exchanger, heat recovery and electricity generating plant as well as associated mobile plant is presented in Appendix 4.3. The noise egress from the chimney is now based upon recently acquired noise source data. The sound reduction indices of the SWIP building have been reduced for a worst-case assessment without the need for any additional sound insulation. These are compared in Appendix 4.3.	The application site is located in a mixed residential/industrial area and accessed via Rochdale Road. Residential dwellings are located to the north of Rochdale Road which carries a high volume of traffic. The noise egress due to existing sources has been measured and presented in Appendix 4.2. The noise egress from the SWIP operations (incinerator, heat exchanger, heat recovery and electricity generating plant as well as associated mobile plant) has been sourced from the manufacturers and presented in Appendix 4.3. Such data for specifically chosen plant was not available when the original ES was prepared
The assessment of both the existing and SWIP operations uses the corrected topography for the site and the receptors as shown on the topographical survey drawings appended to the ES Addendum.		Additional receptors have been modelled at the request of the Council post the publication of the original ES.

4.17 This addendum details all calculations as requested at the Public Inquiry, namely, the noise egress due to the radiating elements of the SWIP building, detailed breakdown of all plant within the SWIP including the loading machinery, the noise egress from the dryer (loading/unloading, dryer under load with aggregates), the noise associated with the movement of RDF waste to the SWIP building and the radiating element of the chimney as well as the noise egress from the chimney opening.

4.18 There are no external pipes that will carry any gases at a velocity that will be significant in noise terms. Based upon survey data prepared by the plant provider ('Inciner8 Ltd'), noise from valves, other than emergency release valves, will not contribute over and above the dominant noise source (fans/blowers). Noise from any emergency release valves will not be part of normal SWIP operations except in an emergency. It is also noted that there will be a number of noise sources (i.e. a series of blowers and fans together with the Triogen ORC unit) operating simultaneously within the SWIP building and also the mobile loading plant which will dominate the reverberant noise levels within the building and therefore other minor noise sources (e.g. dropping/loading of ash) will not significantly contribute to the overall noise levels. For ventilation of the SWIP building, one vent opening (measuring 0.7m by 0.7m) will be installed at the south-west façade of the SWIP building which will enable the Induced Draft Fan (ID Fan) to draw in adequate amounts of natural air.

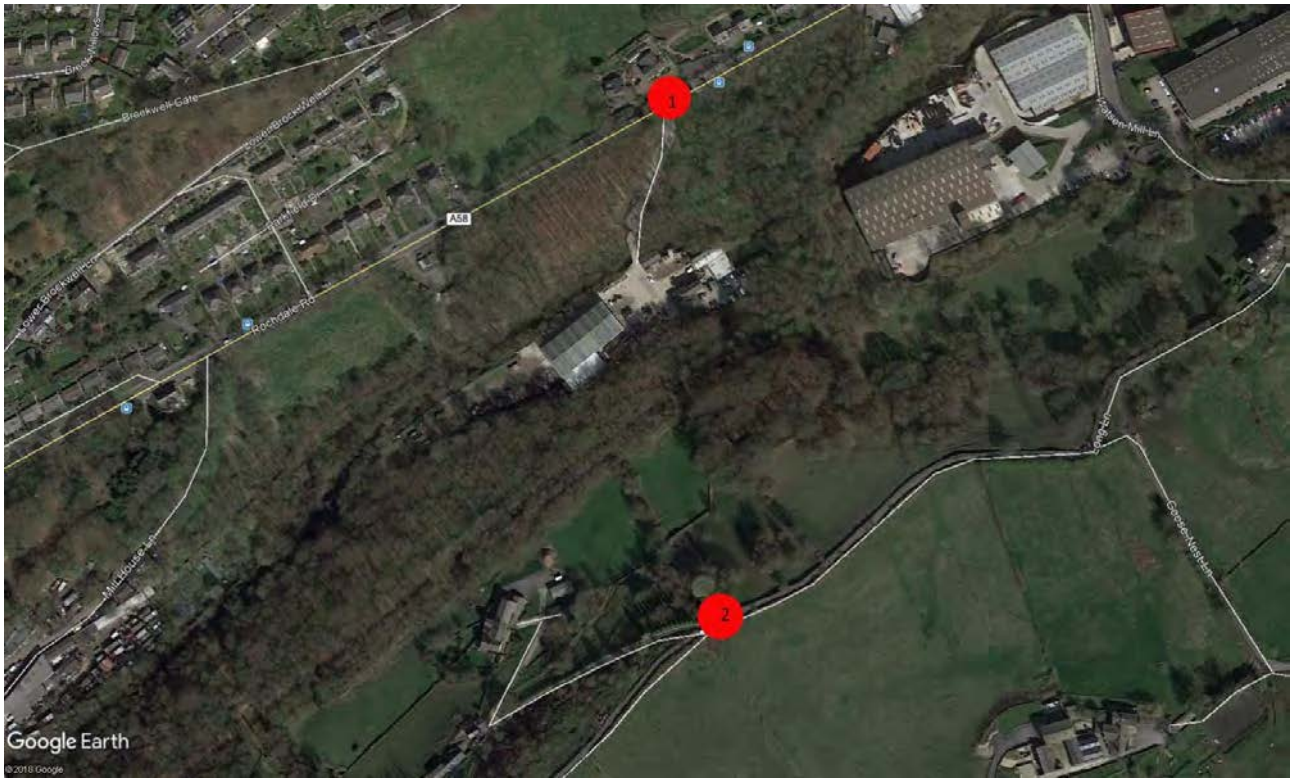
Baseline Environment

4.19 The existing noise conditions at the receptors were resurveyed to confirm the noise surveys of the 2017 Environmental Statement. The attended sample surveys were undertaken on the 23rd/24th May 2019. The most significant sources of noise at the site and in the surrounding area were

noted to be from road traffic and other ambient sources associated with existing residential settlements. On-site surveys for specific plant are presented in Appendix 4.2.

4.20 The survey locations are shown in Figure 4.1.

Figure 4.1: Noise Survey Locations



4.21 The weather conditions during the attended surveys were conducive to noise, with mostly overcast conditions, with wind speeds ranging from 2 to 4 m/s.

4.22 All noise measurements were undertaken between 1.2 and 1.5 m above local ground level and under free-field conditions. The microphones were fitted with protective windshields for the measurements.

4.23 All acoustic measurement equipment used during the noise surveys conformed to relevant Type 1 specifications. A full inventory of this equipment is presented in Table 4.3.

Table 4.3: Noise Survey Equipment

Survey Equipment		
Item	**Make & Model**	**Serial Numbers**
Sound Level Meter	Larson Davis LD824	1419
Sound Level Meter	Larson Davis LD824	1420
Sound Level Meter	Larson Davis LD824	1309
Calibrator	Larson Davis LD200	3723
Calibrator	Larson Davis LD200	3724
Calibrator	Larson Davis LD200	3054

4.24 All noise measurements were undertaken by consultants competent in environmental noise monitoring and in accordance with the principles of BS 7445: 2003 and following the guidance given in BS 4142.

4.25 Recorded summary noise measurement results are presented in Table 4.4 (further details are presented in Appendix 4.4).

Table 4.4: Measured Noise Levels

Measured Baseline Noise Levels						
Location	**Time Period**	**ES reported $L_{Aeq,T}$ dB**	**ES reported $L_{A90,T}$ dB**	**Updated $L_{Aeq,T}$ dB**	**Updated $L_{A90,T}$ dB**	**Comments**
Location 1	Day	60.6	49.8	67.0	51.2	The current baseline shows that the noise levels on Rochdale Road are slightly higher than the ES. The dominant noise source is road traffic with occasional contribution from the site in between traffic events
	Night	53.1	40.1	55.5	46.1	
BS4142 'Mode' value	Day	-	52.2	-	54	
	Night	-	45.0	-	46	
Location 2	Day	57.8	42.5	51.9	44.3	Daytime and night-time noise levels are lower than the ES though background noise levels are not significantly different. No significant noise sources. Noise levels from the site are perceptible from time to time.
	Night	49.5	35.6	43.0	36	
BS4142 'Mode' value	Day	-	-		44	To provide a representative level of the background sound levels which is not automatically to be assumed to be either the minimum or modal value, a statistical analysis of the measured values is used here for the most commonly occurring background level for assessment purposes
	Night	-	-		36	

Mitigation Measures adopted as part of the development

4.26 The location of the new thermal treatment plant is entirely within the existing developed and built area of the site with the following design solutions to protect nearby noise sensitive receptors:

- The majority of the processes are contained within the process building which offers sufficient sound attenuation for the protection of nearby noise sensitive receptors. Internal plant is specified to ensure that plant associated noise levels are appropriate for the development of this scale;
- External plant (e.g. the dryer and associated loading operations) are located behind the recycling shed to maximise the distance and shielding effects to the nearest noise sensitive receptors;

- Site mobile plant movements to and from the SWIP building will only occur during the daytime with no movements at night; and
- All doors of the SWIP building will be closed at night.

Assessment of Effects

4.27 This section of the Chapter assesses the effects of the proposed development on the baseline environment described above.

Construction Effects

4.28 The construction related effects have changed radically from those published in the ES. After its publication the application was amended so as to omit altogether the proposed vertical extension of the building. Consequently, installation of the flue is the only remaining external work to the building. This limited work including the internal fitting out work can be effectively managed and will not materially affect noise sensitive receptors. Consequently, the construction effects of the proposed development are not considered further.

Operational Effects

Existing Operations

4.29 To assess the future SWIP operations against the existing baseline operations, noise egress from the current operations has been quantified and presented in Appendix 4.2. The existing operations were not modelled in the ES but treated as part of the baseline studies for the reasons stated above.

4.30 A noise model using ISO 9613 and BS 5228 methodology was constructed using the data in Appendix 4.2. The ISO 9613 procedure is to calculate the noise egress at the noise sensitive receptors from each radiating element of the recycling shed (i.e. the walls, the roof and the open-door sources) after allowing for the sound attenuation due to the walls and the roof as well as distance, topography and screening corrections. The BS 5228 methodology was used to compute the noise levels associated with the on-site mobile plant.

4.31 The noise model calculates the following noise levels at the receptors (all calculation details are presented in Appendix 4.5):

Table 4.5: Noise Levels at Receptors (Existing Operations)

Existing Operation Noise Levels		
Receptor	**Daytime, $L_{Aeq,1hr}$ dB**	**Night-time $L_{Aeq,15min}$ dB**
46 Rochdale Road, GROUND FL S/W	45	Not Operational at night
46 Rochdale Road, FIRST FL S/W	45	
46 Rochdale Road, GROUND FL South	45	
46 Rochdale Road, FIRST FL South	45	
80 Rochdale Road, GROUND FL S/E	41	
80 Rochdale Road, FIRST FL S/E	43	
80 Rochdale Road, GROUND FL N/E	41	
80 Rochdale Road, FIRST FL N/E	43	
Bank House, GROUND FL West	41	
Bank House, FIRST FL West	42	
Bank House, GROUND FL N/E	42	
Bank House, FIRST FL N/E	43	

Existing Operation Noise Levels		
Receptor	**Daytime, $L_{Aeq,1hr}$ dB**	**Night-time $L_{Aeq,15min}$ dB**
Bank House, GROUND FL East	39	
Bank House, FIRST FL East	41	
90 Rochdale Road, GROUND FL S/E	40	
90 Rochdale Road, FIRST FL S/E	41	
90 Rochdale Road, GROUND FL S/W	35	
90 Rochdale Road, FIRST FL S/W	36	
44 Rochdale Road, GROUND FL S/W	43	
44 Rochdale Road, FIRST FL S/W	44	
44 Rochdale Road, GROUND FL S/E	44	
44 Rochdale Road, FIRST FL S/E	44	
28 Rochdale Road, GROUND FL S/W	41	
28 Rochdale Road, FIRST FL S/W	42	
28 Rochdale Road, GROUND FL S/E	40	
28 Rochdale Road, FIRST FL S/E	41	

4.32 The BS 4142 assessment for the existing operations is presented in Table 4.6.

Table 4.6: Initial Daytime BS 4142 Assessment at representative locations, Existing Operations

Existing Operations, BS 4142 Assessment						
	46 Rochdale Rd	**80 Rochdale Rd**	**Bank House**	**90 Rochdale Rd**	**28 Rochdale Rd**	**Comment**
Calculated Noise Level at Receptor from existing sources, dB(A)	45	43	43	41	42	
Specific Noise Levels, dB(A)	45	43	43	41	42	
Tonal, dB(A)	2	2	0	2	2	Tonal noise is just perceptible at Rochdale Rd and therefore a penalty of 2 dB is applied. Tonal noise is not perceptible on Long Lane
Impulsive	0	0	0	0	0	Impulsive sounds will not readily distinctive against the residual acoustic environment
Intermittency	0	0	0	0	0	Intermittency will not readily distinctive against the residual acoustic environment
Rating Level, dB(A)	47	45	43	43	44	
BS4142 Daytime Background L90 dB(A)	54	54	44	54	54	
Initial BS4142 Assessment	-7	-9	-1	-11	-10	
Significance	**Negligible**	**Negligible**	**Negligible**	**Negligible**	**Negligible**	

See below for the uncertainty assessment.

SWIP Operations

4.33 To assess the future SWIP operations, noise source data has been sourced from the plant providers (internal and external plant such as the soils and aggerates dryer (daytime only) and the chimney stack radiation and the chimney opening). Appendix 4.3 presents all plant details. Previously, because specific plant had not been chosen, the ES utilised generic data from another facility to assess noise levels from the SWIP operations which is considered an appropriate approach for an ES in those circumstances. Now that specific plant has been chosen, data related to each item of chosen plant has been sourced and used in the assessment in this addendum. This addendum also considers mobile plant carrying RDF waste to/from the SWIP building as well as loading activities within the SWIP building.

4.34 A noise model using ISO 9613 and BS 5228 methodology was constructed using the data in Appendix 4.2. The ISO 9613 procedure is to calculate the noise egress at the noise sensitive receptors from each radiating element of the SWIP building (i.e. the walls, the roof and the open-door sources) after allowing for the sound attenuation due to the walls and the roof as well as distance, topography and screening corrections. This methodology is also used to calculate the noise egress from the dryer and loading/unloading activities associated with the dryer. The BS 5228 methodology was used to compute the noise levels associated with the on-site mobile plant.

4.35 The noise model calculates the following noise levels at the receptors (all calculation details are presented in Appendix 4.6):

Table 4.7: Noise Levels at Receptors (SWIP Operations)

SWIP Operation Noise Levels		
Receptor	**Daytime, $L_{Aeq,1hr}$ dB**	**Night-time $L_{Aeq,15min}$ dB**
46 Rochdale Road, GROUND FL S/W	29	28
46 Rochdale Road, FIRST FL S/W	30	28
46 Rochdale Road, GROUND FL South	32	31
46 Rochdale Road, FIRST FL South	33	32
80 Rochdale Road, GROUND FL S/E	30	28
80 Rochdale Road, FIRST FL S/E	31	28
80 Rochdale Road, GROUND FL N/E	29	28
80 Rochdale Road, FIRST FL N/E	31	28
Bank House, GROUND FL West	27	21
Bank House, FIRST FL West	28	21
Bank House, GROUND FL N/E	28	25
Bank House, FIRST FL N/E	30	26
Bank House, GROUND FL East	25	24
Bank House, FIRST FL East	27	25
90 Rochdale Road, GROUND FL S/E	29	26
90 Rochdale Road, FIRST FL S/E	29	26
90 Rochdale Road, GROUND FL S/W	21	19
90 Rochdale Road, FIRST FL S/W	21	19
44 Rochdale Road, GROUND FL S/W	31	31
44 Rochdale Road, FIRST FL S/W	32	32
44 Rochdale Road, GROUND FL S/E	32	31
44 Rochdale Road, FIRST FL S/E	33	32
28 Rochdale Road, GROUND FL S/W	29	29
28 Rochdale Road, FIRST FL S/W	30	30

SWIP Operation Noise Levels		
Receptor	**Daytime, $L_{Aeq,1hr}$ dB**	**Night-time $L_{Aeq,15min}$ dB**
28 Rochdale Road, GROUND FL S/E	29	29
28 Rochdale Road, FIRST FL S/E	30	29

4.36 The BS 4142 assessment for the SWIP operations is presented in Tables 4.8 (daytime) and 4.9 (night-time). By the term, SWIP operations, the assessment includes all of the proposed plant including the incinerator, heat exchanger, heat recovery plant and electricity generating plant as well as associated mobile plant both within the building to load the incinerator and mobile plant outside the building (daytime only) carrying RDF waste from the recycling shed to the SWIP building and return plus the dryer and associated loading and unloading operations.

Table 4.8: Initial Daytime BS 4142 Assessment at representative locations, SWIP Operations only (open door levels in parenthesis)

SWIP Operations, BS 4142 Assessment, Day						
	46 Rochdale Rd	**80 Rochdale Rd**	**Bank House**	**90 Rochdale Rd**	**28 Rochdale Rd**	**Comment**
Calculated Noise Level at Receptor from SWIP operations, dB(A)	33 (33)	31 (32)	30 (31)	29 (30)	30 (30)	
Specific Noise Levels, dB(A)	33 (33)	31 (32)	30 (30)	29 (30)	30 (30)	
Tonal, dB(A)	0	0	0	0	0	Given the current existing noise climate on Rochdale Road and the intervening distance to Long Lane, tonal noise is unlikely to be perceptible
Impulsive	0	0	0	0	0	Impulsive sounds will not readily distinctive against the residual acoustic environment
Intermittency	0	0	0	0	0	Intermittency will not readily distinctive against the residual acoustic environment
Rating Level, dB(A)	33 (33)	31 (32)	30 (30)	29 (30)	30 (30)	
BS 4142 Daytime Background L90 dB(A)	54	54	44	54	54	
Initial BS4142 Assessment	-21 (-21)	-23 (-22)	-14 (-14)	-25 (-24)	-24 (-24)	
Significance	**Negligible**	**Negligible**	**Negligible**	**Negligible**	**Negligible**	

Table 4.9: Initial Night-time BS 4142 Assessment at representative locations, SWIP Operations only

SWIP Operations, BS 4142 Assessment, Night						
	46 Rochdale Rd	**80 Rochdale Rd**	**Bank House**	**90 Rochdale Rd**	**28 Rochdale Rd**	**Comment**
Calculated Noise Level at Receptor from SWIP operations, dB(A)	32	28	26	26	30	
Specific Noise Levels, dB(A)	32	28	26	26	30	

SWIP Operations, BS 4142 Assessment, Night						
	46 Rochdale Rd	80 Rochdale Rd	Bank House	90 Rochdale Rd	28 Rochdale Rd	Comment
Tonal, dB(A)	0	0	0	0	0	Given the current existing noise climate on Rochdale Road and the intervening distance to Long Lane, tonal noise is unlikely to be perceptible
Impulsive	0	0	0	0	0	Impulsive sounds will not readily distinctive against the residual acoustic environment
Intermittency	0	0	0	0	0	Intermittency will not readily distinctive against the residual acoustic environment
Rating Level, dB(A)	32	28	26	26	30	
BS4142 Night-time Background L90 dB(A)	46	46	36	46	46	
Initial BS4142 Assessment	-14	-18	-10	-20	-16	
Significance	**Negligible**	**Negligible**	**Negligible**	**Negligible**	**Negligible**	

4.37 The BS 4142 assessment results of the 2017 ES are reproduced below for comparison with the values presented in Tables 4.8 and 4.9.

Table 4.10: BS 4142 assessment results for the 2017 ES

SWIP Operations, BS4142 Assessment, ES			
	46 Rochdale Rd	80 Rochdale Rd	Bank House
Initial BS 4142 Assessment, Day	-25 (-12 open door)	-25	-17
Initial BS 4142 Assessment, Night	-18	-18	-10
Significance	**Negligible**	**Negligible**	**Negligible**

4.38 Both the ES and this addendum conclude that the noise egress due to the SWIP operations will result in Negligible noise effects. The differences in the calculated noise levels are due to the following factors:

- Previously, generic noise source was utilised in the ES, the assessment in this addendum uses data supplied by the plant providers;
- Previously, mobile plant was not included in the ES, this addendum includes noise data for the movement of RDF to/from the SWIP building as well as movement of containerised ash to the drop off point located adjacent to the weighbridge office;
- Previously, the sound reduction index (SRI) of the SWIP building was based on generic data. This addendum uses the site data (lower SRI values) without any further insulation as a worst-case scenario. The changes in SRI are outlined in Appendix 4.3;
- Previously, it was assumed that the movement of mobile plant for unloading RDF would be by the NE door of the SWIP building. This addendum now correctly uses the SW door. This door will only be open for short periods (10 minutes at most per hour) during the daytime only, however, for the purposes of modelling, it is assumed that the loading door will be open throughout the one-hour daytime assessment period for a worst-case scenario.

4.39 However, these differences do not make a material difference to the overall conclusions to be drawn from the BS4142 assessments. The noise will be of negligible significance, i.e. the rating noise level from the SWIP operations as a whole will be well below background noise levels and will, therefore, be of no significance.

Cumulative Operations

4.40 The noise levels attributable to both existing and SWIP operations have also been calculated. The ES only modelled the cumulative effects of the new plant.

4.41 Using the methodology as described above, the above noise levels have combined to give the following noise levels at the receptors for all existing and SWIP operations.

Table 4.11: Noise Levels at Receptors (Existing and SWIP Operations) (open door levels in parenthesis)

Existing and SWIP Operation Noise Levels		
Receptor	**Daytime, $L_{Aeq,1hr}$ dB**	**Night-time $L_{Aeq,15min}$ dB**
46 Rochdale Road, GROUND FL S/W	45 (45)	28
46 Rochdale Road, FIRST FL S/W	45 (45)	28
46 Rochdale Road, GROUND FL South	45 (45)	31
46 Rochdale Road, FIRST FL South	45 (45)	32
80 Rochdale Road, GROUND FL S/E	41 (41)	28
80 Rochdale Road, FIRST FL S/E	43 (43)	28
80 Rochdale Road, GROUND FL N/E	41 (41)	28
80 Rochdale Road, FIRST FL N/E	43 (43)	28
Bank House, GROUND FL West	41 (41)	21
Bank House, FIRST FL West	42 (42)	21
Bank House, GROUND FL N/E	42 (42)	25
Bank House, FIRST FL N/E	43 (43)	26
Bank House, GROUND FL East	39 (39)	24
Bank House, FIRST FL East	41 (41)	25
90 Rochdale Road, GROUND FL S/E	40 (40)	26
90 Rochdale Road, FIRST FL S/E	41(41)	26
90 Rochdale Road, GROUND FL S/W	35 (35)	19
90 Rochdale Road, FIRST FL S/W	36 (36)	19
44 Rochdale Road, GROUND FL S/W	43 (43)	31
44 Rochdale Road, FIRST FL S/W	44 (44)	32
44 Rochdale Road, GROUND FL S/E	44 (44)	31
44 Rochdale Road, FIRST FL S/E	44 (44)	32
28 Rochdale Road, GROUND FL S/W	41 (41)	29
28 Rochdale Road, FIRST FL S/W	42 (42)	30
28 Rochdale Road, GROUND FL S/E	40 (40)	29
28 Rochdale Road, FIRST FL S/E	41 (41)	29

4.42 The BS 4142 assessment for all existing operations and SWIP operations is presented in Table 4.12 (daytime). There are no existing night-time operations and therefore the BS 4142 presented in Table 4.9 still applies here.

Table 4.12: Initial Daytime BS 4142 Assessment at representative locations, all Operations only (open door levels in parenthesis)

All Operations, BS 4142 Assessment, Day						
	46 Rochdale Rd	80 Rochdale Rd	Bank House	90 Rochdale Rd	28 Rochdale Rd	Comment
Calculated Noise Level at Receptor from existing and SWIP operations dB(A)	45 (45)	43 (43)	43 (43)	41 (41)	42 (42)	
Specific Noise Levels, dB(A)	45 (45)	43 (43)	43 (43)	41 (41)	42 (42)	
Tonal, dB(A)	2	2	0	2	2	Given the current existing noise climate on Rochdale Road and the intervening distance to Long Lane, tonal noise from SWIP is unlikely to be perceptible. However, tonal noise is just perceptible at Rochdale Rd and therefore a penalty of 2 dB is applied. Tonal noise is not perceptible on Long Lane
Impulsive	0	0	0	0	0	Impulsive sounds will not readily distinctive against the residual acoustic environment
Intermittency	0	0	0	0	0	Intermittency will not readily distinctive against the residual acoustic environment
Rating Level, dB(A)	47 (47)	45 (45)	43 (43)	43 (43)	44 (44)	
BS4142 Daytime Background L90 dB(A)	54	54	44	54	54	
Initial BS4142 Assessment	-7 (-7)	-9 (-9)	-1 (-1)	-11 (-11)	-10 (-10)	
Significance	**Negligible**	**Negligible**	**Negligible**	**Negligible**	**Negligible**	

4.43 A comparison of the BS 4142 assessment in Table 4.6 (existing operations) and in Table 4.12 (existing and SWIP operations) indicates that the noise egress from the site is unaffected, in overall terms, by the SWIP operations including the noise egress from the SWIP building, the dryer and the noise emissions from the chimney wall and chimney stack. Due to the changes in the assessment described above in paragraph 6.12, the magnitude of the BS4142 assessment in Table 4.12 has changed from that contained in the original ES, though the significance effects remain unchanged.

Assessment of Uncertainty

4.44 BS 4142 requires that the level of uncertainty in the measured data and associated calculations is considered in the assessment. The Standard recommends that steps should be taken to reduce the level of uncertainty.

Measurement Uncertainty

4.45 BS 4142 states that measurement uncertainty depends on a number of factors, including the following, which may be applicable to the Proposed Development and, therefore, need to be considered:

1. the complexity and level of variability of the residual acoustic environment;
2. the location(s) selected for taking the measurements;
3. the measurement time intervals;
4. the range of times when the measurements have been taken;
5. the range of suitable weather conditions during which measurements have been taken;
6. the level of rounding of each measurement recorded; and
7. the instrumentation used.

4.46 Each of the measurement uncertainty factors outlined above have been considered and discussed in Table 4.13.

Table 4.13: Measurement Uncertainty Factors

BS 4142 Assessment Measurement Uncertainty		
Measurement Uncertainty Factor Reference	**Level of Uncertainty**	**Discussion**
1	0 dB	Residual acoustic environment is relatively constant, hence no correction for a complex residual acoustic environment.
2	0 dB	Measuring at locations representative of the closest affected receptors to the site has enabled the determination of robust background sound levels.
3	0 dB	Measurement time intervals were set in accordance with BS 4142, hence no further correction needs to be made.
4	0 dB	Measurements were undertaken over a continuous diurnal time period.
5	0 dB	No periods of significant wind or precipitation were noted.
6	0 dB	Measured values were rounded to 0.1 dB, therefore rounding would not have had a significant impact on the overall typical background sound levels.
7	0 dB	The acoustic measurement equipment accorded with Type 1 specification of British Standard 61672, and were deployed with appropriate wind shields.

4.47 In summary, a correction of 0 dB has been included in the assessment, to account for measurement uncertainty.

Calculation Uncertainty

4.48 BS 4142 states that calculation uncertainty depends on a number of factors, including the following, which may be applicable to the Proposed Development and, therefore, need to be considered:

1. uncertainty in the operation or sound emission characteristics of the specific sound source and any assumed sound power levels;
2. uncertainty in the calculation method;
3. simplifying the real situation to “fit” the model (user influence on modelling); and
4. error in the calculation process.

4.49 Each of the calculation uncertainty factors outlined above have been considered and discussed in Table 4.14.

Table 4.14: Calculation Uncertainty Factors

BS 4142 Assessment Calculation Uncertainty		
Measurement Uncertainty Factor Reference	**Level of Uncertainty**	**Discussion**
1	0 dB	Sound power levels for all plant are based on manufacturer data, measured in accordance with BS EN ISO 3740 and BS EN ISO 3747, hence no correction.
2	0 dB	Calculations were undertaken in accordance with ISO 9613, which is considered a "validated method" by BS 4142.
3	0 dB	The real situation has not been simplified for the purposes of this assessment.
4	+/-3 dB	ISO 9613 indicates that there is a ±3 dB accuracy to the prediction method, dependent upon input variables and propagation complexities.

4.50 On the basis of the maximum calculation error of +3 dB, the BS 4142 assessment for all receptors except Bank House will remain in the 'negligible significance' category. The application of the maximum error of +3 dB will result in a BS 4142 assessment change of +2 dB at Bank House for both the existing and proposed development. This +2dB change at maximum calculation error for both the existing and SWIP operations is below the +5 dB threshold for an 'adverse impact' outlined in BS 4142. It applies to the existing operations alone and is not increased or otherwise adversely affected by the proposed SWIP operations. This addendum therefore demonstrates that the proposed SWIP operations will not adversely affect the noise environment.

Further Mitigation

4.51 Based upon the BS 4142 assessment on the cumulative effects of the existing and SWIP operations, further mitigation measures are not required as the calculated noise levels will have a negligible effect on existing residential receptors due to the appropriate design, mitigation and intervening distances and natural/built shielding to the nearest residential receptors. The calculation methodology ignores the noise level correction for soft ground propagation as well as making the assumption of all internal and external plant operating simultaneously (which in practice will not occur) and therefore the BS 4142 assessment is considered to be robust.

Cumulative Effects

4.52 There is no other committed development within 600m of the appeal site that will have a noise effect either in terms of construction or operational phases at the appeal site.

Inter-Related Effects

4.53 There are no other inter-related effects on the noise assessment.

Summary

4.54 This addendum has considered the noise effects of the proposed development and the effects of noise generated by the proposed development on surrounding properties during the operational phase of the proposed development.

4.55 Ambient noise levels have been updated and assessed at the appeal site for the day and night-time periods.

4.56 The assessment has applied the methodology outlined in BS 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound'. The assessment uses data from the manufacturers for the equipment that will be installed within the SWIP building as well as other

equipment such as the soils and aggregates dryer including associated loading/unloading operations. Other elements of the assessment also include the movement of the refuse derived fuel waste from the recycling shed to the SWIP building as well the loading of fuel into the incinerator. The calculation methodology of ISO 9613 'Acoustics - Attenuation of sound during propagation outdoors' also considers the noise levels radiated from the SWIP building façades, roof and doors as well as the noise levels radiated from the chimney wall and chimney opening.

4.57 By considering the existing ambient noise levels at the nearby residential receptors, the existing operations on the appeal site as well as the proposed SWIP operations, a cumulative BS 4142 assessment has concluded in a negligible significance effect at the nearby receptors