YORWASTE LTD

Whitby Waste Management Site

Noise Assessment

July 2009

Yor/WWMS/07/09

QEM Systems Ltd

Prepared for:	Yorwaste Ltd Mount View Standard Way Northallerton DL6 2YD
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Quality Environmental Management Systems Ltd
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Halton Shields
Corbridge
Northumberland
NE45 5PZ

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1 Introduction

1.1 Consultants brief

1.1.1 QEM Systems Ltd have been commissioned by Yorwaste Ltd, to undertake a noise impact assessment for a variation of the planning permission to allow for construction of a new recycling building at Whitby Waste Management Site.

1.1.2 The aims of the assessment are.

- To measure the existing background noise level at the nearest potentially noise sensitive receptors to Whitby Waste Management Site.
- To predict at these locations anticipated noise levels generated by the continued operation of Whitby Waste Management Site.
- To compare predicted levels with the existing background noise levels and relevant guidance limits.
- To propose mitigation methods to reduce any potential noise impact from Whitby Waste Management Site, should this prove necessary.

2 Methodology

2.1 Procedure

2.1.1 Noise impact from the waste management site will have three main sources, namely:

- Noise from mobile plant working inside and outside the recycling building.
- Noise from crushing and screening.
- Road traffic noise associated with vehicle movements in and out of the site.

2.1.2 Methodologies for the assessment of noise from these sources are outlined in section 2.3.

2.1.3 A number of potentially sensitive locations likely to be affected by noise from the proposed development have been identified. On Friday 10th July 2009 a baseline noise monitoring survey at two locations in the vicinity of the site was carried out.

2.1.4 The predicted noise impacts associated with the proposal that will be experienced at the sensitive receptors, have been compared with current noise levels and the existing background levels.

2.2 Plant and machinery on site

2.2.1 Recycling activities involve the use of various items of plant throughout the working day. The operation of these items of plant, together with vehicle movements on site, has been assessed for potential disturbance at noise sensitive receptors.

2.2.2 The existing plant and machinery used on the site is as follows:

1 x Komatsu WA150	Liebherr 312 Grab
Erin Fingerscreen 165	Atlas wheeled excavator
Nordberg City Crusher	O&K MH5 crane

2.2.3 One additional item of plant is likely to be required on the proposed site and this is a JCB JS145 360° excavator.

2.2.4 The proposal is for a new recycling building to be constructed and to relocate the existing crusher and screen to the northeast corner of the site.

2.3 Noise Guidance and Standards

Environment Agency: Internal Guidance for the Regulation of Noise at Waste Management Facilities

2.3.1 This guidance applies to landfill sites and other waste management activities that fall under PPC regulations. For IPPC sites, reference must also be made to the Agency's IPPC technical guidance on noise (IPPC H3 Technical Guidance Note, Horizontal Guidance for Noise, Part 1: Regulation and Permitting and Part 2: Noise Assessment and Control).

2.3.2 The guidance covers the control of noise, appropriate noise limits and overlaps with other regulatory authorities.

2.3.3 The World Health Organisation (WHO) guidelines for community noise are recommended as a starting point for assessing appropriate levels of noise emissions from waste sites. In rural settings, lower ambient levels may be needed to protect the local environment. Details are discussed in section 2.3.12 later in this report.

2.3.4 There is little directly relevant guidance for waste management facilities, however, the approaches outlined in the publications below have been considered in this document.

- BS4142:1997 Method for rating industrial noise affecting mixed industrial and industrial areas
- MPS2: 2005 Controlling and Mitigating the Environmental Effects of Minerals Extraction in England Annex 2: Noise

2.3.5 Noise is likely to be unacceptable at different levels depending on the type of area impacted and the persons affected. The approach to setting limits also varies. In general the likelihood of complaint in response to noise depends on a number of factors. These include, the margin by which the noise exceeds the background noise level (measured as $L_{A90,T}$), its absolute level, time of day, the nature of the noise itself, change in the noise environment etc. Local attitudes and the nature of the neighbourhood should also be taken into account.

2.3.6 Dwellings should be the primary focus of any noise conditions and BS4142 provides a method to estimate the likelihood of complaints being caused by industrial premises in a mixed industrial/residential area. BS4142 is referred to in PPG24 Planning and Noise, and is often used to set planning conditions and in the absence of any other recognised procedure it is the preferred method for defining noise limits.

2.3.7 The basic principle behind BS4142 is that at a certain 'noise rating level' above background, the specific noise is liable to provoke complaints. It is considered that at a rating level of 5dB above the background noise level, the operator should enact a noise action plan. If the noise level reaches a rating level of 10dB above the existing background level, then direct enforcement action should be considered. Full details of the methodology are given in section 2.3.14 – 2.3.16.

IPPC H1 Integrated Pollution Prevention and Control (IPPC) Environmental Assessment and Appraisal of Best Available Technique (BAT)

2.3.8 The purpose of this guidance is to provide supplementary information to assist applicants in responding to the requirements described in the IPPC sector and general guidance notes. In particular, methods for quantifying environmental impacts to all media; a method for calculating costs of environmental protection techniques and guidelines on resolving cross media conflicts and making cost/benefit judgements.

IPPC Horizontal Guidance for Noise Part 1 – Regulation and Permitting

2.3.9 This guidance provides supplementary information to assist applicants in preventing and minimising emissions of noise and vibration. Part 1 outlines the main considerations relating to the setting of permit conditions and subsequent regulation of noise.

IPPC Horizontal Guidance for Noise Part 2 – Noise Assessment and Control

2.3.10 Part 2 of this Horizontal Guidance Note describes the principles of noise measurements and prediction and the control of noise by design, by operational and management techniques and abatement technologies.

2.3.11 The document includes relevant methodologies for measurement and evaluation of noise which is covered in a number of British Standards and other documentation. These give guidance on a wide range of related topics including equipment types, calibration, measurement techniques and locations and also the interpretation of data. As indicated in this report the relevant methodologies for measurement and evaluation are contained in the following documentation:

- World Health Organisation Guidelines for Community Noise (1999)
- BS 4142:1997 Method for rating industrial noise affecting mixed residential and industrial areas
- MPS2: 2005 Controlling and Mitigating the Environmental Effects of Minerals Extraction in England. Annex 2: Noise
- Planning Policy Guidance Note PPG24 (1994)
- BS5228:1997 Noise and vibration control on construction and open sites Parts 1 to 5

WHO Guidelines for Community Noise

2.3.12 The World Health Organisation publication "*Guidelines for Community Noise: 1999*" advises that:

> *"To protect the majority of people from being seriously annoyed during the daytime, the outdoor sound level from steady, continuous noise should not exceed 55dB L_{Aeq} on balconies, terraces and in outdoor living areas."*

2.3.13 In all cases, noise should be reduced to the lowest level achievable in a particular situation.

BS4142: 1997 "Method for rating industrial noise affecting mixed residential and industrial areas"

2.3.14 This British Standard describes a method for assessing industrial and background noise levels outside residential buildings and for assessing whether the industrial noise is likely to give rise to complaints from the occupiers of the residential buildings.

2.3.15 To assess the likelihood of complaints the intruding noise should be compared against the measured background noise level (L_{A90}). The greater this difference the greater the likelihood of complaints.

2.3.16 A difference of around 10dB or more indicates that complaints are likely. A difference of around +5dB is of marginal significance. More than 10dB(A) below the background is a positive indication that complaints are unlikely. This method has the advantage of relating the noise limit directly to existing background noise levels but relies on accurate measurements of the prevailing noise climate.

MPS 2: 2005 Controlling and Mitigating the Environmental Effects of Minerals Extraction in England Annex 2: Noise

2.3.17 This document considers that waste disposal operations share many common features with surface mineral workings and the advice contained applies equally to the operations at Whitby Waste Management Site.

2.3.18 Planning conditions should be used to apply absolute controls on noise emissions with limits normally being set at particular noise-sensitive properties. This enables the effect of noise to be related most directly to its impact on local people.

2.3.19 Paragraph 2.19 of MPS2 Annex 2 states that

> *"Subject to a maximum of 55dB(A) L_{Aeq},1h (free field), MPAs should aim to establish a noise limit at the noise-sensitive property that does not exceed the background level by more than 10dB(A). It is recognised, however, that this will in many circumstances, be difficult to achieve without imposing unreasonable burdens on the mineral operator. In such cases, the limit set should be as near that level as practicable during normal working hours (0700-1900) and should not exceed 55dB(A) L_{Aeq},1h (free field)".*

PPG24: 1994 "Planning and Noise"

2.3.20 Noise can have a significant effect on the environment and on the quality of life enjoyed by individuals and communities. The aim of this guidance is: "to provide advice on how the planning system can be used to minimise the adverse impact of noise without placing unreasonable restrictions on development or adding unduly to the costs and administrative burdens of business."

2.3.21 The guidance provides advice on specifying noise limits and suggests that it may be appropriate to set either:

a) an absolute limit based on the average level of noise which should not be exceeded in a specified time period;
b) a relative limit based on the permitted increase in noise level with respect to the background level.

BS5228: Part 1: 1997 Noise and vibration control on construction and open sites

2.3.22 The use of BS5228 provides guidance on the control of noise from construction and open sites and can be used to predict noise from any industrial activity. The specific details relevant to this proposal are provided in Section 5 of this report.

3 Existing Conditions

3.1 Site location and description

3.1.1 The existing site is located to the east of the A171, south east of Whitby in North Yorkshire. Current activity within Whitby Waste Management Site includes the importation of various types of waste, crushing and screening, waste sorting in the existing recycling building and a green waste area.

3.2 Potentially noise sensitive receptors

3.2.1 Noise sensitive receptors are defined by the Environment Agency's Noise Guidance "Internal Guidance for the Regulation of Noise at Waste Management Facilities" (July 2002) and includes any area where "harm to human health", "detriment to the amenity" or "nuisance" could occur. These areas may include the following:

- Dwellings, including gardens
- Open spaces & parkland
- Schools
- Hospitals
- Commercial premises

3.2.2 A desk top study and subsequent site visit identified two potentially noise sensitive receptors as follows:

- St Peter's Court– north west of the site
- Pleasant Mount – west of the site.

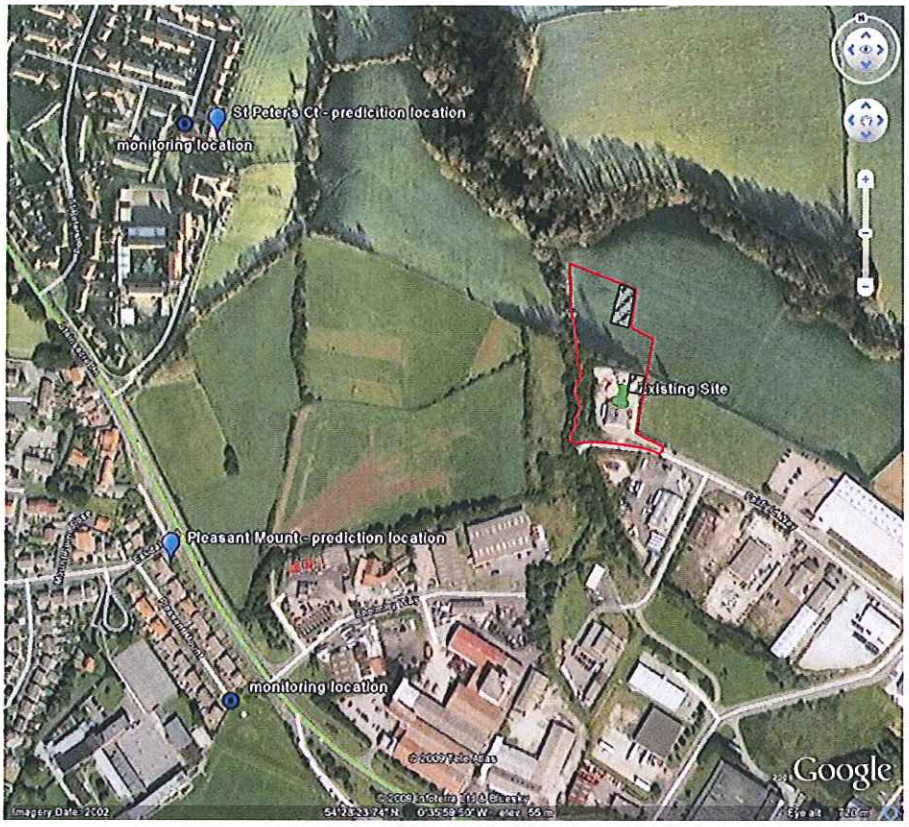
3.2.3 Apart from these areas of housing there are no other sensitive receptors in the immediate vicinity.

3.3 Baseline monitoring

3.3.1 To establish the existing noise climate a monitoring exercise was carried out between approximately 07:30 and 15:30 on 10th July 2009. Measurements were undertaken at the two identified locations. The Noise Sensitive Receptors identified in the vicinity of the site are shown on Figure 1 overleaf.

3.3.2 Measurements were also carried out on site around the plant and equipment currently operating.

Figure 1: Noise Monitoring Locations



3.3.3 The mean results obtained during the noise monitoring surveys are given in Table 1. The L_{Aeq} is the logarithmic average of the monitoring periods. The minimum and maximum levels are the absolute values recorded during all monitoring periods. For all other parameters the arithmetic average was calculated. Full details of the surveys are given in Appendix A.

Table 1: Existing Noise Levels

Noise monitoring location	Mean noise levels (dB)			
	L_{Aeq}	L_{Amax}	L_{A10}	L_{A90}
St Peters Court	47	68	49	42
Pleasant Mount	54	66	56	49

3.3.4 The surveys were carried out with QEM staff in attendance, therefore ensuring that the noise levels recorded were an accurate representation of the prevailing noise climate.

3.3.5 Monitoring was carried out when the weather conditions were within acceptable parameters as recommended in BS4142. During monitoring the weather was mainly cloudy with some sunny spells. There was no precipitation and the wind speed averaged 3m/s from the north west. The temperature ranged from 13 - 17°C over the full monitoring period.

3.3.6 The survey is considered to have produced typical baseline noise levels for the area, in which current noise sources included A171 road traffic, activity in trading estate and high altitude aircraft. On the day of monitoring there was no contribution to the noise climate at the two locations from the existing site.

3.4 Acoustic terminology

3.4.1 Decibel (dB): The logarithmic measure of sound level. 0 dB is the threshold of normal hearing, 140 dB is the threshold of pain. A change of 1 dB is detectable only under laboratory conditions.

3.4.2 A - weighting: Normal hearing covers the frequency (pitch) range from about 20 Hz but sensitivity is greatest between about 500 Hz and 5,000 Hz. The "A - weighting" is an electrical circuit built into noise meters to mimic this characteristic of human hearing.

3.4.3 dB(A): Decibels measured on a sound level meter incorporating a frequency weighting (A - weighting) which differentiates between sounds of different frequency (pitch) in a similar way to the human ear. Measurements in dB(A) broadly agree with people's assessments of loudness. A change of 3 dB(A) is the minimum perceptible under normal conditions, and a change of 10 dB(A) corresponds roughly to doubling or halving the loudness of a sound.

3.4.4 $L_{Aeq,t}$: The equivalent continuous sound level, the sound level of a steady sound having the same energy as a fluctuating sound over a specified measuring period (t). Used to describe many types of noise, and can be measured directly with an integrating sound level meter.

3.4.5 $L_{A90,t}$: The "A - weighted" noise level exceeded for 90 per cent of the specified measurement period (t). In BS 4142, used to define background noise level.

3.4.6 $L_{A10,t}$: The "A - weighted" noise level exceeded for 10 per cent of the specified measurement period (t). It gives an indication of the upper limit of fluctuating noise.

4 Potential Impacts of the Proposed Development

4.1 Road traffic noise

4.1.1 The standard calculation methodology for noise predictions from increased road traffic is based on the Technical Memorandum, "Calculation of Road Traffic Noise (CRTN), HMSO 1988". It states that changes as small as 1dB may be perceived negatively in the vicinity of the road way in question. Such a change in noise level can arise from a change in the traffic regime of approximately 25%.

4.1.2 The noise from the proposed lorries entering and leaving the site has been taken into account in the prediction model.

4.2 Mobile plant and vehicles on-site

4.2.1 BS5228: Part 1: 1997 "Noise and vibration control on construction and open sites" provides basic information and guidance concerning methods of predicting noise. In all cases, calculations have been carried out in accordance with the methodology contained in this British Standard.

Mobile Plant

4.2.2 Sound power levels for the plant and equipment used at the existing site were noted from the plated machines currently in operation. Where this information was not available, noise levels were measured around the plant and a sound power level calculated. Measurements were also carried out when the screen and crusher was working and as the equipment works concurrently the sound power level for both items has been combined to give an overall SWL.

4.2.3 The sound power levels are given in Table 2.

Table 2: Sound power levels of plant and equipment

Item of Plant	No.	SWL dB(A)
Komatsu WA150 loading shovel	1	102
Erin Fingerscreen 165	1	107
Nordberg City Crusher	1	
Liebherr 312 Grab	1	102
Atlas wheeled excavator**	1	101
O & K MH5 crane**	1	102*
Road going lorries tipping	See Table 3	108

* assumed to be equivalent to the Liebherr 312 grab

** to be replaced by JCB JS145 tracked 360° excavator

4.2.4 The method for calculating the L_{Aeq} level at a noise sensitive receptor involves using the above sound power levels and applying typical percentage on-times and various allowances for distance, reflections and screening or soft ground attenuation.

On-Time Correction

4.2.5 Many of the individual operations considered during a prediction exercise do not operate at full power throughout the entire period under assessment. Applying an on-time correction results in an overall reduced noise emission from the activity. The on-time correction therefore gives an attenuation figure based on the percentage of time that an item of plant operates at full power during the period under consideration.

4.2.6 It is unlikely that any of the plant will operate at maximum power for 100% of the prediction period i.e. 60 minutes. However, to demonstrate that a worst case scenario has been considered all items of plant in this assessment are assumed to be operating at 100% on time.

Distance correction

4.2.7 As sound radiates from a source it is attenuated by distance. The attenuation for static plant, or plant moving over relatively small distances, for example a grab or loading shovel can be calculated using the following equation:

$$\text{Distance allowance } K = (20\log_{10}R) + 8 \qquad \text{where } R>25 \text{ metres}$$

4.2.8 The calculation can be adapted to allow for directivity effect and for reflections within the site. However, for the purpose of this assessment the effect is ignored.

Ground Cover Correction

4.2.9 The type of ground between the noise source and the receiver can effect the propagation of sound. If the ground is considered to be acoustically "soft", for example surfaces which support vegetation, then the attenuation produced can be up to about 3dB(A) over distances of 100m.

4.2.10 The area between Whitby Waste Management Site and the surrounding noise sensitive locations is of an absorbent nature and includes fields and hedgerows.

4.2.11 Attenuation due to ground cover correction or ground absorption has been calculated using the Department of Transport and the Welsh Office "Calculation of Road Traffic Noise" (CRTN) (1998). The correction is progressive with distance and, in particular, affects reception points close to the ground.

Barrier Attenuation

4.2.12 A barrier placed between the source and the receiver can effectively reduce noise. A simple but straightforward and effective approach to calculating the effect of barriers is proposed in BS5228 which states that either a 5dB or 10dB reduction can be made depending on whether the receiver is partially or completely screened from the noise source.

4.2.13 It is recognised that there are other, more detailed, methods of calculating barrier attenuation. This methodology is detailed in the Calculation of Road Traffic Noise (CRTN), DOE 1988 Chart 9.

4.2.14 Attenuation due to ground absorption and barrier attenuation should not be added together as most of the noise reduced by soft ground will be intercepted by a barrier. To demonstrate a worst case scenario no consideration has been given to any barriers between the proposed activities and the receptors and only soft ground attenuation has been applied.

Vehicle Movements

4.2.15 For mobile items of plant that pass at intervals, such as wagons on the access road, it is possible to predict the noise level by taking into account the vehicle speed, the number of vehicle movements per hour, distance to the centre of the access road and angle of view to the receptors. The number of loads per day for each activity is given in Table 3 together with the average number per hour and speed.

Table 3: Details of vehicle movements

Item of Plant	Activity	Avg no. of loads per day	Avg. per hour	Speed km/hr
Road going vehicles	Delivering waste	5	1	24
1 artic trailer	Transporting recycled material off site	1	1	24

4.2.16 Corrections are applied to the calculated level to allow for barrier attenuation, ground absorption and angle of view.

Angle of View

4.2.17 At a noise sensitive receptor the noise contribution received from activity on the access road can be corrected to take into account the length of haul road that can be observed from the property. The angle subtended by the boundaries within which the haul road activity is taking place is known as the angle of view and is detailed in BS5228, D.3.5.2.

4.2.18 Noise levels due to vehicles using the site access road have been calculated. The results have been added to the predicted noise from the mobile plant on-site to give an overall resultant noise level at each receptor.

5 Prediction Results

5.1 Operations considered

5.1.1 The proposal is for the construction and use of a building for the recycling of co-mingled waste and the relocation of the crusher and screen in the northeast corner of the site.

5.1.2 The waste would be delivered in closed or covered vehicles. The equipment to be used in the building would include a 360° excavator and a loading shovel. These would also operate on the tarmaced surface in front of the roller shutter doors.

5.2 Results

5.2.1 Table 4 summarises the predicted highest noise levels from operations at Whitby Waste Management Site at the two identified noise sensitive receptors. These figures have been calculated by adding the noise levels from plant operating concurrently at the closest point to each receptor.

5.2.2 Although these levels will not prevail continuously during the operation of Whitby Waste Management Site, they are an accurate representation of potential worst-case noise levels.

Table 4: Predicted Site Noise Levels

Location	Predicted Noise Level dB $L_{Aeq,1hr}$
St Peter's Court	44
Pleasant Mount	43

5.2.3 These are the levels that may be expected at the closest potentially noise sensitive receptors from noise produced by the proposed operations. No barrier correction has been applied to take into account activity whilst it is within the confines of the reception building. Noise levels are likely to be lower than those predicted when this is the case.

5.2.4 The predicted noise levels have been based on a worst-case situation assuming the following:

- All potential operations are working together throughout the prediction period of one hour.
- Activity has been assumed to be working at its closest point to each of the receptors.
- No attenuation has been applied to noise levels produced by operations carried out inside the building.

5.3 Discussion

5.3.1 MPS2 Annex 2 states that the aim of developers should be for operations not to exceed the background noise levels (L_{A90}) by more than 10dB(A), subject to a maximum of 55dB(A) L_{Aeq},1h (free field). However, it is also recognised that in some situations, this may be difficult to achieve. The guidance under these circumstances is to work to a level as near to L_{A90} + 10dB(A) as is practical but should not exceed 55dB(A) L_{Aeq},1h (free field).

5.3.2 The baseline noise levels in the area around Whitby Waste Management Site range between L_{A90} values of 42dB to 49dB. Table 5 compares the existing background noise level with the predicted site noise levels.

Table 5: Comparison of Noise Levels

Noise monitoring location	Measured L_{A90} dB(A)	Predicted Site Noise Level $L_{Aeq,1hr}$ dB(A)	Difference
St Peter's Court	42	44	+2dB(A)
Pleasant Mount	49	43	-6dB(A)

5.3.3 The values in the table show that the worst case predicted site noise level at St Peter's Court is just 2dB(A) above the existing background noise climate. At Pleasant Mount the predicted site noise level is 6dB(A) below the existing background noise climate.

5.3.4 Predicted site noise levels also remain below the maximum recommended level of 55dB(A) L_{Aeq},1h (free field) as detailed in MPS2.

6 Impact Assessment

6.1 St Peter's Court

6.1.1 Residential properties in St Peter's Court are the closest noise sensitive receptors to the north of Whitby Waste Management Site and are over 350m from the site boundary. As a result of this large separation distance, the predicted noise level from the proposed operations is not likely to exceed 44dBL_{Aeq}. This is within the MPS2 recommended limit of 55dB$L_{Aeq,1hr}$.

6.1.2 The background noise climate at this location is mainly influenced by road traffic on the A171 and other activity within the trading estate. The average measured background noise level was 42dBL_{A90}.

6.1.3 The predicted worst case noise level is just 2dB(A) above the existing background noise and there is no likelihood of adverse impact on the prevailing noise climate as a result of the proposed activity at the waste recycling facility during operational daytime hours.

6.2 Pleasant Mount

6.2.1 The background noise climate at this location was influenced mainly by road traffic noise on the A171 and was measured to be 49dBL_{A90}.

6.2.2 The predicted site noise level has been calculated to be 43dB$L_{Aeq,1hr}$. Therefore the noise from the site is within the recommended consent limit of 55dBL_{Aeq} and is 6dB(A) below the background noise climate during a worst case scenario when all plant is operating concurrently.

7 Mitigation Measures

7.1 Screening

7.1.1 The degree of attenuation afforded by a barrier depends on the frequency of the noise, the increase in path distance and the effect on the line of sight of the source from the receptor. The use of barriers results in the loss of ground attenuation and this may sometimes result in disappointing reductions in noise levels as a result of barrier improvements.

7.1.2 There is a 2.4m high retaining wall proposed to the south of the proposed crushing and screening area. This may provide some attenuation to the noise levels produced from this area, particularly for dwellings in Pleasant Mount. However, In order to demonstrate that a worst case situation has been considered the predicted site noise levels do not include for any barrier attenuation.

7.2 Maintenance and site operational procedures

7.2.1 Wherever possible the emphasis on noise control should be upon good design, control at source by good operational practices, correct use and maintenance of plant and use of Best Practice to prevent or minimise emissions. Various measures will be undertaken to ensure that, during the working of the site, noise levels will be kept to a minimum.

- The day to day operations, including grab and loading shovels and wagons tipping will mainly take place within the confines of the waste recycling building.
- The integrity of the building will be maximised by ensuring that all potential areas for noise leakage are sealed.
- Permanent roadways will be hard surfaced where applicable.
- Road surfaces will be maintained to allow efficient use and minimise vehicle noise.
- Vehicle speeds to avoid body slap from empty lorries will be restricted.
- Directional noise sources will be pointed away from sensitive areas wherever possible.
- Working hours will be limited to 07:30 – 17:30 Monday to Friday and 07:30 – 13:00 on Saturdays. There will be no working on Sundays and only very occasionally on Bank Holidays.

7.2.2 Regular and effective maintenance by trained personnel may do much to reduce noise from machinery. Increases in plant noise are often indicative of future mechanical failure.

- Noise caused by friction can be reduced by proper lubrication.
- Drop heights will be reduced where practical.
- Efficient silencers will be fitted to all vehicles and plant
- All plant will be operated with doors and engine cowls in the closed position wherever practical.
- Revving of engines will be avoided.
- Lack of maintenance may lead to overheating, resulting in engine covers being left open.

7.3 Vehicle reversing alarms

7.3.1 The predicted noise levels do not include any noise impacts from reversing alarms as the very short duration of the noise event means that they do not contribute to the overall measurable L_{Aeq} noise levels.

7.3.2 Due to their tonal quality, however, vehicle reversing alarms can give rise to complaints from nearby residents. These are required by the Health & Safety regulations for safety of the workforce and need to generate a certain level of noise to achieve this.

7.3.3 However, there are now more options for vehicle reversing alarms such as directional and adjustable systems, which can help minimise the noise impact at surrounding noise sensitive properties.

7.3.4 Consideration should be given to the fitment of either a broadband system or automatically variable reversing alarms. The variable alarm automatically adjusts to +5dB above the background level. The broadband sound reversing alarm is both directional and localised, concentrating the sound within the immediate danger zone, thereby reducing the potential for nuisance off site.

8 Summary & Conclusions

8.1.1 A survey of existing noise levels in the vicinity of Whitby Waste Management Site was undertaken on 9th July 2009. The results demonstrate that the noise climate at the nearest noise sensitive receptors to the site is affected by road traffic on the A171, high altitude aircraft and activity within the existing trading estate.

8.1.2 This assessment demonstrates that the noise levels predicted by the proposed activities during a worst case scenario are lower than the existing ambient noise climate at each location. It is therefore not likely that there will be any impact on the prevailing ambient noise levels.

8.1.3 The noise produced by the proposed activities does not exceed the measured background daytime noise levels at the nearest noise sensitive receptors at Pleasant Mount to the west. It is therefore not considered likely that complaints will arise from local residents as a result of activity during waste recycling at Whitby Waste Management Site.

8.1.4 At St Peter's Court to the northwest the predicted worst case site noise level is 2dB(A) above the existing background noise level. BS4142 indicates that complaints are of marginal significance at 5dB(A) above background. It is therefore unlikely that complaints would arise at this location as a result of noise from activity within Whitby Waste Management Site.

8.1.5 Noise levels at surrounding locations are likely to be lower for most of the time than those detailed in this report because the worst-case situation has been considered throughout the prediction exercise.

8.1.6 Predicted levels for the worst-case scenario at the noise sensitive dwellings are below the nominal acceptable daytime limit of 55dB$L_{Aeq,1h}$ as detailed in paragraph 34 of MPS2 and the WHO guidelines. This level is likely to protect the majority of people from being seriously annoyed during the daytime.

8.1.7 To prevent or minimise noise nuisance, however, the use of Best Available Technique has been applied which essentially underpins good practice. The continued operation of Whitby Waste Management Site will comply with current Government guidelines on noise and is unlikely to give rise to complaints when assessed against the criteria detailed in BS4142 and will not have a significant impact on the noise climate at the nearest noise sensitive locations.

Appendix A: Noise Monitoring Results

Date: 10th July 2009

Weather: 30% - 100% cloud cover
Wind speed: 3 m/s
Wind Direction: north west
Temperature: 13 - 17°C

Location: St. Peters Court

Monitoring Period	Measured Noise Levels dB						General Observations
	L_{Aeq}	L_{Amin}	L_{Amax}	L_{A10}	L_{A50}	L_{A90}	
07:30 – 07:45	48.6	41.0	66.2	48.1	45.0	43.1	Seagulls and other birdsong throughout. Passing vehicles. Domestic noise from surrounding properties. Distant road traffic noise from A171. Local traffic. At 0911 some industrial noise from estate – whine /hum. High altitude aircraft. Levels at 1211 without crusher operating. Results at 1226 with crusher and screen operating. Children at school playground. Pedestrians passing. 1346 grass cutter nearby for 5 mins. Children playing in street.
07:45 – 08:00	50.8	41.3	64.1	53.2	46.0	43.3	
08:55 – 09:10	45.5	40.9	58.4	47.2	44.3	42.5	
09:10 – 09:25	46.0	41.2	59.3	47.6	44.6	43.0	
12:11 – 12:26	45.6	43.8	68.0	47.7	43.0	40.1	
12:26 – 12:41	46.3	39.7	59.9	49.2	44.0	41.8	
13:46 – 14:01	47.6	36.7	64.8	51.5	41.5	38.5	
14:01 – 14:16	46.2	37.0	59.9	49.6	41.7	38.6	
15:02 – 15:17	46.1	36.9	65.1	48.8	41.3	38.5	
Mean/min/max	47.3	36.7	68.0	49.2	43.4	41.6	

Location: Pleasant Mount

Monitoring Period	Measured Noise Levels dB						General Observations
	L_{Aeq}	L_{Amin}	L_{Amax}	L_{A10}	L_{A50}	L_{A90}	
08:15 – 08:30	54.7	46.7	65.6	57.3	53.6	49.9	Constant road traffic noise from the A171. Seagulls and other birdsong throughout. Some industrial noises from Trading Estate, including banging and whining. Domestic noise including radios/TV's and some gardening. Car and house doors banging. Local traffic, some passing close to monitoring location. High altitude aircraft. Wagons pulling out of industrial estate onto A171. Levels at 1248 with crusher and screen operating. Results at 1303 without. Children at school playing field.
08:30 – 08:45	55.4	48.3	65.5	57.8	54.2	51.2	
09:37 – 09:52	54.0	46.5	63.2	56.6	53.1	49.9	
09:52 – 10:07	53.8	45.7	64.3	56.1	52.6	49.4	
12:48 – 13:03	52.4	44.7	61.1	54.5	51.9	48.7	
13:03 – 13:18	52.6	43.7	61.4	55.0	51.7	48.9	
14:20 – 14:35	53.0	44.2	63.9	55.2	52.2	48.2	
14:35 – 14:50	53.5	42.5	64.3	56.0	52.3	47.2	
15:21 – 15:36	52.1	43.4	62.2	54.9	51.0	47.1	
Mean/min/max	53.6	42.5	65.6	55.9	52.5	48.9	