NOISE SURVEY LTD

Noise Management Plan Morris & Co (Handlers) Ltd

Report Ref:	243NEATH
Client:	Morris & Co (Handlers) Limited
Site Location:	Top Shed Neath Abbey Wharf Skewen Neath SA10 6BL
Date of Issue:	Monday 27th August 2018
Date of Assessment:	Monday 20th August 2018 (Onsite noise measurements) Monday 20th May – Tuesday 21st of May 2019 (background measurements at nearest receptor) Tuesday 18th of June 2019 (ambient and onsite noise measurements)

Picture 1: noise measurements outside opening to the factory.

Noise Survey Limited 3 Sude Hill New Mill Holmfirth HD9 7BL

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Introduction

The Noise Management Plan details the methods by which the site operator known as Morris & Co (Handlers) Limited, will assess, reduce and prevent noise emissions from the incinerated steel and steel can metal recycling facility located at;

Morris & Co (Handlers) Limited
Top Shed
Neath
Abbey Wharf
Skewen
Neath SA10 6BL

General Sector Guidance Note IPPC SO.01

The purpose of the Noise management Plan is to comply with section 2.9 of the General Sector Guidance Note, Integrated Pollution Prevention & Control (IPPC) published by the Environmental Agency. It states;

"This UK General Sector Guidance is to be used when there is no sector specific IPPC guidance. It is a supplemental note for use with existing Integrated Pollution Control (IPC), or waste, or other guidance, and deals with issues included in IPPC which may not have been covered in the previous regulatory regimes, such as accidents, energy, noise, site restoration etc. It lays down some general standards and expectations in the UK (England and Wales, Scotland and Northern Ireland) for the techniques and standards that need to be addressed to satisfy the Regulations".

It is considered that the method and type of steel recycling conducted at the Neath site is not specifically covered by another sector specific guidance.

Section 2.9 of the General Sector Guidance is applicable to this noise management plan. The guidance states;

"The level of detail supplied should be in keeping with the risk of causing noise-related annoyance at sensitive receptors. Where an installation poses no risk of noise-related environmental impact because the activities undertaken are inherently quiet, this should be

justified and no further information relating to noise need normally be supplied. It should, however, be remembered that there can still be an underlying level of annoyance without complaints being made. Where noise issues are likely to be relevant, the Operator will be required, in the Application, to provide information on the following: (for more details see H3 Part 1 Noise)

- the main sources of noise and vibration that will fall within the IPPC installation and also on
- Infrequent sources of noise and vibration
- the nearest noise-sensitive sites
- conditions/limits imposed under other regimes
- the local noise environment
- any environmental noise measurement surveys, modeling or any other noise measurements
- any specific local issues and proposals for improvements. Within this section “noise” should be taken to refer to “noise and/or vibration” as appropriate, detectable beyond the site boundary.

The PPC Regulations require installations to be operated in such a way that “all the appropriate preventative measures are taken against pollution, in particular through the application of BAT” (Best Available Techniques). The definition of pollution includes “emissions that may be harmful to human health or the quality of the environment, cause offence to human senses or impair or interfere with amenities and other legitimate uses of the environment”. BAT is therefore likely to be similar, in practice, to the requirements of the statutory nuisance legislation, which requires the use of “best practicable means” to prevent or minimise noise nuisance. It is understood that raw material handling can generate noise where glass is being recycled or broken up. It is suggested that consideration be given to the use of sonic booths or sound proofing to control the generation of noise where such activities are being carried out. In the case of noise, “offence to any human senses” can normally be judged by the likelihood of complaints, but in some cases it may be possible to reduce noise emissions still further at reasonable costs, and this may exceptionally therefore be BAT for noise emissions.

Indicative Best Available Techniques (BAT) for monitoring

1. The Operator should employ basic good practice measures for the control of noise, including adequate maintenance of any parts of plant or equipment whose deterioration may give rise to increases in noise (for example, maintenance of bearings, air handling plant, the building fabric as well as specific noise attenuation measures associated with plant, equipment or machinery).

2. The Operator should also employ such other noise control techniques to ensure that the noise from the installation does not give rise to reasonable cause for annoyance, in the view of the Regulator and, in particular, should justify where either Rating Levels (LAeq,T) from the installation exceed the numerical value of the Background Sound Level (LA90,T).

3. Further justification will be required should the resulting field rating level (LAR,TR) exceed 50 DB by day and a facade rating level exceed 45 DB by night, with day being defined as 07:00 to 23:00 and night 23:00 to 07:00.

4. In some circumstances "creeping background" may be an issue. Where this has been identified in pre application discussions or in previous discussions with the local authority, the Operator should employ such noise control techniques as are considered appropriate to minimise problems to an acceptable level within the BAT criteria.

5. Noise surveys, measurement, investigation (which can involve detailed assessment of sound power levels for individual items of plant) or modelling may be necessary for either new or existing installations depending upon the potential for noise problems. Operators may have a noise management plan as part of their management system."

This noise management plan together with the accompanying noise survey show that;

1. Suitable noise mitigation can be implemented and will be maintained to minimize the generation and impact of noise to nearby noise sensitive receptors
2. The noise of exposure at noise sensitive receptors will be maintained at levels that are unlikely to result in adverse impact and to minimize complaints
3. Unplanned elevated noise events will be minimised

Horizontal Guidance Note IPPC 3 (Part 2) for Noise Assessment and Control

The purpose of the Horizontal Guidance Note for Noise Assessment and Control is to provide supplementary information, relevant to all sectors, to assist applicants in preventing and minimising emissions of noise and vibration as described in the Sector Guidance Notes (or the General Sector Guidance Note).

Part 2 of the guidance known as *Noise Assessment and Control* – describes the principles of noise measurement and prediction. It also provides example practices and methods for the control of noise and vibration. Methods of noise control include;

- Elimination and reduction of noise at source including the use of low noise machinery and processes;
- Use of facades and buildings to reduce the spread of noise. The building at the Neath site does provide a means of noise control by reducing the spread of noise towards the identified nearest noise receptors.
- Site layout to take advantage of the natural environment such as hills and valleys to control the spreading of noise. At the neath site, the opening to the building does not face noise receptors
- Orientation of directional noise sources away from sensitive receptors; and by use of
- noise barriers or bunding, At the neath site the highest noise emitting activities such as the trommel and baleer are conducted inside the building..

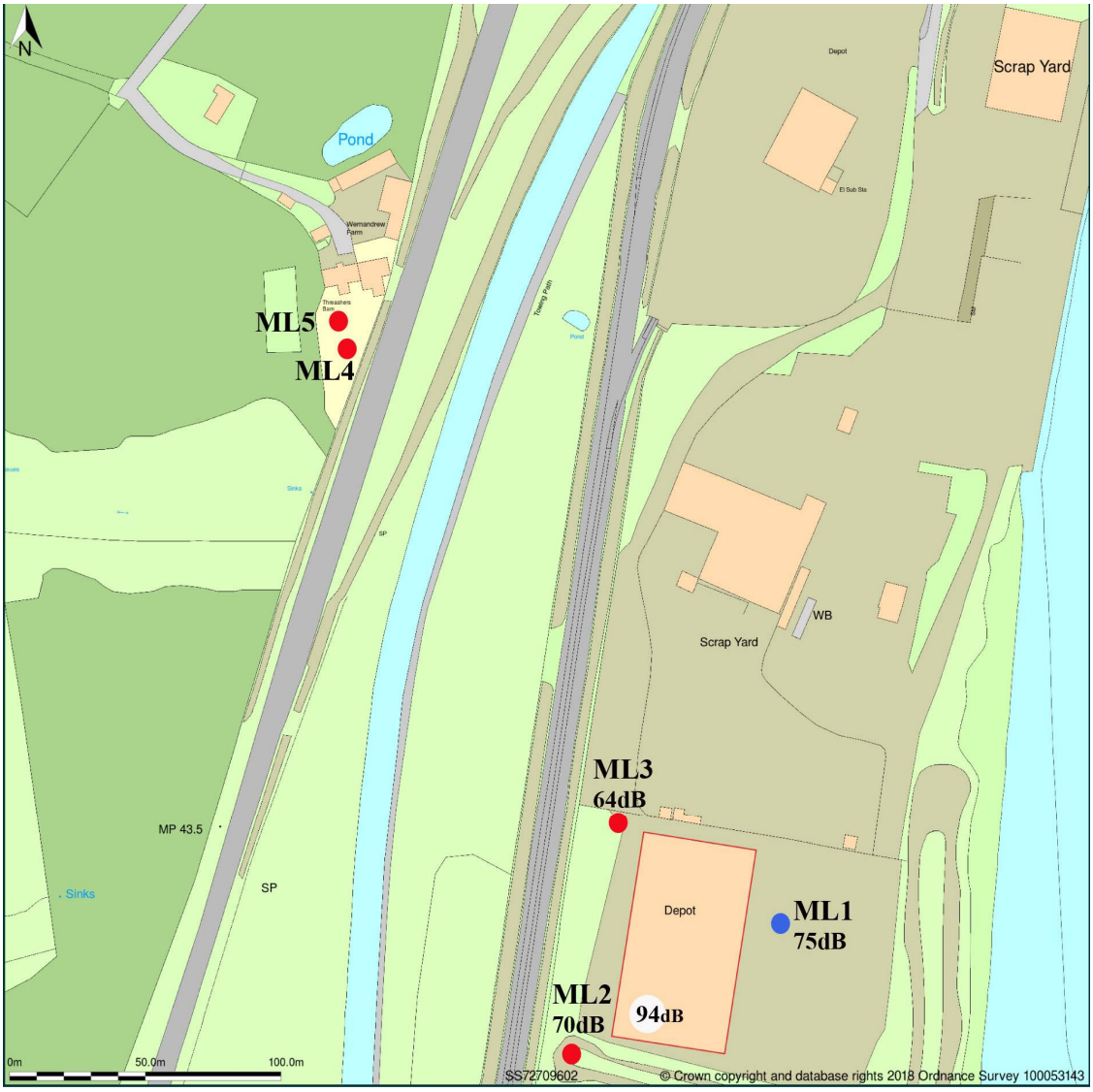
Application of the methods in Part 2 of the Horizontal Guidance note are in keeping with the BAT principles.

Noise Sensitive Receptors

The site is located in a predominantly recycling industrial area. At a distance of 220m is a single residential noise sensitive receptor known as Wernandrew Farm, (distance measured on google maps).

At a distance of approximately 870m are additional residential receptors and a school known as LLandarcy Academy of Sport (measured using google maps).

There are access roads to the site and these may be accessed by local residents on foot or by vehicle.



Location plan: The blue and red circles indicate the measurement locations. The building with a red border is the building within which recycling of incinerated steel and can steel is conducted. The nearest noise receptor is the farm house and is marked ML4 and ML5.

Key Sources of Noise from the Morris & Co (Handlers) Recycling Site at Neath

The potential sources of noise that have been identified in the Amenity Risk Assessment

1. Delivery and collection Heavy Goods Vehicles (HGV's). These vehicles bring the product for recycling and are also a means of transporting recycled products to various destinations. Noise is emitted mainly from their diesel engines.

2. When steel is delivered, it is tipped onto the floor inside the building. This can result in rattling and clanging inside the building. This takes place inside the building.
3. Two material handlers are used to move the steel and place it either in the trommel or the baler. Noise is generated as the metal comes in contact with other metal. Noise is also generated from the engines that power the material handlers. These machines are a Fuchs 340 and a Sennebogen 830. These are located inside the building.
4. A Kenny & Co fixed trommel is used to recycle incinerated steel. Noise is generated from the shaking of the metal and the engines of the trommel system. This takes place inside the building.
5. A Henschel Hydraulic baler is used to bale steel cans. Noise is generated from the crushing of the steel and the engines of the baler. This takes place inside the building.
6. When storage inside the building is not available, the metal is moved from inside the building and tipped outside the building. A reverse process also occurs when metal placed outside the building is taken back inside the building. Noise is generated from the engines of the material handler and the contact and clanging of metal as it is picked up. This process occurs both outside and inside the building.
7. Mechanical maintenance of machines. This takes place predominantly inside the building.
8. Cleaning and general maintenance of the site. This is mainly inside the building.
9. There is five staff who operate the recycling machines and processes. Staff engage in conversation as they interact with each other. This takes place both inside and outside the building.

Amenity Risk Assessment

In accordance with Table 2.9.2 of *Horizontal Guidance for Noise Part 2 - Noise Assessment and Control* (2004) the noise sources identified in this noise management plan are detailed in Table 1 below.

The table shows the nature of each noise is described and the contribution to the overall noise emission.

Noise Sources		
Source of Noise	**Nature of Noise**	**Contribution to overall Emiission**
Cleaning of the work area	Not dominant	Low
5 Staff conversing and interaction	Not dominant	Low
Maintenance and repair	Not dominant	Low
HGV movements	delivery and collection of steel	Medium
Material Handler external	Movement of steel from inside to outside the building and visa versa	Medium
Pouring of steel deliveries onto the floor inside the building	Lasts for short periods not dominant	Medium
Kenny & Co Fixed Trommel	Cleaning of incinerated steel continuously inside the building	High
Henschel Hydraulic Baler	Baleing of steel cans inside the building	High
360 material handlers Fuchs 340 Sennebogen 830	Moving steel from delivery to inside the trommel or baler respectively.	Medium
Wind sifter generator	Located inside the building generating electricity	High LAeq(10min) 94dB at internal location
Shredder and mill	Shredding and moving material	High
X3 Vibrating tables	Separating material	High

Table 1: Nature of Noise from the recycling process.

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Processes and Checks Carried out to Reduce Noise Emission from Operations

Noise Source	Minimisation Action
Heavy Goods Vehicles (HGV's) Deliveries/Collection	A speed limit is to be placed onsite of 5mph
	Loading or collection of product should take place inside the building.
	The unloading/tipping of product should take place inside the building
	HGV's should be required to turn of engines whilst parked or waiting for longer than 2 minutes.
Tipping	This should take place inside the building
Material Handler fuchs 340 & Sennebogen 830 and Truck	The machines should be maintained on a regular basis in compliance with the manufacturers guidance for this type of use. A maintenance check should be conducted on a annual basis or more frequently as and when performance impairment is identified. Maintenance records should be kept up to date and available upon request.
Kenny & Co Fixed Trommel and Henschel Hydraulic Baler, Generator, Shredder mill, conveyors and vibrating tables.	The machines should be maintained on a regular basis in compliance with the manufacturers guidance for this type of use. A maintenance check should be conducted on a annual basis or more frequently as and when performance impairment is identified. Maintenance records should be kept up to date and available upon request.
Moving metal inside to outside of the building and visa versa for storage	Storage of metal outside of the building should be a last resort when all internal storage space has been exhausted. Collection of product on a regular basis should be planned and coordinated to reduce the need to store product externally
General Maintenance	The façade of the building should be checked on a monthly basis for holes and gaps in the building where noise can spread easily. This can be done with a visual examination around the parameter of the building. Any leaks in the roof should be repaired as soon as possible to reduce the escape of noise through holes and gaps. Light visible through the façade of the building should be sealed. A record of each inspection should be maintained together with records of defects in the façade and remedies applied. The inspection and maintenance records should be available on request,
	Maintenance of machines and tools should where possible take place inside the building. Maintenance records should be kept up to date and available upon request.
Staff Interaction	This should be consistent with normal work place conversation levels

Cleaning	This should be consistent with work place practices
Roller Shutter Doors	Consideration should be given to the use of automatic roller shutter doors to reduce the noise emission through openings.
Openings/Doors	Openings not in use by vehicles should be kept closed to reduce the spread of noise
Deviations	Deviations from the working practices and use of stated machinery shall be logged and an observation of the noise levels produced from the deviation be noted to show whether an increase in noise levels was caused by the deviation

Table 2: Processes for reducing noise at source and the spread of noise into the environment

The five highest sources of noise are from the;

1. Kenny & Co fixed trammel
2. Henschel hydraulic baler
3. Material handlers
4. Shredder / mill
5. vibrating tables

These machines are located inside the building and reliance is placed on the building as an effective barrier and attenuator of noise. Regular maintenance of the machinery and the building is essential to this noise management plan.

Some material handlers are used in the yard to pile and or move metal.

Noise Management Plan Frame work

Potential sources of noise have been identified in the Amenity Risk Assessment.

The format of this noise management plan is based on the requirements presented in *Horizontal Guidance for Noise Part 2 - Noise Assessment and Control* (2004), and the general Sector Guidance Note IPPC SO.01.

Noise Management Plan Status
This Noise Management Plan is a controlled document, and forms part of the site Management System.

The specification for the periodic review and update of the noise management plan will be set out within the site Management System and will be on an annual basis, as a minimum. However, the noise management plan is intended to be a live document which serves as a reference during daily operations, and as such would be updated on a more frequent basis should the following occur;

- Noise levels increase due to a change of recycling process or the introduction of additional noise emitting machinery
- Significant changes are made to the plant or operational practices
- the National Resources Wales requests that the noise management plan is updated, in their role as regulator; or
- complaints are received, which on subsequent investigation result in the identification of further control measures or remedial action, in addition to those set out within this document.

Noise Surveillance

The purpose of noise surveillance is to demonstrate to the National Resources Wales that the permitted development is being operated in such a manner as to minimise the noise impact at nearby noise-sensitive receptors. In the event that complaints are received noise monitoring would prompt remedial actions to ensure ongoing future compliance.

In the first instance a responsible person shall undertake monthly noise patrols at the nearby noise-sensitive receptors. Audibility or otherwise of the site noise should be logged in a register.

The closest noise-sensitive receptors are considered to be:
1. Residential property approximately 220m to the North West of the site known as Wernandrew Farm
2. A school known as Llandarcy Academy of Sport located at a distance of approximately 870m from the site in a North Westerly direction.

The sites listed above should be included in the monthly patrols.

Significant deviations from normal working practices shall be logged with a statement stating whether noise levels from the site have been increased as a result of the material deviation.

Complaint Procedure

If a complaint is received from a local resident, an investigation shall be instigated within one working day to identify the cause of the non-compliance/complaint.

The Noise Complaint Form shown below will be filled in and appropriate action will be taken to remedy the problem should the complaint be validated.

A complaint investigation may involve the identification and cessation of the activity. It can also instigate consideration of mitigation measures to reduce the noise emission levels from the activity or activities, for example, by replacement of noisy plant with quieter alternatives and/or the use of temporary screening.

Any deviation from agreed working practices shall be identified immediately and conformance to the working practice reinstated. If it is not possible to identify the source of the complaint it may be necessary to undertake a noise survey. If this is needed a suitably qualified person should be employed to undertake the required survey work.

The date and results of the noise survey should be logged and reported in accordance with the relevant British Standard.

Complaints Processing Form

Noise Complaint Form

Complaint No:……..

Time and date of complaint:	**Name and address of complainant:** **Telephone number of complainant:** **Email of complainant:**
Location of caller in relation to the site?	

Date of noise event:	
Time of noise event:	
Duration of offending noise:	
Weather conditions at the time of offending noise (i.e., dry, rain, fog, snow):	
Temperature (very warm, warm, mild, cold or degrees if known):	
Wind strength (none, light, steady, strong, gusting):	
Wind direction (eg from NE):	
Complainant's description of noise: **o What kind of noise is it?**	
o Duration of the offending noise (time):	
o Is it a constant or intermittent noise in this period:	
o Does the complainant have any other comments about the noise?	
Are there any other complaints relating to this noise? (either previously or relating to the same exposure):	
Operating conditions at the time of the offending noise and any deviations from standard practices at the time:	
Do you accept that the noise is likely to be from your activities?	
What was happening on site at the time the noise occurred?	
Follow up, time and date caller contacted:	

Actions taken:		
Is an amendment to the Noise Mgt Plan required?		
Form completed by:	**Date:**	**Signed:**

Noise Survey

Summary

The specific noise of LAeq(60min) 55dB is based on a subtraction of the residual noise from the ambient level at the nearest noise sensitive receptor known as Wernandrew farm. This is above the background level of LAF90(7hrs 38min) 45dB measured at ML4 on the farm. A subjective character correction of 12dB results in a rating level of 65dB and represents a difference of 22dB above the background level. This shows a likelihood of adverse impact in the context of the noise environment.

In consultation with the NRW, the first step can be to repair the existing recycling warehouse building and close holes and gaps in the facades. Fixing and closing gaps could reduce the specific noise to LAeq(60min) 44dB, a level that is below the residual level of LAeq(7hrs 38min) 48dB. A 6dB character correction results in a rating over background level of 5dB. In the context of the noise environment this represents a low likelihood of adverse impact.

Should fixing and closing holes not result in a low likelihood of adverse impact, an internal cavity wall with 25 kg/m2 of sound bloc board is modeled to reduce the specific noise to LAeq(60min) 32dB at Wernandrew farm. This level is below the prevailing background level and would attract no character correction. It represents a low likelihood of adverse impact.

Uncertainty is assessed at ± 4 dB

Objective:

Picture 1A: Measurements included noise from collection and delivery trucks

The Client recycles steel cans and steel that has been in an incinerator. Delivery trucks bring the steel to the recycling plant. The material is tipped inside metal fabricated building onto the floor. The steel tins are separated from their original bale using a materials handler and are put into the onsite Henschel hydraulic baler where it is baleed into a new sized bale. Finished steel bales of cans are stored inside the factory until they are collected. The moving of the steel bales is done with a 360 material handler known as a Fuchs 340.

Steel that has been incinerated is moved from the tipping area into a Kenny & Co fixed trommel that removes waste such as ash from the steel. The steel is then stored both internally and externally depending on the quantity awaiting collection. The incinerated steel is moved using a 360 materials handler known as a Sennebogen 830. A diesel generator is used internally to generate electricity. A Shredder mill is used to process metal along with vibrating tables and conveyor belts to separate and transport the metal for processing. A Baleer is used to package tin cans into smaller sized bales.

The purpose of this BS4142:2014 noise report is to assess the likely hood of adverse impact on nearby noise sensitive receptors. At a distance of 220m is a single residential farm house noise sensitive receptor on Wernandrew Farm, (distance measured on google maps).

At a distance of approximately 870m are additional residential receptors and a school known as LLandarcy Academy of Sport (measured using google maps).

This noise assessment also provides noise levels to aid in the provision of the noise management plan. The noise survey is based on measured noise levels at the site and at the nearest noise sensitive receptor at Wernandrew.

Source under Assessment

The recycling center has two separate buildings. One is an administrative office and the second is a warehouse where the recycling process is conducted. There is a yard to the front of the factory. At the rear of the factory are shrubs and trees.

Picture 2: Steel can bales and henschel hydraulic baler.

The recycling of steel at Morris & Co (Handlers) Ltd involves the use of plant that is located inside a fabricated building. Additional noise is generated from the movement of the metal. Noise from the recycling process includes;

- Moving of metal from inside to outside and visa versa. This generates clanging when metal is dropped. Noise is also generated from the vehicle engines. This noise takes places outside the front of the building.
- Movement of metal inside the building. This involves the use of material handlers and noise from their engines.
- Kenny & Co fixed trommel
- Henchel hydraulic baler
- Diesel generator
- Shredder mill
- Vibrating tables
- Conveyor belts
- Trommel
- Baleer
- Material handlers
- Collection and delivery trucks and associated transportation noise

The recycling site shares a boundary with another metals recycling station known as Sims Metal Management. Next to Sims Metal management is a manufacturing factory known as Express Asphalt an asphalt mixing plant. The River Neath runs parallel to the factories.

Picture 2: Kenny and Co fixed trommel and materials handler inside the factory.

Picture 3: Moving steel from inside to outside the factory and visa versa.

Picture 4: The nearest noise sensitive receptor is a farm house known as Wernandrew farm. It is approximately 220m from Morris & Co recycling site (measurements obtained from google maps). This is located behind the factory building.

Methodology

Monday 20th August 2018 and Tuesday 18th June 2019 Onsite noise measurements measurement of existing plant and the recycling process noise was measured.

Monday 20th May – Tuesday 21st of May 2019 background and residual noise measurements were obtained at the noise sensitive receptor at Wernandrew farm house.

Tuesday 18th of June 2019 ambient noise measurements where obtained at the farm house

Picture 4A: Ambient, residual and background measurements were obtained at the nearest noise sensitive receptor Wernandrew farm house.

A single type 1 Cel 63X sound level meter was calibrated and used to take measurements at the recycling site and Wernandrew farm house. The sound level meter was positioned at different locations around the factory. These positions included the front of the factory building at a distance of 4m from the façade. Measurements were also obtained at the back of the factory at 5m distance from the façade.

Measurements of the internal noise level near the generator were obtained internally for reference purposes only.

At Wernandrew farm house, measurements were obtained in the rear garden that is between Morris & Co (noise source) and the farm house building.

It is confirmed that all the noise sources outlined as involved in the recycling process where generated during the measurement of the onsite specific noise. This included the baleer (the baleer was not under load and earlier measurements of the baleer have been used to increase the measured ambient level so that they are comparable to the baleer under load), trommel, material

handlers, moving of metal both internally and externally and delivery/collection of recycling material.

Pauses During Measurements or Editing of Measurements

The measurements were not paused or edited during any measurement. Measurements were started and stopped only. The data has not been interfered with, edited or altered to remove unwanted noise.

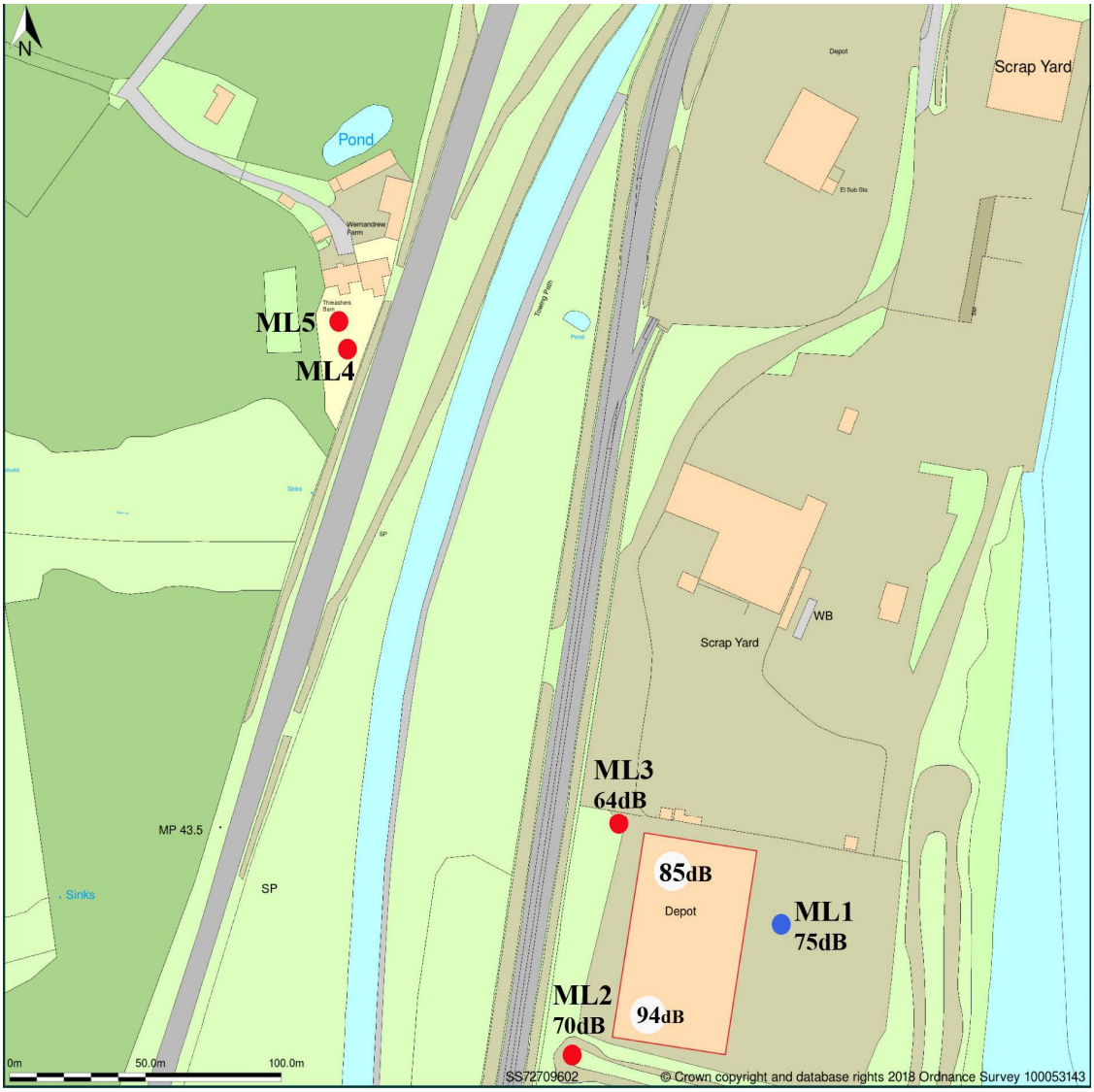
Picture 4B: Loading of collection truck with bales of steel can.

Façade Correction

Façade measurements occur when the meter is outside but in front of a large reflective surface at a distance of less than 3.5m away from the reflective surface. The sound level meter was positioned 4m from the nearest reflective surface. No façade correction has been applied and the measurements are considered to be comparable to free field conditions.

Picture 5: Another noise sensitive receptor is Llandarcy Academy of Sport located approximately 870m from the site (google measurements). No measurements were obtained at the school.

Site and Measurement Locations



Site plan: This is a site location plan purchased and cropped from the website https://www.buyaplan.co.uk on 22nd August 2018 at 11:25. The full site plan is attached as part of this report in the Appendix. The blue and red circles indicate the noise measurement locations and are marked ML1, ML2…etc.

Hours of Operation

The factory is open Monday – Friday 07:00 – 17:00 and on Saturdays from 07:00 – 12:00

Sunday: Closed

Receptor Sensitivity

The residential house on Wernandrew farm is the nearest noise receptor and is located approximately 220m from the Morris & Co recycling site.

The Llandarcy Academy of Sport is located approximately 870m from the Morris & Co recycling site.

Date and Time of Measurements

Monday 20th August 2018 (Onsite noise measurements)
Monday 20th May – Tuesday 21st of May 2019 (background measurements at nearest receptor)
Tuesday 18th of June 2019 (ambient and onsite noise measurements)
All measurements were conducted when Morris & Co was open.

Mode of Operation

The site was operating in a consistent mode.

Noise Characteristics

Irregular: The noise is irregular from the on and off nature of onsite handling vehicles. Measurements at Wernandrew farm at ML4 could not distinguish between the irregularity from the specific noise and that of other nearby recycling operations. A subjective character correction for irregularity has been applied of 6dB.

Impulsive: Clanging from the dropping of metal is impulsive. Measurements at Wernandrew farm at ML4 could not distinguish between the impulsive from the specific noise and that of other nearby recycling operations. A subjective character correction for impulsivity has been applied of 6dB.

Tonal: There is a tone from the humming of machinery. Measurements at Wernandrew farm at ML4 could not distinguish between the tone from the specific noise and that of other nearby recycling operations. A subjective character correction for tonality has been applied of 6dB.

A combined character correction of 12dB has been added to the rating level.

The Ambient Noise

The ambient noise was measured on Tuesday 18th of June 2019 at ML4 at Wernandrew farm house. The baleer was on and operating but not under load. Measurements show that at ML3 the baleer under load generated LAeq(5min) 64dB and not under load at ML3 measured LAeq(233min) 62dB indicating an additional 2dB under load. All other processes were functioning under load including;

- Henschel Hydraulic Baleer (in the building under load)
- Wind sifter diesel generator (internal measurements at the diesel generator LAeq(10min) 94dB (inside the building)
- Conveyor belt 1 (inside the building)
- Shredder (mill) (inside the building)
- X3 magnets (inside the building)
- X3 vibrating tables (inside the building)
- Kenny & Co Fixed Trommel (inside the building)
- X6 additional conveyor belts (inside the building)
- Terex fuch (material handler) LAeq(5min) 82.5dB (in the yard)
- Sennebogen 830 material handler (inside the building)
- Material handlers including Case 721G loader with reverse siren LAeq(1min) 86dB in the yard
- Tipping material in the yard LAeq(3min) 79dB

Start	Duration	Laeq	Lafmax	Laf90
16:40	46min	54.2	78	50.5

Table 1E: Ambient noise measurements obtained on Tuesday 18th of June 2019 at ML4. Processes were operated until 17:30 on this day so as to facilitate measurement of the ambient level. Plus 2dB to correct for baleer underload is added to the ambient level to result in LAeq46min) 56dB.

Freq. Hz	16	31.5	63	125	250	500	1K	2K	4K	8K	16K
LAeq (46min)	9.1	24.2	34.8	37.5	42.5	48.9	51.5	42.4	33.5	24.3	7.3

Table 1F: frequency break down of measurements in table 1E.

The ambient level measured at ML4 was LAeq (46min) 54dB +2dB for baleer underload = 56dB at the farm. Due to noise from Sims Metal Recycling, Fenestration Recycling and road traffic noise from the A465 it was not possible to single out the specific noise from Morris & co.

Noise Sources at the Morris & Co Site

Morris & Co Onsite		
External Measurements at ML1		
Duration	**LAeq dB**	**LAF90**
28min	75.8	69.5
60min	75.4	68.5
47min	75.4	70.5

Table 1: Onsite external measurements at ML1. During the measurements all the activities associated with the recycling plant were conducted. They show a specific noise of LAeq(60min) of 75dB.

Measurements at ML3 at Morris & Co which is closest to the noise sensitive receptors was LAeq(5min) 64dB externally close the baleer when the baleer was under load. Measurements with the baleer not under load at ML3 are LAeq(23min) 62dB.

Background Noise level

Measurements were obtained on Tuesday the 21st of May 2019 in the rear garden of Wernandrew farm house. This is the façade of the building closest to the noise source at Morris Recycling.

Start Time	Duration min	LAeq dB	LAFmax dB	LAF90 dB
07:00	60	49.3	75	45
08:00	60	47.9	63.6	45
09:00	60	48.2	70.8	45
10:00	60	47.2	67.1	44
11:00	60	47	60.2	44.5
12:00	60	47.4	66.4	44.5
13:00	60	48.3	71.4	45.5
14:00	38	48.1	63.8	45

Table 1A: Background measurements obtained at a distance of 4.8m from the farm house on Tuesday 21st of May 2019 at ML5.

Frequency Hz	16	31.5	63	125	250	500	1K	2K	4K	8K	16K
LAeq dB (07:00 - 08:00)	6.4	21.5	29.8	34.1	39	44.1	45.4	39.6	36.7	27.4	6.1

Table 1B: Frequency break down of measurements at 07:00 – 0800 AM from table 1A.

Start	Duration	LAeq dB	LaFmax dB	LAF90 dB
14:39	60min	49.4	65.6	46.5
15:39	60min	48.8	77.3	46
16:39	23min	46.9	62.2	44

Table 1C: Background measurements obtained at a distance of 13.3m from the farm house on Tuesday 21st of May 2019 at ML4.

Frequency Hz	16	31.5	63	125	250	500	1K	2K	4K	8K	16K
LAeq dB (14:39 - 15:38)	5.5	22.1	30.6	32.5	37.6	44.1	46.6	39.1	28.4	18.3	10.7

Table 1D: Frequency break down of measurements at 14:39 – 15:38 from table 1C.

The background level is taken from table 1A. This shows a background level of LAF90 (7 hours 38min) 45dB at Wernandrew farm house. The residual noise level is LAeq(7 hours 38min) 48dB. **The ambient level measured at ML4 was LAeq (46min) 54dB + 2dB for baleer under load = 56dB at the farm**

BS4142:2014 Assessment Day Time

Results		**Relevant Clause BS4142:2014**	**Commentary**
Measured ambient sound level	$L_{Aeq\ (46min)}$ 56dB	7.3.1	Measured onsite at ML4
Residual Sound Level	$L_{Aeq\ (7\ hrs\ 38min)}$ 48	7.3.3	Measured onsite at ML4
Background sound level	$L_{AF90\ (7\ hrs\ 38min\ )}$ 45dB	8.3	Measured onsite at ML4
day time, reference time interval is 60 min.		7.2	
Specific sound level (ambient noise – residual noise)	55dBA	7.3.3	Ambient level – residual level
Acoustic feature correction	+12dB	9.2	Subjectively assessed due to difficulty identifying source of tonality, irregularity and impulsivity
Rating Level (specific level plus correction for noise characteristics)	67dB	9.2	
Excess of rating over background level	67- 45 = 22dB	11	
This indicates a likelihood of adverse impact in the context	Excess of rating over background	11	

of the noise environment	level 22dB		
Uncertainty of the assessment	Uncertainty is estimated at ± 4dB		

Table 3: BS4142 noise rating level calculation for day time specific noise.

Context of the Noise Environment

- The measurement location has a concentration of recycling facilities including metal and plastics recycling as well as asphalt production.
- Near by factories include Steel Supply (Western) Ltd, Sims Group (UK) ltd, Express Asphalt Ltd, Fenestration Recycling Company, Derwen Plant Ltd and Aggregate industries UK ltd. These factories are located close to the noise receptor. They generate tonal, irregular and impulsive noise in the environment.
- There are other recycling and industrial manufacturers closer to Wernandrew Farm than the Morris & Co recycling site.
- The A465 and M4 motorway contributes road traffic noise to the environment.

In the context of the noise environment, the difference over background of 22dB during the day represents a likelihood of adverse impact.

Noise Map

All noise map models include a digital ground model calculated from google map data of elevations present in the map area. The propagation is based on BS5228-01 2009.

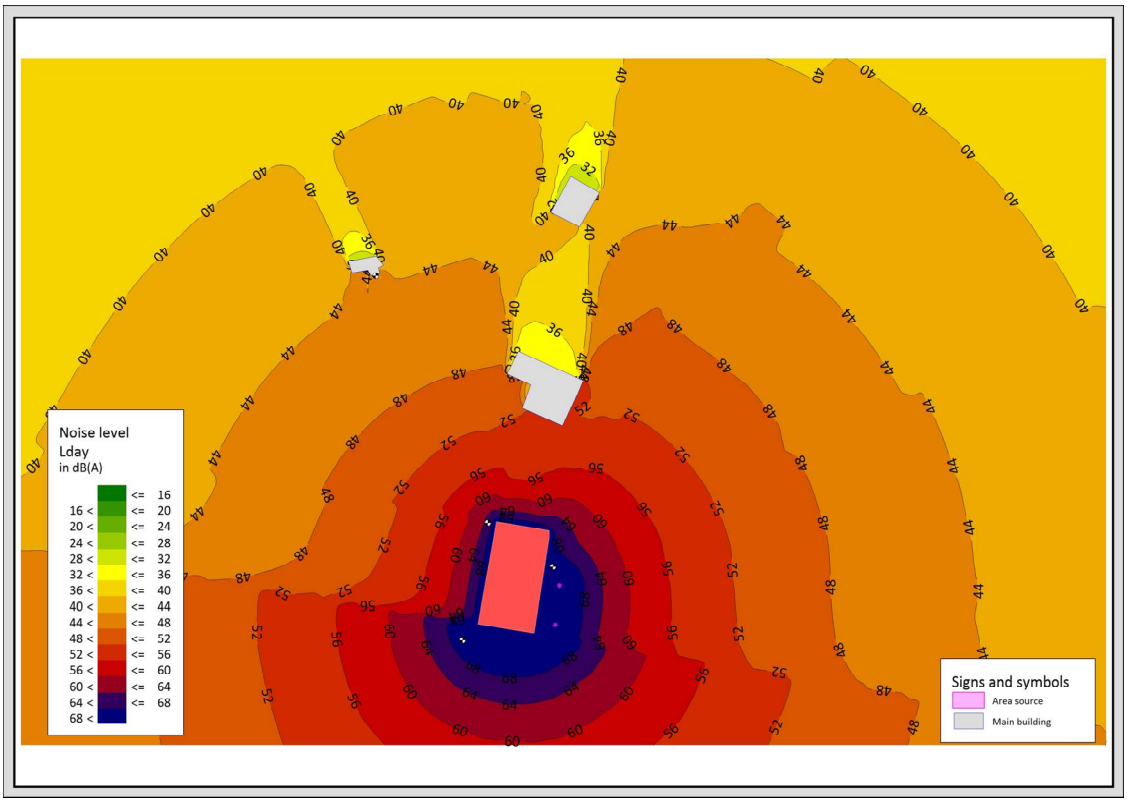
A noise map has been used to calculate the specific noise based on onsite measurements known to be generated by Morris & Co specifically. The ambient noise measurements at Wernandrew farm house of LAeq(46min) 56dB (including 2dB baleer correction) could have been elevated due to other nearby noise sources such as road traffic noise, sims recycling or other nearby occupiers.

Inputs into the noise model are based on measurements obtained at ML1, ML2 and ML3. The octave used are those of measured internally at the diesel generator and were reduced, by a single number across all frequencies, so that the model resulted in the same noise level as that measured at ML1, ML2 and ML3 respectively (this calibrating the noise map). The yellow circles, around

the warehouse building, represent receivers positioned at the same measurement position as that of the sound level meter (ML1, ML2 and ML3 and ML4).

The yard area is set as two sources of point noise where material handlers and metal is moved around.

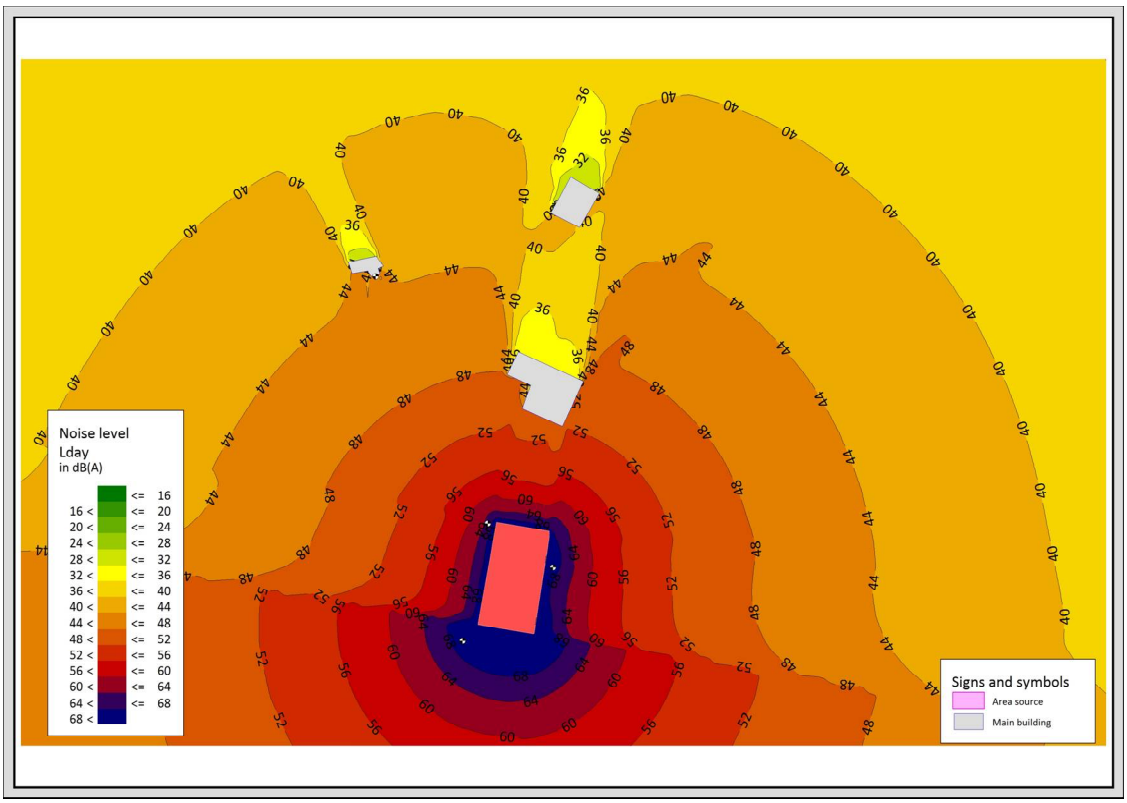
A receiver is placed next to the farm to allow a calculation of the specific noise.



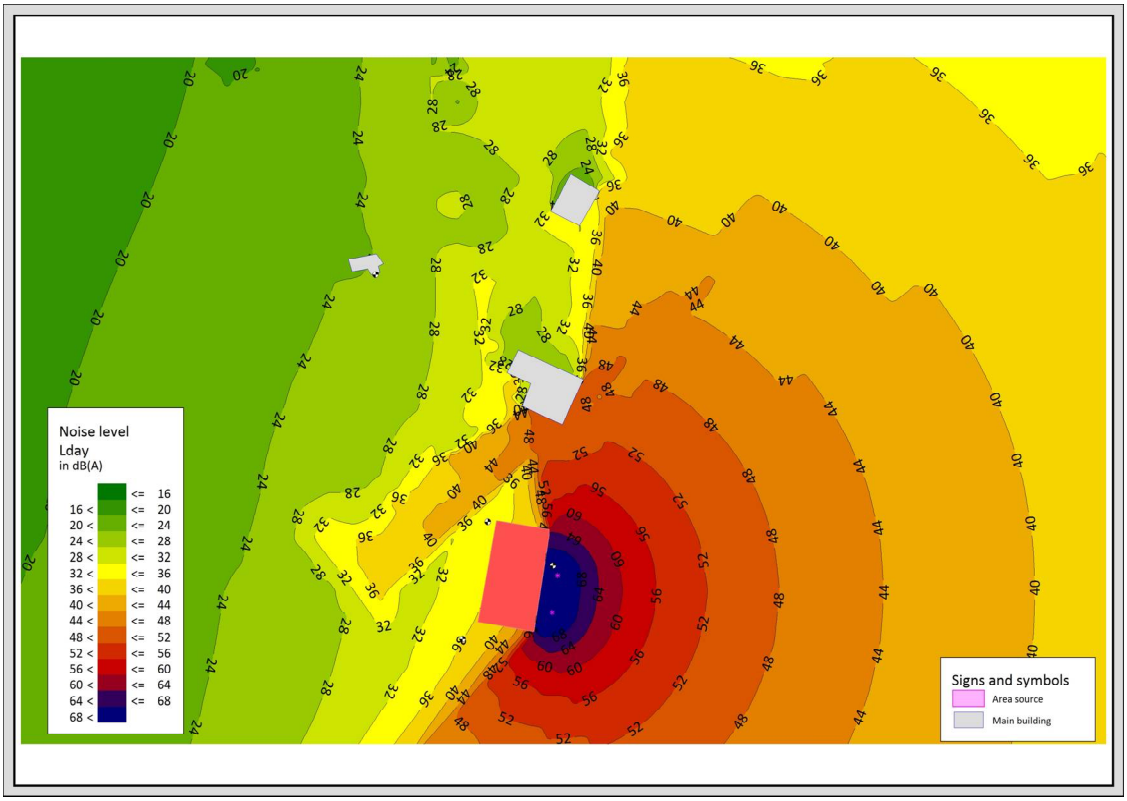
Noisemap 1: This shows a LAeq(60min) 47dB. At the noise sensitive receptor.

Noisemap 1, confirms that the specific noise is above the background LAF90(7 hrs 38min) 45dB but below the residual noise of LAeq(7hrs 38min) 48dB. The specific noise calculated by the noise map model is LAeq(60min) 47dB. This is 8dB lower than the specific noise in table 3 obtained by reducing the residual noise from the ambient level. The lower level will reduce the character correction from 12 to 6dB because of the low audibility of the noise and produce a BS4142 rating level of 53dB. The rating difference when compared with the background level will be 8dB which in the context of the existing noise environment represents a low likelihood of

adverse impact. This map includes noise from the yard and the warehouse building. This map represents the noise presently generated onsite and excludes any additional noise from a planned extractor installation.



Noise Map2: This shows the spread of noise from the building with no work or fuch material handler used in the yard. The Specific noise is modeled as LAeq(60min) 47dB at Wernanadrew farm house ML4.



Noisemap 3: This is noise from the yard. Noise from the building has been reduced to 0dB to show the impact of the yard use with two fuch 360 material handlers as point sources. Noise at Wernandrew farm receptor is LAeq(60min) 28dB at ML4.

Recommendations

Sound Insulation Scheme

- All holes to the façade of the main recycling building should be repaired to reduce the break out of noise.
- The east and southern façade have a gap at the bottom of 1.8m from ground to the façade. This should be made good by making up the gap such that it is insulated from the break out of noise from inside the building.
- Not insulating the roof but repairing the holes and gap in the facades could result in a specific noise to LAeq (60min) 44dB at Wernandrew farm house..

Picture 5A: gap at the bottom of the recycling building to be repaired and sealed to reduce the break out of noise.

A Step by Step Approach to Repairs and Sound Insulation

Step 1: Repair and Maintenance of Existing Recycling Building

The holes and gaps should be sealed first and new noise measurements be obtained in consultation with NRW. If the measured specific noise is acceptable following repairs to facades then a scheme to maintain the façade in good repair should be maintained and regularly monitored. The noise map prediction is a specific noise of LAeq(60min) 44dB at ML4. This is below the prevailing background level of LAF90(7hrs 38min) 45dB. A character correction of 6dB is applied to produce a rating level of 50dB and a rating level over background of 5dB which in the context of the noise environment represents a low likelihood of adverse impact.

Step 2: 100mm Cavity Wall & Ceiling with x2 Gyproc Sound Bloc Board, Staggered Joint

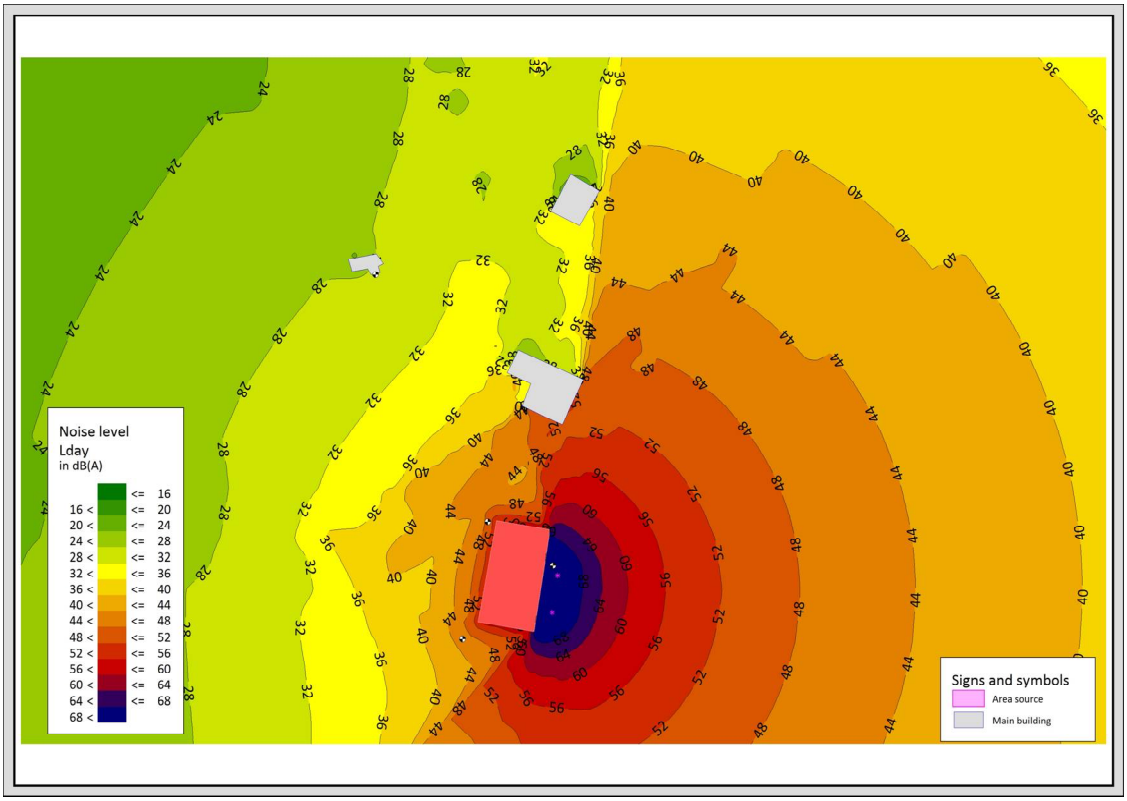
Should the scheme of repairs not be sufficient to result in a low likelihood of adverse impact in the context of the noise environment, then additional sound insulation should be implemented.

The additional sound insulation should consist of an internal 100cm cavity wall created along the existing internal walls. A 100mm cavity suspended ceiling should be created internally. Both wall and ceiling should be finished with a double skin of 15mm thick Gyproc sound bloc board with a mass of 12.6kg/m2 each, a total of 25.2kg/m2 on the internal walls and ceiling. The sound bloc boards joints should be staggered. The 100mm cavity must be left empty with minimal bridging except for structural support.

Freq. Hz	16	31.5	63	125	250	500	1K	2K	4K	8K	16K
fm	403	794	1575	3150	6300	12600	25200	50400	100800	201600	403200
R=20log(fm)-48	4	10	16	22	28	34	40	46	52	58	64
Highest internal noise	39.5	48.7	65.8	77.1	83.6	87.7	88.9	88.3	83.7	74.8	58.7
break out level	36	39	50	55	56	54	49	42	32	17	5

Table 4A: Mass law prediction of noise reduction with a total mass of 25.2Kg/m2 on all the walls and ceiling on a 100mm cavity wall and suspended ceiling. Additional noise reduction will be achieved from the cavity and mass from the existing corrugated metal façade.

The predicted noise at Wernanadrew farm following the scheme of sound insulation (step 2 above) is LAeq(60min) 32dB. This allows for work in the yard and inside the recycling building. It does not account for additional insulation provided by the existing metal cladding



Noise map 5: After scheme of sound insulation including 100mm cavity to walls and ceiling and 25.2kg/m2 of Gyproc sound bloc board to stud walls and suspended ceiling. The predicted specific noise at Wernandrew farm is LAeq(60min) 32dB.

BS4142 New rating Level After Implementation of Sound Insulation Scheme (step 2)

It is predicted that the specific noise level at Wernandrew farm house ML4 will be LAeq(60min) 32dB. This is below the background level of LAF90(7hrs 36min) 45dB. There is no need for a character correction because the tonality, impulsivity and irregular character of the noise will have a low and subjectively not audible. The rating level is 32dB and it is below the background level by 13dB. This will represent a low likelihood of adverse impact in the context of the noise environment.

Uncertainty

The noise levels were obtained by direct onsite measurements. The sound level meter was fitted with a wind shield and maintained on a tripod during the measurement period. Once readings were started, the sound level meter was free from human interference. This was done to minimize uncertainty in the readings. In addition, the data used was taken during suitable weather

conditions. Each measurement was conducted for a duration sufficient to provide a representation of the specific noise at the site.

Uncertainty arises from variations in day to day noise levels. The noise environment might be quieter on different days for because of for example; changes in number of deliveries/collections. Or the amount of recycling processed in a day, as a result a factor of ± 4dB has been added to the uncertainty calculation to account for these changes in noise levels.

Laboratory calibration uncertainty of the sound level meter ± 1 dB

$$u = \sqrt{a^2 + b^2 + c^2 ...etc}$$

U = ± 4 dB

Signed:

Donald I Angir

Donald Angir MIOA BA(Hons)

Noise Consultant

Noise Survey Limited

BIBLIOGRAPHY

British Standards Institution (2014) BS EN 4142:2014 **Methods for Rating and Assessing Industrial and Commercial Sound.** London. BSI

British Standards Publication (2014) BS EN 8233:2014 **Guidance on Sound Insulation and Noise Reduction for Buildings.** London BSI

APPENDIX A

Measuring Equipment

- Casella Cel 63X type 1 sound level meter serial 2670932 (ML1). Last calibrated by Pennine Instrument Services April 2018 traceable to UKAS standards cert no. 037864-2.

- Casella Acoustic Calibrator. Last calibrated 11th August 2017 by Pennine Instrument Services serial 1S38252 cert no. 035297-2.
- Kane May Thermostat model KM330 serial: 723858
- Kaindl Electronic model: Windtronic 2 Anemometer.

Measuring Equipment & Calibration

On each occasion at the beginning and at the end of measurements the meter was calibrated successfully with an acoustic calibrator before and after the measurements.

Measurement Data

Morris & Co Onsite Measurements
at ML1

Duration	Laeq	LAF90
28min	75.8	69.5
60min	75.4	68.5
47min	75.4	70.5

Table 2: Measurements at ML1. At the rear of the building the LAeq(5min) is 64dB at a distance of 4m from the façade of the factory building.

Picture 6: Measurements at the rear of the building that faces the noise sensitive receptors.

Internally at the rear of the tin can baler the noise was LAeq(33min) 85dB. At the trommel the LAeq(37min) was 92dB.

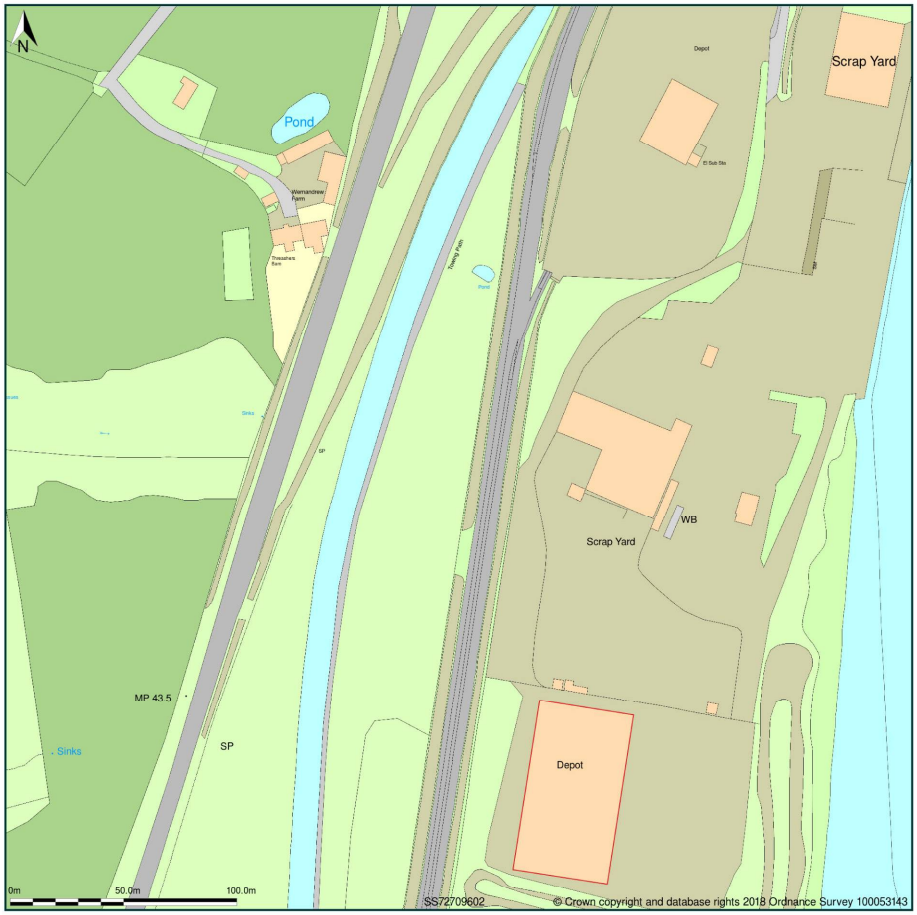
Weather Conditions

	Wind	Cloud Cover (Subjective)	Temperature	Precipitation
12:30 Monday 20th August 2018	1.6m/s	100%	18°C	Yes. Rain was intermittent and measurements were stopped and started to avoid the rain
17:00 Monday 20th of August 2018	0.4m/s	100%	17°C	Intermittent rain
Monday 20th May 2019 Start 07:40	1m/s	70%	11°C	None

Monday 20th May 2019 End 17:15	1.8m/s	15%	18°C	None
Tuesday 21st May 2019 Start 07:00	0.5m/s	10%	10°C	None
Tuesday 18th June 2019 Start 11:30AM	2m/s	90%	19°C	Intermittent rain, measurements stopped and started to avoid rain
Tuesday 18th june 2019 End 17:35	1.5m/s	95%	18°C	Intermittent rain through the day

Table 5: Weather conditions during measurement.

Wernandrew Farm, Lane From Cardonnel Road To Wernandrew Farm, Skewen, Neath Port Talbot, SA10 6NH



Site Plan shows area bounded by: 272507.03, 195822.66 272907.03, 196222.66 (at a scale of 1:2500), OSGridRef: SS72709602. The representation of a road, track or path is no evidence of a right of way. The representation of features as lines is no evidence of a property boundary.

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