



Knauf Insulation Limited

Noise Management Plan for Ravenshead Site



Report for

Knauf Insulation

St Helens

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1. Introduction

1.1 Background

The permitted activity at the installation is: Manufacturing light density glass mineral roll, high density cavity wall insulation slabs and loose fibre products for use as a thermal and acoustic insulation material in the building industry, in a plant with a typical production capacity of 90,000 tonnes per annum.

The process produces glass mineral wool product in a multistage process;

- batch mixing,
- glass melting,
- fiberizing,
- forming,
- curing,
- cooling, • cutting and
- packaging.

The first stage involves melting glass, made from batch materials (sand, soda ash, dolomite, limestone and minerals containing boron and aluminium together with internal and external cullet) in a furnace and then processing the molten glass into fibres.

External cullet is processed glass recycled from various sources including bottles, automotive glass and domestic glass.

Batch material is delivered by road tanker and pneumatically transferred to storage silos contained within the Batch House Building. External (recycled) cullet is brought into site by road tanker and off-loaded using a conveyor system. The batch materials are blended with the cullet within the Batch House before being conveyed to the Furnace Building. Dust arising from materials handling is extracted to reverse-jet dust filters on the roof.

Once conveyed to the Furnace Building, the blended materials are transferred to the oxy-fuel fired furnace with electric boost which is supplied with natural gas and oxygen from the “VSA generation” plant, which is on-site but, outside the facility. A stream of molten glass flows onto the 3N° lines where it is fiberized (i.e fine glass fibres are manufactured) in specially designed rotary centrifuge spinners. On all lines, except for those that manufacture loose fibre products, binder is applied to the fibres prior to a forming process which creates a glass mineral wool mat with a nominal thickness ranging from 50mm to 300mm, although additional sizes may be produced subject to the customer’s requirements. When rolls or slab insulation is being made, the mineral wool is shaped as it is heated in a curing oven at around 300°C which sets the binder. After curing, the products are cooled and then trimmed to the final dimensions.

Various facings can be applied as required or the product may be fully encapsulated in polythene and the products are then packed ready for despatch. Noise emissions may arise during each stage of the process.

Waste gas flows from the furnace are passed through an Electrostatic Precipitator abatement plant prior to being emitted to atmosphere via a 61m stack. Emissions to air from the downstream forming, curing and cooling stages, contain of particulates and volatile organic materials used in the binder. These gas streams are passed through multi stage abatement systems (Wet electrostatic precipitator (WESP) or a series of cyclones and water traps) before being emitted to atmosphere via either a 61m, 65m or 75m stack, depending on the production line.

The site is located at NGR: SJ 500 943 to the southwest of St Helens, Lancashire, just off the A58 Prescott Road, and is situated within a mixed light industrial and residential area. Small areas of open parkland, woodland and farmland are also present in the surrounding area.

Noise from Heavy Goods Vehicles may arise from both deliveries to Site and the use of the Site road network to allow Heavy Goods Vehicles to access the adjacent Viridor recycling site, which is a supplier to, but is unrelated to the Site. This management plan as it pertains to vehicle movements, primarily concerns site-generated traffic and not deliveries to Viridor. However, it is expected that Viridor's vehicles will be bound by the same restrictions as Site traffic by agreement.

The Site location is shown in Figure 1.1. The site layout is presented in

Figure 1.2.

Figure 1.1 Site location

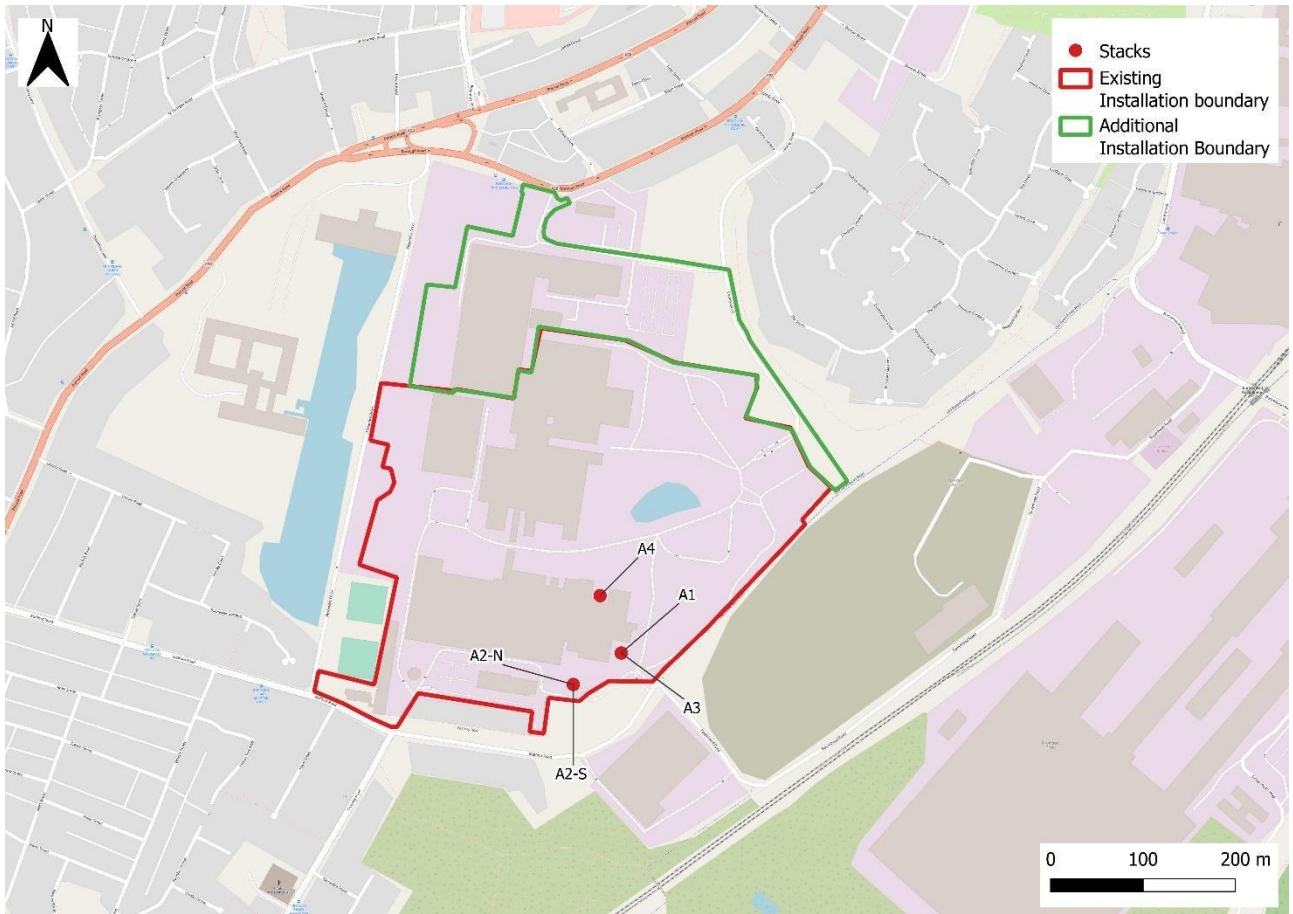
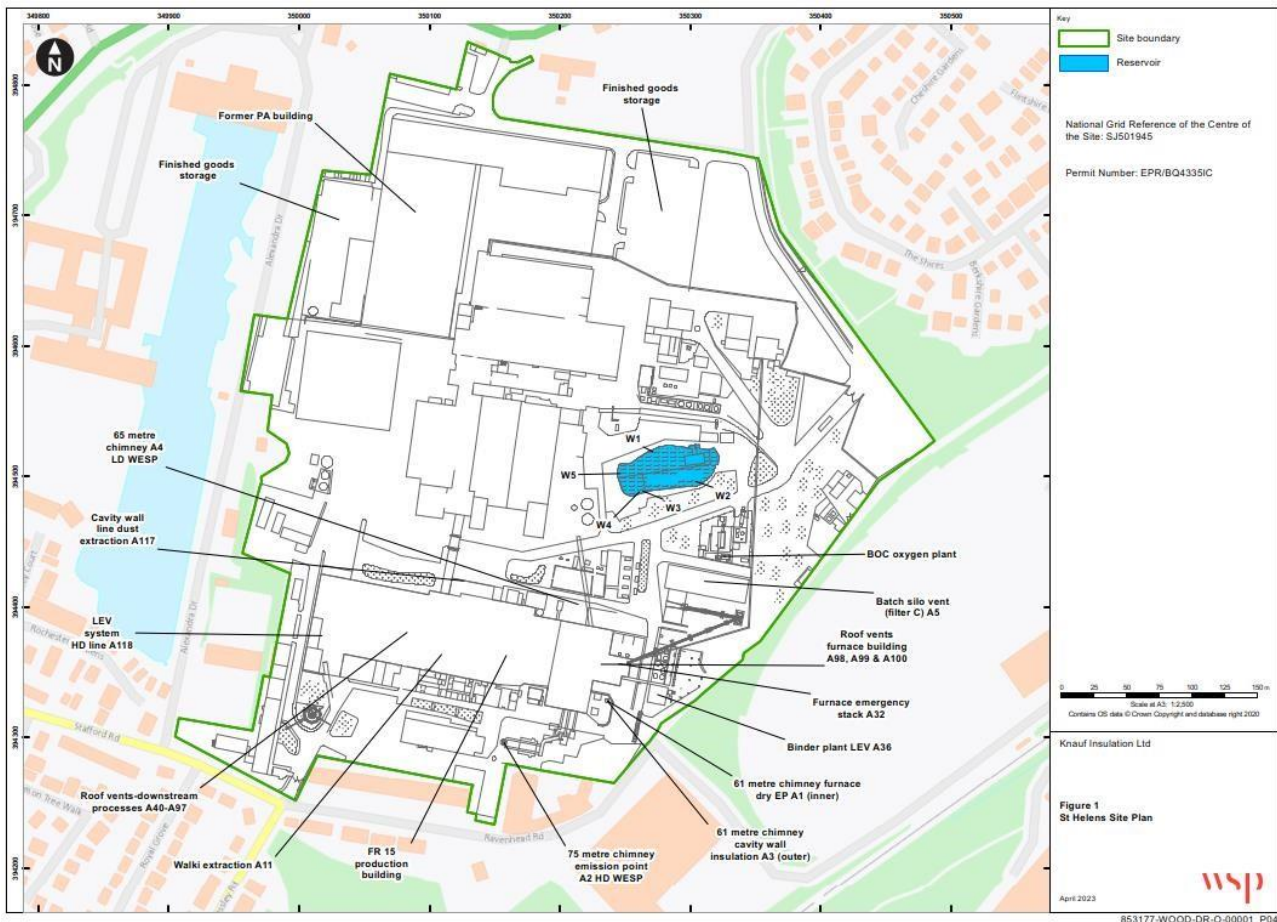


Figure 1.2 Site layout



1.2 Aims and objectives

The principals of noise management planning for permitted sites are set out in the EA guidance “Noise and vibration management: environmental permits”. The guidance provides recommended constituents of a noise management plan (NMP) and identifies that compliance with NMP is an excellent way of demonstrating that site operations are properly controlled.

The NMP should be reviewed frequently; typically once a year or on a significant change in working methods or process. Reviews shall consider land use around the facility and any future developments that could be affected by emissions to the environment.

The recommended constituents of a “Good NMP” are:

- a clear statement that responsibilities for controlling noise impact are understood and accepted, and that the effectiveness of NMP will be constantly reviewed;
- a commitment that the permit holder, contractors or subcontractors, will make sure that any noise control equipment is designed, operated and maintained appropriately so it controls noise effectively at all times;
- a risk assessment of noise problems from normal and abnormal situations (including worst-case scenarios due to, for example, weather, temperature, or breakdowns, and accidents);

- details of the appropriate controls (both physical and management) needed to manage the identified risks;
- confirmation of the level of noise or vibration monitoring that should be in place;
- details of any noise management actions required, contingencies, and responsibilities when problems arise (particularly including expected actions resulting from exceptional circumstances or where serious pollution may occur);
- confirmation of the procedures in place to consider reducing or stopping operations to avoid serious noise pollution; and
- a procedure for engaging with neighbours to minimise their concerns and respond to complaints.

No NMP can cover every eventuality. Even where the plan is executed rigidly, noise pollution may sometimes occur. Where this occurs, it is considered an indication that further appropriate measures are necessary.

Noise emissions from a permitted premises are the responsibility of the permit holder and immediate enforcement may be considered where:

- NMP procedures are not being followed,
- measures in the NMP are not appropriately specified, designed, operated, maintained or managed appropriately; or
- there is a risk of serious impact on human health or the environment.

If rapid action is required to solve a noise problem and that action may contravene something written elsewhere in this NMP, the mitigating action shall override the NMP. The NMP can be revised in reasonable time after the event.

Incident management plan

It is considered appropriate to append an NMP to the site's accident and incident management plan, in order that noise-related incidents are covered. The NMP should identify the appropriate response to a situation, and who is responsible for taking preventative action and taking action after an incident. The regulator expects that noise-critical plant is identified and a list of required spares is maintained. This will make sure vital equipment can be repaired quickly.

Where any incident occurs with the potential to significantly affect the environment, Articles 7 & 8 of the Industrial Emissions Directive (and corresponding UK legislation) require operators to take immediate actions to limit the environmental consequences.

The ultimate control measure when problems arise, is to reduce, or stop, operations to avoid serious noise pollution.

The NMP identifies the points in the operation where significant noise pollution may occur, and where throughput restrictions or production cessation can be applied.

Where continuous throughput is business-critical, the operator must demonstrate that they have suitable measures in place that will prevent the need to reduce or stop production. For example, redundancy is built into the process so standby plant is available to use, if there is a problem with the primary equipment.

1.3 Sources of information

The information used in this report is shown in Table 1.1.

Table 1.1 Sources of information

Item	Source
Process and Noise Data	Knauf Insulation Engineering Process Description Handbook (20220614), current permit (EPR BQ43351C) and previous noise management plan.
Site Layout	Knauf Insulation

1.4 Noise Management Plan Contents

The structure of this document is set out in Table 1.2.

Table 1.2 Noise Management Plan structure

Section	Aims and Objectives
Section 2	Details the noise criteria applicable to the site
Section 3	Describes the roles and responsibilities relating to noise
Section 4	Details the potentially significant noise sources on site and summarises the noise risk assessment
Section 5	Details the main sensitive receptors at risk of noise pollution
Section 6	Presents the main noise controls for the site
Section 7	Presents the noise complaint investigation procedures and previous monitoring
Section 8	Presents the methodology and commitment to noise monitoring
Section 9	Identifies any necessary improvements to the Noise Management Plan and timetable for addressing these

2. Noise Criteria

2.1 Permit Conditions

EPR/BQ43351C/V007 - 30 March 2015

3.4.1 Emissions from the activities shall be free from noise and vibration at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved noise and vibration management plan to prevent or where that is not practicable to minimise the noise and vibration.

3.4.2

- (b) implement the approved noise and vibration management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

3. Roles and Responsibilities

3.1 Overall responsibility

The overall responsibility for the site, ensuring appropriate resources are made available to comply with all legal and regulatory requirements, including conditions in the Planning Consent and Environmental Permit and in accordance with this Noise Management Plan) resides with the Plant Manager. In the absence of the Plant Manager, these responsibilities are passed to the HSE manager.

3.2 Responsibility for process controls that have the potential to give rise to noise pollution

The responsibilities for maintaining the process to minimise noise pollution are under the Engineering Manager. These include:

- Ensuring the facility is managed operated in a manner that does not give rise to unacceptable noise impacts that cause harm to noise sensitive receptors.
- Ensuring all personnel and contractors whose roles and responsibilities interface with this Noise Management Plan, are aware of its requirements and comply with these.
- Ensuring inspection and maintenance of assets, plant and equipment is undertaken in accordance with the schedule.

3.3 Responsibility for Management of Information

The HSE Manager

The responsibilities for monitoring compliance with the NMP, maintaining record keeping and ensuring staff and contractors are trained are under the HSE Manager. These include:

- Ensuring that the Noise Management Plan is kept updated regularly (i.e annually or on a major process change)
- Ensuring all personnel are provided with training, to ensure they manage their activities and plant they are responsible for, in a manner that does not give rise to increased noise emissions
- Ensuring complaints are recorded, investigated and findings are reported in compliance with Knauf procedures
- Ensuring noise emissions are monitored from time to time to assess effects and this information is submitted to the environmental regulators and other stakeholders as required

- Ensuring complaints are investigated promptly and in accordance with the Complaints Procedure and that findings are recorded and reported to key stakeholders

4. Potentially Significant Noise Sources

4.1 Internally Located Plant

The majority of high magnitude sound generation occurs within the main buildings on the site. The nature of the process means that there are electrical induction boost furnaces that require a pressurised oxygen-gas mix air, and pneumatically conveyed raw materials to manufacture virgin glass, such that there are many fans required within the building. Some of these are externally vented, and these are addressed in Section 4.2.

The building envelope is the main form of control for the items of plant outlined within this section:

Binder Plant – Fans and conveyors

Batch Plant – Fans and pneumatic conveyors

Furnace / fiberizers – oxy/gas mix furnace jet ignition, compressor system fans

High-density product line – Fans, conveyors, dust extraction

Low-density product line - Fans, conveyors, dust extraction

Cutting Plant – hydraulic press cutting knife, conveyors

Packaging Plant – wrapping plant

4.2 Internally Located, Externally Vented Plant

Dry EP (Electrostatic Precipitation) – electric arcing, fans

WESP (Wet Electrostatic Precipitation) - electric arcing, fans

Compressor Plant, including new compressor rooms – pneumatic pumps

Dam pumphoom – diesel-powered water pumps, operating alarm

4.3 Externally Located Plant

Bulk material reception processes – lorries using engine powered pumps, facility pneumatic pump, pneumatic conveyors.

Cullet reception processes – HGV reversing alarm, glass tipping into hopper, conveyors.

External Conveyors – rollers, material bouncing on conveyor.

Extractor fans, bag filters and reverse-jet filter cleaning plant - fans

Furnace cooling towers – fans and aerodynamic noise at intakes

Compressor cooling towers - fans and aerodynamic noise at intakes

Cullet cooling towers

Dry Electrostatic Precipitator (DryEP) - electric arcing, fans, aerodynamic stack noise

Wet Electrostatic Precipitator (WESP) - electric arcing, fans, aerodynamic stack noise

Oxygen supply plant (Not included in the site permit, operated by BOC) – compressor pumps

4.4 Vehicle Movements

HGVs - delivery of bulk materials

HGVs - delivery of cullet, (including reversing alarms)

Fork lift trucks - Movement of finished product around site

Tug truck - Movement of product to storage

Non-site HGV movements – use of site HGV road to access Veolia site HGVs

– delivery of product off-site

4.5 Noise Assessment – Permit Variation

A noise assessment has been carried out to accompany the permit variation for installation of new compressor and cooling plant (WSP document ref - 70116857-RP-AC-001 REV P02) The outcomes of the assessment are as follows:

BS 4142 noise impact assessment - daytime

Sensitive receptor	Calculated specific noise level, dB $L_{Aeq,1hr}$	Acoustic feature correction (dB)	Calculated rating level (dB $L_{Ar,Tr}$)	Typical background sound level (dB L_{A90})	Excess over background sound level (dB)
Residential properties on Henley Court	37	+ 3	40	41	-1
Residential properties on Rochester Gardens	32	+ 3	35	41	-7
Residential properties on Factory Row, Ravenhead Road	45	+ 3	48	47	+1
Residential properties on Ravenhead Road	38	+ 3	41	47	-6
Residential properties on The Shires	39	+ 3	42	47	-5

BS 4142 noise impact assessment – night-time

Sensitive receptor	Calculated specific noise level, dB $L_{Aeq,1hr}$	Acoustic feature correction (dB)	Calculated rating level (dB $L_{Ar,Tr}$)	Typical background sound level (dB L_{A90})	Excess over background sound level (dB)
Residential properties on Henley Court	30	+ 3	33	37	-5
Residential properties on Rochester Gardens	23	+ 3	26	37	-11
Residential properties on Factory Row, Ravenhead Road	33	+ 3	36	41	-5
Residential properties on Ravenhead Road	36	+ 3	39	41	-2
Residential properties on The Shires	33	+ 3	36	41	-5

The assessment concluded that “noise levels from the proposed new items of external plant associated with the permit variation have been calculated at the nearest noise-sensitive receptors using a 3D noise model.

The results of a noise survey undertaken on the Site and in the vicinity of the nearest noise sensitive receptors to the Site have been presented. In addition, noise measurement data from several 3rd party reports has been presented.

An assessment in accordance with BS 4142 has shown that the proposed operations are likely to have a low impact on the nearest noise sensitive receptors.

More appropriate background data should be collected when the Site shuts down fully in the Summer of 2024.”

5. Noise-Sensitive Receptors

The following residential areas are identified as the main noise sensitive receptors with potential to be affected by the site activities: -

Human Receptors

1. modern residences on and adjoining “The Shires” housing development to the northeast. Distance to Boundary 100 meters (separated from the site by large bund).
2. modern residences on & adjoining Rochester Gardens to the west (between measurement positions 1 and 3). Distance to Boundary 300 meters.
3. established terraced housing on Factory Row forming the southeast boundary to the site and more modern housing built in early 2000s along Ravenshead Road. Distance to Boundary 5 meters.
4. Residential properties on Prescott Road, Borough Road and adjoining streets. Distance to Boundary 65 meters.

The area immediately to the North of the factory is a mix of commercial and industrial premises that are unlikely to be adversely affected by noise from Knauf Insulation operations at Ravenhead and provide some screening to the residences on Prescott Road and Borough Road

There are no high-sensitivity receptors such as schools, hospitals, or nursing homes in the immediate vicinity.

Ecological receptors

There are many local nature reserves (LNR) within 2km of the site. Whilst these may be considered a risk for other pollutants, most are significantly distant from the site whereupon noise is not considered a risk to these environments.

Thatto Heath Meadows, approximately 800m southeast of the factory and Thatto Heath Dam, 650m to the southwest would potentially have some noise risk, but there is no indication that these LNRs are particularly sensitive towards noise and the reserves are both significantly screened from the factory by intervening buildings, with sensitive human receptors. Therefore, no specific noise controls are needed to protect these receptors.

6. Noise Controls

6.1 Engineered Controls

Bulk material storage

Bulk solid raw materials will be transferred using pneumatic systems. Where practicable, site pneumatic systems will be used in preference to vehicle systems to minimise noise emissions further.

Pneumatic systems shall be maintained in accordance with manufacturers' recommendations, to minimise noise emissions. **Cullet import and storage**

The cullet storage silo is installed with a roof and enclosed on three sides with the unloading area also enclosed on three sides, with the delivery opening facing away from residential properties.

Deliveries and offloading cullet will take place during daytime hours only.

The design of the cullet offloading hopper is optimised to reduce the drop height and speed of offloading to minimise attrition of cullet and noise emissions.

Externally emitting plant

All equipment is specified to comply with the **Supply of Machinery (Safety) Regulations 2008 (as amended)**.

New compressors will be located within dedicated GRP enclosures with air intakes directed away from the nearest residential receptors. The enclosures have been specified with a Sound Reduction Index (R_w) of 24 dB.

The new compressor cooling towers have been specified to incorporate a 'low sound' fan providing 4-7 dB reduction on the standard fan. Compressor cooling towers have been specified to operate on reduced load, with two or three towers operating simultaneously at 33-50% capacity depending on outside temperature.

The cullet and fiberizer cooling towers are to be installed in the same location as the existing systems. Low noise fans have been specified for these cooling towers to minimise offsite noise emission.

The fiberizer cooling towers are to be fitted with:

- Lowered fan speed to reduce fan noise and extra fan blade added to compensate.
- Noise attenuators added to the water basin to reduce noise from falling water.

The operating duties for the fiberizer cooling towers will typically be 66% during the daytime and 50% at night. Maximum operating duty will only occur on the hottest days.

The cullet cooling towers are to be fitted with:

- 'Noise mat' and acoustic louvre to air intake.

The operating duties for the cullet cooling towers will typically be 70-80% during the daytime and 50% at night. Maximum operating duty will only occur on the top percentile of hottest days.

These items will be managed in accordance with **the Preventative Inspection and Maintenance Plan**, which operates to minimise noise emissions associated with wear and tear of equipment and deterioration of equipment.

Every effort has been made to locate the plant and emission points (e.g. louvres and intakes) in a manner that will reduce potential noise emissions to a minimum.

6.2 Building Envelope

Manufacturing activities are undertaken within the enclosed main (FR15) building that is the main noise control for plant on site.

New equipment is specified to comply with the **Supply of Machinery (Safety) Regulations 2008 (as amended)**. An extensive programme of refurbishment works has been undertaken in recent decades to ensure compliance with these requirements.

Manufacturing plant and equipment associated is managed in accordance with the **Preventative Inspection and Maintenance Plan**, which operates to minimise noise emissions associated with wear and tear of equipment and deterioration of equipment.

Access doors and hatches

Where access doors are required on buildings housing plant or processes, these should be kept closed at all times when not in use.

Lobby doors, creating a vestibule, should be considered for high traffic access routes where doors open to outside. Where constructed, the vestibule should have an acoustically absorptive soffit (e.g. glass wool slab).

Hatches covered by plastic curtains should be lobbied and the lobby should be covered with unfaced mineral wool to reduce noise emissions.

Roof and rooflights

The roof, being the largest planar surface, is potentially a major source of noise emissions from the Site. Many items of noisy plant are located in the upper parts of the factory adjacent to the roof and rooflights.

Rooflights are single-ply polycarbonate panels.

The site management should consider upgrading the rooflights to a solution with greater sound insulation within a 15 year period.

The site management should consider upgrading the roof to a specification with greater sound insulation within a 10 year period.

It is recognised that such changes to the factory will come at significant cost, and in the case of changing the roof build up may not be structurally possible, so where there is evidence that replacement of the roof is prohibitive for one or more reasons, these should be recorded for review.

Gaps in the building envelope

Where gaps in the building envelope are present these should be blocked particularly where they exist in noisy areas of the factory:

- Significantly sized gaps (e.g. caused by the removal of ducts) should be packed with mineral wool or slab, covered to both sides with cementitious board or steel plate, and sealed on the perimeter to both sides with a non-hardening silicone sealant.
- Smaller gaps, eg around ductwork or gaps between roof panels should be packed with mineral wool and sealed on both sides with a non-hardening silicone sealant.

6.3 Traffic management

To minimise noise effects, HGVs will continue to access and exit the site using the route agreed with St Helens Metropolitan Borough Council that diverts vehicles away from residential properties. The layout of the site is designed and operated to minimise the requirement for reversing (alarms).

Drivers will be required to comply with the site speed limit (10 mph) to minimise noise effects associated with accelerating and braking.

Vehicle engines will not be left idling.

Site vehicle movements are limited and restricted to forklift trucks and tugs. No vehicles are allowed to operate between stores and FR15 after 5pm due to proximity of houses on Stafford Road.

6.4 Noise emissions during inspection and maintenance

All plant, equipment and infrastructure will be maintained in accordance with the Preventative Maintenance System. This comprises a detailed schedule of inspection and preventative maintenance requirements, which will as a minimum, be typically undertaken in accordance with the manufacturer's recommendations. Information relating to servicing and maintenance of plant and equipment will be recorded.

Maintenance activities will be undertaken during the daytime and in internal areas, where practicable.

When carrying out works in accordance with the Site and Equipment Maintenance Plan that are outdoors, additional mitigation measures may be required to be implemented as agreed with the site HSE lead.

The actions below shall be considered when the maintenance works are for a prolonged duration of not shorter than a day.

For maintenance activities undertaken indoors, no specific control measures are needed, though good practice will be followed.

For inspection and maintenance activities, Risk Assessment Method Statements (RAMs) will be reviewed to ensure all practicable measures to reduce noise emissions are taken.

Consideration of scheduling of maintenance activities will be undertaken to avoid multiple noisy activities being undertaken contemporaneously where practicable.

For maintenance activities outside, but close to main process buildings, quiet plant will be selected where possible. If power tools are needed to complete the works, local acoustic screening should be installed around the worksite.

For noisy works near to residential boundaries, acoustic screening should be installed, and the nature of the works shall be communicated to residents.

6.5 Abnormal emissions controls

The majority of plant failures do not present a significant noise emission risk and would only curtail manufacturing operations or lead to damaged assets.

Some failures or damage to systems could lead to inefficient operation of those systems, which may generate increase noise e.g. damage to fan bearings, leading to increased eccentricity and acoustic tonality and sound levels.

These items will be managed in accordance with the Preventative Inspection and Maintenance Plan, which operates to minimise noise emissions associated with wear and tear of equipment and deterioration of equipment.

6.6 Spares

The site shall have a ready supply of any consumables, that are key to noise control, on site.

Larger items of noise control, e.g. attenuators shall be catalogued in the next version of this NMP with lead-in times for replacement should these fail, reported in a table such as.

Item	Location	Lead-in time for replacement if failure occurs
e.g. Attenuator	e.g. HD Fan House	e.g. 3 months

7. Noise Complaint Procedures

Noise complaints are to be logged with the relevant member of management (HSE Manager) and detailed within the Site Incident Log. All information relating to the complaint will be stored on site in perpetuity for inspection by the Local Authority or Environment Agency, at their request.

Noise complaint investigations are to be undertaken immediately, or as soon as practically possible.

The site is located within a predominantly industrial area, with similar industries located nearby. Therefore, it is necessary, where possible, to verify the source of the complaint, and the validity of the complaint, with noise monitoring. All noise monitoring will be undertaken by competent and appropriately qualified personnel. Where complaints are found to be valid the complaints procedure will be implemented.

Following a substantiated complaint, appropriate action will be taken to remediate the issue and to prevent it from reoccurring. Actions may include, but are not limited, to:

Inspection and evaluation of:

- existing mitigation measures;
- operational procedures;
- requirements for additional mitigation measures; and
- staff training.

Abnormal events such as plant/equipment malfunctions are to be logged by the Engineering Manager. This will ensure retrospective complaints can be cross referenced with any logged events/plant conditions which occurred, to see whether these may have given rise to the complaint.

Where the source of the noise complaint is within the control of Knauf Insulation, the following action is required:

- investigating the source to prevent a re-occurrence;
- suspending operations which are giving rise to excessive noise due to potential plant malfunction, if safe to do so;
- investigating noise mitigation measures;
- logging findings in the site log;
- reporting actions to the complainant and/or Environment Agency, as appropriate; and
- if, following the above, complaint(/s) are still received, and it is confirmed that noise emissions from the Knauf Insulation factory are giving rise to the complaint, and that adverse impacts are occurring due to noise emissions from the EfW CHP Facility, it may be necessary to cease the specific operations giving rise to the complaint until the issues have been rectified.

Complaints recording procedure

Any complaint that is received will be received and logged. This will trigger an investigation with the HSE Manager, and any corrective actions allocated to responsible persons.

Details to be included as a minimum within the complaint log are:

- name, address, and contact details of the caller (so that the complainant may be contacted to provide a response following any investigations/remedial works undertaken);
- a sequential reference number;
- date of event;
- details of the event:
 - time of occurrence; ○ duration of event; ○ frequency of occurrence; ○ is this the first occurrence or have there been multiple previous occurrences; and ○ what is the reason for complaint, including a subjective description of the noise heard by the complainant;
- weather conditions at the time of event:
 - weather conditions (rain, snow, fog etc.); and ○ wind conditions (wind speed/direction);
- details of the internal investigation, and any actions taken; and
- name/role of the member of staff who received the complaint.

Following the investigation of the complaint, and subject to agreement from the complainant, the complainant is to be contacted to provide a summary of the investigation undertaken, the results thereof, and, if remedial steps were found to be necessary, a description of the remedial steps that have been, or will be, carried out. If remedial actions are planned for the future, the complainant should be provided with the anticipated timescale, where possible, in which any remedial actions will be undertaken.

The complaints procedure will be reviewed, as part of the regular review of the NMP, and at any other such time as found to be necessary (for example, following a valid and verified complaint), to identify any potential improvements that can be made. If the complaints procedure, or any aspect of the NMP is updated, the revisions to it will be communicated to all relevant staff and The Environment Agency.

Notifying neighbours of unexpected/emergency/remedial works

In circumstances where a temporary increase in noise and/or vibration from site operations due to unexpected/emergency/remedial works is anticipated, neighbours are to be notified of the unexpected/emergency/remedial works. The details that are to be provided will include the source of the temporary increase in noise and/or vibration, the nature of the work, the expected duration of the work, the actions that are being taken to resolve the issue and contact details for a point of contact who will act as public liaison. For more widespread dissemination of information, social media will be used.

8. Noise Monitoring

This Section details the commitment to future monitoring, on and off-site and references any monitoring undertaken.

8.1 Noise monitoring process

Noise monitoring at the site will follow a tiered approach.

Tier 1 – non-technical noise monitoring

Daily inspection of equipment by process operator. Where abnormal noise present from an identifiable source report it to the engineering team. Any resultant actions shall be logged. If source of noise not readily identifiable and has risk of significant noise generation off-site, undertake Tier 2 monitoring to investigate further.

Periodic site walkover by HSE Manager or Engineering Manager to check that there is no abnormal noise. Where abnormal noise encountered, report to the engineering team. Any resultant actions shall be logged. Where no abnormal noise present, or no corrective action required, this shall still be logged. If source of noise not readily identifiable and has risk of significant noise generation off-site, undertake Tier 2 monitoring to investigate further.

On receipt of noise complaints from EA, Local Authority or members of the public; HSE Manager or Engineering Manager or other relevant staff member to undertake observations of noise on site. If complaint can be corroborated and the source identified, any resultant actions shall be logged and this NMP updated accordingly. Where source of noise cannot be corroborated, contact the complainant to discuss complaint further and where necessary proceed to Tier 2 monitoring.

Tier 2 – Technical noise monitoring

Where off-site noise, or complaint of noise, persists, but it is not readily possible to determine the origin of the complaint (or if identifiable, but corrective actions are not immediately obvious), industrial noise specialists should be engaged to undertake targeted investigations.

Any report undertaken in respect of such an investigation shall be kept on file. Any corrective actions required shall be reported to the Environment Agency and this NMP updated accordingly.

8.2 Background monitoring

It is recommended that background noise monitoring is carried out every 4 years or at a point where there is a significant change in local environment, e.g. opening of a new road in the vicinity of the factory.

8.3 Factory Noise Monitoring

A full BS 4142: 2014+A1:2019 monitoring exercise covering the entire plant is recommended to enable a more targeted approach to BAT. A site-wide noise model would be produced to reduce uncertainty regarding noise generation and identify principal noise sources at the site.

8.4 Historic Monitoring

Noise Complaints 2003 to 2024

Date	Complaint	Status	Corrective Action
06/07/2020	BOC plant	valid	Contributed to construction of attenuating enclosure within building
15/12/2020	Noise from line cleaning	valid	Pressure washer will be kept enclosed on site and roller shutter doors closed.
06/07/2022	Unusual noise from site	valid	Broken fan identified. Engineering solution implemented.
10/2023	Noise complaint from 1 mile away from plant	Under investigation – need more information to progress	N/A

9. Areas for Improvement

Item	What improvement is needed	Timescale for implementation
Incident management plan	Specific noise Incident Management Plan shall be drafted and appended to this document	12 months
Noise emission inspection	An industrial noise specialist shall catalogue all emission points and characterise the sound emissions and make recommendations for improvements which will be reflected in this table in future versions of this document	12 months
Background noise monitoring	Undertake day and night L_{90} and L_{Aeq} monitoring at receptor locations in absence of plant	6 months
Full site BS4142 assessment	Undertake detailed source evaluation, prepare site-wide noise model	12 months
Undertake verification measurements following completion of variation works to inform BS4142 assessment	Determine in-situ noise performance of compressor houses, cooling towers etc.	12 months-18 months

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Appendix A Process Flow Diagrams - Noise

Process schematic taken from WSP document “Application to vary Environmental Permit EPR/BQ43351C”

Colour **System** **Nature of modifications**











or replaced equipment.

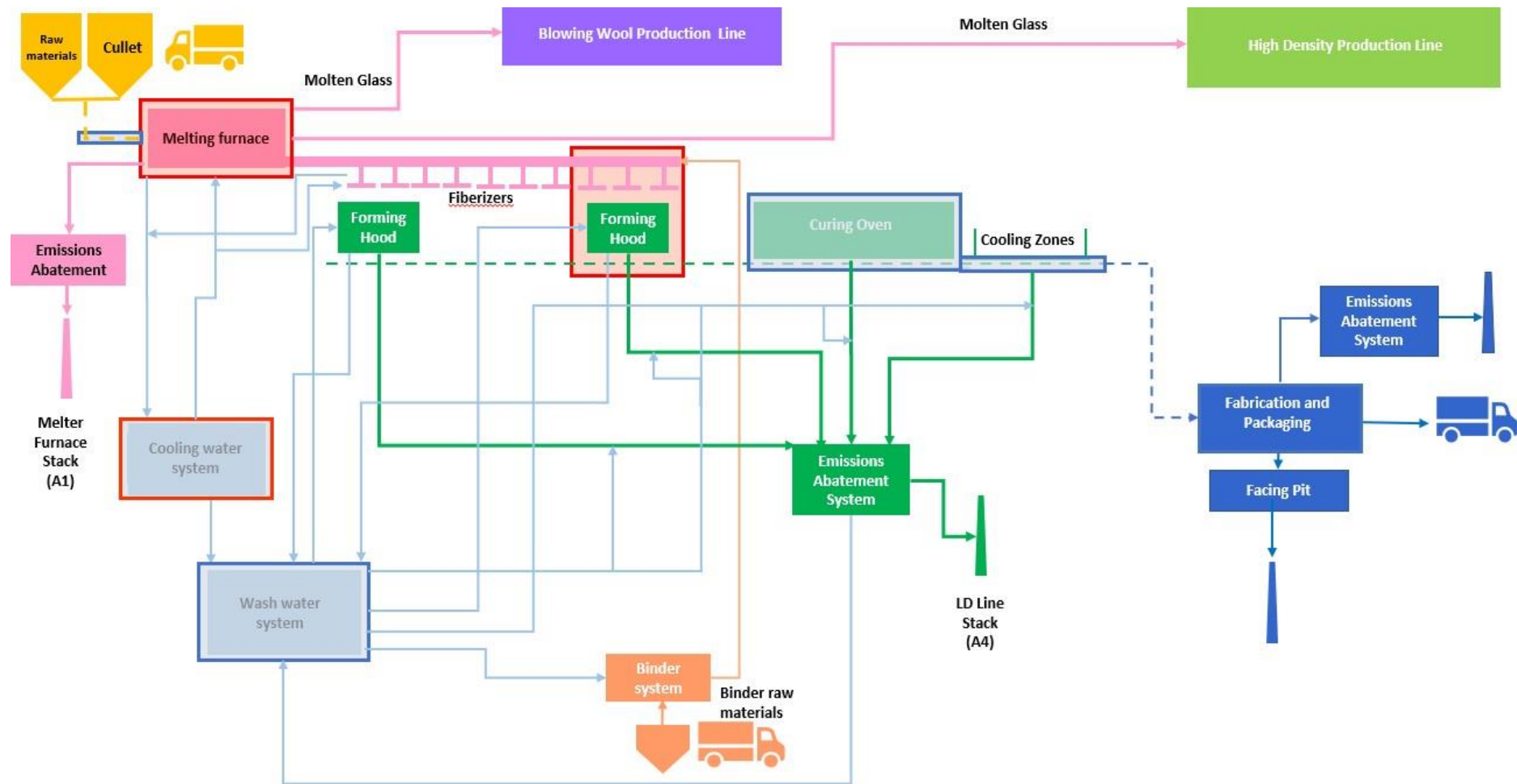
Boxes with red borders indicate significant new

Boxes with blue borders indicate sections with minor modifications or upgrades

Manufacturing processes and systems

-  Batch plant
-  Melting furnace and molten glass
-  LD Production Line
-  Blowing Wool Production line
-  HD Production Line
-  Fabrication and Packaging
-  Binder system
-  Cooling and Wash Water systems

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Appendix B Detailed Noise Sources

Internal noise sources

Source ref no	Location Name	Source	Operation	Hours	Description (noise characteristic)	Rating	Existing Controls
1	FR15 building	Folk lift trucks	intermittent	all	engines, reversing beepers	medium	FLT operator, all modern FLT's comply with SI 2001/1701, door closed when not required open
2	FR15 building	production line alarms	intermittent	all	tones	medium	keeping door closed
3	FR15 building	line drive motors	continuous	all	hum	medium	keeping door closed, maintenance schedule
4	FR15 building	line guillotine	as required	all	rhythmic thump	medium	keeping door closed, maintenance schedule
5	Maintenance shop	power tools / machines	intermittent	all	whirring	low	keeping personnel door closed, operator competence
6	HD WESP	2 pumps	continuous	all	whine	low	Inside building, doors to be closed, maintenance & vibration monitoring. Lower noise levels expected than Ceilcote scrubber-confirmed.
7	Forming duct work	duct work resonance	abnormal	all	clatter	high	Stiffeners, movement joints, good process control.
8	Forming duct work	duct work resonance	normal	all	clatter	medium	Stiffeners, movement joints, good process control. Packed bed scrubber replaced by WESP

9	HD line forming	HD forming fans	continuous	all	rumble	medium	fans in acoustic building, vibration pad mounts, continuous vibration monitoring. Lower dP with WESP has allowed fans to run on a slightly reduced power load.
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Source ref no	Location Name	Source	Operation	Hours	Description (noise characteristic)	Rating	Existing Controls
10	Furnace area	cyclone building fans	continuous	all	beating	medium	keeping doors closed
11	Furnace area	dry EP ID fan	continuous	all	hum	medium	location, vibration monitoring, flexi coupling for duct, flexi floor mountings
12	Furnace area	centrifuge	continuous	all	whine	medium	location, maintenance, door to be closed
13	Furnace area	bucket loader vehicle	intermittent	8am - 5pm	engine, bangs, reversing bleeper	medium	operator competence, location
14	Binder plant	Tanker movements	intermittent	7am - 4 pm	engine, reversing bleeper	low	location, limited hours
15	Binder plant	Drum handling	intermittent	7am - 4 pm	bangs	medium	location, limited hours, operator
16	HD Fan house	fans	continuous	all	whine	medium	location, keeping doors closed, maintenance
17	Compressor house	compressors running	continuous	all	drone	medium	location, doors closed, maintenance,
18	Wash water plant	pumps / motors	continuous	all	whine	low	location
19	Wash water plant	bin movements	intermittent	all	thumps	low	operator
20	Miniwash	Screw feeders	continuous	all	Rhythmic pumping sound	medium	Location, maintenance

21	Dam pump house	diesel fire pump (fire)	abnormal /occasional	all	Engine noise	medium	emergency back up, limited emergency use
22	Dam pump house	diesel fire pump (test)	weekly	8am – 4 pm	Engine noise	low	limited time
23	White wool line	Extract fan	continuous	all	hum	low	location, maintenance
24	White wool line	test blowing machine	intermittent	all	hum	low	with in building, strip door
25	White wool line	forming fan	continuous	all	drone	low	In room within building, doors to be closed
26	Sprinkler pump house	diesel fire pump (OPERATION DURING PROCESS FIRE)	abnormal / emergency	all	drone	medium	inside building, emergency condition only
27	Sprinkler pump house	diesel fire pump (test)	weekly	8am – 4pm	drone	low	limited hours
28	FR15 bldg. West end	fire sprinkler alarm bells (test)	weekly	8am – 4pm	ringing	low	limited hours
29	FR15 bldg. West end	fire sprinkler alarm bells	abnormal /occasional	all	ringing	low	limited emergency use
Source ref no	Location Name	Source	Operation	Hours	Description (noise characteristic)	Rating	Existing Controls
30	LD WESP pump room	Pump motors & fan	continuous	all	drone	low	Location, keep doors closed
31	LD forming	fans	continuous	all	drone	medium	Inside building
32	LD forming	lappers	continuous	all	whoosh	medium	Inside building
33	LD shaker screens	Vibrating screens	continuous	all	rattle	medium / high	none
34	White wool	Test blowing machine exhaust	Intermittent	all	drone	low	none

External noise sources

Source ref no	Location Name	Source	Operation	Hours	Description	Rating	Existing Controls
101	Export yard / MPS Yard	loading/ unloading	intermittent	7am - 7pm	thumps	medium	FLT operator, limited hours
102	Roadway front of FR15 building	Vehicles particularly FLT's trucking out	intermittent	Mainly 07:30-19:30 Mon-Sat	Engines, reversing alarms	medium	Trucking out only permitted 07:30 to 19:30 Mon to Sat
103	Stores area	loading / unloading	intermittent	8am - 7pm	thumps	medium	limited hours
104	Stores area	lift trucks	intermittent	8am - 7pm	engine, reversing beepers	medium	FLT operator, limited hours
105	HD WESP	Arcing at insulators	Occasional intermittent	all	Crack & Ting	low	Plc limits arcing, more likely on single side working. No complaints or any other indication that a problem exists.
106	Furnace area	Blower relief valve	abnormal /occasional	all	hiss	low	process control
107	Furnace area	Gas purge relief	abnormal/occasional	all	hiss	low	process control
108	FR15 Building (external)	a/c chiller fan	continuous	all	whine	medium	location, maintenance

Source ref no	Location Name	Source	Operation	Hours	Description	Rating	Existing Controls
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109	FR15 Building (external)	motors, blowers	continuous	all	whine, hiss	medium	location, maintenance, doors
110	Binder plant	Tanker movements	intermittent	7am - 4 pm	engine, reversing bleeper	low	location, limited hours
111	Binder plant	Drum handling	intermittent	7am - 4 pm	bangs	medium	location, limited hours, operator
112	Cullet silos	tipping	intermittent	7am - 4pm	clatter, diesel engine	medium	location, limited hours
113	Cullet silos	conveyor belt, vibrating feeder	intermittent	7am - 4pm	squeak, clatter	low	location, maintenance, limited hours
114	Furnace cooling towers	fans	continuous	all	drone	low	location, maintenance
115	Cullet cooling units	fans	intermittent	all	beating	low	Location, maintenance
116	Compressor coolers	fans	continuous	all	beating	medium	location, maintenance
117	Compressor house (external – north side)	pressure relief / escape	abnormal / occasional	all	hiss	low	location, limited emergency circumstances
118	New Compressor house(s)	compressors running	continuous	all	drone	medium	location, doors closed, maintenance,
119	Batch plant	vehicle movements	intermittent	7am - 7pm	engine	medium	limited time, location
120	Batch plant	off loading using vehicle based blower	intermittent	8am - 7pm	engine	medium	limited time, controlled by procedure, location
121	Batch plant	off loading using plant blower	intermittent	7am - 7pm	hum	medium	limited time , acoustic enclosed blowers, location
122	Batch plant	off loading tankers	intermittent	7am - 7pm	bangs, thumps	high	operator, limited time, procedure control, location
123	Batch plant	silos	abnormal / occasional	all	bangs	medium	Maintenance, location
124	Batch plant	bin activators	intermittent	all	rattle	low	Operator, location
125	Batch plant	Batch plant start up siren	Intermittent	All	Siren (5s)	Low	Short duration
126	Batch plant	External conveyor LEV fans	intermittent	all	hum	medium	Away from receptors. Silencers fitted - tbc

127	Waste yard	vehicle movements	intermittent	all	engines, reversing bleepers	low	location
128	Waste yard	skip movements	intermittent	8am - 5pm	bangs, thumps	medium	location, limited time
129	Waste yard	compactor operation	intermittent	all	whine	low	location, maintenance
Source ref no	Location Name	Source	Operation	Hours	Description	Rating	Existing Controls
130	Wash water plant	lift trucks	intermittent	all	engines, reversing bleepers	low	operator
131	White wool line (external)	Dust filter reverse air jet bag cleaner	intermittent	all	hiss	low	location, maintenance
132	White wool	Test blowing machine exhaust	Intermittent	all	drone	low	none
133	LD WESP	Arcing at insulators	Occasional intermittent	all	Crack / ting	low	Plc limits arcing, more frequent with one side working
134	LD forming	Slat drying fans	continuous	all	drone	medium	Away from receptors with silencers fitted.
135	Product Storage area (SE area of site)	Vehicle movement	intermittent	7am - 7pm	thumps	medium	FLT operator, limited hours
136	Product Storage area (SE area of site)	HGV Gate movement siren	intermittent	all	Siren	low	Siren removed leaving a lamp to indicate movement of gate,

March 2024

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