Boughton Recycling Facility

Noise and Vibration Management Plan

Contents:

Attached: Nearest Sensitive Receptors Plan
Boughton Recycling Facility Complaints Form

Supporting document: Noise Impact Assessment and predictive modelling
document ref. ACT/BIE/NA/08/19 dated Oct 19
(only attached to this NMP for permit application purpose)

Issue and Revision Record

Revision Number	Date	Completed by	Approved by
Revision 1	17 February 2021	SD	AT

1 Introduction

Boughton Recycling Facility is a site to provide recycling and reclamation of non-hazardous and hazardous aggregate waste materials. The majority arising from construction and or repair of highway works inclusive of carriageways, runways, footpaths and car parks. Materials processing to product includes crushing and screening, mixing, blending and encapsulating via a cold process.

Potential noise and vibration impact of the Boughton Recycling Facility was a fundamental determination factor in securing planning permission in 2020 for the site and operation of its activities. The planning determination process scrutinised the detailed noise impact assessment, inclusive of predictive software modelling of worst case proposed site operating times and practices. It was concluded that noise impact, under worst case proposed site operating times and practices, would be within national guidance criteria and therefore of low impact, insignificant for all identified noise sensitive receptors. At this impact level, no adverse effect on health or quality of life will be detected. Planning permission was unanimously granted by Committee on the concluded worst case noise levels to be experienced. This planning determination position has been protected by planning Conditions that stipulate site operating hours, plant type and activity times and maximum noise rating levels at the nearest sensitive receptors. Compliance with the planning Conditioned noise levels is to be demonstrated by monitoring and software modelling.

This Noise Management Plan (NMP) is based on the assessment source-pathway-receptor approach. It considers noise and vibration sources, management, monitoring and contingencies; and forms part of the Environmental Management System written for the Boughton Recycling Facility. The Plan has been prepared from the detailed noise impact assessment *document ref. ACT/BIE/NA/08/19 dated Oct 19* (appended to the NMP for submission as part of the Installation permit application process); and the planning permission Conditions.

2 Site setting and noise sensitive receptors

The recycling facility is within the 26 hectare North Boughton Industrial Estate. Originally a Ministry of Defence army camp, the estate has a long history of industrial use. Boughton Industrial Estate is currently home to over seventy businesses falling within the small, medium and large business categories. It is not a Business Park with retail and administrative office blocks. The industrial estate has private internal roads and no public footpaths through it. The estate is generally bounded by hedges and privately owned wooded areas. There is worked arable land beyond to the north and west; the rest of North Boughton Industrial Estate extends to the northeast, east and southeast of Boughton Recycling Facility's site boundary and the major

arterial A6075 trunk road runs along the eastern and southern peripheries of North Boughton Industrial Estate.

Boughton Recycling Facility has numerous buildings, which along with Boughton Industrial Estate's other buildings, provide attenuation to the noise generated at the activity. Within the site and along its boundary, concrete 'lego' block walls are used to retain stored materials and provide further noise attenuation to the sensitive receptors.

The nearest noise sensitive receptors are Manor Farm and Elm Tree House c.350 and c.390 metres respectively to the west; Kirton Court c.565 metres to the north and Hillcrest c.455 metres to the east of the site. The locations are denoted on the attached plan.

3 Site activities and impact sources

Site design, layout and operations were developed from principals to minimise, amongst other things, noise and vibration impact. Site plant and performance is to the latest adopted standards, operations are in accordance with relevant Sector and Process Guidance including 3/15(12) and 3/16(12). Site activities and working are subject to the site's written Environmental Management System.

The site provides recycling and reclamation of non-hazardous and hazardous aggregate waste materials; the majority of which arises from the construction and or repair of highways. Materials processing to product includes crushing and screening, mixing, blending and encapsulating via a cold process. This requires loading shovels and backactors, and mobile units are employed to crush, screen and as required, produce a cold processed material.

Impact modelling segregated the site into activity areas and associated typical types of plant and equipment:

Plant and description of activities
Operating area for crusher and screen, cold recycling mixing plant (including bitumen tank and cement silo) and excavator. Also front loading shovel.
Offices and weighbridge
Material storage: processed and unprocessed Material screening and loading area Front loading shovel and screen operating.
Plant maintenance shed and plant storage
HGV overnight parking

For predictive noise impact modelling purposes, the activities and associated hours assumed during the operational phase of the proposed development were:

		Day time	Evening	Night
	06:00 – 07:00	07:00 – 17:00	17:00-23:00	23:00-06:00
Mon – Fri	Heating system start up	Crushing, screening and processing	Vehicles and material tipping	Vehicles and material tipping
Sat – Sun	Heating system start up	Cold recycling mixing plant only	Vehicles and material tipping	Vehicles and material tipping

WEEKDAY AND WEEKEND (SAT & SUN): 06:00 – 07:00

- Start-up of heating system for foam-base material with mobile cold recycling mixing plant

WEEKDAY: 07:00 – 17:00

Crushing, screening and processing

- Transfer of material by mobile plant to crusher (via excavator) and screen (via front loading shovel)
- Loading of recycled material by mobile plant for production of either foam base or cement bound product into mobile cold recycling mixing plant
- Unloading/loading of HGV transporters with pavers and planers
- Movement of road going HGV tippers for distribution of material
- Tipping of material by HGV

WEEKEND (SAT & SUN): 07:00 – 17:00

- Loading of recycled material by mobile plant for production of either foam base or cement bound product into mobile cold recycling mixing plant
- HGV access to/from site

WEEKDAY AND WEEKEND (SAT & SUN): 19:00 – 23:00 & 23:00 – 06:00

- HGV access to/from site
- Tipping of material within storage area

Sound power levels for the plant and equipment to be used at the proposed recycling facility were obtained from three sources:

i. Noise specialist database (noise measurements of similar plant operating in the same mode and power)
ii. The sound power levels of BS5228:2009+A1:2014, Code of practice for noise and vibration control on construction and open sites.

iii. Manufacturers provided data measured at similar operational plant.

Mobile Plant/Vehicles Sound Power Levels

Item	Sound Power Level L_w dB	Speed Km/h	Elevation metres	Data Source
Volvo L120H	106*	20	2	BS5228 C2 Ref 28
HGV	109*	20	2	BS5228 C6 ref 21

*LAmax pass by level

Static/Semi-static operations

Item of Plant	Sound Power Level L_w dB(A)	On-time		Elevation (m)	Source
		mins	%		
Volvo L120H collecting aggregates	106	20	33	1	QEM data
Volvo L120H tip material into hopper	105	20	33	3	QEM data
Volvo EC220 loading	102	30	50	2	BS5228 C2 5
Volvo EC220 EL idling	103	30	50	2	BS5228 C2 6
Wirtgen KMA 220 Cold Mixing plant – engine side	102	60	100	2	provided measurements at similar operational plant
Kleeman MR110z evo 2 impact crusher	110	60	100	2	QEM data
Kleeman MS952 evo screen	102	60	100	2	QEM data
HGV tipping planing	104	-	17	2	QEM data
Planer idling	90	10	17	2	BS5228 C5 8
Paver (+tipper lorry) idling	103	10	17	2	BS5228 C5 30

The prediction of noise levels arising from the operation of the proposed recycling plant at the identified noise sensitive receptors was undertaken using Cadna A noise modelling software. Employing comprehensive baseline measurement survey data that was obtained at the identified sensitive receptors to establish the existing background and ambient sound levels during week days and the weekend.

The Cadna A noise modelling software is configured to ISO 9613-2:1996 "*Acoustics -- Attenuation of sound during propagation outdoors -- Part 2: General method of calculation*". This standard describes a method for calculating the attenuation of sound during propagation outdoors in order to predict the levels of environmental noise at a distance from a variety of sources.

The noise model incorporating the worst case site operations and anticipated vehicle movements on the site enabled prediction of noise propagation from the recycling facility and related activities towards the identified noise sensitive receptors. The results of this BS4142 noise impact assessment demonstrate that worst case site noise levels during the early morning, daytime, and evening will have no observed effect on the existing noise and vibration climate at the respective sensitive receptors. As predicted recycling facility operations will be within BS4142 criteria to be of low impact and also BS8233 guidance from bedrooms there is no requirement for further mitigation measures above proposed operational procedures and best available techniques. At this impact level, no adverse effect on health or quality of life can be detected.

4 Noise control

Noise and vibration generating activity, the associated plant and its modelled impact have been covered in the previous section. Operating to BAT, plant and equipment incorporate noise and vibration abatement and are fitted with silencers and white noise (broadband) reversing alarms. They are regularly serviced and maintained in accordance with manufacturer's guidance to ensure noise emissions do not exceed the manufacturers' specifications.

Site noise and vibration control measures include minimising drop heights, traffic routing and speed control, activity operating times, noise and vibration abatement materials in crusher hoppers, sprung mounted transfer runs, rubber conveyor belts and loose fittings/rattle checks. The surface of the site and access is to be maintained in a good state of repair to minimise empty vehicle body-slap.

Daily plant and site inspections are undertaken and these record sheets are held in the site office along with the planned maintenance schedule.

Site activities, plant and operating times will adhere to the planning condition stipulations that include noise rating level limits at nearest sensitive receptors and immediately outwith the site boundary. The planning imposed noise rating limits having been Conditionally set at levels demonstrated to have no observed effect on the existing noise climate at the respective noise sensitive receptors during the early morning, daytime, and evening periods.

Typical Sources of Noise Problems	Nature of Noise	Abatement / Actions to prevent or minimise noise and vibration	Completion date	Significant impact at NSR
Large vehicles travelling to and from the site.	Intermittent	All vehicles are required to be driven onto and off the site with due consideration for neighbours. Speed limit on site and on wider industrial estate. Dedicated parking areas and traffic routes on site. All vehicles are subject to daily inspection prior to use, maintained so as to minimise engine noise and vibration, and are driven slowly to and from the site. Potholes in installation roads to be filled in.	In place	No
Large vehicles and plant on site e.g. for loading and delivering materials.	Intermittent	Vehicles have to be well maintained and must be driven slowly around the site. Dedicated parking areas and traffic routes on site. Specified activity operating periods Engines to be switched off when not in use. Vehicles which need to reverse are fitted with a white noise warning systems which are generally only audible in the operational area. Noise attenuating concrete 'lego' block walls on boundary and site as push walls	In place	No
Small vehicles travelling to and from the site (e.g. staff and visitor's cars, courier van deliveries etc.).	Intermittent	All vehicles are required to be driven onto and off the site with due consideration for neighbours. Dedicated parking areas and traffic routes on site. Speed limit on site and on wider industrial estate. Small visitor's vehicles arrive during the normal working day and are therefore seen as low risk and no specific management plan is required.	In place	No

Typical Sources of Noise Problems	Nature of Noise	Abatement / Actions to prevent or minimise noise and vibration	Completion date	Significant impact at NSR
Waste loading and delivery	Intermittent	Delivery vehicles are expected to be well maintained and designed so that noise during deliveries is minimised. Specified activity operating periods Tipping and drop heights to be minimised to reduce both noise and dust emissions. Speed limits and traffic route on site. Noise attenuating concrete 'lego' block walls on boundary and site as push walls	In place	No
Loading Shovel, excavators etc.	Intermittent (short and medium run time periods)	Plant equipment is serviced and maintained in good condition to avoid excessive noise and retain manufacturer's operating noise specifications. Specified activity operating periods. Noise attenuating concrete 'lego' block walls on boundary and site as push walls Vehicles which need to reverse are fitted with a white noise warning systems that are generally only audible in the operational area. Prompt repairs and site held consumables	In place	No
Processing plant (crushers, screens, cold mix units)	Intermittent (medium run time periods)	Serviced and maintained in good condition to avoid excessive noise and retain manufacturer's operating noise specifications. Engine off when not in use Specified activity operating periods Minimum load and discharge drop heights. Sprung loaded mountings Rubber conveyors Noise insulated crushing hoppers Enclosed mixing chambers	In place	No

Typical Sources of Noise Problems	Nature of Noise	Abatement / Actions to prevent or minimise noise and vibration	Completion date	Significant impact at NSR
Personnel	Intermittent	Staff and other contractors are required to carry out their work without creating excessive noise from shouting, use of radios etc.	In place	No
Repairs	Intermittent	If repairs to the site are required, the work is undertaken during the normal working day and with due regard for possible noise and vibration nuisance.	In place	No

5 Monitoring

Monitoring will be undertaken to demonstrate compliance with the planning permission. The noise levels will be measured and assessed in accordance with the methodology in BS4142:2014 as amended to show Rating Levels stipulated at each noise sensitive receptor will not be exceeded for the relevant daytime, evening and night time periods.

Noise and vibration levels in and around the site are under constant assessment for employees comfort and safety, not least to be compliant with the Control of Noise at Work Regulations and Health & Safety Executive guidance . There is community feedback through the arranged involvement in local liaison groups. Views and comments from both of these sources, incident actions and any complaints received contribute to the reviews of site operating practices, procedures and the written Environmental Management System.

6 Contingency

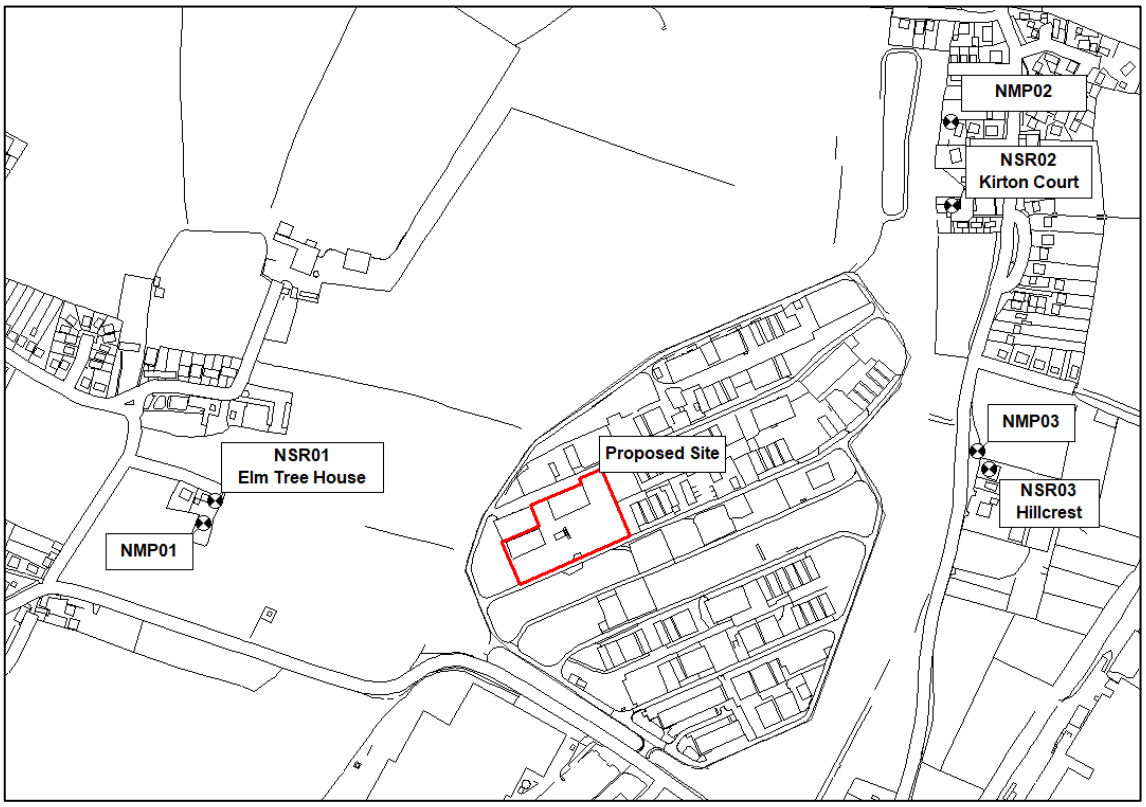
The planning determination process concluded there was no requirement for further mitigation measures above operating in accordance with the planning permission, plant manufacturer's recommendations, proposed operational procedures and management system. Noise nuisance is not anticipated at the nearest noise sensitive properties.

If a noisy incident or nuisance is reported directly to the site or through involvement in local liaison activities, an incident and or complaint form will be completed. A copy of the Complaint Form is attached. This triggers an investigation, immediate corrective and mitigating actions if they can be identified and documented follow-up requiring incident signoff by the site manager. The results of which are reported to Director level and feed into operating practice and management reviews.

Where the offending noise level can be attributed to the Boughton Recycling Facility site, immediate corrective measures include: amending site activities, switching off plant and machinery whose maximum manufacturer's operating noise is being exceeded, possibly having sustained damage. Monitoring will be undertaken to assess the effectiveness of corrective measures.

If noise levels resulting from the operation of the site give rise to a noise nuisance or are found to exceed the planning permission limits, the operator is to prepare a noise mitigation plan inclusive of supporting predictive modelling. This is for submission to and the Planning Authority and Environment Agency. Any agreed noise control(s) will be implemented within the granted period.

Noise Impact Assessment and Predictive Modelling Monitoring Positions representative of Noise Sensitive Receptors (NSR's)



Boughton Recycling Facility Complaints Form

Type of Complaint (Please tick)		Dust Noise Other	
Date and time of complaint:			
Name and address of complainant:			
Contact details of complainant:			
Date, time and duration of subject complaint:			
Details of complaint and comparative references quoted by complainant:			
Weather conditions (e.g. dry, rain, fog, snow):			
Wind strength and direction (e.g. light, steady, strong, gusting) or use Beaufort scale *(attached)*			
Any other previous complaints recorded relating to this complaint?			
Site activities and operating plant at the time complaint subject took place– e.g. loading /unloading, processing, plant movement:			
Any other relevant information:			
Amendment requirement to procedures, management plans:			
Form completed by		Signed:	
Follow-up Action taken:			
Date and time complainant contacted:			
Site procedures, management plan updated and manager approved *(yes / no)*:			
Completed follow-up action signed off by:		Signed:	

Beaufort Scale Reference Table

This scale should be used to determine wind strength for recording with wind direction.
Only record on Complaint From for the dated and time the offending event took place.

Force	Description	Observation	km/hr
0	Calm	Smoke rises vertically	0
1	Light air	Direction of wind shown by smoke drift, but not wind vane	1-5
2	Light breeze	Wind felt on face; leaves rustle, ordinary vane moved by wind	6-11
3	Gentle breeze	Leaves and small twigs in constant motion	12-19
4	Moderate breeze	Raises dust and loose paper; small branches are moved	20-29
5	Fresh breeze	Small trees in leaf begin to sway, small branches are moved	30-39
6	Strong breeze	Large branches in motion; umbrellas used with difficulty	40-50
7	Near gale	Whole trees in motion; pressure felt when walking against wind	51-61