Noise Managment Plan

Murrow AD Ltd, Somerset Farm, Cants Drove Murrow, Wisbech PE13 4HN

Contents

1.0 Introduction

The Noise Management Plan (NMP) is written to cover the scope of operations for Murrow AD Plant at Somerset Farm, Cants Drove, Murrow, Wisbech, Cambridgeshire, PE13 4HN (the site). Murrow AD Plant Ltd (MUR) is the permit holder. Adapt Biogas Ltd is the operations and maintenance company for the site working on behalf of MUR. The NMP has been compiled by Adapt Biogas SHEQ Manager.

The site was previously permitted under standard rules permit SR2012 No.12 Anaerobic digestion facility including the use of resultant biogas (less than 100 tonnes of waste per day).

The current permit is to operate according to standard rules permit SR2012 No.9 On farm anaerobic digestion facility using farm waste only, including use of the resultant biogas. Part A installation – treatment capacity over 100 tonnes of waste per day Environmental Permit No. EPR/FB3133AW/V005. The operator is in the process of applying for a bespoke permit to allow processing of larger tonnages than restricted by the standard rules set (125,000tpa required processing capacity under the current variation). The operator is also seeking to make addition of a new clamp storage area into the permitted boundary, and a new CO_2 recovery unit.

This NMP is to be implemented as part of the site's overall Environmental Management System (EMS). As such, the NMP also refers to a series of 'live' documents including standard agreed operating procedures, maintenance schedules and template forms used for record keeping.

The NMP will be reviewed on an annual basis (as a minimum) or immediately following any incident, complaints or a change in the operation or infrastructure. This will ensure that it continues to remain relevant to the site activities and in line with current guidance.

A copy will be submitted for approval by the EA and in the event of a revision to the NMP the EA will be notified. The previous version of this document (October 2022) was agreed with the EA local enforcement officers. This updated version is to be submitted to the EA National Permitting Service for review and approval as part of the permit variation process.

It is the responsibility of the Operator and the Site Management to be fully aware of the contents of the NMP and to provide relevant training to staff.

1.1 Purpose

This NMP sets out the appropriate measures that Adapt Biogas undertake to control Noise emissions from the anaerobic digestion (AD) facility to reduce noise emissions as far as is reasonably practically, beyond the site boundary.

The NMP will enable the Operator to assess and where possible prevent emissions of Noise from the site that may result in annoyance and/or adverse environmental impacts.

The NMP is written for all operational staff. Staff receive training in the aims and requirements of the NMP. A paper copy of the NMP is held in the Site Office guaranteeing that all employees have access to the latest version. A copy will also be maintained electronically.

The NMP will ensure that noise emissions are considered throughout all operations. This will be achieved by undertaking routine inspections, controlling operational practices, confirming appropriate measures are taken to prevent and/or minimise noise emissions (including those from incidents or accidents).

1.2 Scope of the NMP

The scope of the NMP includes all on-site works within the permitted site boundary and consideration of the sensitivity and potential impacts on nearby receptors. See Appendix 1, MUR-OD-19 Site location map and appendix 4 MUR-OD-018, Human Receptor Plan showing permitted site boundary.

The NMP does not include farm infrastructure outside of the permitted site boundary.

1.3 Site Location

The site is located north of the A47 Peterborough-Norwich trunk road. Access to Somerset Farm from the A47 is via the B1187, onto Cants Drove and then via the farm main access track. See Appendix 1 for site location plan - *MUR-OD-019 Site location Plan*

The AD site benefits from security access gates which are located at the entrance to Somerset Farm, the AD plant is situated beyond this

The site is in a rural location on Wisbech High Fen, characterised by a flat open fen landscape with fields artificially drained via a ditch and dyke drainage system. Somerset Farm itself is a mixed arable and livestock farm.

The AD Plant is situated more than 200 metres from the nearest sensitive receptor.

The AD site is approximately 1.5 hectares (3.7 acres) in extent. The digestate storage lagoons are part of the farm infrastructure outside of the permitted site boundary. There is a drainage ditch over 10 metres from the western boundary of the site.

1.4 Current physical noise abatement conditions

North & Northeast of the site, structures that act as permanent noise barriers include 3-meter-high concrete clamp wall.

- East, there is a high banked lagoon, rising some 4 meters from ground level.
- South, the bund wall and beyond that, open arable farmland.
- West & NW, bund wall, high hedges then open fields with occasional & temporary open field clamps and hay bales.

No equipment mounted externally has cladding or noise reducing components.

Our closest neighbour is Somerset Farm (East Anglia) Ltd; they operate 0600 – 1700 with agricultural farming equipment and 1600 head of cattle. Also, Biocow Environmental Services Ltd occupies land at the entrance to Somerset Farm, with 6 units, trailers and spreading equipment that access the lagoons.

2.0 Process Overview

This section provides a summary of the treatment process which should be read in conjunction with the ***MUR-OD-03 Process Flow Diagram***, see Appendix 3.

The site is fed on purpose grown crops (principally maize), crop residues (e.g. onions, beetroot and apples) and cattle manure. This occurs within five primary and one secondary anaerobic digestion tank to produce biogas and digestate. The site processes up to 125,000 tonnes of feedstock per annum.

Feedstock materials are principally stored off-site and brought onto site as and when required. Energy crops are ensiled in a concrete clamp adjacent to the main AD site which is now being brought into the permitted area. This area is 150m x 84 metres with a capacity of around 40,000 tonnes. It is also used for short term feedstock storage of other feedstock materials.

There is a further on-site clamp/storage area immediately adjacent to the main AD process area of 15m x 30m (1,500m^3 capacity). This area may either be used for storing covered silage or for the short-term storage of feedstocks such as crop residues, prior to loading into one of four solid feed hoppers. This maintains feedstock supply to the digesters.

Calculated capacity of Solid manure is transferred via front end loader from the adjacent farm and loaded directly into the solid's feeders.

Up to four times per week, the clamp/ storage area is also used for maceration of crop residues (beetroot, onions and apples) and for the mixing of feedstock prior to loading into the solid' feeders.

A pre-mixed liquid feedstock that includes, dirty water and fruit juices (from cattle feed from the adjacent farm) is conveyed via gravity fed pipeline to an on-site 57m^3 underground pit (pre-pit)).

Both clamps/ storage areas benefit from an impermeable concrete surface with dirty water collection via gravity fed lines to the 20m^3 underground (leachate tank) dirty Water Pit. This is then either pumped to the 300m^3 Leachate Tank and fed back into the AD process as process water or removed from site to be spread to land for agricultural and/or irrigation benefit.

Three times daily a loading shovel is used to load feedstocks into the 4 No. open solids feeders. Each loading phase takes approximately one hour.

There are currently five primary digesters (DG01, DG02, DG03, DG04, DG05) which operate in parallel. Digester DG01 has a working capacity of 1,664m^3, DG02 a capacity of 2,014m^3 capacity and DG03, DG04 and DG05 each have a working capacity of 2,396m^3 (35 days retention time).

The fan motor cooling fan blades are varied due to manufacture and can vary for 6-12 fins. The motors are 15kw, 965 revolutions per minute, geared down to 10 Revolutions per minute of the agitator shaft. The agitator shaft has 4 paddles attached at every 90 degrees around the shaft.

Digestate is separated into a solid fibre and liquor fraction, which are used as a soil improver and bio-fertiliser respectively on local farms.

There are 4 separators located on a raised platform. They operate in rotation and on a schedule. Usually, one at a time unless production requires one or more to function.

Separated liquor is stored within 2 digestate storage lagoons both situated to the east of the site. Lagoon 1 has a working capacity of 38,000m^3. Lagoon 2 a capacity of 38,000m^3.

The information generated by SCADA can be viewed on-site within the control room and remotely, to ensure optimisation and safe operation of the anaerobic digestion process.

3.0 Noise Pathways - Dispersion

Noise impacts are generally dependant on the prevailing weather conditions. The wind strength and direction help to predict the path of likely aerial dispersion of noise generated on site.

A wind rose of the meteorological data from UK Met Office modelled data (GFS data) for a complete 5-year period shows the prevailing wind direction is from the southwest (including the south-southwest and west-southwest) (Figure 3.1)).

The prevalence of winds from these directions means that receptors which lie to the northeast of the site will be those most frequently 'downwind' of the site and therefore most likely to be impacted by Noise emissions from the site.

3.1 Noise pathways – monitoring

Prevailing weather conditions will be monitored through the following procedures

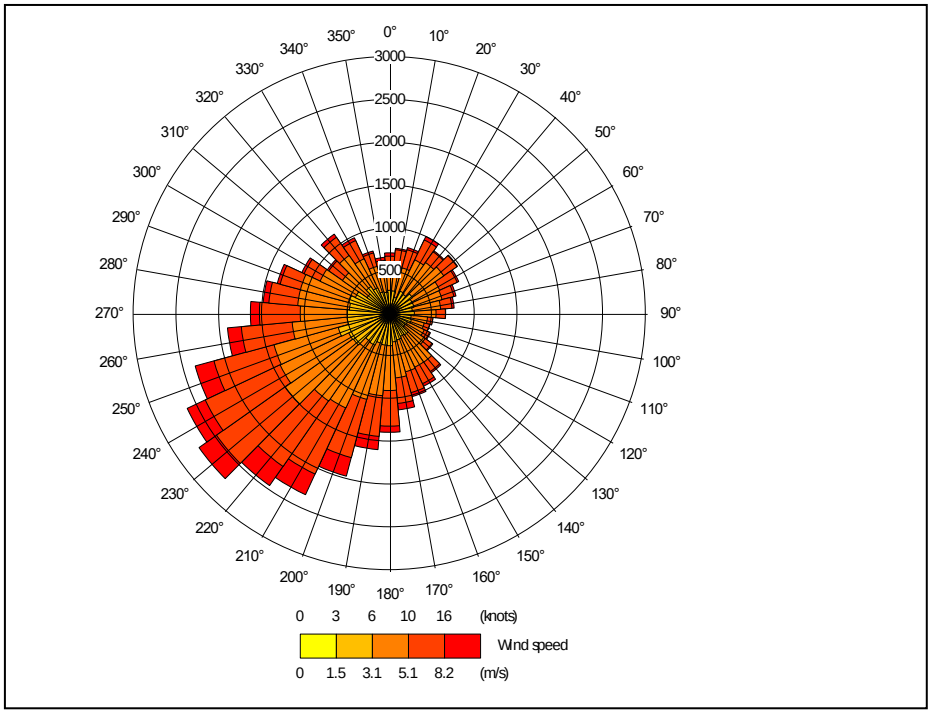
- Site operatives will record daily weather conditions on the BUUAD **Daily Inspection (MUR-MM-03*)*** using information from online resources as part of the routine monitoring on site
- Weather conditions are also being recorded on the Odour Monitoring Smartsheet MUR-MM-05

The potential also exists for nearby receptor locations to be impacted by noise, even if these locations are not directly downwind of operations. Implementation of the NMP will aid understanding of the facility and its operation ensuring Best Available Techniques (BAT) and best management practices are adhered to. This will minimise off-site noise impact from site activities.

Figure 1. Wind Speed/ Direction from GFS (01 January 2016- 01 January 2021)

Speed\ Direction	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total
<0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.2**
0.3 - 1.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	**1.8**
1.0 - 2.5	0.9	0.7	0.9	0.9	0.9	0.8	0.9	1.0	1.1	1.0	1.3	1.6	1.4	1.3	1.0	0.9	**17**
2.5 - 5.0	1.5	2.2	2.7	2.2	1.7	1.4	2.0	2.5	3.2	4.2	5.5	5.1	3.8	3.8	2.7	2.0	**47**
5.0 - 7.5	0.8	1.1	0.9	0.9	0.6	0.3	0.6	1.1	1.9	3.3	4.4	3.8	2.3	1.2	1.1	0.9	**25**
7.5 - 10.0	0.3	0.3	0.2	0.2	0.1	0.0	0.1	0.4	0.5	1.1	1.6	1.3	0.7	0.2	0.2	0.3	**7.6**
10.0 - 12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.4	0.4	0.2	0.1	0.1	0.0	**1.7**
>12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	**0.3**
Total	**3.6**	**4.5**	**4.8**	**4.3**	**3.4**	**2.7**	**3.7**	**5.2**	**6.9**	**10.3**	**13.3**	**12.4**	**8.6**	**6.8**	**5.2**	**4.3**	**100**

Figure 2.Windrose from GFS data (01 January 2016 - 01 January 2021)



Source : GFS Data Location : (Latitude_52.622, Longitude_0.028)

3.1 Receptors and Impacts

Details of the locations of sensitive (human) receptors have been identified up to 1km from the site and are shown in Table 1 and a Receptor Location Plan, **MUR-OD-018 is in Appendix 4.**

The nearest sensitive receptors include seasonal workers accommodation at Somerset Farm and Coronation House located approximately 212m and 270m north of the site respectively. Both are residential premises, and they are partially downwind of the prevailing wind directions.

The nearest receptors downwind of the prevailing winds are the residential receptors R11, R8 and R9, which are between 847m and 896m from the site.

The nearest dwellings in the village of Murrow are approximately 1,480m to the north. Receptors situated to the north are predicted to be downwind of the site approximately 7% of the time.

The factors that will determine the degree of Noise pollution at sensitive receptor locations are summarised as follows:

- **Frequency** of detection- sporadic and repeated noise incidents are more likely to result in complaints.
- **Intensity** as perceived - high pitched noises or low frequency sounds.
- **Duration** of exposure- noises that last a long period of time or occur for repeated days/month.
- **Receptor** sensitivity - tolerance to noises will be reduced in areas where high levels of amenity are expected.

- **Time of day** - once the peripheral daytime noises have abated, i.e., Vehicle traffic the noise emitted from site can seem accentuated.

3.2 Dispersal Control

The nearest (third-party) sensitive receptor is located partially downwind of the facility, approximately 270m to the north. Should it be identified that additional restrictions need to be implemented based on wind direction and/or strength, then an investigation into appropriate controls will be made and documented in this NMP.

Table 1. Sensitive Receptors

Receptor ID	Name	Distance from site (m)	Direction from site
R1	Hope Farm	579	SW
R2	Cooks Farm	759	SW
R3	Ivy Farm	831	SW
R4	Hundreds Farm	914	SW
R5	1, 2 Poplar Cottages and Poplar House	273	N
R6	Coronation House	270	N
R7	Fen View House	321	N
R8	Sidmouth House	880	NE
R9	Goose Cottage	896	NE
R10	Homefield	391	N
R11	Crossingate Cottage	847	NE
R12	Ivy Home	315	N
R13	The Cottage	641	NW
R14	White Lion Farm	390	N
R15	Willow Lodge	278	N
R16	Willow Tree Cottage	535	NW
R17	Jolise House Farm	344	S
R18	Towers Farmhouse	942	S
R19	1-6 Council Houses Long Drove	946	N
R20	New Bungalow (Hooks Drove)	918	N
R21	Adapt Biogas Ltd Offices	Not a receptor but shown on plan	
R22	Redfern House	373	N

Receptor ID	Name	Distance from site (m)	Direction from site
R23	Seasonal workers accommodation, Somerset Farm	212	N

4.0 Complaints History

The Operator has received notification of Noise issues direct from complainants. Table 2 summarises Noise complaints recorded.

Table 2 Complaints History

Date	Location of complainant	Complaint Details	Action/ Findings
09/07/21	Sensitive receptor Cants Drove. Adjacent to site entrance	constant low humming noise	Directors, Compliance manager and AD plant Manager have liaised directly with the complainant on multiple occasions to try to determine the noise source. Considered to possibly be the CHP's 3 &/or 4 or 1 or more of the separators. Various trials of on/off and timings of plant without an absolute ID. Liaising with Fenland District Council and The EA for resolution.
13/07/2021	as above	reversing bleeps on plant annoying and disruptive.	Reversing alarms replaced with 'white noise' units 15/08/2021

5.0 Noise at Work Survey & Assessment of Exposure:

Report No. D21AD01 – *January 2021.* A Noise at Work assessment carried out as part of the Health Surveillance Policy by Karl Matthews, H&S Advisor, to enable the provision of the correct personal protective equipment (PPE) when working in or near to noisy environments. This enabled the correct PPE to be issued to all personnel, including visitors when in these locations.

Independent Contractors must have a Method Statement and Risk Assessment which must consider exposure. The controlling manager of the contractor will ensure the risk is addressed as necessary.

6.0 Noise Sources

6.1 Noise sources and control measures

Table 3 provides an inventory of potential noise sources, sound power levels as stated by the manufacturer (where available) and control measures under normal operating conditions as contingency controls.

Table 3 summarises the series of measures that Adapt Biogas has put in place to ensure that noise emissions created during processes are reduced as far as is reasonably practicable in order to ensure that noise is:

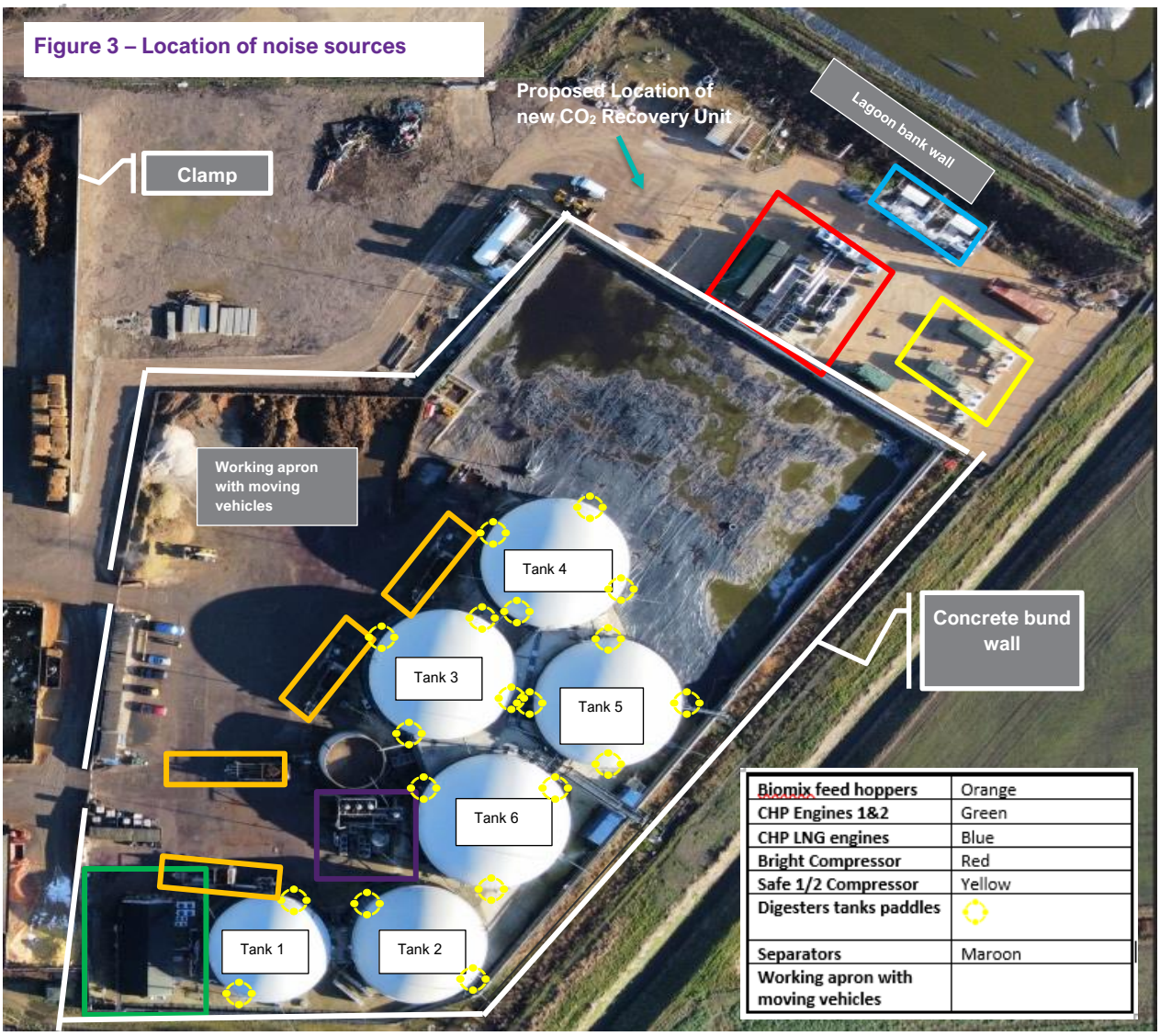
- prevented from occurring, where possible.
- contained within premises.
- not emitted by vehicles transiting to or from site.
- not likely to transgress boundaries where possible.

Table 4. provides details of potential noise sources under abnormal operating conditions including emergencies, maintenance, breakdowns, and extreme weather events.

Figure 3 show an aerial view of the AD Plant with noise sources identified

The general approach to receipt of a noise complaint is that an investigation by Adapt Biogas will be undertaken, as described in Section 8.

Figure 3 – Location of noise sources



6.2 Summary of Noise Sources and Control – Normal Operating Conditions

Table 3: Noise Sources and Control – Normal Operating Conditions				
Noise Source	**Sound Power Level (SWL) (manufacturers)) *Measured in Red*[1]**	**Noise Controls - Normal operational conditions**	**Related Document ref (where applicable)**	**Contingency**
Feed Preparation Operation				
Mobile Feedstock shredding unit 1.5 m high, 5 m from shredder, with front loader operational	**Humming** 120 (LWa) 74 dB LAeq, T @ 1 m	• Restricted operational duration limited to 4hrs/day every day during normal operating hours (12:00 to 1600 hours average operational hours). • Reporting system for breakdowns (Fault report on Smartsheet) • Pre-use maintenance checks on unit interface/ and plant pre use checks • PPM Service provision through outsourced contactor • Training in place for operators • Site rules - All fixed and mobile plant to be in the 'off' status when not in use	PPM Schedule **(MUR-MM-02)** Fugitive Emissions Plan **(MUR-SOP-05)** Blending & Chopping feedstock **(MUR-SOP-38)** Training Procedure **(MUR-SOP-11)** **Staff/Contractor Inductions**	• PPM service contract • Cessation of shredding operation if failure of unit. • Operational flexibility to use feedstock unshredded. • Move Position of unit– mobile shredding unit positioning can be flexible based on noise impact
Feed Hoppers				
Bio mix Feed hoppers x 3 1.5 m high, 2 m from hydraulic pack of feeder 1.5 m high, 1 m from feeder biomix motor Feeder 1, 2 and 3 Hydraulic pack	**Rotational hum** < 70 dB (A) 63 dB LAeq, T @ 1 m 71 dB LAeq, T @ 1 m 69 (dB L_{WA})	• PPM Schedule (PPM's undertaken by external approved contractor who are fully equipped to rectify issues identified during a routine inspection.) • Loading times of hoppers 20 minutes x 12 times per day (off when not in use)	PPM Schedule **(MUR-MM-02)** Control of Contractors Procedure through Inductions MUR-SOP-12) Training Procedure (MUR-SOP-11)	• Critical spares held on site that can be fitted by our appointed engineer. • On site engineer available to rectify defects with hoppers • If hopper/s out of service for repair site has ability to divert from other hoppers

[1]dBX Acoustics, Adapt Biogas, Murrow, Noise Modelling of Existing Equipment Report, 22027, 07/10/2022

Table 3: Noise Sources and Control – Normal Operating Conditions				
Noise Source	**Sound Power Level (SWL) (manufacturers)) *Measured in Red*[1]**	**Noise Controls - Normal operational conditions**	**Related Document ref (where applicable)**	**Contingency**
Biomix Feeder cutting motor	84 (dB L_{WA})			
Gas Upgrading Unit (GUU)				
Bright Compressor	**Humm & ticking** 79 dB LAeq, T @ 1 m (Baseline)	• Acoustic enclosure, restricted access, and doors always closed	PPM Schedule **(MUR-MM-02)** Control of Contractors Procedure through Inductions MUR-SOP-12) Training Procedure (MUR-SOP-	• Critical spares held on site that can be fitted by our appointed engineer. • Emergency call out contract for AD plant. • During PPM the compressors unit would be switched off and therefore no noise impact. • Significant noise impact could switch off compressor and switch to duty standby
Safe 1/2 compressor	75 dB LAeq, T @ 1 m (dBx Baseline)	• Acoustic enclosure, restricted access, and doors always closed		
CHP				
CHP – LNG Engines 0.5 m high, 1 m from CHP 3 outlet CHP 3 - 1 outlet CHP 3 – 2 outlets	**Humm (outside)** 88 dB LAeq, T @ 1 m 101 (dB L_{WA}) 101 (dB L_{WA})	• CHP engines contained in acoustic container • Air intake and exhaust louvres for noise reduction • Room fan with protective grid	PPM Schedule (MUR-MM-02) Fugitive Emissions Plan (MUR-SOP-05) Training Procedure (MUR-SOP-11)	• Critical spares held on site that can be fitted by our appointed engineer. • Emergency call out contract for AD plant. • In breakdown scenarios the CHP unit would be switched off and therefore no noise impact. Two CHP engines so in breakdown scenarios can switch to standby engine

Table 3: Noise Sources and Control – Normal Operating Conditions				
Noise Source	**Sound Power Level (SWL) (manufacturers)) *Measured in Red*[1]**	**Noise Controls - Normal operational conditions**	**Related Document ref (where applicable)**	**Contingency**
CHP - Biogas Engines (CHP1 & CHP2) 1.5 m high, 1 m from CHP 1 & 2 inlet, air side 1.5 m high, 1 m from CHP 1 & 2 chiller fans 1.5 m high, 1 m from CHP 1 & 2 outlet, air side CHP 1 & 2 building (inlet) CHP 1 & 2 table fans (chiller fans) CHP 1 & 2 table chiller	**Humm (outside)** CHP Unit Inside container 100,5 dB(A) 66 dB LAeq, T @ 1 m 76 dB LAeq, T @ 1 m 65 dB LAeq, T @ 1 m 74 dB LWA) 82 (dB LWA) Exhaust 89 (dB LWA) Extract 73 (dB LWA)	• Acoustic enclosure, restricted access and door always closed. • Attenuators fitted • Silencer located in flue • Exhaust vent with sound insulation baffles	PPM Schedule **(MUR-MM-02)** Fugitive Emissions Plan **(MUR-SOP-05)** Training Procedure **(MUR-SOP-11)**	• Critical spares held on site that can be fitted by our appointed engineer. • Emergency call out contract for AD plant. • In breakdown scenarios the CHP unit would be switched off and therefore no noise impact
Anaerobic Digestion (AD)				
Digesters - externally mounted mixer paddles DG01 & DG02 have 2 externally mounted paddle motors DG03, DG04 & DG05 have 4 externally mounted paddle motors.	**Screech** 73 dB (A) @ 2 M 66 dB (A) @ 5 M 60 dB (A) @10 M New tanks mixers 82 (dB LWA) Old tank mixers 84 (dB LWA)	• On site engineer available to rectify defects and critical spares identified and held on-site • Breakdown reporting procedure – as before • Scheduled maintenance PPM • Continuous system checks (SCADA system) on operating parameters for early indication of equipment failures (amps and hertz) that could give early indication of vibration & noise	Training Procedure **(MUR-SOP-11)** Gearbox paddles Maintenance **(MUR-SOP-26)** Control of Contractors Procedure through Inductions **MUR-SOP-12**	• Critical spares available on site (**MUR-MM-06 Spares List -** This will include key items of processing equipment such as screens, processing panels, pumps, pump casings and motors. • PPM schedule in place that includes daily, weekly check sheets that have to be completed.

Table 3: Noise Sources and Control – Normal Operating Conditions				
Noise Source	**Sound Power Level (SWL) (manufacturers)) *Measured in Red*[1]**	**Noise Controls - Normal operational conditions**	**Related Document ref (where applicable)**	**Contingency**
DG06 has 3 externally mounted paddles motors	Tank 2 and tank 1 roof mixers 97(dB LWA)	• Standard operating procedures for maintenance of equipment for gear box paddles. • Defects reported on PPM daily check sheet and fault logged with AD Manager or Engineering manager	PPM Schedule **(MUR-MM-02)**	
Post digestion – Pressing screw Separators x 3 Separator 1, 2 & 3	**Rotational hum** < 70 dB (A) 80 (dB L_{WA})	• Control measures as above	Control measures as above	• If there was a defect issue causing noise impact e.g., gear box failure site would manage on exception – would turn off separator and run duty standbys.
Mobile Plant & Vehicles				
Telehandler & Loading shovel	**Traffic noise** 107 dBA) 104 dB (A)	• Movements limited to daytime operating hours 0600 – 1900 hours. This includes feeding the hoppers for the digesters. • Servicing as per manufacturers requirements • Defects reported on Smartsheet fault log and assigned to AD Manager or Engineering manager • Telehandlers and loading shovels fitted with 'white noise' reversing units. • Induction (staff and contractors) detailing Site rules - avoid idling of machines between work periods and unnecessary revving of engines and sounding horns. Speed limit of 10 MPH on site	Training Procedure **(MUR-SOP-11) Staff/Contractor Inductions**	• Service contract covering mobile plant (vehicle serviced in line with manufacturers frequencies) • Cessation of plant/vehicle use until excessive noise emission rectified • Further contingency sharing vehicles with Somerset Farm or hire in plant

Table 3: Noise Sources and Control – Normal Operating Conditions				
Noise Source	**Sound Power Level (SWL) (manufacturers)) *Measured in Red*[1]**	**Noise Controls - Normal operational conditions**	**Related Document ref (where applicable)**	**Contingency**
		• Maintenance of site roads in a state of good repair to reduce noise from the passage of empty vehicles. Defects reported through Non-conformance process (ad hoc observations and defects highlighted through scheduled inspections)		
Carbon Dioxide Recovery Unit				
Proposed CO_2 recovery facility	Operation of chillers, pumps, blower and compressor	Initial modelling assessment indicates that the noise rating level of the proposed plant is predicted to result in a low impact if the noise emission of the proposed carbon capture plant is limited to 68 dB LAeq, T at 1 m.	CB2107-08 Appendix 3 – Noise Impact Assessment for Carbon Capture Addition.	Further assessment to be undertaken during equipment trials or following provision of detailed equipment specification to verity that the equipment concerned will achieve the required noise ratings to ensure no impacts result.

6.3 Summary of Noise Sources and Control – Abnormal Operating Conditions

Table 4: Summary of Noise Sources and Control – Abnormal Operating Conditions			
Noise Source	**Potential failure scenarios (Abnormal operational conditions)**	**Abnormal situation controls**	**Document ref (where applicable)**
Mobile Feedstock shredding unit	• Catastrophic failure of equipment or/failure of noise abatement measures leading to excessive noise emissions	• Service contract covering breakdown situations • Hire in temporary unit • Stop shredding operations until rectified • Critical spares held on site • 26 Echo H8 acoustic (lab tested noise reduction 37 dB) noise barriers held on site to deploy where required	Training Procedure **(MUR-SOP-11)** Critical spares available on site **(MUR-MM-06 Spares List)** Complaints Procedure **(MUR-SOP-10).**

Table 4: Summary of Noise Sources and Control – Abnormal Operating Conditions			
Noise Source	**Potential failure scenarios (Abnormal operational conditions)**	**Abnormal situation controls**	**Document ref (where applicable)**
AD Plant Digesters	• Catastrophic failure of plant leading to excessive noise emissions • Flare stack - operation in abnormal situations	• Emergency procedure for major incidents on site • contract covering breakdown • Critical spares held on site to expedite resolution of defects	Emergency procedure **(MUR-OD-10)** Training Procedure **(MUR-SOP-11)** Critical spares available on site **(MUR-MM-06 Spares List)** PPM Schedule (**MUR-MM-02)**
Feed hoppers	• Catastrophic/or failure or failure of components causing excessive noise emissions	• Cessation of hopper operations until excessive noise emission rectified. Operations to utilise on-site storage area with capacity (up to 3 months feedstock) • 26 Echo H8 acoustic (lab tested noise reduction 37 dB) noise barriers held on site to deploy where required	Emergency procedure (MUR-OD-10) Training Procedure (MUR-SOP-11) Critical spares available on site (MUR-MM-06 Spares List) PPM Schedule (MUR-MM-02)
Separators	• Catastrophic/or failure or failure of components causing excessive noise emissions	• Emergency procedure for major incidents on site • Critical spares held on site to expedite resolution of defects	Emergency procedure **(MUR-OD-10)** Training Procedure **(MUR-SOP-11)** Critical spares available on site **(MUR-MM-06 Spares List)** PPM Schedule (**MUR-MM-02)**
CHP Plant	• Catastrophic failure • Emergency maintenance of the CHP unit potential to compromise noise abatement equipment	• Service contract covering breakdown • Critical spares available on site (**MUR-MM-06 Spares List**) • Emergency maintenance of the CHP unit, if will compromise any noise abatement noise monitoring to be undertaken and assessment of impact to sensitive receptor to be made. • 26 Echo H8 acoustic (lab tested noise reduction 37 dB) noise barriers held on site to deploy where required • Stakeholder management - Notification to the neighbours (sensitive receptors) to let them know there may be significant disturbance (that cannot be managed by switching off plant or through maintenance)	Training Procedure **(MUR-SOP-11)** Critical spares available on site **(MUR-MM-06 Spares List)**
CO_2 Recovery Unit	• Catastrophic/or failure or failure of components causing excessive noise emissions	• Cessation of operations until excessive noise emissions rectified • Critical spares held on site to expedite resolution of defects • Contract maintenance provision for unit	Emergency procedure **(MUR-OD-10)** Training Procedure **(MUR-SOP-11)** Critical spares available on site **(MUR-MM-06 Spares List)** PPM Schedule (**MUR-MM-02)**

7.0 Noise Monitoring

7.1 Noise Monitoring Under Normal Conditions

Noise monitoring is undertaken as part of planned preventative maintenance daily checks and weekly checks recorded on check sheets. These checks are completed by sounds changes noted by operators. Changes are reported on PPM daily and weekly check sheet and faults logged with AD Manager or Engineering manager, where intrusive investigation into noise change would be undertaken.

7.2 Meteorological Monitoring

Meteorological conditions are key to understanding the potential noise impacts to downwind receptors. Meteorological monitoring at the site will therefore be performed:

- to predict periods when conditions for the dispersion of noise are likely to be poor, enabling planned maintenance operations to be re-scheduled to avoid such times.
- at the time of abnormal events to predict where Noise impacts could potentially occur.
- to identify times when plant conditions and/or noise abatement techniques need to be adjusted to account for adverse conditions; and
- for the investigation of noise complaints.

The site has installed a local weather station to source Meteorological data. If issues with the weather station emerge the contingency is for site operatives to source data from on-line resources e.g., metcheck.com.

7.3 Temporary/Permanent Problem Rectification

If the default procedure does not provide a satisfactory resolution, the following actions will be considered until the problem is resolved:

- Equipment guarding/insulation changes or additions.
- Relocation of equipment
- Review and adjustment of operating hours

7.4 Problem Resolution

Once the cause of the problem is identified and the improvements implemented, the following actions will be undertaken:

1. A noise assessment will be completed to ensure that the improvements have addressed the source of the elevated levels.
2. If the cause is due to inadequately followed noise management controls, re-training of employees will take place to ensure that all employees operate to the required standards.
3. If the noise management controls are determined to be inadequate, it will be raised as part of the review of control measures detailed in the NMP; and

4. All parties affected by the problem event will be notified of the cause, actions, and resolutions by the Operations Manager.

8.0 Noise Complaints

8.1 Noise Complaints Management and Investigation

Complaint's data is recognised by the EA as the most direct and reliable form of monitoring noises that are causing a problem outside of the site boundary. Adapt Biogas understands the importance of addressing both internal and external complaints in a prompt and comprehensive manner, to resolve any issue as quickly as possible.

- All complaints will be collected, registered, and validated following the **Complaints Procedure (MUR-SOP-10).**
- **The Complaints form MUR-FT-01** will be used to record all complaints regarding noise and recorded as a non-compliance.
- The complainant will be offered a diary on which to record all nuisance noises. **Noise Monitoring Diary (MUR-FT-014)**

In order that noise complaints can be substantiated, it is imperative that the site is immediately informed by the complainant themselves and they will be encouraged to immediately contact the site and/or EA in the event of any off-site Noise. This is to enable site personnel to verify the presence, extent and cause of the noise. Adapt Biogas's AD Plant Manager's telephone number is displayed at the site entrance.

The AD Plant Manager and SHEQ Manager will investigate the complaint as soon as possible on receipt of the complaint. If the AD Plant Manager feels that their deputy is better placed to deal with the response, then control of the issue may be handed over to the relevant personnel.

8.2 Complaint Investigation

The complaint investigation will start with an exercise to locate the source of the noise and to verify if related the emission is related to site activities. The initial investigation exercise will consider the following:

- potential noise sources at the facility (Table 3).
- routine/ additional noise monitoring data; and
- meteorological conditions considered in relation to the location of the complainant.

Adapt Biogas will liaise with the EA immediately to inform of the outcome of the initial noise investigation and whether any action is to be taken. If the site is confirmed to be not the noise source, then the investigation will stop at that point.

If the initial investigation process confirms the noise incident is in related to the site activities, then a more detailed investigation will be carried out.

If the cause of the complaint is due to site activity, further advice will be developed with the EA regarding noise control measures and such measures instigated without delay.

Measures to locate the source of the noise emission resulting in complaints could include

- Arrange for a monitoring point in proximity to the complainant(s) address, to be incorporated into the routine daily inspections, the exact location of which is to be agreed by the EA; and/or
- Arrange for either independent noise monitoring; noise diaries/ community surveys for key complainants; and/or visitor questionnaires to substantiate the noise complaints as agreed with the EA.

If the noise complaint is received during operational hours (6am – 6pm), the complaint will be investigated immediately. A 24-hour site contact number is provided at the site entrance for out of hours. The investigation will involve identifying the noise source and implementing measures to bring the source under control. The corresponding noise investigation report will detail the actions taken to minimise the potential for re-occurrence.

After recording the complaint on the **Complaint Form (MUR-FT-01)** and completing an appropriate level of investigation, the AD Plant Manager will discuss the matter with Adapt Biogas Director and the SHEQ Manager.

The **Complaint Form (MUR-FT-01)** will be shared with the EA together with the outcome of the investigation. This will be carried out by the end of the working shift, to enable timely review. The complaint validation results, and any corrective or preventative actions taken in response to the complaint will also be shared

All complaints forms will be kept until the surrender of the Permit. All records will be available for inspection by EA representatives.

8.3 Monitoring

The Operator will maintain a system of complaints monitoring and analysis. Complaints will be registered on the NCR (Non-Conformance Reports) and validated where possible, alongside being reviewed on a weekly basis.

8.4 Community Engagement

The operator will ensure that they are always approachable and open to discussion, the primary objective being to encourage complainants to feel comfortable to contact the operator. This should be completed in the first instance, so that problems can be identified and rectified at the earliest opportunity.

Liaison with residents in closest proximity to the site operations (subset of the receptors given in Table 3.2) and the EA will be co-ordinated through the Operations Manager. Both parties will be notified of activities that have the potential to generate significant noise emissions and of any activities programmed to take place outside of normal site operating conditions or hours.

8.5. Noise Diaries and Community Surveys

In circumstances where, over an extended period, noise complaints from the community do not match the operations of the AD plant and cannot be readily explained by other site activity will undergo further investigations.

These designated residents are invited to perform offsite surveys, recording the data in an **MUR-FT-014 Noise Monitoring Diary** for an agreed length of time. Adapt Biogas will maintain logs of community involvement and keep all completed noise diaries for future reference.

9.0 Management and Document Review

9.1. Policy and Commitment

Adapt Biogas is committed to managing any potential off-site noise impacts from the proposed AD facility. This commitment extends from company policies produced at Director level (Managing Director) through to managing critical work-based activities on-site.

9.2 Overarching Management Responsibility

The key roles and responsibilities of site personnel are summarised in Table 9.1 with specific regard to noise prevention and control.

Site staff will be responsible for maintaining an awareness of general site performance during their daily activities and will report any unusual noise occurrences to the Operations Manager.

Table 5. Key responsibilities - Noise Control

ROLE	RESPONSIBILITIES
MANAGING DIRECTOR (M D)	The Managing Director is a responsible for: • Approving and endorsing the EMS including any amendments as part of the management review process • Overseeing the management of the site by the Site Manager • Providing resources so training and competencies are maintained for operational staff. • Providing extra resources / contingency arrangements due to staff shortages; and • Assists the Operations Manager and AD Plant Manager with day-to-day operational activities on site • Providing the Site Manager with such support and guidance as necessary to fulfil the requirements of the EMS within the organisation • Providing extra resources / contingency arrangements due to staff shortages • Providing the Site Manager with such support and guidance as necessary to fulfil the requirements of the EMS within the organisation.
OPERATIONS MANAGER (OM) **AD PLANT MANAGER**	DUAL RESPONSIBILITIES OF: - • WAMITIAB qualified and TCM's • Day to day responsibility for the operation of the site including: - Fulfilling the specific role requirements of individual procedures - Feedstock control - Ensuring the site processes and procedures are implemented and upheld - Implementing and overseeing emergency response procedures - Overseeing the implementation of corrective actions where required - Observing trends in process management data and discussing process management decisions with the OD - Responding to SCADA alarms or delegating this responsibility to a Nominated Competent Person

	- Implementing the planned preventative maintenance plan with respect to the AD plant and associated infrastructure including maintenance of Noise control equipment - Retaining inspection and maintenance records - Managing external contractors carrying out planned/ ad hoc maintenance - Reporting site issues or incidents to MD and /or working closely with the SHEQM. - Carry out any environmental awareness training and work with contractors to ensure implementation of good practice. • Will prepare and manage dissemination of information on project programme, site contacts and health and safety information to site neighbours. • Day to day responsibility for public liaison, and complaints handling
SHEQ MANAGER	• Responsible for all aspects of environmental, and health and safety compliance including: - Document control and record keeping - Oversight of site audits - Responsibility for editing, updating or superseding of documents - Implementing and overseeing emergency response procedures as required. - Overseeing the implementation of corrective actions where required. • Responsible for the completion of routine inspections • Responsibility for delivering environmental aspects of site inductions. • Day to day responsibility for public liaison, and complaints handling
TECHNICALLY COMPETENT MANAGER (TCM)	• Maintain technical competence including Continuing Competence assessments • Ensuring that operations at the site comply with all relevant environmental and health and safety legislation and where possible relevant guidance • Recording attendance hours on site in the site sign in system

9.3 Records

The Operator will maintain records of all monitoring carried out under this NMP, including details of maintenance of plant and/or equipment including noise abatement equipment, the results of calibration tests performed on plant/ equipment, noise monitoring surveys and any assessment or evaluation made based on such data.

Details of noise non-conformances, including subsequent investigations, timescales and remedial measures taken, and notifications of the relevant internal and external bodies will be recorded by the Operations Manager and copies will be maintained within the Site Office.

All records will be kept for a minimum of six years as specified in the permit conditions. However, if the records involve any off-site impacts, then those records must be kept until the surrender of the permit. All complaints forms will be kept until the surrender of the permit(s). All records will be available for inspection by EA representatives.

9.4 Reporting

The requirements for the reporting of monitoring undertaken at the site are set out within the site's environmental permit. If a noise complaint is received, the investigation of each individual complaint and subsequent report to the EA is to be undertaken without delay.

9.5 NMP Update and Review

This NMP sets out the appropriate measures that Adapt Biogas will undertake in controlling any noisy activities from the facility.

In urgent circumstances where the operator requires the immediate implementation of changes to the NMP- to prevent or reduce significant noisy emissions, these changes will be discussed with the EA without delay but may be implemented by the operator ahead of formal agreement.

Where the operator proposes changes to the NMP that involve a longer-term phased approach, a proposal will be submitted by Adapt Biogas to the EA that outlines the approach relating to an updated NMP. Once agreed, the required changes will then form the future measures as part of the site's noise management and control.

9.6 Review Timescales

While 'normal' operations continue at the site that could give rise to the generation of noise, this NMP will be formally reviewed by Adapt Biogas annually (as a minimum), to ensure the stated management controls and conditions continue to reflect best available techniques and operational requirements/ sensitivities at the site. Any technical and managerial changes on site will also initiate a review of the NMP.

An updated copy of the NMP will be submitted to the EA following review, as required. Any required changes to the conditions set out within this document will be formally agreed with the regulator prior to their implementation.

Following a period of abnormal operations (i.e., immediately following an accident/incident at the facility) the NMP will be reviewed immediately. As well as this, further advice may also need to be developed regarding noise control measures, such measures would be instigated without delay.

Appendix 1 MUR-OD-019 Site Location Map

Appendix 2 MUR-OD-03 Process Flow Diagram

Appendix 3 Noise sources location map

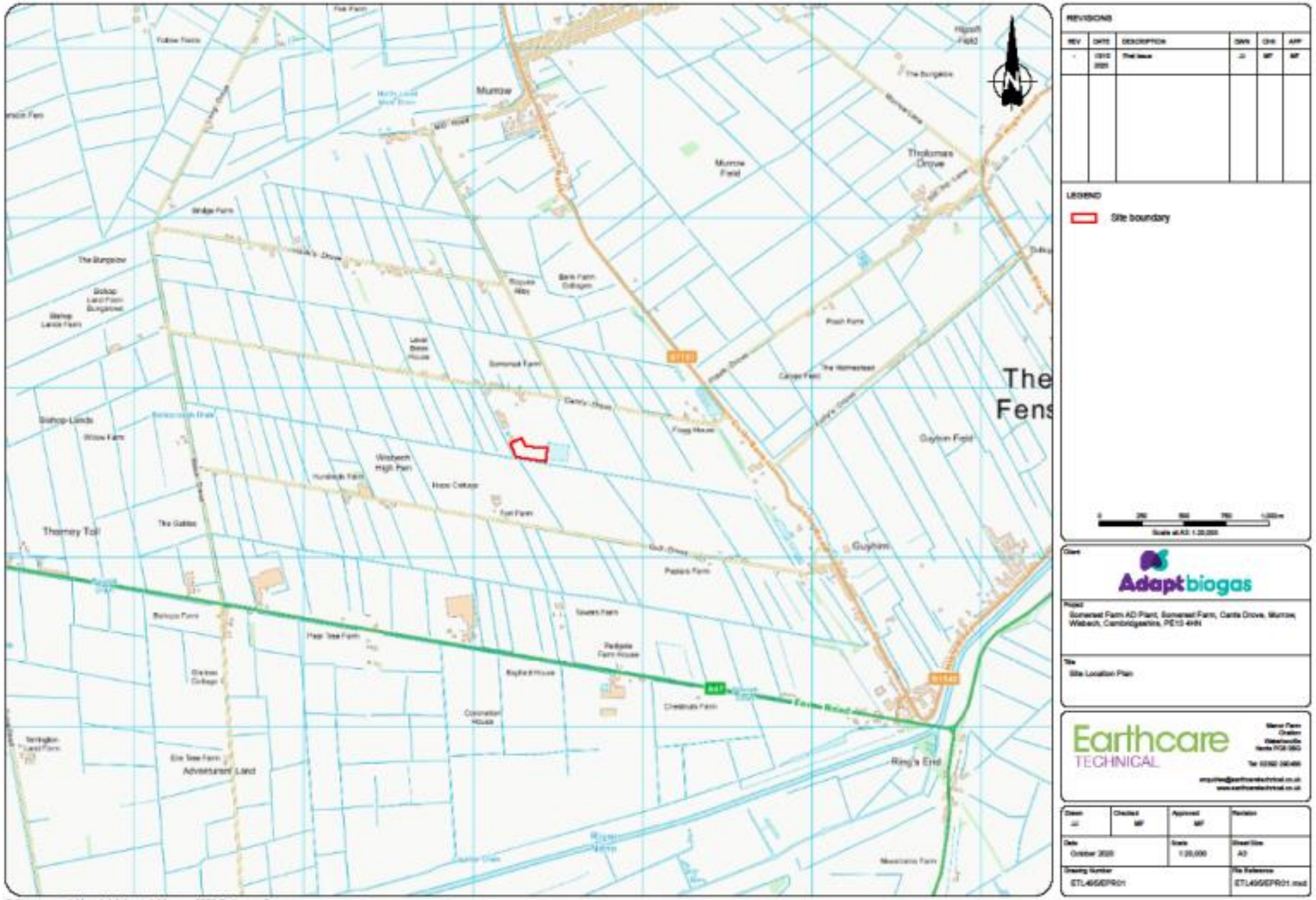
Appendix 4 MUR-OD-018 Receptor Location map

Appendix 5 MUR-FT-01 Complaints Form

Appendix 6 MUR-FT-014 Noise Monitoring Diary Form.

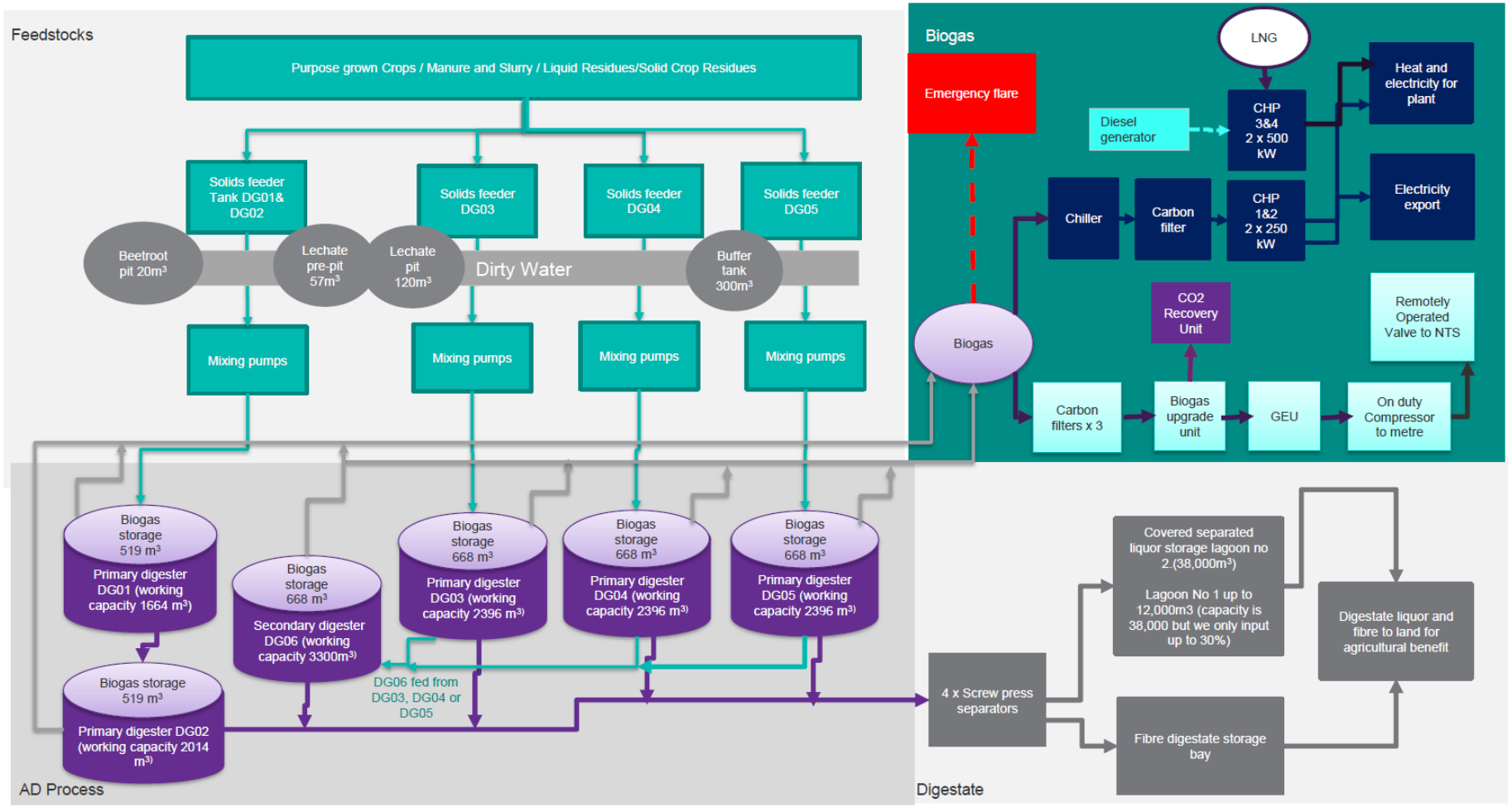
APPENDICES

Appendix 1

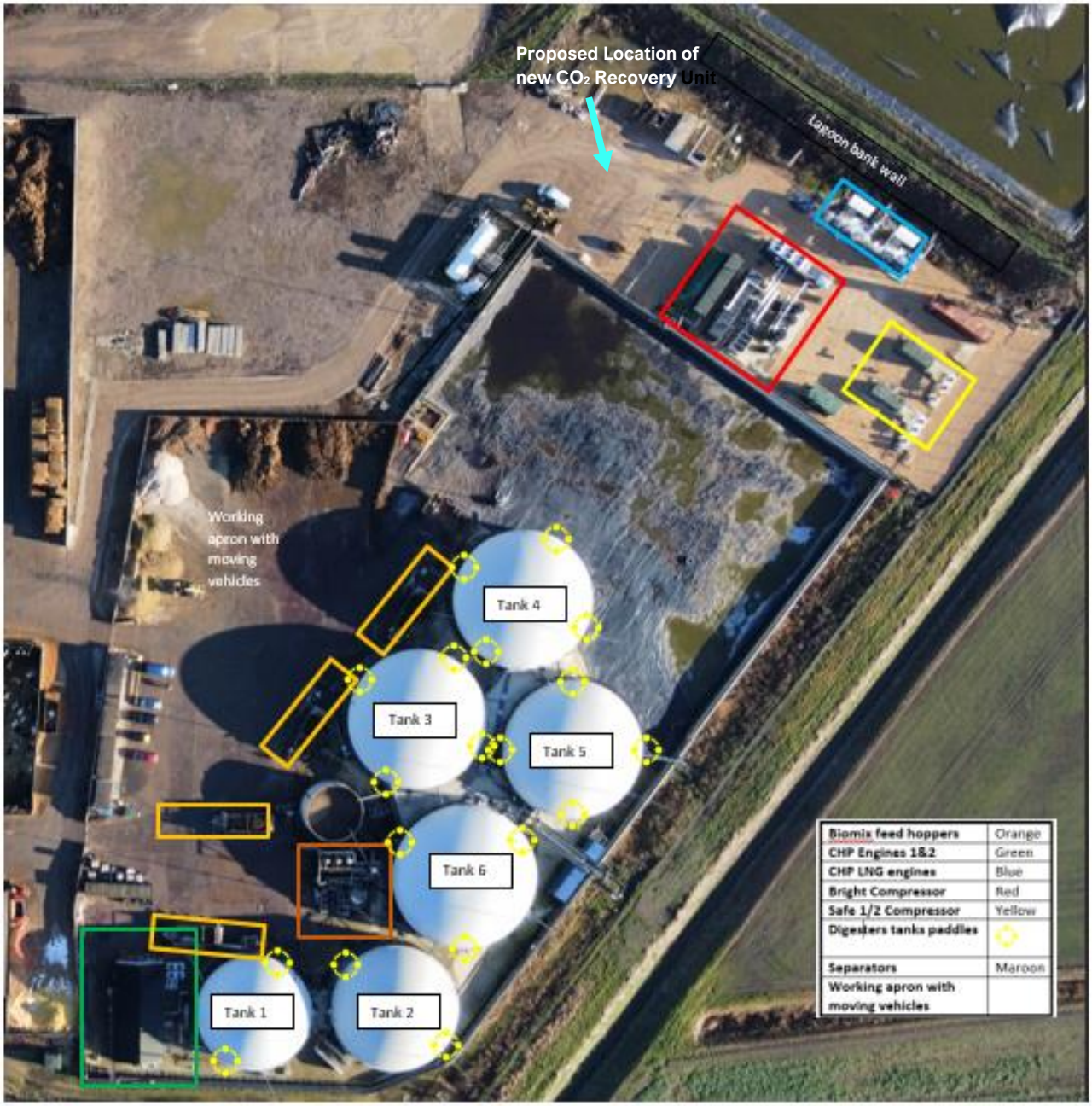


Appendix 2

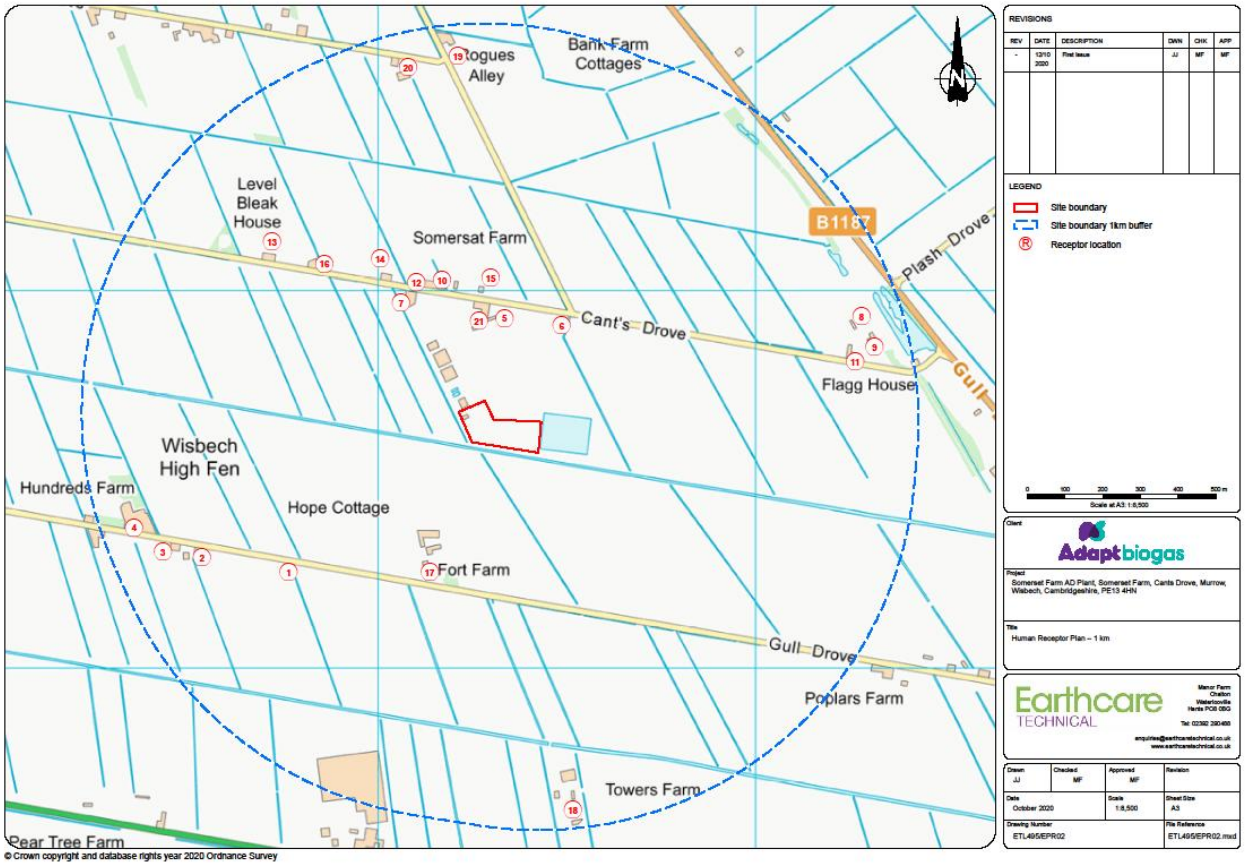
MUR-OD-03 Process Flow Diagram V1.3 Feb 2023



Appendix 3 – location of noise sources



Appendix 4


Bank Farm Cottages
Level Bleak House
Somersat Farm
B1187
Plash Drove
Cant's Drove
Flagg House
Gull
Wisbech High Fen
Hundreds Farm
Hope Cottage
Fort Farm
Gull Drove
Poplars Farm
Towers Farm
Pear Tree Farm
© Crown copyright and database rights year 2020 Ordnance Survey
REVISIONS
LEGEND
Site boundary
Site boundary 1km buffer
Receptor location
Adaptbiogas
Somerset Farm AD Plant, Somerset Farm, Cants Drove, Murrow, Wisbech, Cambridgeshire, PE13 4HN
Human Receptor Plan – 1 km
Earthcare TECHNICAL
October 2020
1:8,500
A3
ETL495/EPR02

Appendix 5

Complaint record form

Complaint ID Reference **Refer to Complaints Register for ID**	
Who made the complaint:	
Date and time of complaint:	
Site area/business to which complaint relates	
If complaint involves contractor, please provide name and main contact	
What happened?	
Is anyone else aware/involved.	
What was the cause?	
Resolution?	
Any lessons learned?	
Do Environment Agency/Highways/Emergency services/Environmental Health need to be informed?	
Notify the Environment Agency on 0800 807060	
Please ref any evidence collated	
Print Name:	
Signature:	

NOISE RECORDS

Noise Intensity Scale is from 1 – 3

1. Faint noise – perceivable however, difficult to detect.
2. Moderate Noise - easily detected but does not disturb regular activity.
3. Loud Noise – clearly detected and disturbs regular activity.

DATE	FROM	TO	LOCATION OF NOISE-audible thru-out the property or only in certain places? Details.	INTENSITY