Bioaerosol Risk Assessment

Home Farm Grange

November 2025

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Bioaerosol Risk Assessment

Home Farm Grange

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1. INTRODUCTION

1.1 Background

This document has been prepared by Sol Environment Ltd on behalf of Engie Renewable Gases UK Ltd (hereafter referred to as "Engie") to assess the potential risk of impact associated with bioaerosol emissions from their proposed agricultural anaerobic digestion facility, located on land east of A162, Low Farm, South Milford, Sherburn in Elmet, LS25 6FW.

This risk assessment has been undertaken to identify potential emissions sources and evaluate associated impacts in the local area from the anaerobic digestion facility.

The proposed AD facility will meet the definition of an 'Installation' under the EPR Regulations by virtue of Schedule 1:

Section 5.4 Part A(1)(b)(i) *Recovery or a mix of recovery and disposal of non-hazardous waste with a capacity exceeding 75 tonnes per day (or 100 tonnes per day if the only waste treatment activity is anaerobic digestion) involving Biological Treatment*

Engie's proposed AD plant will accept up to 100,000 tonnes per annum of feedstock including manures and slurries, maize, silage, whole crop rye, vegetable waste and potato rejects from Home Farm and other local farms.

The purpose of this Bioaerosol Risk Assessment is to:

- Establish the likely sources of bioaerosols arising from the anaerobic digestion operations at the site;
- Assess the potential for significant risk of impact at sensitive locations due to bioaerosol emissions from the identified sources; and
- Identify any additional mitigation required to control potential effects.

1.2 Site Location and Context

The proposed site is located at Low Farm, South Milford, Sherburn in Elmet, LS25 6FW.

Engie's proposed AD plant will accept up to 100,000 tonnes per annum of feedstock including manures and slurries, maize, silage, whole crop rye, vegetable waste and potato rejects from Home Farm and other local farms.

The site is located in a predominantly agricultural landscape, with industrial and commercial units to the north and the villages of Sherburn in Elmet to the north and South Milford to the south. Table 2-1 outlines the surrounding site setting in greater detail, including features in the immediate vicinity, within 500m and beyond 500m of the proposed site.

Table 1.1 - Site Setting

Direction	Description
North	Immediate Vicinity: Agricultural Land, Low Farm Energy AD Plant Within 500m: Agricultural Land, Bypass Park Estate, Commercial Units including YDL Distribution, David Wattson Transport, and Bishop's Move York

	Beyond 500m: Agricultural Land, Residential housing and local amenities in Sherburn in Elmet, A162 Road, Surface Water Lagoon, commercial units including The Great Bear, Esterform Packaging, and Sherburn Motor Spares
East	Immediate Vicinity: Agricultural Land, small woodland block Within 500m: Agricultural Land, Railway Line Beyond 500m: Agricultural Land, Sherburn in Elmet Airfield Airport (EGCJ), Breeze Aviation Services Ltd, Gascoigne Wood Power Plant
South	Immediate Vicinity: Agricultural Land, Railway Line Within 500m: Agricultural Land, Maltings Tea Rooms, Floosie Brow Artist, Woodhaven Boarding Kennels and Cattery Beyond 500m: Amur AD Plant, The Maltings Organic Treatment, Residential Housing and local amenities in South Milford, Agricultural Land, Railway Line
West	Immediate Vicinity: Mill Dike Within 500m: A162 road, Agricultural Land, small woodland Beyond 500m: Residential housing on Milford Road, Tadcaster Timber Products, Agricultural Land, South Milford railway station, YWT Sherburn Willows Nature Reserve,

2. PROCESS DESCRIPTION

The proposed AD plant will process up to 100,000 tonnes per annum of feedstock (including manures and slurries, maize, silage, whole crop rye, vegetable waste and potato rejects) from Home Farm and other local farms.

The proposed process includes these key stages:

- *Feedstock Reception and Storage*: Incoming wastes such as manures will be delivered to site and stored within the feedstock reception building. Energy crops and silage will be stored externally within the silage clamps while liquid feedstocks, such as, slurries will be stored in sealed reception tanks:
- *Digestion:* Solid and liquid feedstocks are fed to the processing vessels (digesters). Within the digesters, the substrate is mixed and heated to allow the bacteria to break down the organic matter in the absence of oxygen. During digestion, biogas is continuously produced in the vessels, typically around 55% methane and 45% carbon dioxide:
- *Digestate Separation:* Following digestion, the residual digestate material containing indigestible fibre and nutrients is pumped to a separation system, where the solid fraction is separated from the liquid fraction. Solid digestate is then stored within a segregated area of the enclosed separator building and liquid digestate is stored in the engineered covered digestate lagoon prior to being spread to land as fertiliser at the appropriate time;
- *Biogas Upgrading:* The majority of the biogas produced during the process is upgraded to remove CO2 and convert to pure biomethane. Biomethane is a clean renewable gas that is compliant with the gas grid specifications and regulations. The biomethane is continuously monitored and metered prior to injection into the gas grid;
- *Carbon Dioxide Recovery:* During biogas upgrading, a side stream of clen compressed CO2 is produced. This will be recovered and liquified before being sent offsite to an end user, likely the food and drinks industry;
- *Electricity production:* Two natural gas generator sets (3MWth) will be utilised to provide electrical power for onsite use; and
- *Biogas Combustion*: A small portion of the gas produced will be combusted in a biogas boiler. This will produce renewable heat to power the on-site demand during start up and during periods of extreme cold weather where required.

3. LEGISLATION AND GUIDANCE

3.1 Bioaerosol Definition

A bioaerosol is a general term for microorganisms suspended in the air which is found naturally within the environment. These include bacteria, fungi, viruses, spores and moulds. Generally, bioaerosols range in size from 0.02 to 100µm in diameter and as such can infiltrate the human respiratory system, resulting in inflammatory, allergic, and pathogenic responses. The size, density and shape of a bioaerosol will affect its behaviour, survivability and ultimately its dispersion in the atmosphere.

Biological treatment technologies such as composting, anaerobic digestion and mechanical biological treatment facilities depend on a large number of microorganisms to break down organic material in the waste.

Anaerobic digestion relies on bacteria and methanogenic archaea, including spore-forming filamentous actinomycetes, as well as fungi and mould spores to produce a harvestable biogas and usable organic digestate that can be used in agricultural land improvement. In anaerobic digestion, as the waste material breaks down it goes through different temperature dependent stages that are dominated by certain groups of bacteria, fungi and archaea. Bacteria are the most plentiful group of microorganisms throughout the process. The dependence on microorganisms to degrade the organic material, and the way in which the material is processed make biological treatment facilities a source of bioaerosols[1]

3.2 Health Risks from Bioaerosols

Exposure to bioaerosols can affect human health. Bioaerosol exposure has been identified with associations between respiratory and gastrointestinal illness at waste management facilities. Aspergillosis caused by exposure to the spores from *Aspergillus fumigatus* has been reported to give rise to a severe infection of the respiratory system and long term chronic respiratory conditions. In particular, people who have a suppressed immune system are at higher risk of developing infection[1].

3.3 Legislative Control

Emissions to atmosphere are controlled through the *Environmental Permitting (England and Wales) Regulations 2016 (as amended).*

The operation of an anaerobic digestion facility processing more than 75 tonnes of waste per day requires an Environmental Permit issued by the Environment Agency under Schedule 1 Section 5.4 '*Disposal, Recovery or a Mix of Disposal and Recovery of Non-Hazardous Waste*' Part A(1)(b)(i) '*Recovery or a mix of disposal and recovery of non-hazardous waste with a capacity exceeding 75 tonnes per day (or 100 tonnes per day if the only waste treatment activity is anaerobic digestion) involving biological treatment.'*

3.4 Environment Agency Policy

The EA Regulatory Position Statement (RPS) '*Bioaerosol Monitoring at Regulated Facilities – use of M9: RPS 209*' published in January 2018, outlines the conditions that apply to biological waste treatment facilities in relation to bioaerosol emissions.

If the facility is located within 250m of a sensitive receptor the operator must:

[1] EA Technical Guidance Note M9 – Environmental Monitoring of Bioaerosols at Regulated Facilities

- Monitor bioaerosols in accordance with the Environment Agency's Technical Guidance Note (Monitoring) M9 – Environmental monitoring of bioaerosols at regulated facilities'; and
- Conduct a site specific Bioaerosol Risk Assessment.

The EA may reduce the amount of monitoring required if:

- The activities are in the open and the operational area is over 250 m from the nearest sensitive receptor;
- The risk assessment shows there is no impact to sensitive receptors; or
- Your risk assessment shows there are no impacts to the surrounding or operational area from a biofilter or stack.

3.5 Best Practice Guidance

The EA guidance "*Biological waste treatment: appropriate measures for permitted facilities"* and '*BREF Waste Treatment BAT Conclusions*' sets out indicative measures and Best Available Techniques (BAT) that should be applied to this type of facility.

The Application Support Document (SOL_25_P007_ENG – Application Support Document) addresses BAT and relevant appropriate measures in detail, describing how the facility meets each of the requirements. As the facility will be new, it will be constructed with both BAT and appropriate measures considerations.

4. SCOPE OF ASSESSMENT

The scope of the risk assessment is considered in the following sections.

4.1 Conceptual Model

The preliminary conceptual model below sets out the sources, hazards, pathways, exposure and receptors at the anaerobic digestion facility.

Criteria	Details
Source	Feedstock, products and fugitive emissions relating to the anaerobic digestion on site as outlined in Section 4.2
Hazard	Adverse impacts on human health as outlined in Section 3.2
Pathway	Airborne
Exposure	Inhalation, ingestion, absorption
Receptor	Nearby human receptors as outlined in Section 4.3

4.2 Sources

The operation of the anaerobic digestion facility results in potential bioaerosol emissions from a number of activities. The following sources have been identified:

- Incoming feedstock during delivery, storage and handling;
- Fugitive release from vehicle movements
- Fugitive release from tanker filling;
- Fugitive release from silage clamps;
- Fugitive release from transfer of solid digestate;
- Fugitive release from the liquid digestate storage lagoon;
- Emissions from the AD Plant; and
- Biogas Combustion.

Incoming Feedstock and Storage

Organic feedstock will be delivered to the facility primarily in tractor – trailer or bulk loads (solid feedstock) or contained tankers (liquid feedstock).

Waste feedstocks will be unloaded primarily upon the concrete apron to allow visual inspection and then immediately transferred for storage within the designated feedstock reception building, which is fitted with an extraction and abatement system ensuring it is kept at negative pressure to reduce fugitive emission when doors are open. Roller shutter doors are kept shut at all times, with opening for vehicles kept to a minimum. The abatement system reduces levels of odour and ammonia prior to release and will also work to minimise the release of bioaerosols from the building.

Other solid organic feedstocks are unloaded into the storage clamps whilst measures are taken to reduce the drop height of material during delivery. Feedstock is covered immediately upon delivery and kept sealed

at all times. During transfer of material, covers are removed at the face only and for as short a period as possible. This limits the potential for release of bioaerosols from the external storage of feedstock onsite.

Liquid feedstock (e.g. slurry) will be fed directly into one of the onsite reception and storage tanks via a network of sealed pipework. The tanks are fitted with vents that are connected to the abatement system of the feedstock building, thereby preventing release of bioaerosols.

Feedstock material will be stored for as minimal time as possible whilst considering that the rate of input through the process is dependant on the requirements of the AD plant at any one time. Wherever possible, the site will operate a first in, first out policy with all feedstocks.

The feedstocks will be subject to minimal handling as to reduce the potential for release of bioaerosols.

Process Releases

There is potential for bioaerosol release during the feedstock loading process. Feedstock will be introduced into the AD plant via hoppers, and as it is tipped, the material impacts previously deposited feedstock which may result in the generation of bioaerosols.

There will be minimal opportunity for release of bioaerosols from the anaerobic digestion process. The plant will be completely sealed to maintain an anaerobic environment, with the exception of operating pressure relief valves to ensure the continued site safety. Additionally there will be a requirement to open digesters and vessels during maintenance activities. In both cases, the release of bioaerosols is expected to be minimal, and any release of bioaerosols is expected to be short-lived for the duration of the activity.

Biogas produced by the AD process with be captured and sent to the biogas upgrading plant which will remove most of the bioaerosols present. Small amounts of biogas may become trapped with the digestate produced, however all appropriate measures to remove as much biogas from the digestate will be taken to ensure the risk of bioaerosol release remains low.

Digestate and Silage Storage

There is a moderate potential for bioaerosol release from the storage of liquid digestate in the surface lagoon and the storage of organic material in the silage clamps. Both the lagoon and silage clamps will be covered and emissions from both sources are expected to be minimal.

The digestate storage lagoon will be fitted with leak detection and maintained with a freeboard of at least 750mm to ensure there is no risk of overtopping and subsequent bioaerosol release. Collection liquid of digestate will be from dedicated draw off points and undertaken under the supervision of trained site operatives, which should further serve to minimise the potential for bioaerosol releases

There is further potential for bioaerosol release during tanker filling both from the lagoon and storage tanks, although this risk is considered low. The release of bioaerosols may be caused by displacement of air during the filling process, however environmental conditions are likely to disperse the small quantity of bioaerosols release and the effects shall be minimal.

The silage clamps will be covered and minimally disturbed to prevent unnecessary release of bioaerosols. The silage clamps will be regularly inspected for signs of damage that may result in fugitive releases of bioaerosols.

Solid digestate will be stored within a segregated area of the enclosed Separator Building, which is kept under negative pressure and fitted with an extraction and abatement system. The abatement system reduces levels of odour and ammonia prior to release and will also work to minimise the release of bioaerosols from the building

Vehicle Movements around Site

There is a low potential for bioaerosols to be generated by the movement of vehicles, including tractors and bulkers. The risk of bioaerosols from this activity relates to the release of settled microbes that have become trapped or contained within dust and/or mud present on site

The site, including road surfaces, will be regularly cleaned to prevent a buildup of material such as dust or mud and all vehicles are to adhere to the onsite speed limits.

Biogas Combustion

There is a low potential for release of bioaerosols during the combustion of biogases within the onsite biogas boiler. The heat from the combustion activity is expected to destroy all bioaerosols present, eliminating the risk of release into the environment.

4.3 Receptors

The table below identifies the sensitive receptors surrounding the site. The EA guidance defines a sensitive receptor as a place where people live or work for more than 6 hours at a time.

The nearest residential properties lie 150m south of the site on Mill Lane, and additional human receptors are present 300m northeast of the site at numerous commercial and industrial units.

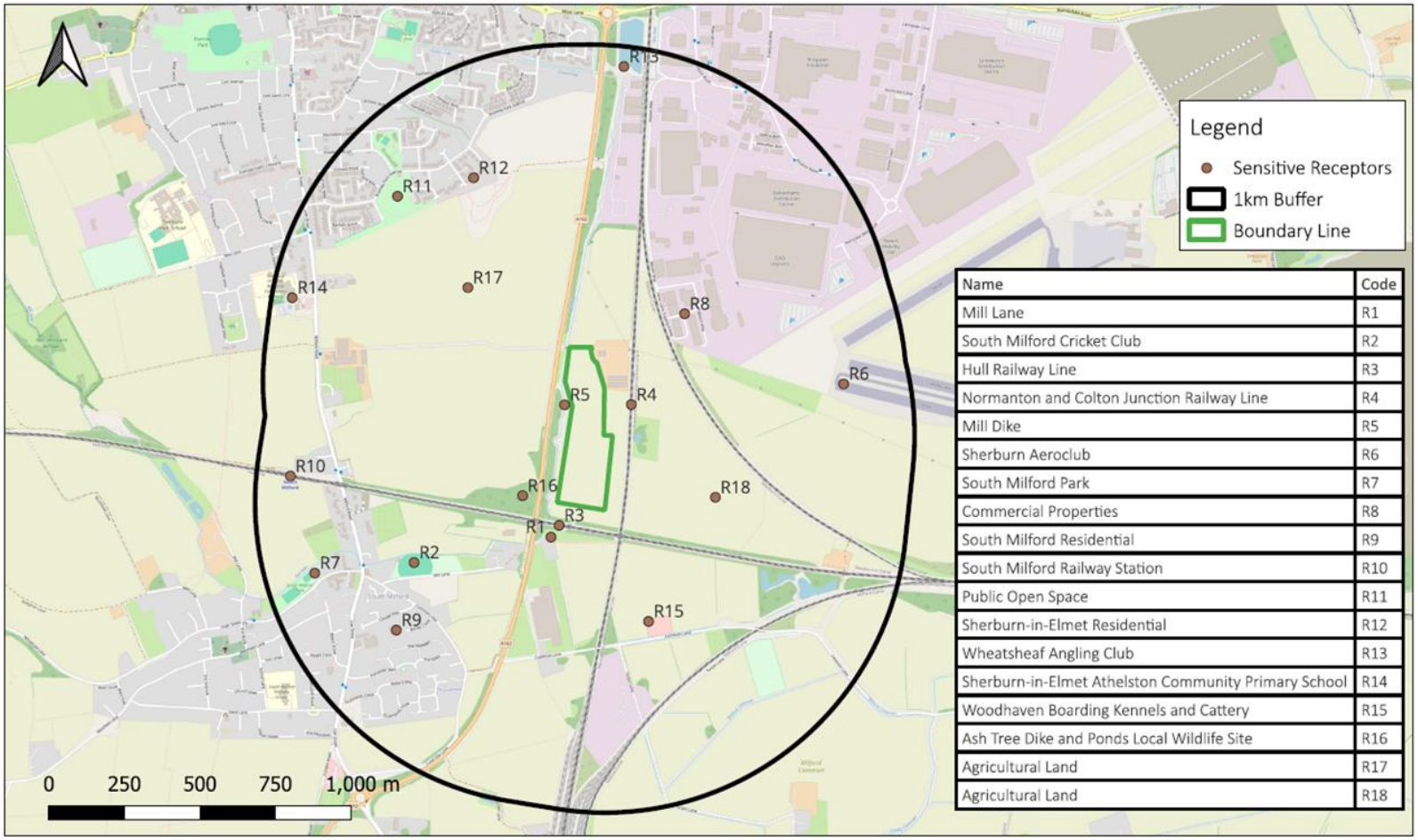
Table 4.1 details the identified nearby human receptors within 1km of the proposed installation.

Table 4.1 - Human Receptors

Receptor Name	Distance from Site
Mill Lane	150m S
Maltings Tea Room	330m S
Milford Plants	330m S
Residential properties (Common Lane)	530m S
South Milford (residential housing)	550m SW
South Milford Cricket Club	410m SW
South Milford Football Club	430m SW
South Milford Home Farm	650m W
Residential housing – Milford Road	870m NW
Public open space	770m NW
Bypass Park Estate	430m N
Wheatsheaf Angling Club	940m N
Commercial and Industrial Estate	300m-1.72km NE
Sherburn Aeroclub	890m E
Woodhaven Boarding Kennels and Cattery	500m SE

Figure 4.1 shows the sensitive receptors identified as relevant to the site.

Due to the proximity of the site to human and ecological receptors, the site could be considered to be moderately sensitive in relation to potential emissions, including bioaerosols. However, numerous operational measures for the control and mitigation of emissions have been applied to site to ensure that all potential releases are prevented, therefore reducing this risk.



Name	Code
Mill Lane	R1
South Milford Cricket Club	R2
Hull Railway Line	R3
Normanton and Colton Junction Railway Line	R4
Mill Dike	R5
Sherburn Aeroclub	R6
South Milford Park	R7
Commercial Properties	R8
South Milford Residential	R9
South Milford Railway Station	R10
Public Open Space	R11
Sherburn-in-Elmet Residential	R12
Wheatsheaf Angling Club	R13
Sherburn-in-Elmet Athelston Community Primary School	R14
Woodhaven Boarding Kennels and Cattery	R15
Ash Tree Dike and Ponds Local Wildlife Site	R16
Agricultural Land	R17
Agricultural Land	R18

Project Number: SOL_25_P007_ENG Doc Ref: Annex A - Site Plans Map Title: Sensitive Receptors (Home Farm Grange) Date: 03/04/2025 Drawn by: RM Checked by: EH	Site Address: Land East of A162, Halstow Energy AD Facility Low Farm South Milford Sherburn in Elmet LS25 6FW	1. Do not scale off this drawing 2. All dimensions to be confirmed on site 3. This drawing is copyright of Sol Environment Ltd 4. This drawing is to be read in conjunction with relevant consultant drawings and specifications 5. QMS Reference: QMS_7.5.39_TEM - Template - GIS Drawing - Horizontal v1

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Figure 4.1 - Sensitive Receptors

4.4 Prevailing Meteorological Conditions

The potential for bioaerosol emissions to impact at sensitive locations depends significantly on the meteorological conditions, particularly wind direction, during release.

The prevailing wind direction at the site is from the west, as shown in **Figure 4.2**. The site is fitted with an on-site weather monitoring station and will ensure that management of onsite operations will consider prevailing conditions.

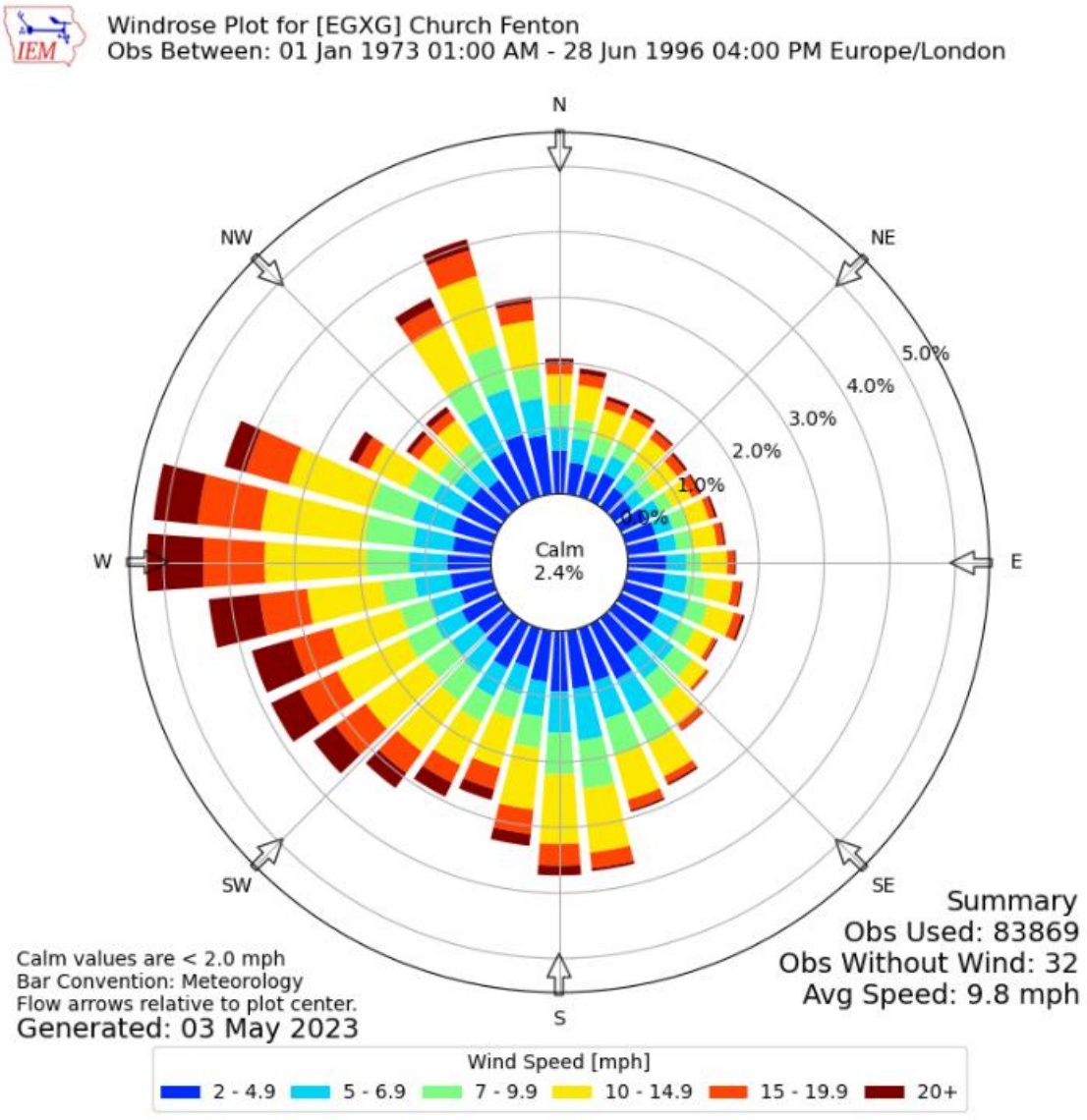

Figure 4.2 - Wind Rose for former RAF Church Fenton, approximately 5.4km NE of the site

4.5 Other Sources of Bioaerosols

The surrounding area includes a number of agricultural uses including arable and pastoral land. These fields may form further sources of bioaerosols from the fertilisation of soils with animal manures or slurries, during

crop harvesting time and animal wastes. However, impacts associated with these uses are not considered to be significant and would be found in any rural location in the UK.

Additional sources of bioaerosols in the vicinity include:

- Low Farm Energy AD Plant, approximately 20m NE
- Amur AD Plant, approximately 520m W
- The Maltings Organic Treatment Plant, approximately 720m S

5. RISK ASSESSMENT METHODOLOGIES

The Bioaerosols Risk Assessment has adopted a risk assessment approach to the potential hazards of bioaerosol release by combining the probability and magnitude of the potential risk to give an estimation of the risk prior to any mitigation measures. The risk management measures, which are designed to reduce the likelihood of occurrence, are then detailed followed by an estimation of the actual risk post-mitigation (Residual Risk Rating).

The DEFRA guide to risk assessment[2] and the EA's guidance indicates the approach of subjectively classifying the magnitude of potential consequences into four categories depending upon the degree of the impact that the potential risk could have and the context in which the risk is being assessed. The classification is used as a guide in this Risk Assessment.

The four categories are as follows:

- **Severe:** exposure may result in serious damage;
- **Moderate:** exposure may result in damage that is not severe and is reversible;
- **Mild**: Minor consequences where damage is not apparent though reversible adverse impacts possible;
- **Negligible:** The effects are negligible.

The matrix shown below considers the probability of the potential risk against the magnitude of the potential impact, thereby giving an estimation of the resulting likelihood of the risk occurring.

Probability of potential Risk	Magnitude of Potential Impact			
	Severe	Moderate	Mild	Negligible
High	High	High	Medium/Low	Near Zero
Medium	High	Medium	Low	Near Zero
Low	Medium	Medium	Low	Near Zero
Negligible	Medium	Medium/Low	Low	Near Zero

The risk assessment below has been based on the matrix outlined above.

The final stage of the risk assessment is the judgment of the severity of the residual risk following implementation of the mitigation measures.

Based on the outcomes of the risk assessment the EA document provides guidance on further requirements for different risks. These are summarised as follows:

- High risk – additional assessment and active management required;
- Medium risk – likely to require further assessment and may require either active management or monitoring; and
- Low risk – only requires periodic review.

[2] A Guide to Risk Assessment and the Risk Management for Environmental Protection, 1995.

6. BIOAEROSOL RISK ASSESSMENT

Table 6.1 - Bioaerosol Risk Assessment

Source	Probability of Exposure	Magnitude of Potential Impact	Risk Rating before mitigation	Risk Management	Residual Risk Rating (following mitigation)
Incoming feedstock during delivery and storage	Medium Incoming feedstock is typically delivered in bulk loads or tractor – trailers deliveries. External storage of solid feedstock in clamps and vents on liquid reception tanks may be sources of bioaerosols.	Medium Respiratory distress, gastrointestinal illness, skin and eye irritation	Medium	▪ Where practicable, feedstock will be delivered in covered vehicles / trailers ▪ All wastes will be stored within an enclosed feedstock reception building or in liquid storage tanks ▪ Doors and windows of the reception building will be kept closed at all times, exception for during delivery periods, which will be kept to a minimum ▪ An abatement system will be fitted to the reception building to remove ammonia, odorous compounds and bioaerosol species that may cause harm ▪ External storage of feedstock is within clamps. Covering of feedstock will be undertaken immediately upon delivery. ▪ Drop heights will be kept to a minimum when unloading as to reduce the generation of bioaerosols in the air. ▪ Transfer of material from the clamps will be undertaken in a short a time period as possible, with only the face exposed and resealed as soon as possible. ▪ Feedstock will be stored for as minimal time as possible before entering the AD process ▪ All site staff will be trained in the appropriate handling and storage of feedstocks to minimise the risk of bioaerosols	Low due to the risk management techniques described

Fugitive release from vehicle movements	Low Vehicle movement around site may agitate settled microbes and result in release of bioaerosols	Medium Respiratory distress, gastrointestinal illness, skin and eye irritation	Medium	▪ Release of settled microbes through vehicle movement is likely to be low ▪ The site, including road surfaces, will be regularly cleaned to prevent a buildup of material such as dust or mud that may contain microbial species that could be released by vehicle movements ▪ Vehicles will adhere to the onsite speed limits to prevent excessive tear up on settled dust or mud containing microbes. ▪ Site staff will be trained to identify potential signs of dust or mud build up and will alert the site manager at the earliest convenience	Low due to the risk management techniques described
Fugitive release from tanker filling	Low Small quantities of bioaerosols may be released by the displacement of air within tankers during the removal of liquid digestate	Medium Respiratory distress, gastrointestinal illness, skin and eye irritation	Medium	▪ Release of bioaerosols from displacement of air during tanker filling is expected to be minimal ▪ Bioaerosol risk from displacement of air is likely to be short-term and restricted only to the filling duration. Environmental conditions are likely to disperse any released bioaerosols to far below harmful levels. ▪ All digestate will meet the PAS 110 accreditation standard which determines that digestate must not pose an unacceptable risk to human or environmental health	Low due to the risk management techniques described
Fugitive release from silage clamps	Medium Bioaerosols may be released from the storage of organic materials in silage clamps	Medium Respiratory distress, gastrointestinal illness, skin and eye irritation	Medium	▪ The silage clamps will be covered to prevent bioaerosols being released into the atmosphere ▪ Once covered, the silage clamps will be minimal disturbed to avoid unnecessary agitation of organic materials that may result in bioaerosol release ▪ Spills of material near or around the clamps will be cleaned as soon as possible to prevent bioaerosol releases and	Low due to the risk management techniques described

				prevent pest attraction and possible odour complaints. ▪ Silage clamps will be inspected regularly and maintained as necessary to prevent and repair damage that may result in fugitive bioaerosol release	
Fugitive release from liquid digestate storage lagoon	Medium Bioaerosols may be released from the storage of digestate	Medium Respiratory distress, gastrointestinal illness, skin and eye irritation	Medium	▪ The lagoon will be covered to prevent bioaerosols being released into the atmosphere; ▪ Emissions from lagoon vents are likely to be minimal. ▪ The lagoon will be fitted with leak detection and maintained with a freeboard of at least 750mm to ensure there is no risk of overtopping and subsequent bioaerosol release; ▪ Collection of digestate will be from dedicated draw off points and undertaken under the supervision of trained site operatives; ▪ Lagoon will be inspected regularly and maintained as necessary to prevent and repair damage that may result in fugitive bioaerosol release	Low due to the risk management techniques described
Emissions from Feed Hoppers	Medium Feedstock is manually transferred into feed hoppers by use of telehandler or equivalent. Hoppers are open to the atmosphere therefore potential source of bioaerosol release	Medium Respiratory distress, gastrointestinal illness, skin and eye irritation	Medium	▪ Drop heights will be kept to a minimum during transfer of feedstock into hoppers as to reduce the generation of bioaerosols in the air. ▪ Transfer of material to the hoppers will be undertaken in a short a time period as possible. ▪ All site staff will be trained in the appropriate handling and storage of feedstocks to minimise the risk of bioaerosols	Low due to the risk management techniques described
Emissions from the AD Plant	Low The aerobic digestion facility is a sealed process although	Medium	Medium	▪ Releases directly from the AD plant are not expected as it is a sealed process	Low due to the risk management techniques described

	microbial releases may occur through pressure-relief valves or during maintenance programs	Respiratory distress, gastrointestinal illness, skin and eye irritation		▪ The site will operate a Leak Detection and Repair programme, as well as regular inspections and maintenance carried out ▪ Gas produced during the process are captured and treated to remove bioaerosols ▪ Pressure relief valves may release bioaerosols, however these releases are likely to be small and pose no risk to nearby receptors as environmental conditions will likely disperse any released bioaerosols ▪ Release of bioaerosols during maintenance will likely be minimal and short-lived and therefore pose no risk to nearby receptors. ▪ Only trained site operatives will be responsible for undertaking anaerobic digestion activities	
Biogas Combustion	Low The biogas will be cleaned and combusted at high temperatures, minimising the risk of bioaerosols	Medium Respiratory distress, gastrointestinal illness, skin and eye irritation	Medium	▪ Biogas will be combusted at high temperatures, which is a known treatment method to destroying bacteria and virus ▪ Biogas will be cleaned and upgraded prior to combustion, further minimising the risk of uncontrolled bioaerosol release	Low due to the risk management techniques described

7. CONCLUSION

Sol Environment Ltd have undertaken a Bioaerosol Risk Assessment on behalf of Engie Renewable Gases UK Ltd to assess the potential risk of impact associated with bioaerosol emissions from proposed anaerobic digestion facility at Home Farm Grange, Low Farm, Sherburn-in-Elmet.

This report has been undertaken in support of a permit application for an agricultural anaerobic digestion facility proposed to accept up to 100,000 tonnes per annum.

The operation of the AD site may result in bioaerosol emissions from a number of activities which have the potential to cause adverse effects to sensitive receptors within the vicinity of the site. A risk assessment using the source – pathway – receptor approach has therefore been undertaken to evaluate the risk of adverse impacts.

The following potential sources of bioaerosol emissions were identified:

- Incoming feedstock during delivery and storage
- Fugitive release from vehicle movements
- Fugitive release from tanker refilling
- Fugitive release from silage clamps
- Fugitive release from digestate lagoon
- Emissions from the AD Plant
- Biogas Combustion

The results of the assessment indicate that the residual risk from all sources was determined as low. This is due to a number of factors including enclosed AD process and feedstock reception building, short duration of potential exposures and management controls. As such, potential impacts as a result of bioaerosol emissions from the site are not considered to present a significant risk to nearby receptors.

Bioaerosol monitoring will be carried out annually in accordance with the *Environment Agency's Technical Guidance Note (Monitoring) M9 – Environmental monitoring of bioaerosols at regulated facilities* guidance.