



ENVIRONMENTAL RISK ASSESSMENT

Fernbrook Bio Limited



Helping clients prosper through compliance

SITE DETAILS

Fernbrook Bio Ltd

Rothwell Lodge AD Facility

Rothwell Lodge Farm

Rothwell Road

Kettering

Northamptonshire

NN16 8XF

OPERATOR DETAILS

Fernbrook Bio Ltd

Rothwell Road

Kettering

Northamptonshire

NN16 8XF

PERMIT REFERENCE

EPR/EP3894SC

DOCUMENT REFERENCE

K114.1~11~001

ISSUE DATE

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REVISION HISTORY

REFERENCE:	DATE	ISSUE	REVISION SUMMARY
K114.1~11~001/V1	21/08/2009	01	Final draft to accompany Permit application
K114.1~11~001/V2	26/11/2012	02	Amendments following letter from Pat Kelly (EA) dated 23/10/12 (ref: K114.1~04); incorporating changes to the ERA to incorporate information for odour mitigation.
K114.1~11~001/V3	30/04/2014	03	Amendments following meeting with Pat Kelly (EA) on 05/11/13; changes to Odour Management Plan to include reference to action levels, and to reflect improvements to odour management techniques. Review against <i>How to comply with your permit. Additional guidance for anaerobic digestion</i> (v1.0, Nov 2013)
K114.1~11~001/V4	02/02/2015	04	Changes to support a normal variation application for an increase in annual throughput

REFERENCE:	DATE	ISSUE	REVISION SUMMARY
			& addition of treatment and/or upgrading of biogas to biomethane.
K114.1~11~001/V5	15/05/2015	05	Amendments following comments from determining officer during 'Duly Made' stage of permit variation application to reflect requirements of the Fire Prevention Plan guidance and the variation application.
K114.1~11~001/V6	02/2017	06	Amendments following change of company ownership, improvements to odour abatement and process management, and issue of Regulation 36 Notice.
K114.1~11~001/V7	03/2018	07	Amendments following client instruction to review existing Management System documentation, change in EA guidance and following independent review of incident in April 2017 and issue of Regulation 36 Notice.
K114.1~11~001/V8	01/2020	08	Review of the ERA to support a Minor Variation application, January 2020.
K114.1~11~001/V9	04/2021	09	Review to support the application for a variation to the Environmental Permit to include the operation of a Biogas Upgrading Unit.
K114.1~11~001/V10	05/2021	10	Review to support the application for a variation to the Environmental Permit to include a thermal oxidiser to treat odourous emissions from the AD process.
K114.1~11~001/V11	07/2022	11	Review to support the application for a substantial variation to the Environmental Permit to include an increase to annual throughput, expansion of the reception building and replacement of its odour abatement system, inclusion of a thermal oxidiser (odour

REFERENCE:	DATE	ISSUE	REVISION SUMMARY
			treatment), additional tanks, CO ₂ recovery and the operation of a biogas upgrading unit.
K114.1~11~001/V12	13/6/2023	12	Amended following change in design to odour abatement system

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ACTION	DATE	NAME
Prepared	27/07/2022	Josh Freeman
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1. INTRODUCTION

This document forms an Appendix to the site's Management Plan (K114.1~09~006) that supports the bespoke Environmental Permit operated by Fernbrook Bio Limited at Rothwell Lodge Farm, Rothwell Road, Kettering, Northamptonshire, NN16 8XF.

This Environmental Risk Assessment (ERA) should be read in conjunction with the site's Management Plan and other supporting Management System documents.

This ERA was originally written to accompany the permit application and was updated in April 2014 to reflect improvements to odour management measures and the addition of action levels with regard to certain elements of the odour management system. The assessment has been further updated in February 2015 to reflect an increase in annual throughput at the site from 30,000 tonnes to 49,000 tonnes and the inclusion of a biogas upgrading system.

An iteration in 2017 was prompted by the amendments following change of company ownership, improvements to odour abatement and process management, and issue of Regulation 36 Notice by the Environment Agency. The gas upgrading system was not installed and references to the production of biomethane were removed.

Maintenance and upgrades to the reception hall odour abatement system were carried out by the manufacturer, CSO Technik, in late 2017. Fernbrook Bio have re-engaged CSO Technik to provide routine servicing and maintenance to the system going forwards.

The ERA was revised in 2018 following a client instruction to review existing Management System documentation, change in EA guidance and following independent review of incident in April 2017 and issue of Regulation 36 Notice.

The ERA was revised in 2020 to support the application for a Minor Variation to the site's Bespoke Permit (EPR/EP3894SC). The Minor Variation was limited to adding 9 and removing 7 waste codes from the permit. No changes were made to the processes of the AD facility; therefore, the revised ERA focused on a review of the sensitive receptors within 2 km of the site as this was the only aspect of the ERA that could have varied.

The previous iterations of the ERA were required to support the application for a variation of the Environmental Permit to alter the permitted biogas upgrading and bottling activity and to add a single Directly Associated Activity (DAA) for the treatment of odourous compounds from the AD process.

The gas upgrading system was not installed and references to the production of biomethane were removed. The permit variations to include the gas upgrading and the thermal oxidiser were not submitted in 2021 due to a change in ownership of the operator.

This iteration of the ERA is required to support the application for a Substantial Variation to the Environmental Permit. The scope of the Application includes increasing the annual throughput from 49,000 to 100,000 tonnes; expansion of the reception building to include an additional feedstock line; replacement of the reception building odour abatement system with extraction and activated carbon filtration (Stack 2: 12m); additional tanks (pasteurisation system, four buffers, two digesters and one end storage); new odour abatement system for all other tanks and process areas; gas upgrading for grid injection and propane gas storage; adding CO₂ recovery as an indirect activity; and modifications to ancillary equipment and pipework. There are no proposed changes to the permitted area or waste types to be accepted at the facility.

1.1. Scope

The site is operated in accordance with policies, plans, procedures and practices outlined within the Management Plan (K114.1~09~006) in Section 04 of the application pack.

The assessment conducted is specific to operations found at the site at the time of writing and is based upon observations made during site visits and a desk study. In addition, this assessment relies upon information provided by Fernbrook Bio Ltd and their technology advisors.

The Environmental Risk Assessment has been produced in accordance with the Environment Agency's guidance:

- Risk assessments for your Environmental Permit¹

1.2. Aims

This assessment aims to identify potential environmental hazards, sensitive receptors to those hazards and the influence of site management practices for reducing risk.

¹[Risk assessments for your environmental permit - GOV.UK, 1st February 2016 \(updated 31st August 2022\)](#)

2. SITE SETTING

2.1. Location

The site is located at Rothwell Lodge Farm, Rothwell Road, Kettering, Northamptonshire, NN16 8XF, at NGR SP 82389 80138. Lying approximately 600 m south of Rothwell, 1.1 km northwest of Thorpe Malsor, 1.3 km north east of Loddington, and 1.5 km northeast of Orton. The site covers an area of 2.33 ha.

Access to the site is gained directly from the west bound A14.

2.2. Environmental Setting

2.2.1. Geology

Review of the geological map for the area reveals that the local area is formed in deposits of Northampton Sands, which in turn are overlying the Upper Lias Clays. It is estimated that the depth of the Northampton Sands is less than 5 m and that the Upper Lias Clays extend to depths in excess of 50 m. Records suggest that significant areas of the site have been subject to open cast mining to exploit iron deposits within the Northampton Sands, and subsequently backfilled with quarry spoil.

2.2.2. Groundwater and Surface Water

The site is located over Secondary A Aquifer but not within a Source Protection Zone. The closest surface water course is the Slade Brook, approximately 500 m to the north of the site.

The Thorpe Malsor Reservoir is approximately 500 m to the south.

2.2.3. Flood Risk

The site is located within Flood Zone 1 and the probability of flooding at the site is regarded as low; additionally, given the proposed strategies for water management the site will not further contribute to flood risk downstream.

2.2.4. Air Quality

The site does not fall within an Air Quality Management Area. However, site design incorporates a dedicated air quality management system for the management of odours and bio-aerosols which is described within the Management Plan.

2.3. Nature Conservation

There are no designated conservation sites within 2 km of the site. Talby Meadows Local Nature Reserve lies 2.7 km to the north and the River Ise & Meadows Site of Special Scientific Interest (SSSI) is approximately 4.2 km to the northeast of the site.

Non-Designated sites:

There are several Biodiversity Action Plan (BAP) sites within 2 km of the site. These areas consist of Deciduous Woodland (broadleaved) and Wood-Pasture and Parkland. The closest BAP Deciduous Woodland to the site is adjacent to the A14 and lies approximately 190 m west of the site's boundary. The closest Wood-Pasture and Parkland is approximately 1.4 km southeast of the site.

Deciduous woodland includes woodland growing on the full range of soil conditions, from very acidic to base-rich, and takes in most semi-natural woodland in southern and eastern England. It thus complements the ranges of upland oak and upland ash types. It occurs largely within enclosed landscapes, usually on sites with well-defined boundaries, at relatively low altitudes. The woods tend to be small, less than 20 ha. Often there is evidence of past coppicing, particularly on moderately acid to base-rich soils; on very acid sands the type may be represented by former wood-pastures of oak and birch.

Wood-pasture and parkland are mosaic habitats valued for their trees, especially veteran and ancient trees, and the plants and animals that they support. Grazing animals are fundamental to the existence of this habitat. Specialised and varied habitats within wood-pasture and parkland provide a home for a wide range of species, many of which occur only in these habitats, particularly insects, lichens and fungi which depend on dead and decaying wood. Individual trees, some of which may be of great size and age, are key elements of the habitat and many sites are also important historic landscapes.²

2.4. Nature of The Risk Assessment

This document provides a broad and general assessment of the risk factors considered to be of importance for an anaerobic digestion facility. The supporting documents detailed below

² [UK BAP Priority Habitat Descriptions \(Broadleaved, Mixed & Yew Woodland\) \(2008, revised 2011\) | JNCC Resource Hub](#)

provide more specific evaluation of impact from the principle risk factors to receptors within the site vicinity.

2.5. Supporting Information

In support of the planning application originally submitted for the site various reports were produced. Several of these documents are of relevance and have been used in undertaking this risk assessment.

- Ground Investigation Report (Prepared by Soiltechnics Ltd)
- Ground pollution prevention and control (Prepared by JPP Consulting Ltd)
- Dust and Odour Assessment (Prepared by STATS)
- Flood Risk Assessment (Prepared by JPP Consulting Ltd)
- Noise Impact Assessment (Prepared by STATS Ltd)
- Ecological Appraisal (Prepared by The Landscape Partnership)
- Planning Statement: Construction of biogas scrubbing columns, gas clean up, container, compressor, distribution kiosk, propane tanks, grid entry unit and export pipeline to grid (prepared by Philips Planning Services Ltd)
- Plant Noise Impact Assessment: Project GAS, Rothwell Lodge Farm (Prepared by Environmental Equipment Corporation Ltd)

This document is also supported by the following documents:

- Accident Management Plan (K114.1~11~002);
- Odour Management Plan (K114.1~09~013);
- Noise & Vibration Management Plan (K114.1~09~020); and
- Management Plan (K114.1~09~006).

3. METHODOLOGY

3.1. Hazard Identification

A hazard is something with potential to cause harm to something else. For example, fire is a hazard to life and property. This document provides a broad assessment of the hazards considered to be of principal importance for a composting facility. The hazards are:

Table 1. Identified Hazard Types

PRINCIPAL HAZARD TYPE	SUB-HAZARD TYPE
Odour	N/A
Noise and Vibration	N/A
Fugitive Emissions	Dust & Particulate Matter Bio-aerosols Water Quality Litter and Debris Birds, Vermin and Insects Air quality (global warming)
Fire Explosion	N/A

The documents noted in Section 2.5 'Supporting Information' provide more specific evaluation of impact from the noted hazard to receptors within the site vicinity.

3.2. Receptors

A receptor is the person, organism, resource or property impacted by a hazard. For example, odour may cause offence to a human (the receptor). The above hazards have been assessed in terms of their general impact on principle receptor types identified within the vicinity. In summary these receptors may be described as follows:

Table 2. Receptor Description

RECEPTOR TYPE	DESCRIPTION	NEAREST LOCATION FROM SITE (APPROX.)	DIRECTION OF NEAREST LOCATION FROM SITE	
Humans and Property	Site Workers	On site	On site	
	Site Visitors	On site	On site	
	Inhabitants of Residential Property			
		<i>Original Farmhouse at Rothwell Lodge</i>	<50 m	E & N
		<i>New Farmhouse at Rothwell Lodge</i>	96m	ESE
		<i>Residents of Rothwell</i>	615 m	NNW
		Binders Lodge off Kettering Road	957 m	SSW
		Residents of Glendon Hill Farm	1.03 km	NE
		Residents of Thorpe Malsor	1.24 km	SE
		Residents of Woodfield Farm	1.26 km	NE
		Residents of Rothwell Grange Farm	1.42 km	E
		Residents of Woodfield Farm	1.45 km	N
		Residents of Loddington	1.51 km	SSW
		Residential Properties at Woodfield Lodge	1.67 km	N
		Residents of Bunkers Hill Farm	1.75 km	NE
		Residents of Orton	1.76 km	WSW
		Residents of Grange Farm	1.82 km	NNW
		Binders Lodge off Kettering Road	957 m	SSW
		Residents of Glendon Hill Farm	1.03 km	NE
		Residents of Thorpe Malsor	1.24 km	SE
	Sensitive Public Use			
		<i>Rothwell Cemetery</i>	480 m	WNW
		Rothwell Cemetery	480 m	WNW
		Holy Trinity Parish Church	1.13 km	NW
		Rothwell Victoria Infant School & Rothwell Junior School	1.29 km	NNW
		All Saints, Thorpe Malsor (Church)	1.33 km	SE
		Woodland Hospital	1.35 km	E
	Montsaye Academy	1.59 km	NW	
	Loddington CEVA Primary School	1.76 km	SSW	
	St. Leonard, Loddington (Church)	1.89 km	SSW	
	Rothwell Medical Centre	1.97 km	NW	

RECEPTOR TYPE	DESCRIPTION	NEAREST LOCATION FROM SITE (APPROX.)	DIRECTION OF NEAREST LOCATION FROM SITE
Commercial Use			
	Rothwell Service Station; Petrol Station & Outlets (McDonalds & Greggs)	65 m	N
	Sewage Works south of the A14	725 m	ESE
	Multiple Buildings on Market Hill & Bridge Street - Rothwell Town Centre	1.06 km	NNW
	Rothwell Truck Stop (Service Station)	1.21 km	WNW
	Midland Stone Centre (Aggregates Yard)	1.44 km	W
	Unspecified Buildings & Yards off Main Street	1.69 km	SW
	Styles Lodge Holiday Accommodation & Equestrian Centre	1.71 km	NNE
Recreational Use			
	Blythe Play Park	547 m	N
	Rothwell Recreation Ground	551 m	NNW
	Manor Park	1.05 km	NW
	Park between Tennyson Road & Crown Lane	1.43 km	NW
	Rothwell Town Cricket Club	1.68 km	NW
Agricultural Use & Allotments			
	Rothwell Lodge Farm Yard	0 m	E
	Parcels of Open Arable Farm Land south of the A14	0 m	S, W
	Parcels of Open Arable Farm Land north of the A14	106 m	NE
	Allotment Gardens off Meadow Road	965 m	WNW
	Farm Yard at Thorpe Malsor	1.31 km	SE
	Allotment Gardens off Rushton Road	1.52 km	N
	Woodfield Lodge Farm Yard	1.59 km	N
Roads			
	A14	12 m	N
	B669	525 m	W
	B576	1.51 km	NW
	A6	1.71 km	WNW
Public Rights of Way			
	Footpaths running between Rothwell Lodge Service Station & Rothwell	65 m	NE

RECEPTOR TYPE	DESCRIPTION	NEAREST LOCATION FROM SITE (APPROX.)	DIRECTION OF NEAREST LOCATION FROM SITE
	Footpath running between Rothwell Lodge & Wyatts Plantation	125 m	E
	Footpath running between Thorpe Malsor & Cransley Reservoir	1.38 km	SE
	Footpath running between Thorpe Malsor & Harrington Road	1.65 km	SE
	Footpath running between Loddington & Orton	1.83 km	SSW
	Footpaths running between Rothwell & Desborough	1.85 km	NNW
	Footpath running between Loddington & Great Cransley	1.88 km	SSW
Surface Water	Slade Brook	515 m	NNW
	Thorpe Malsor Reservoir (and associated streams)	525 m	SSE
	Pond adjacent to Wyatts Plantation	626 m	ESE
	Pond in Manor Park	1.03 km	NW
	Pond adjacent to A14/16 Junction	1.35 km	WNW
	Darwen Lake	1.56 km	WSW
	Pond in Thorpe Malsor	1.58 km	SE
	Two ponds at Grange Farm	1.65 km	NNW
	Cransley Reservoir (and associated streams)	1.73 km	S
Groundwater	Secondary A Aquifer though not within a Source Protection Zone	Beneath Site	Beneath Site
Protected nature conservation sites (SAC, SPA, SSSI, etc.)	Tailby Meadow - Local Nature Reserve	2.65 km	NNW
	Birch Spinney & Mawsley Marsh - SSSI	3.22 km	SSW
	River Ise & Meadows - SSSI	4.25 km	NE
	Alder Wood & Meadow - SSSI	4.52 km	NNE
	Pipewell Woods - SSSI	5.59 km	N
	Stoke & Bowd Lane Woods - SSSI	6.13 km	NNW
	Great Oakley Meadow - Local Nature Reserve	6.63 km	NNE
	Badsaddle, Withmale Park & Bush Walk Woods - SSSI	7.09 km	SSE
	Southfield Farm Marsh - SSSI	7.11 km	SE
	Kings Wood - Local Nature Reserve	7.85 km	NNE
	Geddington Chase - SSSI	8.91 km	NE
	Pitsford Reservoir - SSSI	9.19 km	SSW

RECEPTOR TYPE	DESCRIPTION	NEAREST LOCATION FROM SITE (APPROX.)	DIRECTION OF NEAREST LOCATION FROM SITE
	Hardwick Lodge Meadow - SSSI	9.55 km	SSE
Non-Designated (BAP) Sites	Deciduous Woodland (broadleaved)	190 m	W
	Deciduous Woodland (broadleaved)	455 m	NE
	Deciduous Woodland (broadleaved)	615 m	NE
	Deciduous Woodland (broadleaved)	720 m	SE
	Deciduous Woodland (broadleaved)	785 m	E
	Deciduous Woodland (broadleaved)	850 m	E
	Deciduous Woodland (broadleaved)	890 m	WNW
	Deciduous Woodland (broadleaved)	890 m	S
	Deciduous Woodland (broadleaved)	1.3 km	NNW
	Deciduous Woodland (broadleaved)	1.3 km	N
	Wood-Pasture & Parkland	1.4 km	SE
	Deciduous Woodland (broadleaved)	1.4 km	SE
	Deciduous Woodland (broadleaved)	1.4 km	NE
	Deciduous Woodland (broadleaved)	1.5 km	SSW
	Deciduous Woodland (broadleaved)	1.5 km	WSW
	Deciduous Woodland (broadleaved)	1.5 km	W
	Deciduous Woodland (broadleaved)	1.5 km	E
	Wood-Pasture & Parkland	1.7 km	SE
	Deciduous Woodland (broadleaved)	1.7 km	NE
	Deciduous Woodland (broadleaved)	1.8 km	ENE
Deciduous Woodland (broadleaved)	1.8 km	N	
Atmosphere	Atmosphere - The site is not in an Air Quality Management Area (AQMA)	Surrounding	Surrounding

3.3. Pathways

The pathway is the means by which the hazard reaches the receptor and forms the link between the two. For example, an odour hazard may reach a human receptor by travelling through air, with the air therefore being the pathway.

The source-pathway-receptor link must be present for there to be a risk. Management measures applied at the site may minimise the overall risk by impeding the pathway.

3.4. Assessment of Risk

Assessment of risk is based on the **probability** of receptor exposure to the identified hazards and the **consequences** of such exposure. **The initial assessment of risk is made assuming no risk management practices are applied.** A matrix is used to determine overall risk and uses the following definitions:

Table 3. Probability of Exposure

PROBABILITY OF EXPOSURE
HIGH – exposure is probable: direct exposure likely with no / few barriers between hazard source and receptor.
MEDIUM – exposure is fairly probable: feasible exposure possible, barriers to exposure less controllable.
LOW – exposure is unlikely: several barriers exist between hazards source and receptors to mitigate against exposure.
VERY LOW – exposure is very unlikely; effective, multiple barriers in place to mitigate against exposure.

Table 4. Consequences of Exposure

CONSEQUENCES OF EXPOSURE
HIGH – the consequences are severe: sufficient evidence that short or long-term exposure may result in serious damage
MEDIUM – consequences are significant; sufficient evidence that exposure to hazard may result in damage that is not severe in nature and reversible once exposure ceases (e.g. irritant).
LOW – consequences are minor; damage not apparent though reversible adverse changes may occur.
VERY LOW – consequences are negligible; no evidence of adverse changes following exposure.

Comparison between probability and consequence provides the **overall risk** which is reached as follows:

Table 5. Assessing Overall Risk

		CONSEQUENCES			
		Very Low	Low	Medium	High
PROBABILITY	High	Low	Medium	High	High
	Medium	Low	Medium	Medium	High
	Low	Low	Low	Medium	Medium
	Very Low	Very Low	Low	Low	Low

3.5. Risk Management

Risk management practices for the key hazards identified above are summarised in the tables presented below. The information presented below is supported by various documents and this is clearly indicated within each table presented. In addition, risk management measures have been developed with reference to several guidance documents, the following being of note:

- 'Risk assessments for your environmental permit'³
- Best Available Techniques (BAT) Reference Document for Waste Treatment⁴
- Sector Specific Guidance - Environment Agency
 - EPR 5.06 Guidance for the Recovery and Disposal of Hazardous and Non-Hazardous waste⁵
- Horizontal Guidance - Environment Agency
 - H4 Odour Management – how to comply with your environmental permit⁶
- Monitoring Technical Guidance Notes – Environment Agency
 - Monitoring stack emissions: measurement locations (formerly M1) (December 2022)
 - Monitoring of stack emissions: environmental permits, volatile organic compounds (VOCs) and methane (formerly M2 and M16) (February 2021)⁷
 - M8 – Monitoring ambient air (April 2014)
 - M17 - Monitoring of particulate matter in ambient air around waste facilities (April 2014)
- Groundwater Protection⁸ (previously GP3). Environment Agency.
- Environmental Permitting (England and Wales) Regulations 2016

³ [Risk assessments for your environmental permit - GOV.UK, 1st February 2016 \(updated 31st August 2022\)](#)

⁴ [Best available techniques \(BAT\) reference document for waste treatment – IED 2010/75/EU \(europa.eu\), 2018](#)

⁵ [Sector Guidance Note S5.06: recovery and disposal of hazardous and non-hazardous waste - GOV.UK \(www.gov.uk\) 13th May 2013 \(updated 10th October 2018\)](#)

⁶ [Environmental permitting: H4 odour management - GOV.UK \(www.gov.uk\) 4th April 2011](#)

⁷ [Monitoring stack emissions: environmental permits - GOV.UK \(www.gov.uk\)](#)

⁸ <https://www.gov.uk/government/collections/groundwater-protection>

3.6. Residual Risk

The **application of management practice results in a residual risk** which is detailed in Tables 6-13, presented in section 4 of this document.

4. RISK ASSESSMENT & MANAGEMENT PLAN

The key risk factors identified above for an anaerobic digestion facility have been subject to a broad and general risk assessment. Each hazard is assessed in a separate table. The information presented is, as appropriate, supported by the documents noted in 'Supporting Information' above.

A schematic overview of the anaerobic digestion process is illustrated by Appendix A.

Many of the hazards identified in the following tables relate to 'Environmental Risk Points (ERP)' identified throughout the anaerobic digestion process. Each ERP is shown in Figure 1 below.

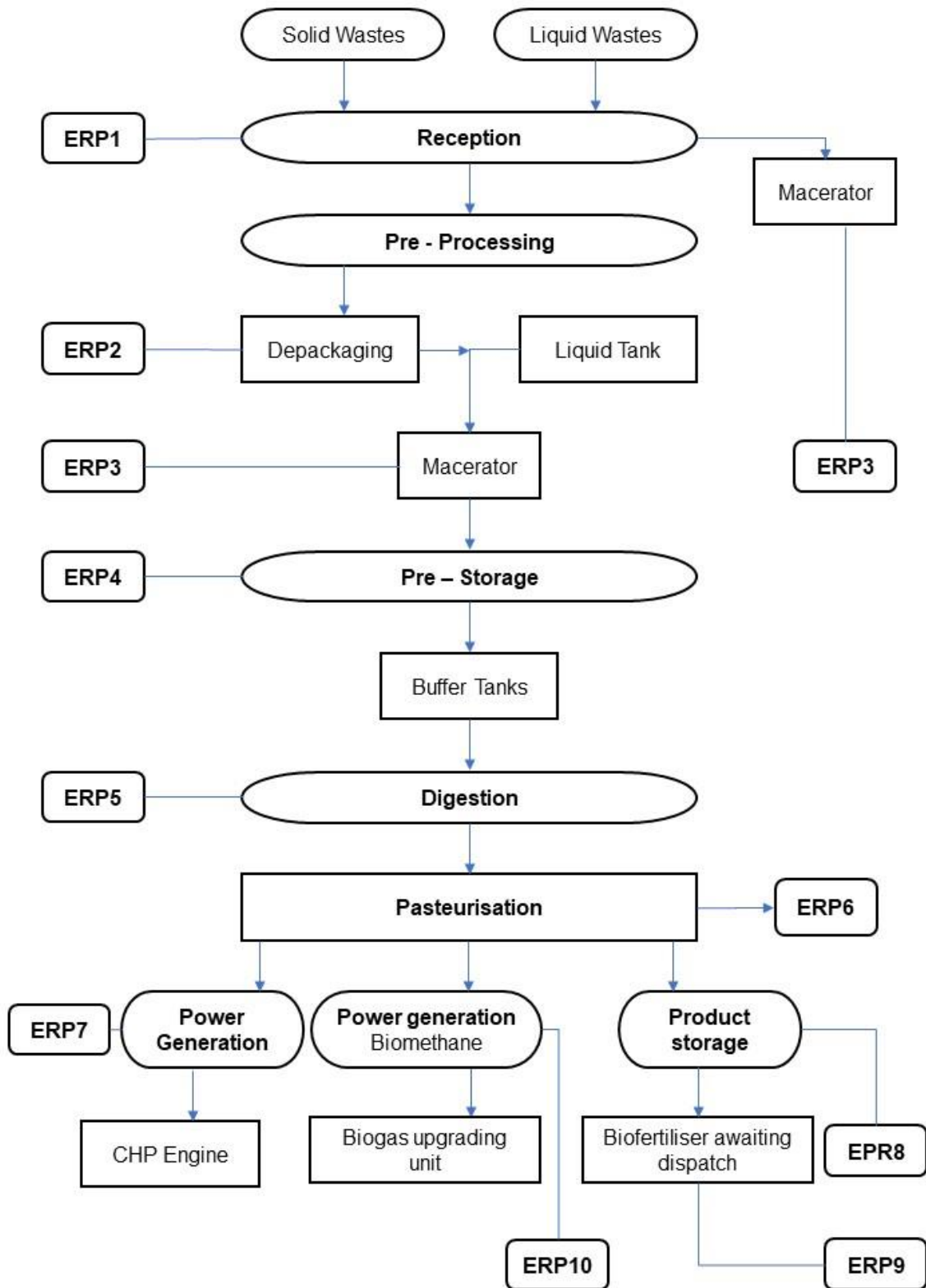


Figure 1. Environmental Risk Points

Table 6. Odour

IDENTIFYING THE HARM AND WHAT COULD BE HARMED			ASSESSING THE RISK			MANAGING THE RISK	
HAZARD	RECEPTOR	PATHWAY	PROBABILITY OF EXPOSURE	CONSEQUENCE	OVERALL RISK	RISK MANAGEMENT*	RESIDUAL RISK
<i>What has the potential to cause harm?</i>	<i>What is the risk? What do I wish to protect?</i>	<i>How can the hazard get to the receptor?</i>	<i>How likely is this contact?</i>	<i>What is the harm that can be caused?</i>	<i>What is the risk that still remains</i>	<i>What measures will you take to reduce the risk? If it occurs, who is responsible for what?</i>	<i>What risk remains following the application of management measures?</i>
ERP1 Reception (delivery of organic wastes into reception building and loading into hoppers)	Humans (Rothwell Lodge Farm <50 m, Rothwell 560 m northwest). <i>Odour annoyance.</i>	Air. Prevailing wind direction is southwest.	LOW	MEDIUM	MEDIUM	<ul style="list-style-type: none"> • Odour Management Plan (K114.1~09~013) • Pre-characterisation checks prior to receipt of waste (<i>SOP001 – Waste Reception and Acceptance</i>). • Reception area fully enclosed with rapid closing doors (<i>SOP002 – Waste Storage</i>). • Reception building odour abatement system upgraded to extraction and activated carbon filter to prevent odour emissions • Progressive emptying and regular cleaning of reception pits (<i>SOP004 – Feedstock Storage</i>). • Reception building has ionised air system kept under positive pressure for contact time (<i>SOP012 – Odour Control</i>). • Efficient and prompt unloading of delivery vehicles. • Efficient and prompt loading of hopper (<i>SOP003 – Pre-Digestion Processing</i>). 	LOW
ERP2 & ERP3			LOW	MEDIUM	MEDIUM		LOW

IDENTIFYING THE HARM AND WHAT COULD BE HARMED			ASSESSING THE RISK			MANAGING THE RISK	
HAZARD	RECEPTOR	PATHWAY	PROBABILITY OF EXPOSURE	CONSEQUENCE	OVERALL RISK	RISK MANAGEMENT*	RESIDUAL RISK
<i>What has the potential to cause harm?</i>	<i>What is the risk? What do I wish to protect?</i>	<i>How can the hazard get to the receptor?</i>	<i>How likely is this contact?</i>	<i>What is the harm that can be caused?</i>	<i>What is the risk that still remains</i>	<i>What measures will you take to reduce the risk? If it occurs, who is responsible for what?</i>	<i>What risk remains following the application of management measures?</i>
Separation / maceration (Organic wastes loaded into macerator, or where packaged via a depacking unit)						<ul style="list-style-type: none"> Storage of feedstock material is within sealed tanks (SOP004 – Feedstock Storage). Hydraulic mixing inhibits settlement of fibrous material (SOP004 – Feedstock Storage). Any emissions from the buffer and liquid tanks, which are sealed, are passed through a biofilter and then activated carbon filter to further remove H₂S and Volatile Organic Compounds (VOCs) before being exhausted to atmosphere via a new stack. Suction is created by the fans on the inlet side of the tanks. The size of the carbon filter vessel and carbon media required to achieve full treatment of odorous compounds, at the air change volume and velocity has been calculated and specified for the likely odorous compounds. Targeted compounds include fatty acids, amines and mercaptans. Olfactory monitoring is carried out three times per day by both site staff and weekly by staff not routinely based at the site. Any observations are 	
ERP4 Pre-storage (tanks holding liquid organic wastes awaiting digestion)			LOW	MEDIUM	MEDIUM		LOW

IDENTIFYING THE HARM AND WHAT COULD BE HARMED			ASSESSING THE RISK			MANAGING THE RISK	
HAZARD	RECEPTOR	PATHWAY	PROBABILITY OF EXPOSURE	CONSEQUENCE	OVERALL RISK	RISK MANAGEMENT*	RESIDUAL RISK
<i>What has the potential to cause harm?</i>	<i>What is the risk? What do I wish to protect?</i>	<i>How can the hazard get to the receptor?</i>	<i>How likely is this contact?</i>	<i>What is the harm that can be caused?</i>	<i>What is the risk that still remains</i>	<i>What measures will you take to reduce the risk? If it occurs, who is responsible for what?</i>	<i>What risk remains following the application of management measures?</i>
						recorded in the site diary and reported to the TCM (SOP012 – Odour Control). <ul style="list-style-type: none"> Monitoring of H₂S and NH₃ is conducted daily from the outlet of all tertiary abatement units (e.g. carbon filters) (SOP023 – Monitoring Output from Carbon Filters). Replacement carbon filters are kept in stock by the supplier to enable prompt replacement when necessary. This is likely to occur each 12 to 18 months but depends on waste types, climatic conditions and the odour concentration of the air. ADM Report (Ref: FM1316/R1/2021) concludes that for all sources, long-term average concentrations of NH₃ and H₂S are not screened out, but do not exceed the long-term EALs for either pollutant. At the sensitive receptor points, there are no exceedances of the long- or short-term EALs for NH₃, or the long-term EAL for H₂S. However, the short-term EAL for H₂S is exceeded at two of the residential receptors. Performance monitoring will be undertaken in accordance with Permit conditions and further odour modelling will be considered. 	

IDENTIFYING THE HARM AND WHAT COULD BE HARMED			ASSESSING THE RISK			MANAGING THE RISK	
HAZARD	RECEPTOR	PATHWAY	PROBABILITY OF EXPOSURE	CONSEQUENCE	OVERALL RISK	RISK MANAGEMENT*	RESIDUAL RISK
<i>What has the potential to cause harm?</i>	<i>What is the risk? What do I wish to protect?</i>	<i>How can the hazard get to the receptor?</i>	<i>How likely is this contact?</i>	<i>What is the harm that can be caused?</i>	<i>What is the risk that still remains</i>	<i>What measures will you take to reduce the risk? If it occurs, who is responsible for what?</i>	<i>What risk remains following the application of management measures?</i>
ERP5 Digestion (organic wastes subjected to anaerobic digestion, release of odorous biogas)			LOW	MEDIUM	MEDIUM	<ul style="list-style-type: none"> Digestion occurs within sealed tanks. Biogas generated by digestion is collected and stored in sealed tanks prior to utilisation to produce heat & power. Readings are taken daily. VFA action levels have been set to ensure that control measures can remain effective (<i>SOP015 – VFA Determination</i>). Excess biogas is burnt in the emergency flare under controlled conditions. Desulphurisation unit is operated as a second phase scrubbing unit. Gas quality data is monitored using the IT system, that automatically takes readings and if the level of H₂S is exceeded, it triggers an alarm system (<i>SOP010 – Process Control</i>). Carbon filter removes sulphide, siloxanes and Volatile Organic Compounds (VOCs) through absorption. 	LOW
ERP6 Pasteurisation			LOW	MEDIUM	MEDIUM	<ul style="list-style-type: none"> Gas quality data is monitored using the IT system, that automatically takes readings and if the level of 	LOW

IDENTIFYING THE HARM AND WHAT COULD BE HARMED			ASSESSING THE RISK			MANAGING THE RISK	
HAZARD	RECEPTOR	PATHWAY	PROBABILITY OF EXPOSURE	CONSEQUENCE	OVERALL RISK	RISK MANAGEMENT*	RESIDUAL RISK
<i>What has the potential to cause harm?</i>	<i>What is the risk? What do I wish to protect?</i>	<i>How can the hazard get to the receptor?</i>	<i>How likely is this contact?</i>	<i>What is the harm that can be caused?</i>	<i>What is the risk that still remains</i>	<i>What measures will you take to reduce the risk? If it occurs, who is responsible for what?</i>	<i>What risk remains following the application of management measures?</i>
						H ₂ S is exceeded, it triggers an alarm system (SOP010 – Process Control). <ul style="list-style-type: none"> Off gases will be directed into the digesters and there will be no point source emissions to air from the pasteurisation unit. Test points have been installed at strategic points to enable blockages to be identified and resolved swiftly (SOP021 – Site Checks). 	
ERP8 Biogas storage			LOW	MEDIUM	MEDIUM	<ul style="list-style-type: none"> Biogas is retained within a sealed system to the generating engines and to the emergency flare. Biogas is scrubbed through a desulphurisation unit prior to introduction to engines to minimise corrosion to the equipment. The desulphurisation plant serves to remove H₂S which in turn minimises odorous emissions. The combustion process in the engines and emergency flare further treats odours to minimise emissions. The emergency flare is specified to comply with emission limits set in Table S4.1 of the Environmental Permit. 	LOW

IDENTIFYING THE HARM AND WHAT COULD BE HARMED			ASSESSING THE RISK			MANAGING THE RISK	
HAZARD	RECEPTOR	PATHWAY	PROBABILITY OF EXPOSURE	CONSEQUENCE	OVERALL RISK	RISK MANAGEMENT*	RESIDUAL RISK
<i>What has the potential to cause harm?</i>	<i>What is the risk? What do I wish to protect?</i>	<i>How can the hazard get to the receptor?</i>	<i>How likely is this contact?</i>	<i>What is the harm that can be caused?</i>	<i>What is the risk that still remains</i>	<i>What measures will you take to reduce the risk? If it occurs, who is responsible for what?</i>	<i>What risk remains following the application of management measures?</i>
						<ul style="list-style-type: none"> Monitoring is conducted during daily odour checks by site management (SOP021 – Site Checks). 	
ERP9 Storage (storage of whole digestate)			LOW	MEDIUM	MEDIUM	<ul style="list-style-type: none"> Liquid digestate is stored in sealed tanks (SOP008 – Storage of Digestate). Collected by road tankers directly coupled to storage tank for loading product. 	LOW
ERP10 Generation of Biomethane (BUU)			LOW	MEDIUM	MEDIUM	<ul style="list-style-type: none"> Sealed system for treatment of biogas: removal of H₂S, VOCs and fine carbon particles Exchange of activated carbon filters and related maintenance Excess biogas is burnt in a dedicated emergency flare 	LOW

Table 7. Dust and Particulate Matter

IDENTIFYING THE HARM AND WHAT COULD BE HARMED			ASSESSING THE RISK			MANAGING THE RISK	
HAZARD	RECEPTOR	PATHWAY	PROBABILITY OF EXPOSURE	CONSEQUENCE	OVERALL RISK	RISK MANAGEMENT*	RESIDUAL RISK
<i>What has the potential to cause harm?</i>	<i>What is the risk? What do I wish to protect?</i>	<i>How can the hazard get to the receptor?</i>	<i>How likely is this contact?</i>	<i>What is the harm that can be caused?</i>	<i>What is the risk that still remains</i>	<i>What measures will you take to reduce the risk? If it occurs, who is responsible for what?</i>	<i>What risk remains following the application of management measures?</i>
ERP1 Reception (delivery of organic wastes into reception building and loading into hoppers)	Humans (Rothwell Lodge Farm <50 m, Rothwell 560 m northwest), users of vehicle filling station & restaurant (65 m north), Surrounding land (largely agricultural) and Highway users (A14). <i>Inhalation of</i>	Air Prevailing wind direction is southwest.	LOW	MEDIUM	MEDIUM	<ul style="list-style-type: none"> Reception area fully enclosed with rapid closing doors. Reception building odour abatement system upgraded to extraction and activated carbon filter to prevent fugitive emissions of dust and particulate matter. Efficient and prompt unloading of delivery vehicles. Efficient and prompt loading of hopper. Documented management system controls delivery and ensure carbon filters are appropriately maintained. 	LOW
ERP2 & ERP3 Separation/maceration (Organic wastes loaded into macerator, or where packaged via a depacking unit)			LOW	LOW	LOW		LOW
ERP4 Pre-storage (tanks holding liquid organic wastes awaiting digestion)			LOW	LOW	LOW		<ul style="list-style-type: none"> Storage of feedstock is within sealed tanks. Moisture content of stored material inhibits dust production.

IDENTIFYING THE HARM AND WHAT COULD BE HARMED			ASSESSING THE RISK			MANAGING THE RISK	
HAZARD	RECEPTOR	PATHWAY	PROBABILITY OF EXPOSURE	CONSEQUENCE	OVERALL RISK	RISK MANAGEMENT*	RESIDUAL RISK
<i>What has the potential to cause harm?</i>	<i>What is the risk? What do I wish to protect?</i>	<i>How can the hazard get to the receptor?</i>	<i>How likely is this contact?</i>	<i>What is the harm that can be caused?</i>	<i>What is the risk that still remains</i>	<i>What measures will you take to reduce the risk? If it occurs, who is responsible for what?</i>	<i>What risk remains following the application of management measures?</i>
ERP5 Digestion (organic wastes subjected to anaerobic digestion)	<i>particles deposition of dust/particles on property and land.</i>		LOW	LOW	LOW	<ul style="list-style-type: none"> Digestion occurs within sealed tanks. Material in process has high moisture content and unlikely to produce dust. 	LOW
ERP9 Storage (storage of digestate)			LOW	LOW	LOW	<ul style="list-style-type: none"> Whole digestate unlikely to produce dusts. Digestate stored within sealed system. Malodorous digestate will be returned through the digestion process. 	LOW
ERP10 Generation of Biomethane (Operation of BUU)			LOW	LOW	LOW	<ul style="list-style-type: none"> Sealed plant, no dust or particulate matter released. 	LOW

IDENTIFYING THE HARM AND WHAT COULD BE HARMED			ASSESSING THE RISK			MANAGING THE RISK	
HAZARD	RECEPTOR	PATHWAY	PROBABILITY OF EXPOSURE	CONSEQUENCE	OVERALL RISK	RISK MANAGEMENT*	RESIDUAL RISK
<i>What has the potential to cause harm?</i>	<i>What is the risk? What do I wish to protect?</i>	<i>How can the hazard get to the receptor?</i>	<i>How likely is this contact?</i>	<i>What is the harm that can be caused?</i>	<i>What is the risk that still remains</i>	<i>What measures will you take to reduce the risk? If it occurs, who is responsible for what?</i>	<i>What risk remains following the application of management measures?</i>
Vehicle Movements			MEDIUM	MEDIUM	MEDIUM	<ul style="list-style-type: none"> • Additional dust suppression measures available as required. • All external areas will be subject to regular housekeeping. 	LOW

Table 8. Bio-Aerosols & Fugitive Gases

IDENTIFYING THE HARM AND WHAT COULD BE HARMED			ASSESSING THE RISK			MANAGING THE RISK	
HAZARD	RECEPTOR	PATHWAY	PROBABILITY OF EXPOSURE	CONSEQUENCE	OVERALL RISK	RISK MANAGEMENT*	RESIDUAL RISK
<i>What has the potential to cause harm?</i>	<i>What is the risk? What do I wish to protect?</i>	<i>How can the hazard get to the receptor?</i>	<i>How likely is this contact?</i>	<i>What is the harm that can be caused?</i>	<i>What is the risk that still remains</i>	<i>What measures will you take to reduce the risk? If it occurs, who is responsible for what?</i>	<i>What risk remains following the application of management measures?</i>
ERP1 Reception (delivery of organic wastes into reception building and loading into hoppers)	Humans (Rothwell Lodge Farm <50 m, Rothwell 560 m northwest), users of vehicle filling station & restaurant (65 m north) <i>Respiratory problems and illness.</i>	Air Prevailing wind direction is southwest	MEDIUM	MEDIUM	MEDIUM	<ul style="list-style-type: none"> Reception area fully enclosed with rapid closing doors. Reception building extraction and filtration system prevents the release of bio-aerosols. Efficient and prompt unloading of delivery vehicles. Efficient and prompt loading of hoppers. Documented management system controls delivery and ensure carbon filters are appropriately maintained. 	LOW
ERP2 & ERP3 Separation/maceration (Organic wastes loaded into macerator, or where packaged via a depacking unit)			LOW	MEDIUM	MEDIUM		LOW
ERP4 Pre-storage (tanks holding liquid organic wastes awaiting digestion)			LOW	MEDIUM	MEDIUM		LOW

IDENTIFYING THE HARM AND WHAT COULD BE HARMED			ASSESSING THE RISK			MANAGING THE RISK	
HAZARD	RECEPTOR	PATHWAY	PROBABILITY OF EXPOSURE	CONSEQUENCE	OVERALL RISK	RISK MANAGEMENT*	RESIDUAL RISK
<i>What has the potential to cause harm?</i>	<i>What is the risk? What do I wish to protect?</i>	<i>How can the hazard get to the receptor?</i>	<i>How likely is this contact?</i>	<i>What is the harm that can be caused?</i>	<i>What is the risk that still remains</i>	<i>What measures will you take to reduce the risk? If it occurs, who is responsible for what?</i>	<i>What risk remains following the application of management measures?</i>
ERP5 Digestion (organic wastes subjected to anaerobic digestion, release of odorous biogas)			LOW	MEDIUM	MEDIUM	<ul style="list-style-type: none"> Digestion occurs within sealed tanks. Material in process has high moisture content and unlikely to produce bio-aerosols. 	LOW
ERP9 Storage (storage of whole digestate)			LOW	MEDIUM	MEDIUM	<ul style="list-style-type: none"> Whole digestate unlikely to liberate bio-aerosols. 	LOW
ERP10 Generation of Biomethane (Operation of BUU)	+ Protected Nature Conservation Sites Atmosphere (Global Warming)		LOW	MEDIUM	MEDIUM	<ul style="list-style-type: none"> Enclosed system to clean biogas and feed biomethane to the grid system. Stack 1 (~10m high) venting treated stream to atmosphere. A series of activated carbon media and polymer membranes are installed to remove polluting substances (H₂S, VOCs, NH₃, particulate, CO₂). The plant is operated in accordance with manufacturer's instructions and subject to regular maintenance. 	LOW

IDENTIFYING THE HARM AND WHAT COULD BE HARMED			ASSESSING THE RISK			MANAGING THE RISK	
HAZARD	RECEPTOR	PATHWAY	PROBABILITY OF EXPOSURE	CONSEQUENCE	OVERALL RISK	RISK MANAGEMENT*	RESIDUAL RISK
<i>What has the potential to cause harm?</i>	<i>What is the risk? What do I wish to protect?</i>	<i>How can the hazard get to the receptor?</i>	<i>How likely is this contact?</i>	<i>What is the harm that can be caused?</i>	<i>What is the risk that still remains</i>	<i>What measures will you take to reduce the risk? If it occurs, who is responsible for what?</i>	<i>What risk remains following the application of management measures?</i>
						<ul style="list-style-type: none"> Air impact screening indicates insignificant impact from H₂S, NH₃ and VOCs. Continuous monitoring for H₂S, NH₃. 	

Table 9. Water Quality

IDENTIFYING THE HARM AND WHAT COULD BE HARMED			ASSESSING THE RISK			MANAGING THE RISK	
HAZARD	RECEPTOR	PATHWAY	PROBABILITY OF EXPOSURE	CONSEQUENCE	OVERALL RISK	RISK MANAGEMENT*	RESIDUAL RISK
<i>What has the potential to cause harm?</i>	<i>What is the risk? What do I wish to protect?</i>	<i>How can the hazard get to the receptor?</i>	<i>How likely is this contact?</i>	<i>What is the harm that can be caused?</i>	<i>What is the risk that still remains</i>	<i>What measures will you take to reduce the risk? If it occurs, who is responsible for what?</i>	<i>What risk remains following the application of management measures?</i>
ERP1 Reception (delivery of organic wastes into reception building and loading into hoppers)	Groundwater & Surface Water (nearest water course Slade Brook 515 m north, Trib. to Slade Brook 580 m west & Thorpe Malsor reservoir 525 m southwest; over a Minor Aquifer but not within SPZ).	Through the ground or direct run-off to surface waters.	LOW	MEDIUM	MEDIUM	<ul style="list-style-type: none"> All reception and pre-processing activities undertaken over impermeable surfaces. Internal areas drain to sealed drainage system (<i>SOP024 – Surface Water Management in Containment Area</i>). All external surface water directed to soakaway via Class 1 bypass separator (<i>SOP021 – Site Checks</i>). 	LOW
ERP2 & ERP3 Separation/maceration (Organic wastes loaded into macerator, or where packaged via a depacking unit)			LOW	MEDIUM	MEDIUM		LOW
ERP4 Pre-storage (tanks holding liquid organic wastes awaiting digestion)			LOW	MEDIUM	MEDIUM	<ul style="list-style-type: none"> Feedstock held within sealed tanks. Tanks constructed on concrete slab. Tanks within bunded area with a capacity of 5,500 m³ (110% of largest tank). 	LOW
ERP5			LOW	MEDIUM	MEDIUM		LOW

IDENTIFYING THE HARM AND WHAT COULD BE HARMED			ASSESSING THE RISK			MANAGING THE RISK	
HAZARD	RECEPTOR	PATHWAY	PROBABILITY OF EXPOSURE	CONSEQUENCE	OVERALL RISK	RISK MANAGEMENT*	RESIDUAL RISK
<i>What has the potential to cause harm?</i>	<i>What is the risk? What do I wish to protect?</i>	<i>How can the hazard get to the receptor?</i>	<i>How likely is this contact?</i>	<i>What is the harm that can be caused?</i>	<i>What is the risk that still remains</i>	<i>What measures will you take to reduce the risk? If it occurs, who is responsible for what?</i>	<i>What risk remains following the application of management measures?</i>
Digestion (organic wastes subjected to anaerobic digestion)	<i>Deterioration of water quality.</i>					<ul style="list-style-type: none"> Recirculation of contaminated water back through process or disposal at suitable permitted facility if required. Float switch alarm system indicates significant leaks, and triggers closure of motorised sluice gates to prevent uncontrolled discharge (<i>SOP010 – Process Control</i>). 	
ERP9 Storage (storage of whole digestate)			LOW	MEDIUM	MEDIUM		LOW
ERP8 Generation of Biomethane (BUU)			LOW	MEDIUM	MEDIUM		LOW
Vehicle Movements			LOW	MEDIUM	MEDIUM		LOW

Table 10. Noise

IDENTIFYING THE HARM AND WHAT COULD BE HARMED			ASSESSING THE RISK			MANAGING THE RISK	
HAZARD	RECEPTOR	PATHWAY	PROBABILITY OF EXPOSURE	CONSEQUENCE	OVERALL RISK	RISK MANAGEMENT*	RESIDUAL RISK
<i>What has the potential to cause harm?</i>	<i>What is the risk? What do I wish to protect?</i>	<i>How can the hazard get to the receptor?</i>	<i>How likely is this contact?</i>	<i>What is the harm that can be caused?</i>	<i>What is the risk that still remains</i>	<i>What measures will you take to reduce the risk? If it occurs, who is responsible for what?</i>	<i>What risk remains following the application of management measures?</i>
Internal Mobile Site Machinery (loading shovels)	Humans (Rothwell Lodge Farm <50 m, Rothwell 560 m northwest), users of vehicle filling station & restaurant (65 m north)	Air	LOW	MEDIUM	MEDIUM	<ul style="list-style-type: none"> • Activity conducted indoors. • Reception area fully enclosed with rapid closing doors. • All machinery and equipment will be fitted with noise reduction devices as appropriate. • Machinery will be operated in accordance with manufacturer’s instructions and subject to regular maintenance. • Limits on operational hours. • Recent Noise Impact Assessment (ref: EC17694-2, October 2020) confirms that noise is not an issue. 	LOW

IDENTIFYING THE HARM AND WHAT COULD BE HARMED			ASSESSING THE RISK			MANAGING THE RISK	
HAZARD	RECEPTOR	PATHWAY	PROBABILITY OF EXPOSURE	CONSEQUENCE	OVERALL RISK	RISK MANAGEMENT*	RESIDUAL RISK
<i>What has the potential to cause harm?</i>	<i>What is the risk? What do I wish to protect?</i>	<i>How can the hazard get to the receptor?</i>	<i>How likely is this contact?</i>	<i>What is the harm that can be caused?</i>	<i>What is the risk that still remains</i>	<i>What measures will you take to reduce the risk? If it occurs, who is responsible for what?</i>	<i>What risk remains following the application of management measures?</i>
External Mobile Site Machinery (loading shovel)	Noise annoyance (e.g. sleep deprivation and associated health issues and loss of amenity).		MEDIUM	MEDIUM	MEDIUM	<ul style="list-style-type: none"> All machinery and equipment will be fitted with noise reduction devices as appropriate. White noise reversing alarms used where necessary. Machinery will be operated in accordance with manufacturer’s instructions and subject to regular maintenance. Operation of external vehicles & equipment is limited to normal daytime hours associated with industrial use. 	LOW
ERP2, 3, 5, 7 Process machinery (Separators, macerators, pasteurizer, agitators, pumps, desulphuriser, ventilation equipment, CHP engine, flare)			MEDIUM	MEDIUM	MEDIUM	<ul style="list-style-type: none"> Process machinery contained with building and tanks. Plant operated in accordance with manufacturer's instructions and subject to regular maintenance. Building designed to provide acoustic attenuation. Equipment with greater potential noise source located within built enclosures sited away from sensitive receptor. 	LOW

IDENTIFYING THE HARM AND WHAT COULD BE HARMED			ASSESSING THE RISK			MANAGING THE RISK	
HAZARD	RECEPTOR	PATHWAY	PROBABILITY OF EXPOSURE	CONSEQUENCE	OVERALL RISK	RISK MANAGEMENT*	RESIDUAL RISK
<i>What has the potential to cause harm?</i>	<i>What is the risk? What do I wish to protect?</i>	<i>How can the hazard get to the receptor?</i>	<i>How likely is this contact?</i>	<i>What is the harm that can be caused?</i>	<i>What is the risk that still remains</i>	<i>What measures will you take to reduce the risk? If it occurs, who is responsible for what?</i>	<i>What risk remains following the application of management measures?</i>
Delivery and Collection Vehicles (including use of weighbridge & wheel wash)			MEDIUM	MEDIUM	MEDIUM	<ul style="list-style-type: none"> Enforced site speed limit. Deliveries & collections are limited to normal daytime hours associated with industrial use. Landscaping of site incorporates bunds which aid noise attenuation. 	LOW
ERP10 Generation of Biomethane (Operation of BUU) (noise generating components: chiller, maproblower, Air inlet filters for Compressor)			LOW	MEDIUM	MEDIUM	<ul style="list-style-type: none"> Acoustic panel screen installation around the chiller and blower. Blower housed within the Mapro casing. Acoustic panel shrouds installed around the compressor air inlet filters. 	LOW

Table 11. Litter and Debris

IDENTIFYING THE HARM AND WHAT COULD BE HARMED			ASSESSING THE RISK			MANAGING THE RISK	
HAZARD	RECEPTOR	PATHWAY	PROBABILITY OF EXPOSURE	CONSEQUENCE	OVERALL RISK	RISK MANAGEMENT*	RESIDUAL RISK
<i>What has the potential to cause harm?</i>	<i>What is the risk? What do I wish to protect?</i>	<i>How can the hazard get to the receptor?</i>	<i>How likely is this contact?</i>	<i>What is the harm that can be caused?</i>	<i>What is the risk that still remains</i>	<i>What measures will you take to reduce the risk? If it occurs, who is responsible for what?</i>	<i>What risk remains following the application of management measures?</i>
ERP1 Reception (delivery of organic wastes into reception building, some wastes may be delivered within packaging)	Humans, property (Rothwell Lodge Farm <50 m, Rothwell 560 m northwest), users of vehicle filling station & restaurant (65 m north)	Air (windblown); physical transport and deposition	LOW	LOW	LOW	<ul style="list-style-type: none"> Wastes received unlikely to contain loose litter and other light fractions. All reception and sorting activities conducted indoors. Reception area fully enclosed with rapid closing doors. Controlled discharge of loads. Packaging removed by the depackaging unit and collected in bins or bags for collection and removal off-site. 	LOW
ERP2 & ERP3 Separation/maceration (Organic wastes loaded into macerator, or where packaged via a depackaging unit)			LOW	LOW	LOW		LOW
ERP4 Pre-storage (tanks holding liquid organic wastes awaiting digestion)			<i>Litter nuisance.</i>	LOW	LOW	LOW	<ul style="list-style-type: none"> Digestion process is fully enclosed.

IDENTIFYING THE HARM AND WHAT COULD BE HARMED			ASSESSING THE RISK			MANAGING THE RISK	
HAZARD	RECEPTOR	PATHWAY	PROBABILITY OF EXPOSURE	CONSEQUENCE	OVERALL RISK	RISK MANAGEMENT*	RESIDUAL RISK
<i>What has the potential to cause harm?</i>	<i>What is the risk? What do I wish to protect?</i>	<i>How can the hazard get to the receptor?</i>	<i>How likely is this contact?</i>	<i>What is the harm that can be caused?</i>	<i>What is the risk that still remains</i>	<i>What measures will you take to reduce the risk? If it occurs, who is responsible for what?</i>	<i>What risk remains following the application of management measures?</i>
ERP5 Digestion (organic wastes subjected to anaerobic digestion)			LOW	LOW	LOW		LOW
ERP9 Storage (storage of digestate)			LOW	LOW	LOW	<ul style="list-style-type: none"> Liquid digestate held in tanks and discharge directly into tankers for use off site. 	LOW
ERP10 Generation of Biomethane (BUU)			LOW	LOW	LOW	<ul style="list-style-type: none"> Enclosed system of equipment to clean biogas 	LOW
Vehicle Movements			LOW	LOW	LOW	<ul style="list-style-type: none"> Vehicles bringing materials to site will be covered; Incoming materials will be discharged directly into reception building; Vehicles removing solid digestate from the site will be covered. 	LOW

Table 12. Birds, Vermin and Insects

IDENTIFYING THE HARM AND WHAT COULD BE HARMED			ASSESSING THE RISK			MANAGING THE RISK	
HAZARD	RECEPTOR	PATHWAY	PROBABILITY OF EXPOSURE	CONSEQUENCE	OVERALL RISK	RISK MANAGEMENT*	RESIDUAL RISK
<i>What has the potential to cause harm?</i>	<i>What is the risk? What do I wish to protect?</i>	<i>How can the hazard get to the receptor?</i>	<i>How likely is this contact?</i>	<i>What is the harm that can be caused?</i>	<i>What is the risk that still remains</i>	<i>What measures will you take to reduce the risk? If it occurs, who is responsible for what?</i>	<i>What risk remains following the application of management measures?</i>
ERP1 Reception (delivery of organic wastes into reception building and loading into hoppers)	Humans (Rothwell Lodge Farm <50 m, Rothwell 560 m northwest), users of vehicle filling station & restaurant (65 m north), Surrounding land (largely agricultural) and	Land, air, water	LOW	MEDIUM	MEDIUM	<ul style="list-style-type: none"> • Reception area fully enclosed. • Efficient and prompt unloading of delivery vehicles. • Frequent inspection of operational areas. • Appropriate use of insecticides/bait stations, etc. as necessary. • Contract with pest controller/contractor as necessary. 	LOW
ERP2 & ERP3 Separation/maceration (Organic wastes loaded into macerator, or where packaged via a depacking unit)			LOW	MEDIUM	MEDIUM		LOW
ERP4 Pre-storage (tanks holding liquid organic wastes awaiting digestion)			LOW	MEDIUM	MEDIUM		LOW
ERP5	LOW		MEDIUM	MEDIUM	LOW		

IDENTIFYING THE HARM AND WHAT COULD BE HARMED			ASSESSING THE RISK			MANAGING THE RISK	
HAZARD	RECEPTOR	PATHWAY	PROBABILITY OF EXPOSURE	CONSEQUENCE	OVERALL RISK	RISK MANAGEMENT*	RESIDUAL RISK
<i>What has the potential to cause harm?</i>	<i>What is the risk? What do I wish to protect?</i>	<i>How can the hazard get to the receptor?</i>	<i>How likely is this contact?</i>	<i>What is the harm that can be caused?</i>	<i>What is the risk that still remains</i>	<i>What measures will you take to reduce the risk? If it occurs, who is responsible for what?</i>	<i>What risk remains following the application of management measures?</i>
Digestion (organic wastes subjected to anaerobic digestion)	Highway users (A14). <i>Amenity impact and impact on human health.</i>						
ERP9 Storage (storage of digestate)			LOW	MEDIUM	MEDIUM	<ul style="list-style-type: none"> Liquid digestate stored in sealed tanks. Pest treatment to be conducted routinely when materials being stored 	LOW
ERP8 Generation of Biomethane (BUU)			LOW	MEDIUM	MEDIUM	<ul style="list-style-type: none"> Enclosed system to clean biogas and feed biomethane to the grid system. Stack ~10m high venting treated stream. 	LOW
Vehicle Movements			LOW	MEDIUM	MEDIUM	<ul style="list-style-type: none"> Delivery vehicles may contain waste that is attractive to pests; all vehicles will be covered, delivery and offloading undertaken within the reception building. 	LOW

Table 13. Fire and Explosion

IDENTIFYING THE HARM AND WHAT COULD BE HARMED			ASSESSING THE RISK			MANAGING THE RISK	
HAZARD	RECEPTOR	PATHWAY	PROBABILITY OF EXPOSURE	CONSEQUENCE	OVERALL RISK	RISK MANAGEMENT*	RESIDUAL RISK
<i>What has the potential to cause harm?</i>	<i>What is the risk? What do I wish to protect?</i>	<i>How can the hazard get to the receptor?</i>	<i>How likely is this contact?</i>	<i>What is the harm that can be caused?</i>	<i>What is the risk that still remains</i>	<i>What measures will you take to reduce the risk? If it occurs, who is responsible for what?</i>	<i>What risk remains following the application of management measures?</i>
ERP1 Reception (delivery of organic wastes into reception building and loading into hoppers)	Humans (Rothwell Lodge Farm <50 m, Rothwell 560 m northwest), users of vehicle filling station & restaurant (65 m north),	Spread through physical contact; fanned by winds	LOW	MEDIUM	MEDIUM	<ul style="list-style-type: none"> Accident Management Plan (K114.1~11~002) Delivery vehicles monitored by staff, unlikely to contain sources of ignition. 	LOW
ERP2 & ERP3 Separation/maceration (Organic wastes loaded into macerator, or where packaged via a depacking unit)			LOW	MEDIUM	MEDIUM	<ul style="list-style-type: none"> Process intrinsically safe; moisture content of waste reduces risk of ignition. 	LOW
ERP4 Pre-storage (tanks holding liquid organic wastes awaiting digestion)			Surrounding land (largely agricultural)	LOW	MEDIUM	MEDIUM	<ul style="list-style-type: none"> Materials in liquid/sludge form, unlikely to provide source of ignition or combustion.

IDENTIFYING THE HARM AND WHAT COULD BE HARMED			ASSESSING THE RISK			MANAGING THE RISK	
HAZARD	RECEPTOR	PATHWAY	PROBABILITY OF EXPOSURE	CONSEQUENCE	OVERALL RISK	RISK MANAGEMENT*	RESIDUAL RISK
<i>What has the potential to cause harm?</i>	<i>What is the risk? What do I wish to protect?</i>	<i>How can the hazard get to the receptor?</i>	<i>How likely is this contact?</i>	<i>What is the harm that can be caused?</i>	<i>What is the risk that still remains</i>	<i>What measures will you take to reduce the risk? If it occurs, who is responsible for what?</i>	<i>What risk remains following the application of management measures?</i>
ERP6 Digestion (organic wastes subjected to anaerobic digestion, process involves elevated temperatures)	and Highway users (A14)		LOW	MEDIUM	MEDIUM	<ul style="list-style-type: none"> Biogas generated by digestion process may provide combustion source – process controlled by telemetric system and stored within engineered tanks designed for the specific purpose. 	LOW
ERP9 Storage (storage of digestate)	<i>Loss of life and property destruction loss of amenity.</i>		LOW	MEDIUM	MEDIUM	<ul style="list-style-type: none"> Whole digestate stored away from main process building and does not provide a combustible material to sustain fire. 	LOW
ERP10 Generation of Biomethane (BUU)			LOW	HIGH	MEDIUM	<ul style="list-style-type: none"> Enclosed system to clean biogas and feed biomethane to the grid system. The plant is operated in accordance with manufacturer’s instructions and subject to regular maintenance. 	LOW

IDENTIFYING THE HARM AND WHAT COULD BE HARMED			ASSESSING THE RISK			MANAGING THE RISK	
HAZARD	RECEPTOR	PATHWAY	PROBABILITY OF EXPOSURE	CONSEQUENCE	OVERALL RISK	RISK MANAGEMENT*	RESIDUAL RISK
<i>What has the potential to cause harm?</i>	<i>What is the risk? What do I wish to protect?</i>	<i>How can the hazard get to the receptor?</i>	<i>How likely is this contact?</i>	<i>What is the harm that can be caused?</i>	<i>What is the risk that still remains</i>	<i>What measures will you take to reduce the risk? If it occurs, who is responsible for what?</i>	<i>What risk remains following the application of management measures?</i>
Fuel and substance spillage (flammable substances presenting fire risk)			LOW	MEDIUM	MEDIUM	<ul style="list-style-type: none"> Fuels stored in secure tanks, double skinned and bunded with 110% capacity. Spill kits available and easily accessible. Secure storage of any hazardous substances necessary for site operation. DSEAR Risk Assessment (ref: P100399-1087, March 2016) and zoning plan ensures safe storage of fuels and biogas and flare usage. 	LOW
Hot works (welding or cutting)			LOW	MEDIUM	MEDIUM	<ul style="list-style-type: none"> Hot works are undertaken by specialist contractors in accordance with a permit to work system. Fire mitigation equipment will be available at the location where hot works are being undertaken. 	LOW
Arson or vandalism			LOW	MEDIUM	MEDIUM	<ul style="list-style-type: none"> Site is secured by fencing, bunds and CCTV. Site is located in a remote location on a no through road. There is no pedestrian access to the site. 	LOW

IDENTIFYING THE HARM AND WHAT COULD BE HARMED			ASSESSING THE RISK			MANAGING THE RISK	
HAZARD	RECEPTOR	PATHWAY	PROBABILITY OF EXPOSURE	CONSEQUENCE	OVERALL RISK	RISK MANAGEMENT*	RESIDUAL RISK
<i>What has the potential to cause harm?</i>	<i>What is the risk? What do I wish to protect?</i>	<i>How can the hazard get to the receptor?</i>	<i>How likely is this contact?</i>	<i>What is the harm that can be caused?</i>	<i>What is the risk that still remains</i>	<i>What measures will you take to reduce the risk? If it occurs, who is responsible for what?</i>	<i>What risk remains following the application of management measures?</i>
Plant or equipment failure			LOW	MEDIUM	MEDIUM	<ul style="list-style-type: none"> Fully automated AD process with constant monitoring and alarm system. All plant and equipment is subject to regular maintenance and inspection in accordance with manufacturers guidelines. Nature of the material stored within the site is not combustible. 	LOW
Hot exhausts			LOW	MEDIUM	MEDIUM	<ul style="list-style-type: none"> All site plant is subject to an evening shut down procedure. Stored away from the main AD process. 	LOW



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