Accident Management Plan

Home Farm Grange

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Acronyms and Abbreviations

Name	Description
AD	Anaerobic Digestion
AMP	Accident Management Plan
CHP	Combined Heat and Power
EA	Environment Agency
EMS	Environmental Management System

1. INTRODUCTION

This document has been prepared by Sol Environment Ltd on the behalf of Engie Renewable Gases UK Ltd (hereafter referred to as "Engie") in support of a bespoke permit application to permit the operation of an Anaerobic Digestion (AD) facility under *The Environmental Permitting (England and Wales) Regulations 2016 (as amended)* at their proposed site on land east of A162, Low Farm, South Milford, Sherburn in Elmet, LS25 6FW.

The proposed development comprises the following:

- Silage Clamps;
- Feedstock Reception Building;
- Feeders;
- Liquid Feed Tanks;
- 1 x Digestion Tank;
- 2 x Post Digesters;
- Biogas Upgrading Plant;
- Two Natural Gas Gensets;
- 1 x backup diesel generator;
- A digestate storage lagoon;
- Grid Connection infrastructure;
- CO2 Building;
- Separator Building;
- Bund (4m in height surrounding tank area);
- Other ancillary infrastructure.

This document represents the Accident Management Plan (AMP) submitted as part of the Application package to the Environment Agency (EA). This AMP has been produced in accordance with EA guidance Document '*How to comply with your Environmental Permit (EPR 1.00*)'.

It is stipulated under this guidance document that the Accident Management Plan fulfils the following four key requirements:

- Identifies events or failures that could damage the environment;
- Assesses how likely they are to happen and the potential environmental consequences;
- Actions to minimise the potential causes and consequences of accidents; and
- The actions that are required to be carried out if an accident happens.

This Accident Management Plan will be implemented and maintained at the site as part of the Engie's Environmental Management System (EMS) and will ensure the site and all operatives within are fully prepared for such incidents.

The AMP and all associated procedures will be reviewed at least every four years or as soon as practicable after an incident, with changes made accordingly to minimise the risk of occurrence/recurrence.

Please note, this AMP relates solely to environmental risks and is not focused on health and safety. The site has been appropriately designed to DSAER and HAZOP requirements, with additional Incident Management Procedures in place to deal with the health and safety aspects of any onsite incidents or accidents.

2. RISK MAGNITUDE ESTIMATORS

The AMP (**Table 3.1** overleaf) has adopted a risk assessment approach to each potential hazard 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[1] 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**: Possible irreparable damage to environmental resources;
- **Moderate**: Possible damage to environmental resources which are limited within a regional context;
- **Mild**: Possible effects might be transient damage to environmental resources which are commonplace on a regional basis and alternative sources are readily available;
- **Negligible**: The effects are negligible or might cause very slight temporary deterioration in the current environmental resource quality.

The matrix shown below, in **Table 2.1**, 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.

Table 2.1 - Risk Estimator Matrix

Probability of potential risk	Magnitude of Potential Impacts			
	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 qualitative risk assessment for the Accident Management Plan 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

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

3. ACCIDENT MANAGEMENT PLAN

Table 3.1 - Accident Management Plan

Accident Scenario	Probability of Accident Occurring	Magnitude of Potential Impact	Risk Rating before mitigation	Risk Management	Residual Risk Rating (following mitigation)
Spills and leaks / loss of containment / transfer of substances / overfilling of vessels	Medium	Moderate to Severe Spillage and leakage could occur during feedstock deliveries, feedstock transfers/tank chemical reactions. Other incidents could involve vehicle refuelling, vehicle breakdowns/ accidents and or damage to tanks or bunds. Loss of containment could result in potentially polluting materials (including oils and chemicals) being discharged in surface water drainage systems and to controlled waters.	Medium to High	▪ All infrastructure on site will be new and constructed to high standards. All tanks, reactors and pipework will met the relevant BAT guidance, ensuring risk of leakage during its guaranteed lifespan low. ▪ Tanks are to be inspected visually on a daily basis by site staff to ensure continued integrity of tanks, and identify any necessary remedial action; ▪ All tanks provide appropriate primary containment and are fitted with leak detection. ▪ Electronic monitoring (i.e. level gauges, feedback loops etc) is installed on all vessels; ▪ The plant has been designed to include an automated alarm system in the event that any tanks are approaching overfilling; ▪ A sealed drainage and containment system for all tanks containing potentially polluting liquids has been constructed so that any leaks / spills are contained; ▪ All external delivery areas are contained within a sealed drainage and containment system that incorporates bund walls, appropriate falls and drains; ▪ Secondary containment onsite is in line with CIRIA 736 and proporationate to the risk posed by leachate / digestate and includes bunding on the western, southern and eastern boundary will prevent fugitive runoff to the environment. ▪ Testing of all planned discharges to Mill Dike will be carried out to ensure that all surface water discharged is clean and uncontaminated. ▪ The digestate lagoon will be appropriately engineered, constructed, lined and managed with freeboard maintained, cover in place and leak detection present. ▪ The site EMS incorporates an Emergency Spill Procedure and spill kits are located around site.	**Low**

				▪ Minor spills to be cleaned up immediately, using sand or proprietary absorbent. Resultant materials to be placed in container for off-site disposal to appropriate facility, if necessary; ▪ Immediate action to be taken in event of major spill which is likely to cause polluting emissions to the environment to prevent liquid from entering surface water drains or any adjacent unsurfaced ground. Spillage to be cleared immediately and placed in containers for offsite disposal. EA to be informed.	
Vandalism	Medium	Moderate The site could be subject to intentional vandalism and damage by intruders/trespassers who could cause damage or harm to the plant and equipment, spills and leaks to tanks.	Medium	▪ On-site security measures are in place and implemented on site to prevent acts of vandalism that may result in damage or harm to the site. ▪ Security lighting is operational on site. ▪ Security cameras and intruder alarms are installed at key areas of the site. ▪ Control building is secured with a burglar alarm. ▪ The operational areas of the site will be fully secured with 2.4m high steel paladin-type perimeter fencing and controlled access points. ▪ Staff work onsite 24/7 so will present a deterrent to potential intruders. ▪ Gates and fencing are inspected daily by operations staff to identify deterioration and damage and the need for repair; ▪ Fencing and gates are maintained and repaired as needed to ensure their continued integrity. If damage is sustained, repair will be made within the same working day. If this is not possible, suitable measures will be taken to prevent unauthorised access to the site and permanent repairs will be affected as soon as is practicable; ▪ All visitors to the site operational areas are required to register in the visitor's book and sign out again on exit, thereby minimising the risk of unauthorised visitors on the site; and ▪ Operational procedures will be implemented including regular inspections, ensuring continual monitoring of security provision at the site.	**Low**
Flooding	Low	Moderate Flooding on site may result in the loss of containment, damage to tanks or associated infrastructure and result in uncontrolled releases to the environment	Medium	▪ As the site is located in Flood Zone 1, the risk of flooding on site is considered low ▪ In the unlikely event of a flood, the site will be equipped with a sealed drainage and bunding systems which will prevent the inflow of offsite flood water into critical areas (bunds, tanks, storage, etc.).	**Low**

Outbreak of fire Plant malfunction Electrical equipment that could provide an ignition source	Medium	Severe	High	▪ All infrastructure on site will be new and constructed to high standards. All tanks, reactors ad pipework will met the relevant BAT guidance, ensuring risk of fire, outage or otherwise damage by malfunction remains low ▪ Site has been designed in accordance with DSEAR, ATEX and HAZOP requirements. ▪ All plant is subject to a planned preventative maintenance schedule. ▪ The plant has significant control and safety systems all of which are interlocked to ensure a very controlled shutdown in the event that the plant undergoes operational difficulties. ▪ All aspects of the plant and associated infrastructure are constructed of non-combustible materials. ▪ The plant has been designed to shut down in the event of an emergency. ▪ The control system will monitor all relevant process data for the biogas upgrading plant (flows in/out, operating temperatures and pressures etc). Biomethane flowing to the grid must at all times be compliant with the requirements of the Gas Safety (Management) Regulations 1996; ▪ Remote access to the control system will be provided; ▪ Should any abnormal incident occur affecting operation of the biogas upgrader, the unit will automatically shut down and biogas can be diverted to the flare; ▪ Any tanks and vessels containing flammable and potentially polluting liquids are constructed so that any leaks / spillages are contained and responded to in accordance with established emergency procedures. ▪ Fire suppression and monitoring systems have been installed ▪ Separation of combustible materials from the source prior to processing; ▪ All waste feedstock is stored within dedicated areas; ▪ All flammable process consumables shall be stored in bunded tanks. ▪ Staff are appropriately trained in the relevant systems, and this training is reviewed periodically to ensure staff remain compliant with eh appropriate use of onsite equipment. In the event of a fire, the following actions will be taken: ▪ The fire brigade will be notified immediately and the Local Authority as soon as practicable. ▪ The site will be immediately evacuated.	**Low**

				▪ Records of fire incidences will be kept on site together with a summary of remedial action taken. ▪ Smoking will not be permitted in the operations areas of the site.	
Incompatible feedstock/unwanted reactions	Low	Moderate	Medium	▪ Waste will be subject to waste pre-acceptance and acceptance procedures to ensure only the correct wastes are accepted on site. ▪ Wastes will be subject to continuous inspection by site operatives working at the facility. ▪ Records of incidents involving incompatible wastes will be kept on site together with a summary of the remedial action taken.	**Low**
Failure of mains services	Low	Mild Heat and power required by the site are provided by the onsite CHP units. Mains services are limited to water, which is minimal as surface water run-off, leachate and blackwater is utilised to provide the water requirements of the plant.	Low	In the event that mains services of water and genset provided electricity supplied to the site are unavailable, the following actions will occur: ▪ The plant has been designed to shut down in the event of an emergency. ▪ An emergency backup diesel generator is present onsite to maintain running of critical equipment; ▪ All feed drives will stop, and no more materials will be fed to the plant; ▪ All pump sets will cease operating so no further transfer of material can occur; ▪ The biogas upgrading plant will be operated by the emergency generators and where capacity is unavailable will automatically stop and the biogas will be diverted to flare; ▪ Upon restoring of services, the plant will resume operations as normal.	**Low**
Operator error / failure of equipment.	Medium	Mild The unexpected breakdown of any part of the plant could result in short term buildup of waste in the reception areas or the incomplete treatment of waste. The result of operator error could result in the plant not functioning efficiently or a risk of fugitive emissions to air through uncontrolled decomposition of waste.	Low	▪ The plant has been designed with a number of fail safe and automatic shutdown systems, where appropriate. ▪ In the case that a major plant failure occurs, no waste will be accepted on to site. ▪ All equipment is subject to a Planned and Preventative Maintenance Programme (PPM), to minimise unplanned failures ▪ The plant also has in place a number of Emergency Shutdown Controls to ensure safe shut down in emergency. ▪ The biogas will be diverted to flare where necessary (i.e. if it cannot be burnt in the biogas boiler).	**Negligible**

4. SUMMARY AND CONCLUSION

This document has been prepared to meet the requirements pertaining to Accident Management Plans within the Environment Agency guidance document *'How to Comply with your Permit'*.

It is concluded that despite the Installation having the potential for a medium-low environmental impact to the environment, the mitigation measures incorporated into the design of the plant and the site infrastructure are sufficient to mitigate the risks to at least a low-risk rating

Engie proposes to operate using a suite of procedures for the control and management of all materials and plant in use in their process. These procedures will detail the required actions to be taken in the event of an emergency and should be used in the first instance for any accident and emergency at site.