




EPR Bespoke Installation Environmental Management System Summary

Biomass No.4 UK Ltd Energy From Waste Facility

Prepared by:
Sol Environment Ltd

Date:
September 2023

Project or Issue Number:
SOL_21_P024_COG

VERSION CONTROL RECORD			
Contract/Proposal Number:		SOL_21_P024_COG	
Authors Name:		Sophie Rainey	
Signature:			
Issue	Description of Status	Date	Reviewer Initials
1	First Submission to the Environment Agency	21 st September 2023	EH

This report has been prepared by Sol Environment with all reasonable skill, care, and diligence, and taking account of the Services and the Terms agreed between Sol Environment and the Client. This report is confidential to the client, and Sol Environment accepts no responsibility whatsoever to third parties to whom this report, or any part thereof, is made known, unless formally agreed by Sol Environment beforehand. Any such party relies upon the report at their own risk.

Sol Environment disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the Services.

CONTENTS

1	INTRODUCTION	2
2	LAYOUT OF THE EMS	5
3	CONTEXT OF THE EMS	6
4	MANAGEMENT OF THE EMS	7
5	POLLUTION PREVENTION PLANNING	8
6	COMPETENCE AND AWARENESS	9
7	COMMUNICATION	10
8	RECORDS AND CONTROL OF DOCUMENTS AND DATA	11
9	OPERATIONAL PLANNING AND CONTROL	12
10	EMERGENCY PREPAREDNESS AND RESPONSE	13
11	MONITORING AND MEASUREMENT	14
12	INTERNAL AUDIT	15
13	MANAGEMENT REVIEW	16
14	IMPROVEMENT	17

1 INTRODUCTION

This document has been prepared by Sol Environment Ltd on behalf of Biomass No.4 UK Ltd (referred to as 'The Operator' hereafter) to provide an Environmental Management System (EMS) Summary in support of a Bespoke Installation Permit application for the proposed operation of an energy from waste facility at Belliver Way, Plymouth.

The Installation is located at Units 21-29, Belliver Way, Roborough, Plymouth, Devon, PL6 7BW (National Grid Reference: SX 49890 62378).

The site has been both previously operated and permitted by the previous plant owners and operators, Dartmoor Bio Power Limited (DBPL), under environmental permit number EPR/XP3134AW, using waste wood as a feedstock for gasification. Following DBPL entering into administration in 2018, the site was closed and permit duly surrendered by the Environment Agency (EA) on the behalf of the company.

Biomass No.4 (the 'Applicant') intends to upgrade the existing facility and make changes to the combustion technology and boiler to enable the plant to operate reliably on a wider range of fuels to include refuse derived fuels (RDF), Solid Recovered Fuels (SRF) as well as mixed (PAS111:2012- Grade A – C) non-hazardous waste wood feedstocks.

The Facility comprises a single-line incineration process, including a single thermal oil boiler serving a ORC turbine. The turbine is designed to generate a gross electrical output of 4.64 MWe of electricity. The plant has a corresponding parasitic load of approximately 0.75MWe resulting in a net electrical export of approximately 3.9 MWe.

The Facility will have the capacity to export up to approximately 10 MWth of heat, subject to configuration and available offtake partners.

The Installation has been designed with an annual throughput of approximately 50,000 tonnes per annum, assuming a design NCV of 10.11 MJ/kg. The design of the combustion system assumes an average throughput of 6.33 tph, assuming 7,900 hours annual availability. Allowing for seasonal availability and fuel variability the maximum permitted throughput of the plant will be 60,000 tpa.

The main features of the proposed Installation, as described in this document are as follows:

- *Waste Acceptance and Reception:* Refuse Derived Fuel (RDF) will be delivered to the Reception Hall. Waste is delivered and unloaded in the internal tipping area where a visual inspection will take place. The delivered RDF feedstocks will then be transferred to one of the internal storage bunkers. RDF is typically processed and used within 4 days of arrival onsite.
- *Reagent and raw material tanks and silos;* The Facility will receive deliveries of RDF by road. The Facility will also use consumables including sodium bicarbonate, activated carbon, urea, auxiliary fuel (mains gas or fuel oil depending on availability), water treatment chemicals and various maintenance materials as required (oils, greases, insulants, antifreezes, welding and firefighting gases etc).
- *Residue Handling & Storage;* The initial handling and quenching of the IBA at the Facility will be undertaken in an enclosed building. In addition, any overflow from the ash quench will be contained in the process effluent drainage system, reused and hence will not be released off-site. All Air Pollution Control Residues (APCR) is stored within sealed, fully contained skips

- *Combustion Process*; The combustion process will utilise a conventional moving grate technology which will agitate the fuel bed to promote a good burnout of the RDF and a uniform heat release. The moving grates will enable the RDF to be moved from the feed inlet along the grate to the ash discharge. The combustion chambers will be designed to ensure that the exhaust gases are raised to a minimum temperature of 850°C, with a minimum of 2 seconds flue gas residence time.
- *Start-up Burner*: Auxiliary start-up burners are mounted to the grate combustion system to maintain temperature and to enable start-up and shut down.
- *Heat Recovery*; The boiler contains an the organic working medium (thermal oil) is pre-heated in a regenerator, then heated and vaporized through a heat exchanger with a thermal oil loop.
- *Organic Rankine Cycle (ORC) turbine/generator set*; The vapour is expanded in a turbine which drives an electric generator to generate electricity. Once the vapour has passed through the turbine, it passes through the regenerator that is used to initially pre-heat the organic working medium, increasing the overall efficiency of the process through internal heat recovery.
- *Air Pollution Control and Flue Gas Cleaning*; The abatement of oxides of nitrogen (NOx) will be achieved by careful control of combustion air, including flue gas recirculation, and an SNCR system. Sodium bicarbonate and powdered activated carbon (PAC) will be injected into the flue gases in a reaction chamber following the boiler to abate acidic gases, heavy metals and any remaining dioxins and furans.

The Installation will make an important contribution to regional waste management and local renewable energy generation and will provide a single treatment facility for RDF materials that would otherwise be destined for landfill, incineration or foreign export.

The process meets the definition of a listed activity as defined by Schedule 1 of the Environmental Permitting Regulations 2018.

As such, the proposed facility meets the definition of an Installation as defined by Section 5.1 'Incineration and Co-Incineration of Waste' paragraph A(1)(b) namely:

'The incineration of non-hazardous waste in a waste incineration plant or waste co-incineration plant with a capacity exceeding 3 tonnes per hour.'

The EfW's EMS will set out how the environment will be managed on site in accordance with the environmental permit and the Environment Agency Guidance 'Develop a management system: environmental permits' (available at <https://www.gov.uk/guidance/develop-a-management-system-environmental-permits>) ('EA Guidance'), and Waste Incineration BREF BAT 1. The EMS explains what happens at GP to ensure the following:

- The environment is protected from adverse impacts from the activities;
- The organisation is protected from environmental conditions such as floods or droughts;
- The Permit and environmental legislation are complied with;
- The sustainability of the operations is addressed; and
- Environmental information and performance are communicated to relevant interested parties.

The EMS will be developed and maintained by Biomass No.4 UK Ltd (the operator of the Environmental permit).

2 LAYOUT OF THE EMS

The EMS will be laid out in a similar fashion to ISO 14001:2015, focusing on a '*Plan-Do-Check-Act*' cycle of management and control. Each section is briefly summarised in this document with reference to the requirements of the EA Guidance for clarity.

The section headings are as follows:

- a) Risks and opportunities;
- b) Management of the EMS;
- c) Pollution prevention planning;
- d) Competence and awareness;
- e) Communication;
- f) Control of documents and data;
- g) Operational planning and control;
- h) Emergency preparedness and response;
- i) Monitoring and measurement;
- j) Internal audit;
- k) Management review; and
- l) Improvement.

3 CONTEXT OF THE EMS

The level of detail and complexity of the EMS will be determined using a life cycle approach based on compliance obligations, interested parties, internal and external issues and other issues and requirements such as the outcome of audits and management reviews.

Risks and opportunities associated with the environmental discharge will be identified and recorded in the initial stages of the EMS design to prioritise significant environmental risks, consider the benefit of opportunities, and have a thorough understanding of the scope of environmental protection required.

4 MANAGEMENT OF THE EMS

Managers of Biomass No.4 UK Ltd's activities take their responsibility for environmental compliance and sustainability very seriously. To make the structure of responsibilities clear, the EMS will include an organisation chart.

The operator is keen to identify opportunities to prevent or mitigate adverse environmental impacts and enhance beneficial environmental impacts, particularly those with strategic implications, to remain effective at environmental protection. Environmental management is therefore integrated into the project development plans and decision making, aligning it with other business priorities.

5 POLLUTION PREVENTION PLANNING

The following aspects of the business have been included in the Environmental Risk Assessment, sourced from site plans and specialist reports:

- Authorised activities;
- Details of site drainage for surface water, foul and combined;
- Locations for mains water, gas, and electricity supplies;
- Buildings, relevant plant and equipment and security fencing;
- Storage facilities for oil, fuel tanks, chemical stores, and waste materials;
- Spill kit locations and drain protectors;
- Emergency service routes in and out of the site;
- Pollution control inspection and monitoring points;
- Surface water and effluent discharge points; and
- Vulnerable locations.

6 COMPETENCE AND AWARENESS

A training matrix will be in place to ensure that each member of staff that can affect the environmental performance of the installation is competent based on their training, education, and experience as appropriate. Records of training sessions and qualifications will be maintained as part of the EMS.

The training matrix details who is responsible for various environmental procedures and which staff roles are relevant to the conditions of the Environmental permit.

A procedure will be established for checking the training and qualifications of external providers in advance of carrying out work on site. They are provided with the information necessary to work in accordance with the Operator's environmental permit.

7 COMMUNICATION

Communication with relevant interested parties will be determined based on the information that needs to be communicated and the associated circumstances. Different types of communication will be considered to promote understanding of the EMS and engagement with interested parties at all levels.

Relevant staff will have access to the EMS and are required to understand their duties and responsibilities as part of induction and ongoing training.

A process will be established for receiving communications from and responding to, internal and external communications, considering the needs and expectations of the interested parties.

Complaints will be managed and recorded using procedures that lay out how complainants should be communicated with and how their complaint must be investigated.

8 RECORDS AND CONTROL OF DOCUMENTS AND DATA

Documented information for the EMS will be developed, maintained, and controlled to ensure effective operations. Records required by the environmental permit will be managed according to processes described in the EMS, including a list of their retention times.

They include the following documents:

- Environmental Permit;
- Compliance Obligations;
- Duty of Care transfer notes for non-hazardous waste;
- Environmental Risk Assessment;
- Operating Procedures;
- Staff Competence and Training Matrix;
- Site and Equipment Maintenance Record;
- Emissions Monitoring Data;
- Records of compliance checks and audits, findings of investigations and actions taken;
- Records of complaints made, findings of investigations and actions taken;
- Audit Reports including findings and actions taken; and
- Management reviews and changes made to the EMS.

Data is protected through software and online security controls.

9 OPERATIONAL PLANNING AND CONTROL

The operation of the transfer, storage and incineration of waste will be conducted in a controlled way by identifying what types and levels of controls are needed where and for what purpose. The relevant procedures list the steps taken to prevent or minimise risks to the environment from the process. The waste storage plan will include appropriate types and levels of control.

Relevant staff and other interested parties will have access to all the documents they need and understand that to operate effectively the processes making up the EMS must be carried out as planned.

The operational controls consist of procedures, work instructions, physical controls and use of competent personnel. Types of control are based on the skills and experience of the people carrying out the operation, and its complexity and environmental significance. Steps to determine controls include choice of method and operating criteria (e.g., measurements, features on the plant), writing down how processes should be planned, carried out and controlled, designing documents such as records and reports and applying technological options such as automated systems and software.

The controls will be monitored to check they continue to be effective, and action is taken if there are changes or improvements to be made.

Maintenance of all tanks, bunds, connections, plant, etc. will be carried out according to the manufacturer's or supplier's recommendations using the appropriate instructions, guidelines, and manuals.

Contingency plans will be in place for a robust response to minimise the impact on the environment of any breakdowns, enforced shutdowns and any other changes in normal operations, for example due to flooding or other extreme weather based on climate change knowledge and trends.

10 EMERGENCY PREPAREDNESS AND RESPONSE

To ensure a comprehensive response to any emergency, consideration will be given to the initial environmental impact and the secondary environmental impact that could result, e.g., fighting a fire can lead to water and air pollution.

The scale of accident management covers incidents from spillages of chemicals or failure of emission abatement equipment to large-scale events such as floods that could endanger humans and the environment to a broader extent.

The Accident Management Plan details incidents or events that could result in pollution, including the likelihood of an accident occurring and the potential consequences, measures to avoid the accident happening in the first place, and corrective actions in the event an accident does take place. The following potential accidents have been considered as a minimum:

- Breach of Environmental permit;
- Equipment breakdowns;
- Enforced shutdown of the plant;
- Fires;
- Vandalism;
- Flooding; and
- Extreme weather based on climate change knowledge and trends such as heat waves, hot days, and storms.

Accidents will be recorded, including any investigation and response.

To assist staff in the event of an accident, a record form, and a list of emergency contacts and how to reach them will be included in the Plan, together with an up-to-date list of substances stored at the site with the type of storage facility used. The Accident Management Plan will be regularly reviewed.

11 MONITORING AND MEASUREMENT

A Monitoring and Measurement Plan will be in place to analyse and evaluate the environmental performance of the plant. The environmental risks, compliance obligations and operational controls are considered when determining how monitoring and measurement will be carried out and how it will be recorded and communicated.

Results are used to identify nonconformances (e.g., triggers that indicate a permit limit may be breached), look at performance trends and find opportunities for improvement.

12 INTERNAL AUDIT

A process will be established to evaluate the extent to which the businesses compliance obligations are fulfilled, by conducting regular internal audits and providing information to management on the performance of the EMS.

The internal audit programme will be based on the environmental risks and opportunities, the results of previous audits, monitoring and measurement results, and management reviews. Audit findings are captured in a report including action lists and action close-outs where appropriate.

13 MANAGEMENT REVIEW

Management reviews that include the environment on the agenda will be held at least annually to check compliance with the Environmental permit and EMS. There will be an annual environmental management review with a fixed agenda to review the year's environmental compliance, suitability of the procedures and the adequacy and effectiveness of the EMS in achieving environmental improvements. This enables decisions on priorities and resources for the EMS to be balanced with other business priorities and resource needs.

The EMS will be reviewed and updated under the following circumstances:

- Changes made to the site, operations or equipment that affect permitted activities;
- After any accident, complaint, or breach of permit; and
- After identification of a new environmental problem or issue with new control measures.

A record of changes to the EMS will be kept, including the following:

- New abatement or process equipment; and
- Implementation of significantly new or different control measures.

14 IMPROVEMENT

Improvement opportunities will be identified from the following EMS processes:

- Communication with interested parties including staff, customers, and the authorities;
- Monitoring and measurement;
- Analysis of data and information relating to environmental performance;
- Evaluation of compliance obligations;
- EMS audits; and
- Management reviews.

The detection of non-conformities such as potential Permit breaches or procedures not being followed is critical to improvement.

In the event of a non-conformity, an investigation will be carried out to determine where the EMS needs improving, and action will be taken to make the appropriate changes and eliminate the cause where possible so the incident will not re-occur. Changes are communicated to relevant staff.

Improvement findings from all sources will be fed back into the Plan-Do-Check-Act cycle for continual improvement.