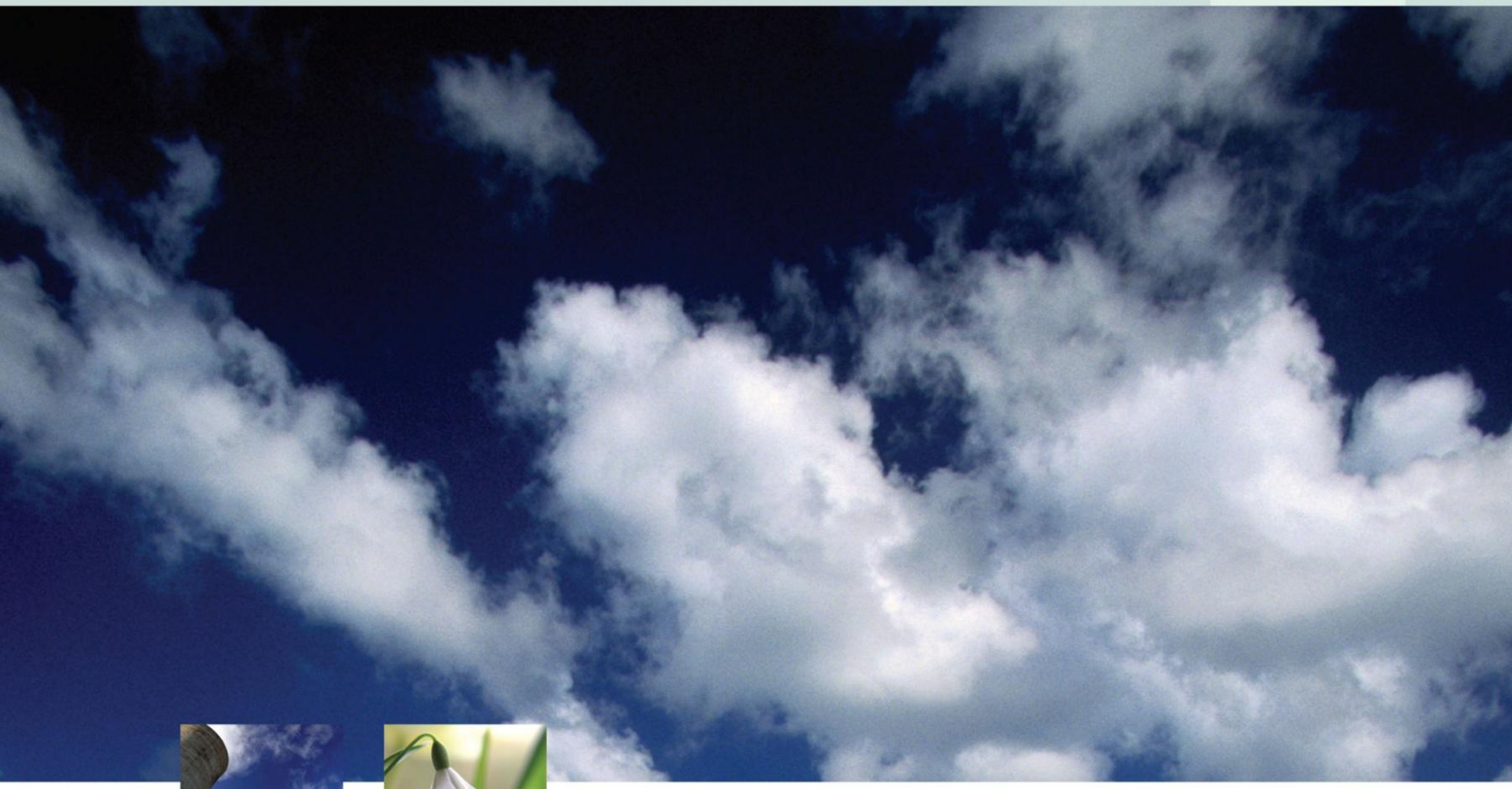

ACCIDENT MANAGEMENT PLAN
Clean Power (UK) Ltd

Micheldever Energy Recovery Centre

Prepared by:
Sol Environment Ltd

Date:
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1 INTRODUCTION

This document has been prepared by Sol Environment Ltd on the behalf of Clean Power (UK) Ltd (hereafter referred to as "the applicant") in support of a Bespoke Installation Permit Application for the proposed operation of Clean Power Properties waste to energy plant utilising Advanced Conversion Technologies (ACT), pyrolysis and anaerobic digestion at Micheldever Rail Sidings, Micheldever, Hampshire.

This document represents the Accident Management Plan (AMP) submitted as part of the Application package to the Environment Agency (EA) (Sol Environment Ref. SOL0613CPP03_MD).

Clean Power (UK) Ltd site (*'the Site')* is located at Micheldever Rail Sidings, Overton Road, Micheldever Station, Hampshire, SO21 3AP.

The proposed process will incorporate ACT technologies, pyrolysis with and associated upstream processing and anaerobic digestion for the generation of renewable energy. The proposed development is a bespoke energy recovery centre that has been designed to recover all available resources from mixed solid waste feedstocks. The proposed development integrates the above technologies to provide a single treatment facility for solid wastes that would otherwise be destined for landfill or incineration.

The treatment process will be permitted by the Environment Agency as a Waste Recovery Operation and be operated in accordance with the EPR 2010 Regulations.

This Accident Management Plan 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 company's Environmental Management System and will ensure the site and all operatives within are fully prepared for such incidents.

A number of the control measures cited within this document refer the operators proposed suite of Environmental Procedures and new procedures which have been drafted in response to the proposed new operations at site (CPP-E01 to CPP-E20).

These documents should be referred to for detailed actions in relation to emergency response and control.

- CPP-E01 Waste Pre-Acceptance;
- CPP-E02 Waste Acceptance;
- CPP-E03 Waste Rejection;
- CPP-E04 Off Site Waste Transfer;

- CPP-E05 Waste Reception & Preparation;
- CPP-E06 Autoclaving;
- CPP-E10 Anaerobic Digestion;

The Accident Management Plan 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.

All of the necessary actions that are required to be taken in the event of an accident are detailed within CPP-E20 Emergency Procedure.

2 RISK MAGNITUDE ESTIMATIONS

The Accident Management Plan (Table 2.2 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 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 Estimation Matrix

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

The 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 judgement 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.

Table 2.2: Accident Management Plan

Accident Scenario	Probability of Accident Occurring	Magnitude of Potential Impact	Risk Rating before mitigation	Risk Management	Residual Risk Rating (following Mitigation)
1 - Spills and Leaks / Loss of containment / transfer of Substances / Overfilling of Vessels	Medium	Moderate to Severe Spillage and leakage could occur during fuel deliveries, 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;	Low	• A sealed drainage and containment system for all tanks containing potentially polluting liquids has been constructed so that any leaks / spills are contained; • Electronic monitoring (i.e. level gauges, feedback loops etc) shall be installed on all vessels; • All external delivery areas are contained within a sealed drainage and containment system that incorporates bund walls, appropriate falls and drains; • All storage vessels have been constructed to the appropriate British Standard; • Tanks are inspected visually on a daily basis by site staff to ensure continued integrity of tanks, and identify any necessary remedial action; • 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; • The plant has been designed in order to include an automated shutdown facility; • The company has established emergency procedures CPP-E20.	Low
2 - Vandalism	Low	Moderate The site could be subject to intentional vandalism and	Low	• On-site security measures: • Security lighting 24 hours a day; • Security cameras are installed at key areas of the site; • Security fencing extends around the site perimeter; • – 2m palisade or equivalent;	Low

		damage by intruders/ trespassers who could cause damage or harm to the plant and equipments, spills and leaks to tanks or cause fires.		• Lockable gates are located at the site entrance; • Gates will be locked whenever the site is closed; • 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 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; • Oil-water interceptors prevent the potential migration of contaminants caused by vandalism; • All visitors to the site 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; • Operational procedures have been implemented including regular inspections, ensuring continual monitoring of security provision at the site.	
3 - Flooding	Medium: The site is located entirely in Flood Zone 1 (low risk).	Severe	Low	• All activities at the installation are carried out internally and have sealed drainage and bunding systems which will prevent the inflow of off site flood water into critical areas (bunds, tanks, storage etc). • In cases of extreme rainfall, the site containment systems will contain all water falling on site; • The main elements of the development are located in the area of medium risk, only some tanks and minor buildings are located in the area of high risk.	Low
4 - Fire in pyrolysis plant. Plant malfunction; Electrical equipment that could provide an ignition source; Waste products / raw materials that may support combustion.	Medium	Severe	Medium	• All plant is subject to a planned preventative maintenance schedule (CPP-E15 Infrastructure Monitoring and Cleaning Programme) • All plant has been specified to be intrinsically safe and earthed in accordance to best practice; • All aspects of the plant and buildings are constructed of non combustible materials; • The plant has been designed to shut down (fail safe) in the event of an emergency (all gases will be directed to Emergency Flare) • Containment system: all 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;	Low

				• Fire suppression (utilising Nitrogen) and monitoring systems have been installed; • Separation of combustible materials from the source prior to processing; – All waste feed stock is stored within dedicated bays Zone 1; – All flammable process consumables shall be stored in bunded tanks. • In the event of a fire, the following actions will be taken: – The fire brigade will be notified immediately and the EA as soon as practicable. – All containment valves and systems will be closed. – The site will be immediately evacuated. • Records of fire incidences will be kept on site together with a summary of remedial action taken. • The entire site will be subject to a third party DSEAR assessment and all recommendations / mitigation measures incorporated • The EA will be advised of all incidents of fire as soon as is practicable; • Smoking will not be permitted in the operations areas of the site. • Automated fire sprinkler systems have been installed within the Reception Area (Zone 1).	
Incompatible Feedstock/ Unwanted Reactions: Some of the raw materials and waste inputs at the site could contain impurities that impede / prevent the pyrolisis process.	Low	Moderate / Severe	Low	The following methods will be implemented to ensure that incompatible feedstocks do not compromise the safe operation of the plant: • All wastes accepted onto site have been subject to 'pre-acceptance' in accordance to established procedure CPP-E01; • All incoming wastes are inspected in accordance with established procedure CPP-E02; • When in the waste reception area, any non conforming waste will be removed prior to acceptance in accordance with established procedure CPP-E03; • The upstream autoclaving process removes any extraneous material (i.e. recyclates etc) and produces a homogenised, organic flocculent that is exclusively utilised within the pyrolisis process; • Records of incidents involving incompatible compatible will be kept on site together with a summary of the remedial action taken. • The company has an established Emergency Response Procedure CPP-E20	Low
Failure of Mains Services: Failure in the mains services, water or electricity.	Medium	Low	Low	In the event that mains services of water and electricity supplied to the site are unavailable, the following actions will occur: • In the event of sudden disconnection of the grid the ID fan will cease to	Negligible

				operate, thus no emissions will be released to atmosphere; • All pump sets will cease operating so no further transfer of material can occur; • The boiler plant shall shutdown, thus rendering the plant inoperable. The emergency back-up generators shall be active in the event of a mains grid failure.	
Operator Error / Failure of Equipment: The unexpected breakdown of any part of the plant could result in short term build up 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 biological waste.	Medium	Low	Low	The plant has been designed with a number of fail safe and automatic shutdown systems, where appropriate. • The design of the plant includes sufficient storage capacity for a number of weeks production and waste storage; • Should the above storage capacity be exceeded, incoming waste can be diverted to the adjacent composting and / or landfill facilities. • Redundancy measures have been incorporated into the plant design, such that the site can continue to operate in the event of major plant failure (i.e. such as the E-Claves, pyrolysis units etc). • All pressure vessels and steam equipment will be designed to appropriate standards and be subject to HAZOP and HAZID assessments to ensure that any catastrophic failures are engineered out of the system. *The above capacity measures allow waste to be received while equipment repairs are affected.* • All equipment is subject to a Planned and Preventative Maintenance Programme (PPM), to minimise unplanned failures (CPP-E15 Infrastructure Monitoring and Cleaning Programme) • The plant also has in place a number of Emergency Shutdown Controls to ensure safe shut down in emergency.	Negligible

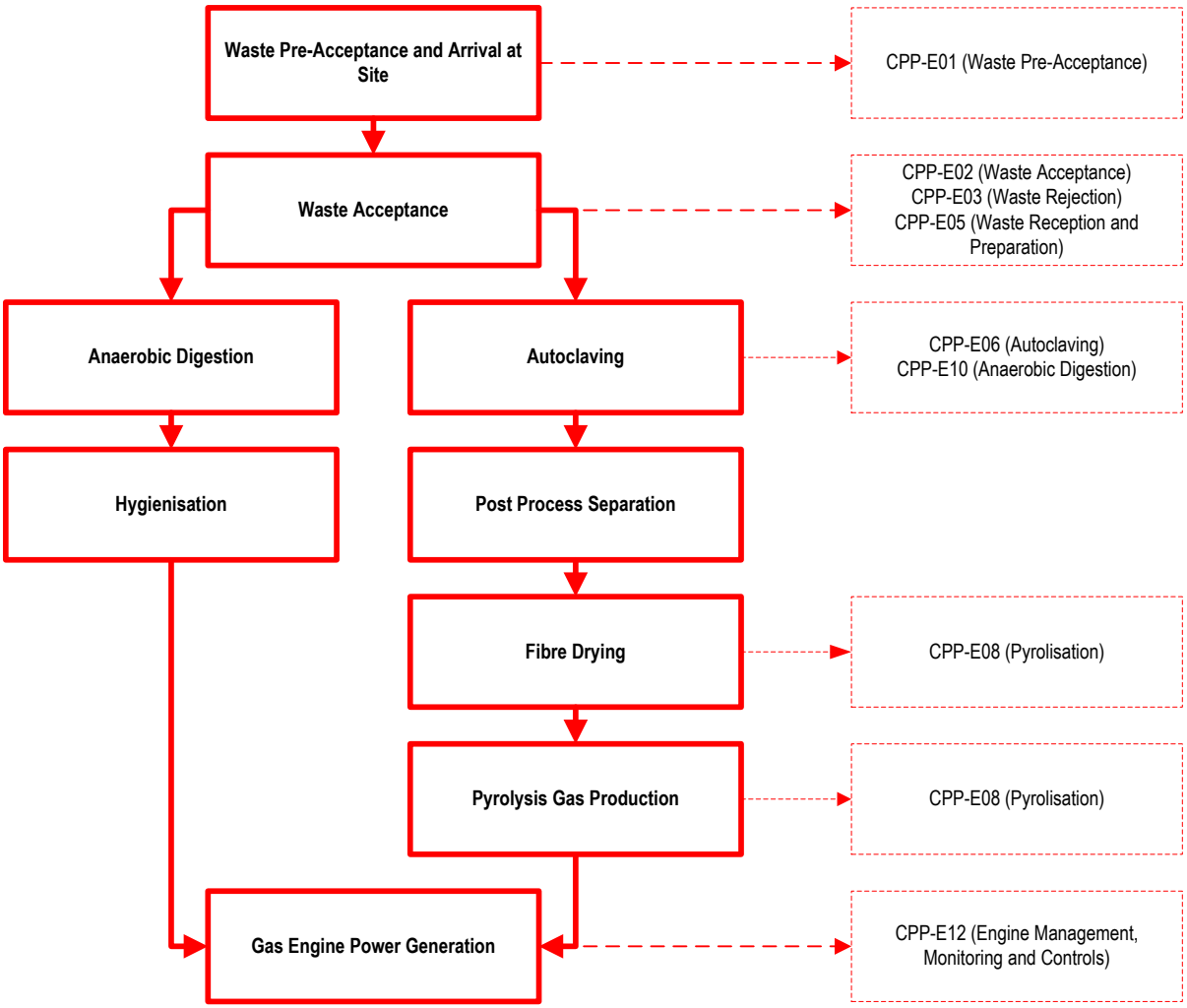
3 SUMMARY & CONCLUSION

This document has been prepared to meet the requirements pertaining to Accident Management Plans within the Environment Agency guidance document EPR1.00 *'How to Comply with your Permit'*.

It is concluded that despite the Installation having the potential for a low-moderate 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

The company operates and continues to operate using an established suite of procedures for the control and management of all materials and plant in use in their process. These procedures 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.

A procedural map of the site working plan is provided in Figure 3.1 below. Please refer to the Site Working Plan Manual (Ref. CPP-SWP).



ANNEX 1: Working Plan Structure

Table 3:12 Working Plan

Ref No:	Title	Purpose
CPP-E01	Waste Pre-Acceptance	This procedure defines the upstream screening, checking and pre-acceptance of all incoming waste prior to its arrival on site.
CPP-E02	Waste Acceptance	This procedure outlines the onsite controls and considerations that need to be applied when waste materials arrive on site for processing.
CPP-E03	Waste Rejection	This procedure outlines the waste rejection process for all non-conforming wastes that cannot be processed on site. Acceptance of non-conforming wastes will be a direct breach of the permitted conditions of the sites Environmental Permit.
CPP-E04	Off Site Waste Transfers	This procedure provides the necessary information to enable the assessment and off site transfer of non-conforming or untreatable waste streams.
CPP-E05	Waste Reception and preparation	This procedure outlines the waste reception, storage and autoclave/anaerobic digestion loading processes for all incoming waste.
CPP-E06	Autoclaving	This procedure defines the processes and stages of the autoclave process.
CPP-E07	Recyclate Management	This procedure defines the recyclate management and control process.
CPP-E08	Pyrolisation	This procedure defines the stages and control measures for the pyrolisation syngas generation process
CPP-E09	Slag and Ash Management	This procedure defines the condensate management and control process.
CPP-E10	Anaerobic Digestion	This procedure defines the stages and control measures for the anaerobic digestion process.
CPP-E11	Digestate Management	This procedure defines the digestate management and control process.
CPP-E12	Engine Management, Engineering and Controls	Procedure that outlines the required monitoring and analysis requirements for the operation of the gas engine generation sets, pasteurisation and digestion stages
CPP-E13	Environmental Records	This procedure defines the necessary Environmental Permit and Waste Records that are required to be managed by the site to ensure compliance.
CPP-E14	Environmental Monitoring Programme	This procedure provides an overview of all of the necessary environmental monitoring procedures and controls to ensure compliance with the Site Environmental Permit.
CPP-E15	Infrastructure Monitoring and Cleaning Programme	This procedure provides an outline of the inspection and cleaning requirements for the site.
CPP-E16	Accident Management Plan	This procedures refers to the sites emergency plans and response requirements
CPP-E17	Odour Management Plan	This document outlines the sites Odour Management plan and requirements
CPP-E18	Training	To ensure that all training needs are identified for a relevant personnel. In addition, educational and training qualifications and records are maintained.
CPP-E19	Security	To ensure that all site and driver security controls are implemented and maintained to minimise security risks at Clean Power Properties.
CPP-E20	Emergency Procedures	To ensure the safe evacuation of the site and protection of the environment in the event of a site emergency.