ACCIDENT MANAGEMENT PLAN
Clinitek (Malvern) LLP

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Energy Recovery Plant

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1 INTRODUCTION

This document has been prepared by Sol Environment Ltd on the behalf of Clinitek (Malvern) Ltd (hereafter referred to as "the applicant") in support of a permit application for the proposed operation of an Energy Recovery Plant at their site on Hangmans Lane, Worcester.

The site is located at Hangmans Lane, Hanley Castle, Worcestershire, WR8 0AJ (National Grid Reference: SO 82390 44190).

This document represents the Accident Management Plan (AMP) submitted as part of the Application package to the Environment Agency (Sol Environment Ref. SOL1909CL01).

The facility will accept up to approximately 8,000 tonnes per annum of clinical / medical wastes across the spectrum comprising bagged yellow, orange and tiger stripe waste and other offensive materials. The waste heat and energy produced as a by-product of the thermal treatment process will be recovered for export and use on site.

The proposed development consists of the following:

- The reception and storage of clinical waste;
- The combustion of clinical waste;
- The reception, emulsification and combustion of waste oil;
- Waste heat recovery system;
- Screw expander turbine;
- Air Pollution Control System;
- Bottom ash removal system;
- Filter fly ash removal system; and
- Continuous Emissions Monitoring System

By virtue of the fact that the Installation now intends to process more than 10 tonnes per day of hazardous waste, the process now meets the definition of an Installation as defined by Section 5.1 'Incineration and Co-Incineration of Waste' paragraph A(1)(a) namely:

'The incineration of hazardous waste in a waste incineration plant or waste co-incineration plant with a capacity exceeding 10 tonnes per day.'

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 which have been drafted in response to the proposed new operations at site (CL-E01 to CL-E09).

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

- CL-E01 – Waste Pre-Acceptance;
- CL-E02 – Waste Acceptance;
- CL-E03 – Waste Rejection;
- CL-E04 – Off Site Waste Transfers;
- CL-E05 – Waste Reception and Storage;
- CL-E06 – Environmental Records;
- CL-E07 – Environmental Management and Monitoring;
- CL-E08 – Infrastructure Management and Monitoring;
- CL-E09 – Accident Management Plan; and
- CL-E10 – Fire Prevention Plan.

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.

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 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.

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 of wastes could occur during inspections and loading of the feed system resulting in potential release of pathogens Spillage and leakage could occur during fuel deliveries, vehicle refueling, 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	Low	• The site is entirely sealed hardstanding with fully contained and sealed drainage and therefore considered to have a low potential for impacts to groundwater; • The unloading of delivery vehicles and storage of waste will take place externally upon a kerbed area of sealed hardstanding. In the event of a spillage, this area can be isolated via a valve resulting in the spillage being contained within the kerbed area. • In the unlikely event of a fire, the firewater will be contained within the kerbed area and pumped into a tanker for off site for disposal. • Waste is stored within shipping containers that are leak proof, creating sealed storage of clinical waste and eliminating the risk of any leakage. • Should any spillage of waste occur, broad spectrum disinfectants and appropriate cleaning equipment is in place throughout the site. All staff are trained in their use. • A sealed drainage and containment system for all tanks containing potentially polluting liquids has been constructed so that any leaks / spills are contained; • 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	Low

		waters		from entering surface water drains or any adjacent unsurfaced ground. Spillage to be cleared immediately and placed in containers for offsite disposal. The Environment Agency to be informed; • The plant has been designed in order to include an automated shutdown facility.	
2 - Vandalism	Low	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 or cause fires.	Low	• On-site security measures: • The site is manned 24 hours a day; • CCTV monitoring of all external and internal areas of the installation; • Security fencing extends around the site perimeter; • Fencing is inspected daily by operations staff to identify deterioration and damage and the need for repair; • Fencing is maintained and repaired to ensure 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 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; • External on-line monitoring and administration of the combustion process from a remote location, including shut down option; • Operational procedures have been implemented including regular inspections, ensuring continual monitoring of security provision at the site.	Low
3 - Flooding	Medium: The site is located in Flood Zone 1 (low risk).	Severe	Medium	• The site is equipped with a sealed drainage and kerbing system which will prevent the inflow of off site flood water; • Site is located in a low risk flood zone.	Low
4 - Fire in combustion plant. Plant malfunction; Electrical equipment that	Medium	Severe	Medium	• All plant is subject to a planned preventative maintenance schedule (CL-E08 Infrastructure Monitoring and Management Programme); • 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;	Low

could provide an ignition source; Waste products / raw materials that may support combustion.				• 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; • 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; • Fire suppression, detecting and monitoring systems have been installed where necessary; • Separation of combustible materials from the source prior to processing; – All waste is stored within dedicated shipping containers; – 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 Environment Agency 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 Environment Agency 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.	
5 - Incompatible Waste/ Unwanted Reactions: Some of the raw materials and waste inputs at the site could contain impurities that	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 CL-E01; • All incoming wastes are inspected in accordance with established	Low

impede / prevent the combustion process.				procedure CL-E02; • When in the waste reception areas, any non conforming waste will be removed prior to acceptance in accordance with established procedure CL-E03; • Records of incidents involving incompatible compatible will be kept on site together with a summary of the remedial action taken.	
6 – 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 and combustion air fans will cease to operate, thus combustion cannot take place; • The emergency generator set will connect to keep the ID fan running to remove excess heat from the combustor during shut down or loss of services; • All combustion air fans will stop and flue emissions will instantly cease to be produced; • 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 boiler plant shall shutdown, thus rendering the plant inoperable.	Negligible
7. 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	Medium	Low	Low	The site is equipped with spare plant and equipment which can be used in the event of a single plant breakdown. (e.g. loading shovels etc). The facility has been designed with a number of fail safe and automatic shutdown systems. Should the facilities storage capacities be exceeded, incoming waste will be diverted to a nearby waste processing / landfill site. *The above capacity measures allow waste to be received while equipment repairs are affected.* • All equipment is subject to a Planned and Preventative	Negligible

risk of fugitive emissions to air through uncontrolled decomposition of biological waste.				Maintenance Programme (PPM), to minimise unplanned failures (CL-E08 Infrastructure Monitoring and Cleaning Programme) • The plant also has in place a number of Emergency Shutdown Controls to ensure safe shut down in emergency.	

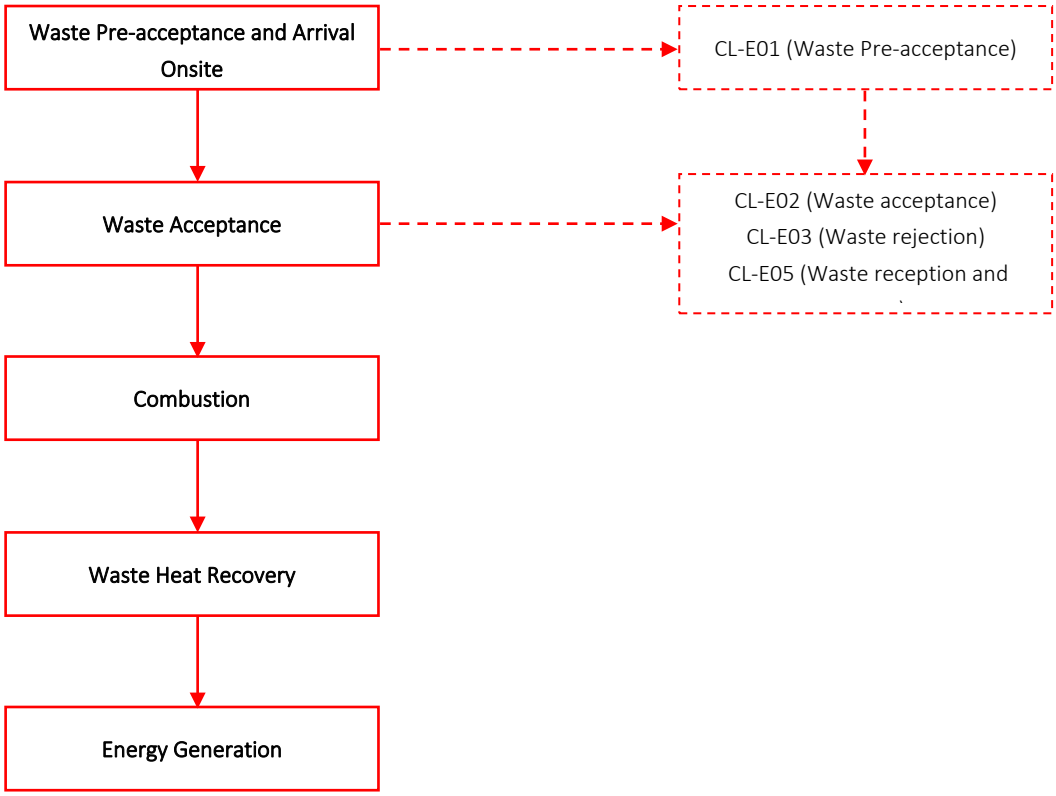
3 SUMMARY & CONCLUSION

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 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. CL-SWP).



ANNEX 1: Working Plan Structure

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Reference No:	Title	Purpose
CL-E01	Waste Pre-Acceptance	This procedure defines the upstream screening, checking and pre-acceptance of all incoming waste prior to its arrival on site.
CL-E02	Waste Acceptance	This procedure outlines the onsite controls and considerations that need to be applied when waste materials arrive on site for processing.
CL-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.
CL-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.
CL-E05	Waste Reception and Storage	This procedure outlines the waste reception, storage processes for all incoming waste.
CL-E06	Environmental Records	This procedure defines the necessary Environmental Permit and Waste Records that are required to be managed by the site to ensure compliance.
CL-E07	Environmental Management and Monitoring Programme	This procedure provides an overview of all of the necessary environmental monitoring, management procedures and controls to ensure compliance with the Permit.
CL-E08	Infrastructure Management and Monitoring Programme	This procedure provides an outline of the inspection and cleaning requirements for the site.
CL-E09	Accident Management Plan	This plan refers to the site's accident management requirements.
CL-E10	Fire Prevention Plan	This procedure refers to the sites fire prevention measures.