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LEVENSEAT GASIFICATION PLANT NON-TECHNICAL SUMMARY

Document Production & Approval Record						
ISSUE NO. 2	NAME	SIGNATURE	POSITION	DATE		
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Checked by:	Stephen Othen	satal	Technical Director	23 December 2014		

Document Revision Record					
ISSUE NO.	DATE	DETAILS OF REVISIONS			
1	24 Nov 2014	First issue			
2					
3					
4					
5					
6					
7					

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1 Introduction

1.1 The Applicant

Levenseat Ltd (Levenseat) is a waste management company which has been engaged in the waste management industry since 1986. Levenseat operate both landfill and recycling operations. Levenseat currently handle approximately 200,000 tonnes per year of wastes including household, commercial, industrial, inert and organic wastes.

The company currently operates from 3 sites: Muldron Landfill (Restoration Phase), Torphin Quarry Restoration (a landfill for inert material only plus treatment of contaminated soils) and the Levenseat Waste Management Site. The Levenseat Waste Management Site comprises a fully engineered 2 million cubic meter landfill (non-hazardous wastes) and a five hectare materials recycling facility.

Levenseat are committed to on-going enhancement of their facilities and improvement of the service they provide to both private sector customers and local authorities. Levenseat pride themselves on their innovative and environmentally sympathetic approach to waste management.

1.2 The Application

The Levenseat Site is currently regulated under an existing pollution prevention and control (PPC) permit (Reference: PPC/E/20001 granted on 31 Jul 2009). Levenseat is proposing to make a number of changes to the Levenseat Site.

To be able to operate the proposed plant, a variation to the PPC permit will be required from SEPA. This document is a Non-Technical Summary of the information submitted in support of the PPC application.

1.3 The Site

Levenseat is located on the west side of the A706, 2km north of Forth and 2km south of the junction with the A71 at Breich. The site entrance is just within West Lothian on the border with South Lanarkshire. The site is located approximately 3km south of Fauldhouse.

The existing landfill site extends to some 10 hectares and is located in a former sandstone quarry and accessed from the A706 along a tarmac roadway to the south-east corner of the site.

The site is perched at the top of the north facing hillside of Leven Seat Hill. Elevations on the site range from 350m AOD to 320m AOD and are highly variable due to the current use of the site, particularly within the landfill area. In general however, the site falls towards the north. The access road off the A706 is located on the opposite side of the hill and therefore falls away from the site in a south-easterly direction to an approximate elevation of 328m AOD.

The Levenseat site is a well-established fully integrated waste management facility that offers a broad spectrum of waste handling, sorting and recycling facilities.

2 Details of the Amendments to the Levenseat Facility

Levenseat is proposing to make a number of changes to the Levenseat Site. The New Activities and Directly Associated Activities covered by this application include:

- (1) a Gasification plant of one gasification line combusting RDF from the fuel storage area;
- (2) electricity generation and export to the National Grid;
- (3) production of inert bottom ash material that will be transferred off-site for recovery/disposal;
- (4) generation of an air pollution control residue that will be transferred to a suitably licensed hazardous waste facility for disposal; and
- (5) an increase in the overall tonnage of wastes to be received at the site from 150,000 tonnes per annum, as stated in the existing PPC permit, to 400,000 tonnes per annum, as per the planning permission.

The following table lists the regulated and directly associated activities.

Table 2.1: Scheduled and Directly Associated Activities						
Type of Activity	Schedule Activity	Description of Activity				
Installation	5.4 Part A b) ii)	Operation of a materials recycling facility to process the incoming waste to recover recyclates from the incoming waste and to produce an RDF which is suitable to be processed in a close coupled gasification plant.				
Installation	5.1 Part A b)	The waste incineration of RDF in a gasification plant with an aggregated nominal design capacity of 12.9 tonnes per hour.				
Directly Associated Activities						
Directly Associated Activities		The export of electricity to the national grid.				
Directly Associated Activities		Standby electrical generation to provide electrical power to the plant in the event of an interruption in the supply.				

Levenseat understands that, due to the extent of the proposed changes, these are considered to be a 'change in operation', as defined in RGN8.

A Substantial Change as stated within Part 1 – General, Regulation (2) paragraph (1) of the Pollution Prevention Regulations (2012) is defined as follows:

'a change in operation which SEPA considers may have a significant negative effect on human health or the environment, or which in itself constitutes the carrying out of an activity described in Part 1 of Schedules 1 or 2 that exceeds any threshold capacity specified in those Schedules. '

The Pollution Prevention Regulations (2012) Part 2, Schedule 1, Chapter 5, Section 5.1 Part A (b) defines the threshold of installation activities for the incineration of non-hazardous waste as:

'Incineration of non-hazardous waste with the exception of waste which is biomass or animal carcasses in an incineration or co-incineration plant.'

The Pollution Prevention Regulations (2012) Part 2, Schedule 1, Chapter 5, Section 5.4 Part A (b) ii) defines the threshold of installation activities for the pre-treatment of waste prior to incineration as:

'Recovery or a mix of recovery and disposal of non-hazardous waste at an installation with a capacity exceeding 75 tonnes per day by one or more of pretreatment of waste for incineration or co-incineration.'

Therefore, as the both of the additional activities proposed by this PPC permit variation introduce new Schedule 1 activities as stated in Part 2, Schedule 1, Chapter 5 of the Pollution Prevention Regulations (2012), the proposed variation is considered a Substantial Variation.

2.1 The New Facilities

2.1.1 MRF

The MRF has been designed to process 42 tonnes per hour (TPH) of commercial and industrial (C&I) waste or municipal solid waste (MSW). The proposed plant will allow Levenseat to produce a high grade SRF fraction (to be baled and wrapped), along with an RDF fraction (to be sent to the gasification plant). The proposed system layout will also allow for the recovery and removal (through a combination of automatic and manual separation methods) of; wood, old corrugated card (OCC), ferrous metals, non-ferrous metals, mixed plastics and mixed paper.

2.1.2 Gasification Facility

The gasification facility will comprise a fluidised bed close-coupled gasification plant that will convert Refuse Derived Fuel (RDF) - that will be delivered to the Levenseat Site prepared - into low carbon electricity and heat.

The nominal design capacity of the facility is 100,000 tonnes per annum, based on a mechanical throughput of 12.9 tonnes per hour of RDF with a net calorific value (NCV) of 13 MJ/kg. The gasification facility will consist of a single combustion line.

The gasification facility will be designed to be able to accept RDF within a NCV design range of circa 10-17.5 MJ/kg. Fluctuations in the delivered RDF NCV may lead to variations in the waste throughput.

The Facility has been designed to operate with maximum fuel flexibility in order to be able to receive as wide a range of WDF within an agreed specification as possible. Only RDF that has been processed on site to meet a pre-determined fuel composition range will be sourced for the Facility. The sources of the RDF will typically comprise Municipal Solid Waste (MSW) and Commercial and Industrial Waste.

The gasification facility will generate up to 12.34 MW of gross electrical output and it will also be designed to export up to 12 MWth of heat to the MRF and to potential future heat users offsite.

2.2 Emissions

2.2.1 Emissions to Air

Emissions to atmosphere from the gasification facility will be released via a 55 metre high stack. The proposed emissions to air from the gasification facility will comply with the emission limits required by Chapter 4 of the Industrial Emissions Directive (IED) and other relevant Air Quality Guidance.

Emissions to atmosphere from the MRF will be released via a 13 metre high exhaust from the MRF dryer scrubbing units.

A detailed air quality assessment has been completed which is presented in Annex 5 of the full application.

2.2.2 Emissions to Water

The arrangements for the discharge of emissions to water from the Levenseat site will not be amended through implementation of this variation. Discharges to water will be dealt with in the following ways:

- the site's existing connections to the surface water and landfill drainage systems will be utilised;
- run-off from roof and hardstanding areas will be kept separate from process effluents and discharged into the existing SUDS system for the site;
- surface water run-off from all hardstanding areas will pass through a compliant Class 1 Bypass Separator prior to being combined with run-off from roofs; and
- where practicable, process effluent from the Gasification plant will be recycled within the process.

Foul drainage from welfare facilities, toilets and mess-rooms from MRF and gasification facilities will be collected in a septic tank prior to discharge into a swale which will be located around the perimeter of the MRF and gasification plant.

2.3 Monitoring

The gasification facility will include a Continuous Emissions Monitoring System (CEMS) for the continuous monitoring of oxygen, carbon monoxide, hydrogen chloride, sulphur dioxide, nitrogen oxides, ammonia, volatile organic compounds (VOCs), and particulates in the flue gases in the stack. Other pollutants will be monitored by spot measurements at regular intervals. The data will be recorded and operators will be alerted if emissions to air approach authorised limits. The results of the monitoring will be reported to SEPA. Solid residues generated by the gasification plant will be sampled on a regular basis to assess bottom ash burnout and to monitor the levels of specified pollutants.

There will be no emissions monitoring from the MRF.

2.4 Management

There is an environmental management system for the Levenseat Site. This will be maintained and adapted to reflect the changes to the operation of the Levenseat Site.



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