

APPENDICES

Appendix 1
Summary of Management System

Summary of Environmental Management System

Endless Energy Ltd will operate the site in accordance with an Environmental Management System, which will be installed as part of the development. The EMS will be prepared to achieve ISO14001 accreditation.

The EMS will be in line with the Environmental Policy of the Company which commits to:

- Compliance with relevant legislation;
- Compliance with the conditions of the Planning Permission and Environmental Permit;
- Consideration of Environmental Issues in Purchasing and Process Change;
- Setting of targets to achieve continuous improvements in Environmental Matters.

The EMS will contain a range of information and procedures including:

- The qualifications and experience required for individual roles and the procedures to identify training needs and record training undertaken;
- management of contractors;
- Procedures for the day to day operation of the site including: waste acceptance, inspection of loads, routine maintenance, thermal treatment of waste, storage of raw materials, off-site disposal of waste;
- Procedures for environmental monitoring including: the monitoring of point source emissions to air, surface water and foul sewer, inspection of site infrastructure and monitoring of potential amenity impacts from noise, dust, odour, birds, pest and vermin infestations;
- Prevention of and response to incidents and complaints, including: procedures to prevent and respond to fires, procedures to prevent and respond to spillages, a preventative maintenance programme and procedure to be followed in the event of plant break down, a rejection procedure for non-conforming waste and the protocol to be followed if a complaint is received;
- Considerations to be taken into account for capital expenditure and process change; Procedures for reviewing water, energy and raw material use and setting targets for improvements;
- Details of record keeping and appropriate forms to record the information set out above; and
- A programme for audit and review of the EMS.

Appendix 2
List of Waste Types

APPENDIX 2: PERMITTED WASTE TYPES

European Waste Catalogue Code	Waste Type
02	WASTES FROM AGRICULTURE, HORTICULTURE, AQUACULTURE, FORESTRY, HUNTING AND FISHING, FOOD PREPARATION AND PROCESSING
02 01	Wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing
02 01 03	Plant tissue waste
02 01 04	Waste plastics (except packaging)
02 01 07	Waste from forestry
02 02	Wastes from the preparation and processing of meat, fish and other foods of animal origin
02 02 03	Materials unsuitable for consumption or processing
02 03	Wastes from fruit, vegetables, cereals, edible oils, cocoa, coffee, tea and tobacco preparation and processing; conserve production, molasses preparation and fermentation
02 03 04	Materials unsuitable for consumption or processing
02 05	Wastes from the dairy products industry
02 05 01	Materials unsuitable for consumption or processing
02 06	Wastes from the baking and confectionery industry
02 06 01	Materials unsuitable for consumption or processing
02 07	Wastes from the production of alcoholic and non-alcoholic beverages (except coffee, tea and cocoa)
02 07 04	Materials unsuitable for consumption or processing
03	WASTES FROM WOOD PROCESSING AND THE PRODUCTION OF PAPER, CARDBOARD, PULP, PANELS AND FURNITURE
03 01	Wastes from wood processing and the production of panels and furniture
03 01 01	Waste bark and cork
03 01 05	Sawdust, shavings, cuttings, wood, particle board and veneer other than those mentioned in 03 01 04
03 03	Wastes from pulp, paper and cardboard production and processing
03 03 01	Waste bark and wood
03 03 07	Mechanically separated rejects from pulping of waste paper and cardboard
03 03 08	Waste from sorting of paper and cardboard destined for recycling
04 02	Wastes from the textile industry
04 02 21	Waste from unprocessed textile fibres
04 02 22	Waste from processed textile fibres
07	WASTES FROM ORGANIC CHEMICAL PROCESSES
07 02	Wastes from the MFSU of plastics, synthetic rubber and man-made fibres
07 02 13	Waste plastic
09	WASTES FROM THE PHOTOGRAPHIC INDUSTRY
09 01	Wastes from the photographic industry
09 01 08	Photographic film and paper free of silver or silver compounds
09 01 10	Single-use cameras without batteries
12	WASTES FROM SHAPING AND PHYSICAL AND MECHANICAL SURFACE TREATMENT OF METALS AND PLASTICS
12 01	Wastes from shaping and physical and mechanical surface treatment of metals and plastics
12 01 05	Plastics shavings and turnings
15	WASTE PACKAGING, ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED
15 01	Packaging (including separately collected municipal packaging waste)
15 01 01	Paper and cardboard packaging
15 01 02	Plastic packaging
15 01 03	Wooden packaging
15 01 05	Composite packaging
15 01 06	Mixed packaging
15 01 09	Textile packaging
15 02	Absorbents, filter materials, wiping cloths and protective clothing
15 02 03	Absorbents, filter materials, wiping cloths, protective clothing other than those mentioned in 15 02 02
17	CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)

European Waste Catalogue Code	Waste Type
17 02	Wood, glass and plastic
17 02 01	Wood
17 02 03	Plastic
17 06	Insulation materials and asbestos containing construction materials
17 06 04	Insulation materials other than those mentioned in 07 06 01 and 17 06 03
18	WASTES FROM HUMAN OR ANIMAL HEALTH CARE AND/OR RELATED RESEARCH (EXCEPT KITCHEN AND RESTAURANT WASTES NOT ARISING FROM IMMEDIATE HEALTH CARE)
18 01	Wastes from natal care, diagnosis, treatment or prevention of disease in humans
18 01 04	Wastes whose collection and disposal is not subject to special requirements in order to prevent infection (for example dressings, plaster casts, linen, disposable clothing, diapers)
18 02	Wastes from research, diagnosis, treatment or prevention of disease involving animals
08 02 03	Wastes whose collection and disposal is not subject to special requirements in order to prevent infection
19	WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION AND WATER FOR INDUSTRIAL USE
19 05	Wastes from aerobic treatment of solid wastes
19 05 01	Non-composted fraction of municipal and similar waste
19 05 02	Non-composted fraction of animal and vegetable waste
19 05 03	Off-specification compost
19 06	Wastes from Anaerobic Treatment of Wastes
19 06 04	Digestate from anaerobic digestion of municipal waste (for seeding/reseeding of digesters or SBR only)
19 06 06	Digestate from anaerobic treatment of animal and vegetable waste (for seeding/reseeding of digesters or SBR only)
19 12	Wastes from the mechanical treatment of waste (e.g. sorting, crushing, compacting, pelletising) not otherwise specified
19 12 01	Paper and cardboard
19 12 04	Plastic and rubber
19 12 07	Wood other than that mentioned in 19 12 06
19 12 08	Textiles
19 12 10	Combustible waste (refuse derived fuel)
19 12 12	Other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11
20	MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS
20 01	Separately collected fractions (except 15 01)
20 01 01	Paper and cardboard
20 01 08	Biodegradable kitchen and canteen waste
20 01 10	Clothes
20 01 11	Textiles
20 01 38	Wood other than that mentioned in 20 01 37
20 01 39	Plastics
20 02	Garden and park wastes (including cemetery waste)
20 02 01	Biodegradable waste
20 02 03	Other non-biodegradable waste
20 03	Other municipal wastes
20 03 01	Mixed municipal waste
20 03 02	Waste from markets
20 03 03	Street cleaning residues
20 03 07	Bulky waste

Appendix 3
Firing Diagram



MARTIN GmbH

Stoker capacity diagram Keighley / GB

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Number of runs: V - 3

Grate width: 6.320 m

Grate area: 44.9 m²

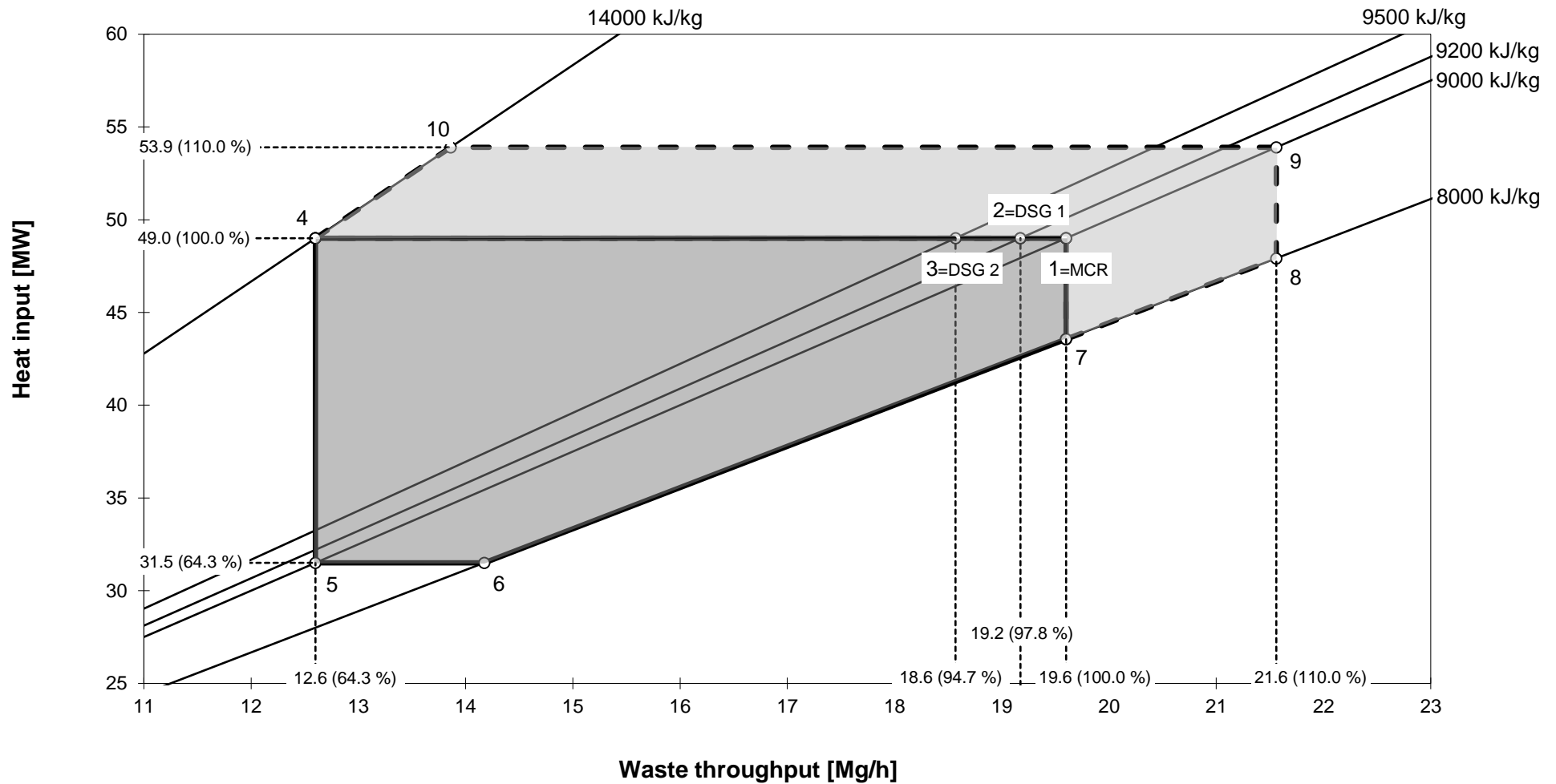
Number of steps: 13



Normal load range



Range for control fluctuations
(set point specification not permitted!)



Appendix 4
R1 Calculation

E	Update with LHV 9,5MJ/kg	15/06/17	
D	Update for final offer	09/01/17	
C	Update with LHV 9,2MJ/kg	12/07/16	
B	Update	30/03/15	
A	First issue	12/03/15	
REV.	OBJET	DATES	ENR
Un trait dans la marge signale une évolution du texte depuis l'indice précédent.			

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KEIGHLEY

TITRE :

Energy Efficiency - R1

Ce document dans son statut BPE reste applicable pendant toute la phase de réalisation

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Preliminary values

Type of energy	Unit	Reporting year (8000h)		
		amount [tonne]	NCV [kJ/kg]	Energy Ex [MWh]
1.1 amount of incinerated waste (without 1.2 and 1.3)		148 544	9 500	391 972
1.2 e.g. amount of incinerated sewage sludge		0		
1.3 e.g. amount used activated carbon incinerated		0		
1 E_w: energy input to the system by waste	MWh			391 972
2.1 E _{i1} : amount of light fuel oil for start up (after connection with the steam grid)	litre	18 856	42 705	206
2.2 E _{i2} : amount of light fuel oil for keeping the incineration temperature	litre	0		
2.3 E _{i3} : amount of natural gas for start up and keeping incineration temperature	Nm3	0		
2 S E_i: energy input by imported energy with steam production	MWh			206
3.1 E _{i1} : amount of light fuel oil for start up/shut down (no connection with the steam grid)	litre	18 856	42 705	206
3.2 E _{i2} : e.g. natural gas for heating up of flue gas temperature for SCR	Nm3	0		
3.3 E _{i3} : imported electricity (multiplied with the equivalence factor 2.6)				869
3.4 E _{i4} : imported heat (multiplied with the equivalence factor 1.1)		0		
3 S E_i: energy input by imported energy without steam production	MWh			1 075
4.1 E _{pel} internal used: electricity produced and internally used for the incineration process	MWh			101 837
4.2 E _{pel} exported: electricity delivered to a third party	MWh			0
4 S E_{pel} produced = E_{pel} internal used + E_{pel} exported	MWh			101 837
5.1 E _{pheat exp.1} : steam delivered to a third party without backflow as condensate				0
5.2 E _{pheat exp.2} : district heat delivered to a third party with backflow as condensate (hot water)				0
5 E_{pheat exported} = E_{pheat exp.1} + E_{pheat exp.2}	MWh			0
6.1 E _{pheat int.used1} : for steam driven turbo pumps for boiler water, backflow as steam				0
6.2 E _{pheat int.used2} : for heating up of flue gas with steam, backflow as condensate				2 909
6.3 E _{pheat int.used4} : for concentration of liquid APC residues with steam, backflow as condensate				0
6.4 E _{pheat int.used5} : for soot blowing without backflow as steam or condensate				3 694
6.5 E _{pheat int.used7} : for heating purposes of buildings/instruments/silos, backflow as condensate				0
6.6 E _{pheat int.used8} : for deaeration-demineralization with condensate as boiler water input				
6.7 E _{pheat int.used9} : for NH4OH (water) injection without backflow as steam or condensate				0
6 S E_{pheat int.used} = S E_{pheat int.used1-9}	MWh			6 603

$$R1 = [(E_p - (E_f + E_i)) / (0.97 * (E_w + E_f))] * \text{Climatic factor} \quad [-]$$

Climatic factor = 1,05

$$E_p = 2.6 * (S E_{pel \text{ int.used}} + S E_{pel \text{ exported}}) + 1.1 * (S E_{pheat \text{ int.used}} + S E_{pheat \text{ exported}}) \quad \text{MWh} \quad 272 \ 039$$

$$R1 = [((2.6 * (101 \ 683) + 1.1 * (5 \ 935 + 0)) - (206 + 1 \ 066)) / (0.97 * (391 \ 983 + 206))] * 1,05 \quad [-] \quad 74,4\%$$