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ENERGY AND CLIMATE CHANGE
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WASTE RESOURCE MANAGEMENT

VALENCIA WASTE MANAGEMENT LTD

APPLICATION TO VARY PERMIT NUMBER EPR/BV4517IM

ASSESSMENT OF BEST AVAILABLE TECHNIQUES

APRIL 2023

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1 INTRODUCTION

1.1.1 Wardell Armstrong have been appointed to prepare an application to vary the permit for Masons Landfill at Great Blakenham near Ipswich. The site is operated by Valencia Waste Management Ltd (Valencia) under permit number EPR/BV4517IM.

1.1.2 The landfill site is permitted to accept non-hazardous commercial, industrial and household waste as well as having a separate cell for asbestos.

1.1.3 Valencia is seeking to move waste up the waste hierarchy by treating mixed non-hazardous waste arriving at the landfill to recover materials for recycling. The waste will be further treated to remove non-combustible material from combustible material before it is sent off site for energy recovery. The residual waste will be placed in the landfill.

1.1.4 No asbestos will be treated. The measures in place for the safe disposal of asbestos into a dedicated cell within the landfill will continue.

1.1.5 This document shows how the site will comply with 2018 BAT Conclusions for Waste Treatment.

2 COMPLIANCE WITH 2018 BAT CONCLUSIONS

2.1.1 Table 2.1 below describes how the site will comply with the best available techniques as set out by the European Commission in the 2018 BAT Conclusions for Waste Treatment.

2.1.2 The Environment Agency has recently published appropriate measures for the transfer and treatment of non-hazardous and inert waste. These are largely based on the BAT conclusions. This document, along with the other documents that make up the application show how the appropriate measures are applied.

2.1.3 There are no sensitive human receptors in close proximity to the site and the only protected habitat within 500m is a county wildlife site which lies to the south of the existing landfill. Therefore an odour abatement system and noise management plan are not considered to be required.

2.1.4 Further detail regarding the measures in place is given in the EMS Summary, Operating Techniques, Odour Management Plan, Dust Management Plan, Fire Prevention Plan and Accident and Amenity Risk Assessment.

Table 2.1 Compliance with the 2018 BAT Conclusions	
BAT Requirement	**Compliance**
BAT 1 Environmental Management System	Valencia has a companywide EMS which will be rolled out to the new Materials Recycling Facility (MRF), covering issues such as staff appraisal and training. Standard operating procedures will be in place for waste pre-acceptance and acceptance and all waste treatment operations. Where necessary the EMS includes management plans submitted to the EA including an accident management plan and site specific Fire Prevention Plan.
BAT 2 Site pre-acceptance and acceptance procedures, waste tracking, sorting of waste, waste segregation and managing the quality of outputs	Pre acceptance and acceptance procedures will be as those for the landfill, ensuring the waste is permitted and is suitable for transfer or treatment. Records will be kept of all incoming waste, any treatment process to which it was subjected and all outgoing materials. Where appropriate manual sorting will take place to remove non-conforming materials or those that might impact waste treatment. Visual inspection of outgoing materials will be made to ensure they are of appropriate quality with a picking line to give quality control.
BAT 3 Inventory of waste gas and wastewater streams	There will be no point source emissions to water or air from the permitted activities. Only water from roofs and clean areas will discharge to the existing surface water system.
BAT 4 Adequate storage at an optimised location. Separate storage for hazardous waste.	No hazardous waste will be received in the MRF. Storage bays provided to allow good management of waste types. Site designed with sufficient capacity. Wastes stored in building to minimise emissions. Building not near any sensitive boundary.
BAT 5 safe handling including management of spills and staff training	No liquid wastes or powders to be accepted. Staff trained regarding safe storage, appropriate wastes for treatment, proper control of sorting machinery, quality of output and environmental risks (e.g. understanding of dust prevention plan and fire prevention plan)
BAT 6 and BAT 7 Monitoring emissions to water	No emissions to water
BAT 8 Monitoring of point source emissions to air	No point source emissions to air

Table 2.1 Compliance with the 2018 BAT Conclusions	
BAT Requirement	**Compliance**
BAT 9 monitor emissions from regeneration of solvents, treatment of solvents and use of solvents to decontaminate equipment containing POPs.	Not applicable. No waste solvents will be accepted. No POPs waste will be treated.
BAT 10 Odour monitoring where a nuisance at sensitive receptors is expected or has been substantiated.	Not applicable. There are no sensitive receptors in close proximity to the site. No odour nuisance has been substantiated. Daily olfactory monitoring will occur and will be recorded.
BAT 11 monitor energy, raw material and water use	Use of diesel, electricity, water and raw materials (e.g. lubricants for site plant) will be monitored and recorded.
BAT 12 Odour Management Plan in place	An Odour Management Plan has been prepared and is submitted as part of this application.
BAT 13 Reduce odour by limiting residence times, using chemical treatment and optimising aerobic treatment	There will be no aerobic treatment on site. Chemicals will not be used as these may add to emissions and can mask rather than treat the odour. Residence times are limited. Waste will be turned round as soon as possible and readily biodegradable wastes will not be stored on site for more than 72 hours. Waste containing a high proportion of putrescible waste will not be accepted at the MRF.
BAT 14 Minimise sources of diffuse emissions e.g. dust by minimising sources of emissions, using good quality well maintained plant, damping down where needed, cleaning waste storage areas having a leak detection and repair (LDAR) programme	Due to the type of waste treated LDAR is not applicable. Site roads and storage areas will be swept as necessary to prevent a build-up of dust. Plant will be maintained in accordance with the manufacturer's recommendations. A water supply is available to allow damping down where necessary.
BAT 15 and BAT 16 Flaring only for safety reasons, correct design of flare	Not applicable the waste treatment does not generate flammable gas.
BAT 17 Noise Management Plan where nuisance at sensitive receptors is expected or has been substantiated.	Not applicable. There are no sensitive receptors in close proximity to the site. Operations take place inside a building and within an existing landfill.
BAT 18 reduce noise by one, or a combination of appropriate location, proper operation and maintenance of plant, low noise equipment, noise attenuation.	The building will provide some attenuation. Doors will be kept closed. Plant will be operated by trained staff and maintained in line with the manufacturer's recommendations. Noise levels will be a consideration in purchasing new equipment with quieter models used where cost effective.
BAT 19 Manage water effectively by managing water use, recirculating water where appropriate, reducing	Water use will be metered and use of water for damping down dust or cleaning will be limited to that

Table 2.1 Compliance with the 2018 BAT Conclusions	
BAT Requirement	**Compliance**
the chance of overflows, roofing waste storage areas, impermeable surfacing and adequate drainage.	which is appropriate. Water in the water bath will be kept at an appropriate level to prevent overflows. All waste will be stored and treated in a building limiting contaminated run-off from the waste. Roof water and from clean areas will be kept separate. All waste storage and treatment areas will have impermeable pavement. Water from the sump will be sent for disposal when required as it is likely to be contaminated. Roof water may be captured and used on site.
BAT 20 treatment of wastewater	The process does not use water other than in the water bath and there are no emissions to water so water treatment is not necessary.
BAT 21 Limit emissions from incidents by protecting plant from malevolent acts, effective controls, prevention of fire, incident management plan, logging incidents and reviewing for	Fire Prevention Plan in place, including management of firewater. Safe means to isolate plant in the event of an incident. Site security in place including fencing around the site and lockable door on the building, all incidents and near misses logged as reviewed on a regular basis for lessons learned.
BAT 22 reduce raw material use by substituting waste	Not applicable. Raw materials limited to those necessary for proper operation of site plant and use of waste is not appropriate.
BAT 23 Energy balance and energy efficiency plan	Specific energy use recorded. Energy used measured and will be reviewed on a regular basis. Plant properly maintained to prevent excessive use of diesel.
BAT 24 Reuse of packaging	Not applicable waste is accepted loose.
BAT 25 Reduce emissions of dust to air by use of cyclone, fabric filter or wet scrubber or damping by injecting water into shredder. The waste to be shredded is damped by injecting water into the shredder. The amount of water injected is regulated in relation to the amount of waste being shredded (which may be monitored via the energy consumed by the shredder motor).	No point source emissions to air external to the building. The 3 way separator has localised extraction which feeds air from the plant via a dust filter back into the building. Spray bar provided at transfer point for light wastes to minimise fugitive emissions to atmosphere from the 3 way separator.
BAT 26, 27 and 28 applicable to shredding of metal	Not applicable
BAT 2 and 30 applicable to treatment of WEEE	Not applicable
BAT 31 limit emissions of VOCs to air from mechanical treatment of waste with calorific value by use of	Waste to be treated is not expected to give rise to significant emissions of VOCs and should not cause a

Table 2.1 Compliance with the 2018 BAT Conclusions	
BAT Requirement	**Compliance**
adsorption, biofilter, thermal oxidation or wet scrubbing.	nuisance. To be reviewed should olfactory monitoring show odour is a problem.
BAT32 applicable to treatment of WEEE	Not applicable
BAT 33,34,35,36,37,38 and 39 applicable to biological treatment	Not applicable. No biological treatment on site.
BAT 40 Monitor waste inputs for metals, salts, odorous compounds, oxidisers and organics.	Not practicable where the input is mixed waste, largely C&D waste. Pre-acceptance procedures in place and the waste will be subject to visual inspection prior to treatment to ensure that nothing is present that might damage the plant or cause other issues. No chemical treatment of waste.
BAT 41 Limit emissions of dust, organic compounds and ammonia by use of adsorption, wet scrubber, biofilter or fabric filter.	Not applicable. No point source emissions to air.
BAT 42,43 and 44 applicable to re-refining of oil	Not applicable. No waste oil to be accepted.
BAT 45 reduce emissions of VOC to air by cryogenic condensation, thermal oxidation, adsorption or wet scrubbing.	Not applicable no point source emissions to air.
BAT 46 and 47 applicable to regeneration of spent solvent	Not applicable
BAT 48 and 49 applicable to thermal treatment of spent activated carbon, contaminated soil and waste catalysts	Not applicable
BAT 50 applicable to washing of contaminated soil	Not applicable
BAT 51 applicable to treatment of equipment containing PCBs	Not applicable
BAT 52 and 53 applicable to treatment of liquid waste	Not applicable only solid wastes will be treated.

3 USE OF WATER

3.1.1 The process does not use water other than in the water bath. Otherwise use of water will be limited to damping down of dust and cleaning. As a rule, bays will be cleaned by dry sweeping or vacuuming to limit water use.

3.1.2 The water bath will use between 4m^3 and 8m^3 of water during each 10 hour shift. Losses are via evaporation or entrained in the waste streams from the plant and there are no emissions. Water will be topped up from the mains supply.

3.1.3 A water meter is installed to monitor water use. Records will be kept of water usage and these will be reviewed annually with targets set for reduction where appropriate.

3.1.4 It is not intended to reuse water from the sump as in normal circumstances very little water will be present. By unloading and storing the waste inside a building the amount of run-off from stored wastes should be negligible. In the event of a fire the water collecting in the sump will be recirculated for reuse in firefighting. Ultimately it is likely to become contaminated and will be taken off-site for disposal.

3.1.5 Consideration will be given to the collection of roof water for use on site for damping down dust or cleaning. This will be implemented subject to being practicable and to health and safety considerations being acceptable, that is legionella can be prevented.

3.1.6 Water use will be reviewed at least once every four years to assess whether any improvements can be made.

4 USE OF RAW MATERIALS

4.1.1 The following raw materials will be used on site:

- Lubricating oil for site plant
- Hydraulic oil for site plant

4.1.2 The new MRF is for the mechanical treatment of waste and so no raw materials are used directly in the process.

4.1.3 Raw material use will be reviewed at least once every 4 years and where more environmentally friendly options are available these will be adopted provide that they provide the correct performance and are cost effective.

5 USE OF ENERGY

5.1 Compliance with BREF Note on Energy Efficiency

5.1.1 In order to comply with the BAT Conclusions on energy efficiency Valencia will have an energy efficiency and management system incorporated in their EMS. This will include a commitment from senior managers to use energy efficiently and to seek to reduce carbon emissions. Valencia is committed to complying with all energy efficiency legislation.

5.1.2 Communications will be made to staff to raise awareness of the energy policy and encourage employee engagement.

5.1.3 Energy use will be reviewed at least once every four years and targets for efficiencies will be set, seeking continuous improvement and reduction in emissions.

5.1.4 Where new plant is being purchased energy efficiency will be an important consideration and all processing plant, lighting and HVAC systems will be designed with expert input to ensure the most efficient schemes are adopted. This will include optimising layouts, assessing correct sizing of motors and using variable speed drives where appropriate and effective.

5.1.5 All plant will be part of the planned preventative maintenance programme and will be properly maintained so as to operate without excessive use of energy. Staff will receive training so that procedures are followed correctly and idling of plant or inefficient loads are avoided.

5.1.6 All energy use will be recorded so that quantitative comparisons can be made and energy savings can be properly assessed.

5.2 Specific Energy Consumption

5.2.1 To allow benchmarking and assessment of progress against any energy efficiency targets that are set the specific energy consumption will be calculated each year. An initial assessment of electricity usage is given below.

5.2.2 An overall breakdown of the power required by the recycling plant has been provided by the technology supplier, based on the installation of the technology at a number of Valencia's sites. This indicates that the plant will require a 627.71kW supply and will operate for 2,000 hours a year. The scale of the final scheme is to be confirmed and the energy use calculations will be updated as required when the site specific energy usage is finalised.

5.2.3 On the basis of the currently available information, it is anticipated that the site will have an electricity usage of 1,255.42MWh per year.

5.2.4 This allows the potential carbon emissions to be calculated as shown in the following tables.

Table 5:1 Energy Consumption		
Energy Source	**Units/year as delivered MWh**	**At primary source Unit MWh /year**
Electricity from mains supply	1,255.42	3,013.01*
Total MWh	1,255.42	3,013.01
Notes: * When electricity from the national grid is utilised there are losses from the grid between the power station and the plant. Environment Agency guidance requires that a conversion factor of 2.4 is used to account for this. https://www.gov.uk/guidance/assess-the-impact-of-air-emissions-on-global-warming#greenhouse-gases-impact-of-your-emissions		

5.2.5 As the site will process 150,000 tonnes of waste a year the specific energy use per tonne of waste treated will be as follows.

Table 5.2 Projected SEC for First Year of Operation			
Year	**Total Energy Consumption (kWh)**	**Total Waste received (tonnes)**	**Projected SEC for year (kWh/ Tonne)**
1	3,013,010	150,000	20.1

5.2.6 Since the quantity of waste treated may vary from year to year the specific energy usage can be calculated to make like for like comparisons regarding energy efficiency.

5.2.7 Currently the expected energy usage would equate to the following carbon emissions.

Table 5:3 Annual Carbon Dioxide Emissions from Energy Use			
Energy source	**Primary Energy Usage (MWh)**	**Conversion factor & CO_2 factor**	**CO_2 (tonnes per annum)**
Electricity	3,013.01	0.166*	499.66
TOTAL	3,013.01		499.66
* Conversion factor taken from https://www.gov.uk/guidance/assess-the-impact-of-air-emissions-on-global-warming#greenhouse-gases-impact-of-your-emissions accessed on 7th April 2020.			

5.2.1 As yet there is no estimate of diesel usage for mobile plant at the site. During the first year of operation diesel usage will be monitored and recorded, allowing this to be incorporated into the specific energy use calculation. An assessment of available mobile plant will be made at the point that it is ordered to establish whether available diesel or electric plant is more suitable for operational purposes.

5.2.2 Energy use will be recorded and will be reviewed at least once every four years to assess where savings could be made. Where assets come up for replacement consideration will be given to the following options:

- use of more efficient models;
- use of alternative fuel (e.g. biofuel);
- use of renewable electricity where possible.

6 WASTE MINIMISATION

6.1.1 The whole purpose of the variation is to move waste further up the waste hierarchy. Waste treatment will allow the recovery of ferrous metal, non-ferrous metal, plastics and wood for recycling. It will also allow energy recovery from waste that might otherwise have been landfilled, selecting the light wastes which will have the best calorific value. Finally the heavies, comprising mainly inert waste, will be utilised for landfill engineering, for example maintain site roads, heavies and fines from the trommel maybe used as daily cover on the landfill, minimising the use of non-waste for that purpose.

6.1.2 Overall the new plant will therefore maximise the recycling or recovery of the waste delivered to site.

6.1.3 Since waste is subject to mechanical treatment the waste arising from the plant itself will be minimal. Oils or oily rags arising from plant maintenance will be sent for recycling where appropriate or will be sent for energy recovery.

6.1.4 At least once every four years the waste treatment will be reviewed to determine whether there are cost effective options for improving recovery of materials for recycling.

6.1.5 All wastes will be stored in appropriate bays or containers and waste oil drums will be provided with a bunded tray as secondary containment.

6.1.6 All waste dispatched from site will be sent to a permitted waste recovery or disposal facility. Transfer notes will be provided (or consignment notes for waste oils that are hazardous). Records will be maintained detailing the quantity of waste dispatched form the site and its final destination.

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