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VALENCIA WASTE MANAGEMENT LTD

SHELFORD LANDFILL VARIATION APPLICATION (EPR/XP3434HX)

OPERATING TECHNIQUES

MAY 2023

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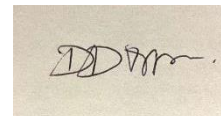
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APPENDICES

Appendix 1 Plant Specification and process flow diagram

DRAWINGS	TITLE	SCALE
SHF247	Proposed MRF Location	1:500@A0

1 INTRODUCTION

- 1.1.1 Wardell Armstrong has been appointed to prepare an application to vary the permit for Shelford Landfill Site at Shelford Farm Estate near Kent. The site is operated by Valencia Waste Management Ltd (Valencia) under permit number EPR/XP3434HX.
- 1.1.2 The site is permitted to accept non-hazardous commercial, industrial and household waste for disposal, as well as for the treatment of leachate arising from the landfill.
- 1.1.3 Valencia is seeking to prevent recyclable and recoverable wastes from going to disposal, in accordance with the principles of the waste hierarchy. The variation will allow mixed non-hazardous waste arriving at the landfill to be first treated to recover metals, wood and plastics for recycling, then further treated to remove non-combustible material to prepare the combustible wastes for energy recovery off-site. The residual non-combustible waste will be utilised in landfill engineering or will be placed in the landfill.
- 1.1.4 Section 2 sets out the new activities to be undertaken at the site, whilst section 3 sets out the waste acceptance procedures for the treatment process.
- 1.1.5 Section 4 describes the waste treatment activity and the way in which it is managed and section 5 describes the measures in place to minimise any impacts on the amenity of the locality from the new activity. Otherwise the site will continue to operate in accordance with the agreed management system and plans set out in the Environmental Permit.
- 1.1.6 The site layout is shown on drawing SHF247.

2 NEW ACTIVITIES

- 2.1.1 A new installation will be included in the permit, listed under Section 5.4 A(1) (b) (ii), i.e. a mix of recovery and disposal of non-hazardous waste with a capacity exceeding 75 tonnes per day involving pre-treatment of waste for incineration or co-incineration.
- 2.1.2 There will also be a new waste activity for manual sorting and transfer of waste.
- 2.1.3 The activities and their relevant waste disposal and waste recovery codes are set out in Table 2.1, below.

Table 2.1: Waste Activities	
Activity	D or R Code
Separation of combustible waste from non-combustible waste where EfW has R1 status	R3 Recycling /reclamation of organic substances that are not used as solvents
Separation of wood and plastic for recycling.	R3 Recycling /reclamation of organic substances that are not used as solvents
Separation of ferrous metal and non-ferrous metal from mixed waste pending recycling elsewhere	R4 Recycling /reclamation of metals and metal compounds
Separation of stone, brick, glass etc for use in roads	R5 recycling/reclamation of other in-organic materials
Storage of incoming waste and storage of treated wastes pending transfer to R1 status EfW facility, metal recycling site.	R13 storage of waste pending any of the operations numbered R1 to R12
Storage of waste pending transfer to landfill	D15 storage of waste pending any of the operations D1 to D14.

2.1.4 The wastes that may be stored or treated in the MRF building would be as listed in Table 2.2. These wastes will undergo mechanical treatment to recover metals and inert materials and prepare the waste for incineration.

Table 2.2. Wastes for Mechanical Treatment	
Waste Code	Description
01	WASTES RESULTING FROM EXPLORATION, MINING, QUARRYING, AND PHYSICAL AND CHEMICAL TREATMENT OF MINERALS
01 01	Wastes from mineral excavation
01 01	Wastes from mineral metalliferous excavation
01 01 02	Wastes from mineral non-metalliferous excavation
01 04	Wastes from physical and chemical processing of non-metalliferous minerals
01 04 08	Waste gravel and crushed rocks other than those mentioned in 01 04 07
01 04 09	Waste sand and clays

Table 2.2. Wastes for Mechanical Treatment	
Waste Code	Description
02	WASTES FROM AGRICULTURE, HORTICULTURE, AQUACULTURE, FORESTRY, HUNTING AND FISHING, FOOD PREPARATION AND PROCESSING
10 12	Wastes from manufacture of ceramic goods, bricks, tiles and construction products
10 12 06	Discarded moulds
10 12 08	Waste ceramics, bricks, tiles and construction products (after thermal processing)
10 12 12	Wastes from glazing other than those mentioned in 10 12 11
10 13	Wastes from manufacture of cement, lime and plaster and articles and products made from them
10 13 14	Waste concrete
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 04	Metallic packaging
15 01 05	Composite packaging
15 01 06	Mixed packaging
15 01 07	Glass packaging
15 01 09	Textile packaging
17	CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)
17 01	Concrete, bricks, tiles and ceramics
17 01 01	Concrete
17 01 02	Bricks
17 01 03	Tiles and ceramics
17 01 07	Mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06
17 02	Wood, glass and plastic
17 02 01	Wood
17 02 02	Glass
17 02 03	Plastic

Table 2.2. Wastes for Mechanical Treatment	
Waste Code	Description
17 03	Bituminous mixtures, coal tar and tarred products
17 03 02	Bituminous mixtures other than those mentioned in 17 03 01
17 04	Metals (including their alloys)
17 04 01	Copper, bronze, brass
17 04 02	Aluminium
17 04 03	Lead
17 04 04	Zinc
17 04 05	Iron and steel
17 04 06	Tin
17 04 07	Mixed metals
17 04 11	Cables other than those mentioned in 17 04 10
17 05	Soil (including excavated soil from contaminated sites), stones and dredging spoil
17 05 04	Soil and stones other than those mentioned in 17 05 03
17 09	Other construction and demolition wastes
17 09 04	Mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03
19	WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION/INDUSTRIAL USE
19 01	Wastes from incineration or pyrolysis of waste
19 01 02	Ferrous materials removed from bottom ash
9 02	Wastes from physico/chemical treatments of waste (including dechromatation, decyanidation, neutralisation)
19 02 03	Premixed wastes composed only of non-hazardous wastes
19 02 10	Combustible wastes other than those mentioned in 19 02 08 and 19 02 09
19 04	Vitrified waste and wastes from vitrification
19 04 01	Vitrified waste
19 12	Wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified
19 12 01	Paper and cardboard
19 12 02	Ferrous metal
19 12 03	Non-ferrous metal

Table 2.2. Wastes for Mechanical Treatment	
Waste Code	Description
19 12 04	Plastic and rubber
19 12 05	Glass
19 12 07	Wood other than that mentioned in 19 12 06
19 12 08	Textiles
19 12 09	Minerals (for example sand, stones)
19 12 10	Combustible waste (refuse derived fuel)
19 13	Wastes from soil and groundwater remediation
19 13 02	Solid wastes from soil remediation other than those mentioned in 19 13 01
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 02	Glass
20 01 38	Wood other than that mentioned in.20 01.37
20 01 39	Plastics
20 01 40	Metals
20 02	Garden and park wastes (including cemetery waste)
20 02 02	Soil and stones
20 03	Other municipal wastes
20 03 01	Mixed municipal waste
20 03 02	Waste from markets
20 03 07	Bulky waste

3 WASTE ACCEPTANCE

3.1.1 Up to 150,000 tonnes of additional waste may be accepted at the site each year with approximately 150,000 tonnes being treated through the recycling plant. Waste for treatment may be a mix of those waste streams already accepted at the landfill and new waste streams.

3.1.2 The waste types are very similar to those already accepted on site, therefore the Waste Pre-Acceptance and Acceptance will continue in line with the existing

procedures. At the pre-acceptance stage, each waste stream will be allocated to either the treatment plant or the landfill and this will be clearly recorded in the waste information form so it is apparent to weighbridge staff when the waste arrives on site.

- 3.1.3 Waste arriving at the site will be directed to the weighbridge to be weighed and inspected by a weighbridge operator. The transfer note will be checked against the pre-acceptance information and, wherever possible, a visual inspection of the waste will be made. If all is in order, the weighbridge operator will direct the load to the appropriate unloading point, whether that is the active non-hazardous landfill cell or the MRF building. Non-permitted and other non-conforming waste types will be returned to the site of origin or re-directed to an appropriately permitted facility.
- 3.1.4 Waste loads received at the MRF building will tipped into the waste reception area. Loads will be inspected during unloading to ensure that they are compliant with the permit and whether they are suitable for waste treatment.
- 3.1.5 Those wastes listed in Table 2.2 will be stored in a dedicated bay pending treatment through the mechanical treatment plant.

4 MECHANICAL TREATMENT

- 4.1.1 Non-hazardous waste arriving at the site will be received inside a building to provide containment for litter, dust, noise and odour.
- 4.1.2 Waste is to be sorted into a range of different waste streams for recycling or recovery. Appendix 1 provides the specification of the waste sorting equipment to be used on site, including a process flow diagram. A written description of the process is given below.
- 4.1.3 Wastes to be treated through the MRF should be in fraction sizes less than 300mm in any direction. To facilitate this, a shredder will be provided and, where necessary, waste will be treated through the shredder to ensure the correct particle size entering the plant. As an additional safeguard, a long part separator will be placed between the shredder and the other MRF equipment to remove any long pieces of material that might damage the plant. Long parts will be sent to the landfill.
- 4.1.4 The waste will pass on a conveyor under an overband magnet in order to remove ferrous metal. Ferrous metals will be placed in a dedicated bay pending removal to a permitted metal recycling site.

- 4.1.5 Then the waste will pass via a combi screen which will separate the waste into three sizes:
- <10mm fines, treated as residual waste;
 - <50mm, sent to the fan blower to separate light materials; and
 - 50 -300mm, sent to the 3 way separator.
- 4.1.6 The <50mm fraction will pass through a fan blower to remove light material, for example small pieces of card or plastic. This is followed by a water bath where further light materials will be floated off. The light material will be passed to a dedicated refuse derived fuel (RDF) bay pending removal to an energy from waste plant.
- 4.1.7 The RDF will have a lower metal content and higher calorific value compared to the incoming waste, improving its characteristics for incineration versus the untreated waste.
- 4.1.8 The <50mm waste will then pass a further magnet to remove any remaining ferrous metal before, finally, the material will pass through an eddy current separator to separate any non-ferrous metal from the remaining heavy waste. Ferrous and non-ferrous metal will be directed to dedicated storage bays pending removal to a metal recycling site.
- 4.1.9 The mid-sized heavies will be combined with the larger heavies from the other line (described below).
- 4.1.10 The larger material (50mm to 300mm) will pass to a three way separator. This will separate waste by weight, producing a light fraction a mid-heavy fraction and a heavy fraction. The light fraction will be sent off site as RDF.
- 4.1.11 The heavy fraction will pass via another overband magnet, with ferrous metal being collected and sent to the ferrous metal bay, pending recycling off-site.
- 4.1.12 The mid-heavy fraction will contain plastic, wood and similar materials. This will then be sent to an optical sorter which will separate wood, plastic and residual waste.
- 4.1.13 Following mechanical treatment, the plastic, wood, residual waste and heavy waste will pass through a picking station to allow final quality control on the outputs. Staff will sort the waste by hand to remove any materials remaining in the wrong stream and ensure it is directed to the correct storage bay.

- 4.1.14 Wood and plastic will be stored in dedicated storage bays pending recycling off-site. Where it is confirmed to be non-hazardous all residual waste will be placed in the landfill.
- 4.1.15 The heavy fraction is expected to contain a high content of grit, stone, glass etc it will be used within the landfill for maintaining site roads and for daily cover.
- 4.1.16 Once it has been evidenced that it is non-hazardous, the <10mm fines and the residual waste will be placed in the landfill or where appropriate used as landfill cover. Any hazardous fines will be sent off site to a permitted hazardous waste facility.

5 OUTGOING WASTES

5.1 Fate of Sorted Materials

- 5.1.1 Ferrous and non-ferrous metals will be stored in dedicated bays and then will be loaded into a vehicle and removed to a permitted metal recycling site. Metals will not be stored for more than 1 month.
- 5.1.2 The heavy material is expected to be largely inert. This material will be stored in a dedicated bay or may be stockpiled on the landfill awaiting use in engineering works. Heavy material will not be stored for more than 6 months.
- 5.1.3 RDF will be stored in a dedicated bay and then loaded onto vehicles for direct transfer to the Energy from Waste Plant (EfW). As the material is loose RDF, it will be removed daily and all such waste will be transferred to the EfW within 72 hours of being received on site.
- 5.1.4 Wood and plastic will be stored in dedicated storage bays before being loaded into vehicle and sent off site for recycling. Wood and plastic will not be stored for more than 1 month.
- 5.1.5 Fines and residual waste will be removed to the landfill within 72 hours except where they need to be held for a longer period pending results from the laboratory to confirm their classification. Should any fines be classed as hazardous waste they will be loaded onto a vehicle and removed to a permitted hazardous waste site. A consignment note will be completed. Non-hazardous fines may be used as landfill cover providing that they are not dusty or odorous. Any other fines/residual waste will be landfilled.
- 5.1.6 All fines and residual waste will be stored in a dedicated bay inside the building until they are moved for final disposal.

5.2 Testing of Trommel Fines

- 5.2.1 There is an expectation that as only non-hazardous wastes are proposed to be treated on site, the fines will also be non-hazardous. However, 19 12 12 is a mirror entry in the list of waste codes and it is known that some trommel fines classify as hazardous waste.
- 5.2.2 To ensure the quality of the outputs, only a limited number of wastes will be treated through the trommel. The composition of the fines is therefore expected to be relatively consistent.
- 5.2.3 To ensure the fines are properly classified, 2 samples per day will be taken during the first month of operation. The waste types accepted over this month of operation are anticipated to be representative of the average feedstock to be processed throughout the operational life of the facility. The samples will be subject to testing in line with the Environment Agency's WM3 guidance to confirm their classification.
- 5.2.4 If the results show that the wastes are non-hazardous throughout this period, testing will cease after the first month. Thereafter, one sample of trommel fines will be taken each year to assess whether anything has changed.
- 5.2.5 Should any samples within the first month return a result showing that the fines are hazardous an assessment will be made to determine whether the results are statistically significant and, where necessary, a sampling programme will be drawn up to ensure that all wastes are correctly classified and disposed of legally going forward.
- 5.2.6 Likewise, should there be a significant change in the waste source(s) used as a feedstock to the facility identified (e.g. during pre-acceptance checks) as potentially impacting the composition and classification of the trommel fines, additional sampling and testing will be undertaken to assess whether anything has changed and to ensure that all wastes are correctly classified and disposed of legally going forward.

6 ENVIRONMENTAL PROTECTION

6.1 General

- 6.1.1 The main purpose of the variation is to prevent recyclable and recoverable wastes from going to disposal, following the principles of the waste hierarchy. There will therefore be an overall environmental benefit in reduced use of raw materials (by

recycling metals) and reduced carbon emissions (by recycling metals and recovering energy from combustible waste).

- 6.1.1 Nevertheless, it is important that this is carried out without harm to the local environment. In order to minimise emissions, the activities will take place inside a building.
- 6.1.2 The site will be kept tidy and will be inspected on a daily basis to make sure that no pollution is occurring. Any significant emissions of dust, odour, litter or noise will be investigated and remedied.
- 6.1.3 All plant and equipment will be properly maintained so that it is fit for purpose and operates without excessive noise.
- 6.1.4 The site will be managed by a technically competent manager in accordance with Valencia's written Environmental Management System.
- 6.1.5 As the majority of receptors are more than 200m away, potential emissions of dust, noise or odour are not expected to cause a nuisance or harm to sensitive habitats or human receptors. The facility has been designed to prevent emissions of dust and minimise potential impacts on nearby sensitive receptors, as demonstrated by the Environmental Risk Assessment accompanying the permit application.

6.2 Contaminated Run-Off

- 6.2.1 Waste is unloaded, treated and stored inside the building and therefore it is protected from precipitation and run-off will be minimal.
- 6.2.2 The building is provided with an impermeable reinforced concrete floor, ensuring that no leachate will enter soils under the site. The floor is designed to drain to a 240m³ sump, which will capture any leachate should a load with any free liquid be received. This sump is also designed to capture fire water in the event of a fire.
- 6.2.3 A speed hump at the site entrance ensures that no liquids can run out of the building.

6.3 Litter

- 6.3.1 Measures will be in place to prevent litter. Waste will be unloaded inside the waste MRF building. The building will be fitted with fast acting roller shutter doors which will, as far as possible, be kept closed except for allowing vehicle access and egress.
- 6.3.2 Waste will be stored in dedicated storage bays or containers.

6.3.3 Daily inspections will be made and any loose waste noted lying around will be collected and transferred to the appropriate bay or container.

6.3.4 Incoming and outgoing vehicles will be enclosed or have appropriate sheeting to contain any waste.

6.4 **Dust**

6.4.1 To minimise emissions of dust incoming and outgoing vehicles will be enclosed or have appropriate sheeting to contain any waste.

6.4.2 Waste types accepted at the facility do not include those that are anticipated to be a risk of generating excessive dust.

6.4.3 Waste will be unloaded inside the waste transfer station and as far as possible the fast acting roller shutter doors will be kept closed to contain emissions.

6.4.4 Localised air extraction is provided for the 3 way separator. This will draw air from the separator via a dust filter before returning air inside the building.

6.4.5 A spray bar is provided where the light materials leave the 3 way separator to minimise dust.

6.4.6 There are no point source emissions to atmosphere external to the building.

6.4.7 Daily inspections will be made to ensure that dust is not being emitted from the building. Where emissions of dust are noted, the cause will be investigated and remedied.

6.5 **Odour**

6.5.1 Waste will be accepted and dispatched in enclosed or sheeted vehicles.

6.5.2 There is no intention to treat putrescible waste. Household waste and similar materials, with a high proportion of food waste or other putrescible material, will be identified at the pre-acceptance stage and will be directed to the landfill. Only wastes with a low putrescible content, such as construction and demolition wastes and some commercial and industrial wastes, will be directed to the MRF.

- 6.5.3 Waste will be dealt with on a first in first out basis and will be turned round within 72 hours to minimise the risks of odour and vermin. All bays will be emptied on a regular basis.
- 6.5.1 Waste will be unloaded inside the MRF building. The building will be fitted with fast acting roller shutter doors which will, as far as possible, be kept closed except for allowing vehicle access and egress.
- 6.5.2 A daily olfactory inspection will be made and if there is any noticeable odour at the site boundary, the source will be investigated and remedial action will be taken. Odorous loads will be prioritised for removal from site.

6.6 Vermin and Pests

- 6.6.1 Waste will be stored unloaded and stored inside the building to limit access to pests and vermin.
- 6.6.2 Wastes containing a high level of putrescible waste will not be treated.
- 6.6.3 Waste will be turned round within 72 hours to prevent conditions that would allow pests to become established.
- 6.6.4 A pest control contractor will be retained and will make routine inspections, taking appropriate action to control vermin and pests.
- 6.6.5 The daily inspection will include assessing the presence of rats, flies or other pests. Where there is an indication that there is an infestation the pest contractor will be contacted to attend site as soon as possible to manage the problem.

6.7 Noise

- 6.7.1 The site is not expected to cause any noise issues as the nearest sensitive receptors as the building is in an industrial setting and the majority of receptors are over 200m away, it is considered unlikely that the cumulative noise from the operation will adversely impact local human or habitat receptors. The new activities will take place inside a building giving a degree of attenuation.
- 6.7.2 Plant and equipment will be properly maintained so that it operates without excessive noise.

7 RECORD KEEPING

7.1.1 The records described below will be maintained at the site office and will be made available to warranted officers of the Environment Agency on request:

- The pre-acceptance record for each waste stream and copies of related transfer notes.
- Details of all waste taken off site with a copy of the appropriate transfer note.

7.1.2 A site log will be maintained with the results of daily amenity inspections and any actions taken as a consequence and a record of attendance by the technically competent manager.

7.1.3 A copy of the preventative maintenance programme showing plant has been properly inspected and maintained and when.

7.1.4 A log will be maintained detailing any complaints received and the actions taken to resolve them.

7.1.5 A log will be maintained of any pollution incidents and the action taken to remediate them.

7.1.6 Records will also be kept regarding staff training.

7.1.7 Records will be kept for a minimum of two years and in line with any statutory requirements. Records of pollution incidents will be maintained indefinitely in order to inform any eventual surrender application.

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