

Document reference: ECGE B2.2

**PROCESSING OF ANIMAL BY-PRODUCTS TO PRODUCE
TALLOW AND MEAT AND BONE MEAL BY HEATING AND
CENTRIFUGAL EXTRACTION**

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**FORESEEABLE EMISSIONS and
CHARACTERISATION**

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1. FORESEEABLE EMISSIONS

1.1 This document should be read in conjunction with the Site Report, Document ECGE B3 which provides an assessment of potential pollutants, possible impact and likelihood of contaminating land.

1.2 There is no reasonable potential for harmful emissions to water, groundwater or land from the process. The plant is fully enclosed from beginning to end and within a building, and the potential for polluting emissions could only occur in the event of catastrophic failure of the containment. Additionally, the plant will be licenced in accordance with the EU Animal By-Products Regulations (ABPR) and required to have impermeable surfaces including all delivery and wash down areas, creating a secondary or in some cases tertiary containment. Consequently:

- the waste water stream is spun out during the process and piped to waste water storage tanks for off-site disposal
- all wash down waters or spillages are contained
- all liquids drain to a collection tank for off-site disposal, and
- spilt material is collected and introduced into the plant for processing, including any material caught in drain traps from washing down.

1.2 Waste water from the process and wash down is collected and stored in tanks outside the building in the Installation. Similarly, extracted oil from the process is stored in a heated tank outside the building. This is a potential source of pollution to land, water or groundwater if these failed or the pipework to and from the tanks failed. The tanks are identified as a single point source – **ST 1**. In accordance with the regulations, the tallow and waste water storage tanks will be contained within a bund, which will be regularly maintained and collected rainwater removed; planning permission for the storage tanks and bund, which adjoins the Installation building, has been granted as part of the overall scheme, and forms part of the Installation.

1.3 Other than **ST 1**, there are three emissions which are foreseeable:

- odour
- combustion gases
- noise

2. ODOUR

2.1 The following point sources are identified:

- **Od 1**
- **V 1**
- **V 2**
- **D 1**
- **S 1, S 2 and S 3**

The following area or fugitive sources are identified:

- **A 1**
- **A 2**

2.2 The Installation is located adjoining the knackery and Intermediate Plant at Main Road, Flagg, operated by a sister company; the adjoining site also incorporates animal carcass and pet incinerators and a clinical waste reception and transfer station. The wider site, which is situated in a rural location in a dispersed village which incorporates extensive livestock farming, is not, therefore, odour free.

2.3 The general location is characterised by odours associated with livestock farming, such as manure, while the adjoining knackery, etc, receives dead stock, some being skinned in the knackery and some dismembered with meat sold to maggot farms and for pack hounds. The carcasses are either disposed of by incineration –

- specific stock or pets – or primarily bulked up into trailer loads for despatch to a rendering plant for processing. The wider site is, therefore, characterised by odours of dead stock, generally in early stages of deterioration, though the carcasses and animal by-products will deteriorate more quickly in warmer weather and as it stands in the trailer awaiting despatch to the rendering plant. Putrescent material can be characterised as having a sweet and sickly smell, deteriorating to a strongly objectionable odour, potentially of the highest order, as the Environment Agency has characterised it in their hedonic tone analysis. The knackery is washed down frequently and disinfected every day after operations and odours from this source are minimised.
- 2.4 In addition, the Installation adjoins the hides’ building. Removed hides are stockpiled in this building. The odour is slightly different from the knackery but potentially strong and pungent.
- 2.5 The Installation will receive raw material direct from the adjoining knackery and Intermediate Plant. No new “odour load” arising from raw material will be created by the introduction of the new activity as the material is already present on the immediately adjoining site; the Installation site formerly was part of the knackery site. The material will only be brought into the Installation and introduced into the processing line as required; there will be no storage of raw material on site. Raw material will be introduced directly into the reception hopper, within the enclosed building, above the series of macerators.
- 2.6 The reception hopper is a potential source point of odour – **Od 1**. The hopper is lidded to restrict odours emanating from here.
- 2.7 It is expected that odours from raw material and knackery and Intermediate Plant operations will reduce from the wider site as there will be:
- less storage of carcasses and by-products on site

- removal of trailer used to bulk up material and remove it to a rendering plant
 - reduced use of incineration for disposal of certain tranches of carcasses and by-products
 - quicker processing of material – on the Installation site; there is an incentive to process as quickly as possible as the better quality oil is extracted the fresher the material
- 2.6 Within the processing line there is a venting point **V 1** from buffer tank, HT1. Air from this vent will be collected, combined with air from other sources and used as combustion air in the electricity generating set.
- 2.7 Air from the drier is a potential source of odour, **V 2**. This air will be collected, combined with air from other sources and used as combustion air in the electricity generation set.
- 2.8 Meat and bone meal (MBM) is discharged directly into a trailer for despatch for use off-site; this is the only open part of the process apart from the introduction of raw material but is a potential source of odour – **D 1**. Recently dried MBM has a “cooked” and potentially acrid tone. The MBM is passed from the drier through a cooling auger to reduce temperature and thus odours. The discharge mechanism will include curtains lowered into the trailer to minimise dispersal of dust and thus odour. All filling of trailers will be CCTV observed to even the load within the trailer and ensure no spillage, thus reducing potential for odour. All loading of the trailer will be carried out within the building with closed doors, thus reducing the potential for odour to be emitted.
- 2.5 Each of the waste water storage tanks will need to be vented to allow for displacement. The vents – **S 1, S 2 and S 3** – are potential sources of odour; experience has shown that the waste water stream is not as malodorous as

condensates resulting from rendering. Air from these vents will be contained and passed through charcoal filters to remove malodours.

- 2.6 Reception area – **A 1** – where raw material is introduced into the process and the MBM discharge area – **A 2** – are potential area sources arising from spillage and material trapped in drains from either the waste water stream or from wash down. All trapped material will be regularly removed, thus minimising potential odours, and re-introduced for re-processing. All areas will be regularly washed down and disinfected, thus reducing potential odours.

3. COMBUSTION EMISSIONS

- 3.1 The electricity generating set, located within the process building and Installation, will be fuelled with the animal oil (tallow) extracted by the process. Combustion gases from operation of the generating set are collected and passed to the boiler to heat the water to produce steam used to heat the raw material in the process. This produces a good quality combined heat and power operation and does away with the need for a traditional separate boiler with its own heat source. The generating set is, therefore, a Directly Associated Activity.
- 3.2 Gases from the combustion process will be emitted via the stack – **Ch 1**. Combustion gases will be emitted directly via the stack when the Installation activity is not in operation, or via the boiler of the activity when it is. When in operation the combustion gases will be at reduced temperature – it is expected that the energy from the combustion gases will lower the temperature of the emitted gasses by approximately half to 200⁰ C.
- 3.3 Approximately 9,350m³ per hour of combustion gases will be produced and either passed through a heat exchanging boiler or discharged via the chimney. Except during initial start-up, when B100 bio-diesel will be used, the generating set will

use tallow from the Installation process. Tallow is a low sulphur, clean bio-fuel. The characteristics of the combustion gases from burning the tallow are:

- CO - 0.02 % VOL
- HC - 2 ppm VOL
- NO_x - 329 ppm VOL
- CO₂ - 6.2 % VOL
- O₂ - 12.1 % VOL
- SO_x - 1 ppm VOL

4. NOISE

4.1 The process line is a general source of noise – **NA 1** – containing a number of sources. The generating set is a particular potential source of noise – **NP 1**.

4.2 A full noise report was prepared in connection with the planning application for the new building and plant; this is submitted as an appendix to **Document ECGE B2.9**. In that report the boiler and generating set were both identified as the highest noise generating equipment. However, the boiler is not a separate fired boiler but a heat exchange boiler and will not be a noisy item of plant. The generating set will now be housed within its own sound attenuating box as detailed in B2.9. The building as a whole will be attenuated as specified. Noise from the Installation is forecast to be well within the critical WHO daytime and night time levels and lower than existing ambient levels at this location.