Omega Proteins Ltd.

Penrith

Report Title:	**Environmental Permit Variation Application – BAT Review**
Permit:	**EPR/HP3238AF**
Issue Date:	**Aug 2022**
Report Reference:	**V004-BAT-V2.0**

Submitted to:

Environment Agency

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1. Introduction

1.1 General

This report is a summary listing with respect to BAT compliance of the rendering plant at Penrith operated by Omega Proteins (Penrith) Ltd in respect of the current permit variation.

The variation covers rendering operations and the associated odour abatement.

2. BAT Listing and Review

2.1 Introduction

The guidance document SG8 contains a number of specific BAT recommendations. The sections below list those recommendations relevant to this permit variation and provide a commentary regarding how site complies with each and what actions, if any, may be needed to increase compliance. The numbering of the recommendations is as per SG8.

2.2 Releases

2.2.1 Releases to Air

1 Ensure that all operations which generate emissions to air are contained and adequately extracted to suitable arrestment plant, where this is necessary to meet specified emission limits.

All process fume is directed to abatement by thermal oxidiser in enclosed ducts. Specific and identified odour sources (foul air) are extracted to oxidisers. Residual odour extraction of room air is via general ventilation for abatement by biofilter or as combustion air. This is supplemented by a chemical scrubber (see BAT46)

Under normal operations the BAT condition is fully met. For abnormal operating conditions the adequacy of contingency abatement has been assessed in the risk upgrade programme (Improvement Condition Reports submitted 2019 – 2020) and details are also contained in the Odour Management Plan (OMP).

2 Ensure that emissions from combustion processes in normal operation are free from visible smoke and in any case do not exceed the equivalent of Ringelmann Shade 1 as described in British Standard BS 2742:1969.

Combustion plant comprises the site boilers and oxidisers. These are regularly serviced to ensure good combustion and compliance with the BAT condition. Visual checks to demonstrate compliance with the Ringelmann limit are carried out.
No new combustion plant are being installed as part of this variation.

3 Ensure that hot emissions take place from the minimum practicable number of stacks, in order to obtain maximum advantage from thermal buoyancy. This is particularly important when new plants are being designed or when changes are being made to existing processes. If practicable a multi-flue stack should be used.

Emissions from the boilers and oxidisers are through individual stacks to prevent back-pressure interference between equipment. This is the minimum requirement and achieves compliance with the BAT condition.

No new combustion plant are being installed as part of this variation.

4 Ensure that stack heights are sufficient to ensure adequate dispersion under normal conditions.

Dispersion assessments have been carried out and addressed in the updated Risk Assessment (ERA document). A stack height review was carried to determine that the proposed height for the Multi-Fuel oxidiser stack is correct. Details are given in the Dispersion Modelling Reports.

No further changes are considered under this variation.

5 Be able to demonstrate to the regulator that all reasonably practicable steps are taken during start-up and shut-down, and changes of fuel or combustion load in order to minimise emissions.

Start-up and shutdown procedures are in place which ensure that the oxidisers are operating at effective temperatures before start-up and maintain effective combustion until process plant has been shutdown.

No new combustion plant are being installed as part of this variation.

6 Where waste gas treatment includes an afterburner or a thermal oxidiser or catalytic oxidiser or boiler furnaces, asses the stack height on the basis of the need to comply with BAT 34. The stack height so obtained should be adjusted to take into account local meteorological data, local topography, nearby emissions, and the influence of plant structures. The calculation procedure in HMIP Technical Guidance Note D1, as supplemented by the additional guidance subsequently produced by AEA Technology, should be used as a basis for the assessment, insofar as it is relevant. Alternative dispersion models may be used by agreement with the regulator.

Specific odour modelling has been carried out and detailed in the updated Risk Assessment. The modelling used new generation dispersion models and the reports have been provided for review by the Regulator.

No new combustion plant are being installed as part of this variation.

7 **Ensure that all discharges to air, other than water vapour, are free from persistent visible emissions.**

All emissions to air pass through stages of abatement which ensure they are free from persistent visible emissions other than water vapour.

No new combustion plant are being installed as part of this variation.

8 **Ensure that emissions of water vapour are free from droplet fallout.**

Oxidiser emissions are at a sufficiently high temperature that droplet fallout is avoided.

No new combustion plant are being installed as part of this variation.

9 **Ensure that liquid entrainment in the duct of wet arrestment, leading to droplet fallout, does not occur as a result of the linear flow rate within the duct exceeding 9m/s.**

No wet arrestment plant is currently employed. The humidifiers prior to the biofilters feed directly into plenum chambers below the biofilters where any entrained droplets are likely to fall-out. The new biofilter will follow the same design as existing units on site.

10 **Ensure that flues and ductwork are cleaned to remove any accumulation of materials, as part of the routine maintenance programme.**

Extraction ducts are incorporated into an inspection and maintenance programme to ensure that they are kept free of debris.

Ducting in the new process areas are fitted with water sprays to improve cleaning and reduce temperature during operations.

11 **Ensure that exhaust gases discharged through a stack achieve an exit velocity greater than 15m/sec during normal operating conditions to achieve adequate dispersion.**

See response to number 4. This is also checked on the annual emissions testing.

No changes are made as part of this variation.

12 **Ensure that stacks are not fitted with any restriction at the final opening such as a plate, cap or cowl, with the exception of a cone which may be necessary to increase the exit velocity of the emissions.**

No restrictions or cowls are fitted to outlet stacks and this is not affected by this variation.

13 **Ducts should be designed and the velocity inside them maintained such that the accumulation of material inside them is minimised.**

Accumulation of material inside ducts is normally associated with the processing areas handling dry meal or hot fats and oils. Meal tends to release dusts as it is mechanically handled and these fines are drawn into extract ducts and settle out at points of low velocity. Hot fats and oils can release amounts of vapour into extract systems that condense back to fat/oil in the extract duct and lead to accumulations. Ducts at the installation are designed to have a suitable velocity to ensure minimal settlement but are additionally inspected and cleaned on a regular basis.

Room air changes per hour are checked at least annually to ensure performance is maintained.

See also point 10 in relation to the new processing areas and cleaning of ducts.

2.2.2 Liquid Storage and Releases to Water and Groundwater

No changes to these control measures are proposed within this variation. Finished products from the new lines will be stored in the existing tanks. A new meal store is being built which will improve the handling of dry products.

14 **All emissions are controlled, as a minimum, to avoid a breach of water quality standards. (Calculations and/or modelling to demonstrate this may be required to be submitted to the regulator).**

There are no direct emissions to water or groundwater other than clean roof water.

15 **Run-off from the installation should be controlled and managed and where necessary (given the nature of the run-off) treated before discharge in a suitable effluent treatment plant.**

Clean roof water is captured for re-use, where feasible, with any surplus being discharged to the water course via approved outlets. Potentially contaminated surface water is treated in the effluent treatment system.

16 **All interceptors:**

- are impermeable

- are subject to at least weekly visual inspection and, where necessary to ensure the continuous function, contamination removed

- have an annual maintenance inspection; prior to inspection all contents should be removed

Where sediment traps / drain sumps are installed these are subject to weekly visual inspection and cleaning (as required) with an annual maintenance inspection.

Where interceptors are being installed within updated drainage systems – they will be subject to the appropriate cleaning and maintenance procedures.

17 **Process effluent is kept separate from surface drainage unless agreed with the regulator.**

Complied with.

18 **Where effluent is treated off-site at a sewage treatment works, the operator should demonstrate that a suitable monitoring programme is in place to avoid a breach of sewage discharge consent conditions.**

The effluent treatment plant is designed to treat process effluent for re-use. Any surplus effluent discharged off-site is subject to a monitoring programme to avoid a breach of effluent consent.

19 **There should be no point source emissions to groundwater.**

There are no point source emissions to groundwater.

26 **The operator should have a clear diagrammatic record of the routing of all installation drains, subsurface pipe work, sumps and storage vessels including the type and broad location of the receiving environment.**

Drainage diagram kept up to date as part of the EMS for the site. Where areas of the site are being upgraded all drainage systems are approved prior to installation.

27 **The operator should identify the potential risk to the environment from drainage systems recorded by BAT 26 and should devise an inspection and maintenance programme having regard to the nature and volume of waste waters, groundwater vulnerability and proximity of drainage systems to surface waters.**

EMS contains infrastructure monitoring programme and a drainage risk assessment. This is updated with changes to site layout as required.

28 **The operator should ensure that all operational areas are equipped with an impervious surface, spill containment kerbs, sealed construction joints, and connected to a sealed drainage system or such alternative requirements as approved by the regulator. The condition of the impervious surface should be checked regularly and the results of inspections and intended maintenance arising should be recorded in the log book.**

Operational areas are within the main buildings, where the floor is impervious and sealed and where spillages can be directed back to the raw materials pit for re-processing or into the effluent system. External tanks are bunded to contain spillages and local containment is provided at the points where tankers will be filled.

29 **It is preferable that sustainable urban drainage system techniques should be used for the drainage of open storage areas. In the event that these techniques cannot be employed then oil and grit interceptors will be required.**

All potentially contaminated surface water is treated in the effluent treatment system.

30 **All sumps should be impermeable and resistant to stored materials.**

Where sediment traps / drain sumps are installed these are subject to weekly visual inspection and cleaning (as required) with an annual maintenance inspection.

31 **All liquid storage tanks should be located within bunds that are designed, constructed and located away from watercourses and drains to appropriate standards and ensuring that the volume is more than 110% of the largest tank.**

Storage tanks are within bunds designed to provide 110% of the largest tank volume or 25% of the tank total volume.

32 **Storage tanks should be fitted with high-level alarms or volume indicators to warn of overfilling and where practicable the filling system should be interlocked to the alarm system to prevent overfilling. Delivery connections should be located within a bunded area, fixed and locked when not in use.**

Storage tanks have level indicators to warn of overfilling.

Blood and tallow tanks also have visual alarms on the operator screen to alert them.

33 **All tanks bunds and sumps should be subject to regular visual inspection as agreed with the regulator, placed on a preventative maintenance programme. The contents of bunds and sumps should be pumped out or otherwise removed as soon as is practicable after checking for contamination.**

There is a tank and bund inventory in place (as part of the EMS) together with a weekly visual inspection and an annual maintenance inspection.

43 **The handling and treatment of liquid effluent should be carried out so as to minimise the emission of offensive odours. Where necessary to prevent odour emissions, tankers or transportable tanks should be vented to suitable arrestment plant or back vented.**

See BAT 49.

2.2.3 Fugitive Emissions

Development of the site includes new buildings to an improved specification to minimise the potential for fugitive emissions. The same BAT principles are applied to all new buildings.

20 **Operations should be controlled to minimise fugitive emissions.**

Operations are mainly inside buildings and subject to enclosed extraction. Fugitive emissions are minimal. External conveyors are covered. External storage containers are covered. Building integrity is monitored as part of the EMS using visual inspections and periodic smoke testing.

21 **The operator should make an inventory of fugitive emissions. The operator should update the inventory of fugitive emissions on an annual basis and submit to the regulator to demonstrate progress in reducing emissions.**

There is a fugitive emissions inventory in place as part of the EMS and this is reviewed annually.

22 **Transportation of materials on site should be carried out in such a manner so as to prevent fugitive releases of particulates.**

PAP is transported in tote bags or sealed bulk containers to minimise dust or particulate releases. The tote bags are sealed closed. The tote bags are filled inside the mill building using a semi-automated filling process.

2.3 Process

2.3.1 Greave and meal processing

23 **All plant should be constructed and linked in such a manner that prevents spillage.**

Processing plant is linked by enclosed pipes and conveyors. Buffer bins are lidded to minimise spill potential. These principles are applied to all new plant and buildings.

2.3.2 Storage

The new meal store will provide further cover for storage and loading activity of finished product.

24 **Stocks of dusty material, such as processed greaves and meal, should be stored in suitable silos, closed containers or an enclosed store. Storage silos for dusty materials should be vented to air through suitable equipment to meet the requirements of BAT 34 and to minimise the emissions of particulate matter.**

PAP is stored in designated buildings. Closed containers for waste ash.

25 **The transportation and handling of dusty materials should be carried out by methods which do not give rise to dust emissions. Preferred methods include enclosed containers**

or covered conveyors. Conveyors should be of sufficient capacity to handle maximum loads and conveyor discharges should be arranged to minimise free fall of dusty materials. Transfer points should be enclosed and ducted to suitable equipment as approved by the regulator to meet the requirements of BAT 34 and to minimise emissions of particulate matter.

Processing plant is linked by enclosed pipes and conveyors. Buffer bins are lidded to minimise spill potential.

The same applies to new buildings.

35 **Hosing points or other methods such as high pressure steam cleaning should be provided for the effective cleaning of any area of spillage and for the effective cleaning of plant.**

Hose points and pressure washer are provided for cleaning purposes.

The same applies to new buildings.

36 **All points of transfer should be designed to be leak-proof and spill-proof. Means for cleaning and transferring spillages back to the raw material reception area should be provided and agreed with the regulator.**

Transfer from the raw material pit and to/from the processors is via enclosed lines to minimise the potential for spillage. Processing plant is linked by enclosed pipes and conveyors. Buffer bins are lidded to minimise spill potential.

The same applies to new buildings.

2.3.3 Processing Equipment

As part of the site upgrade measures have been taken to improve of the collection of foul air for treatment. The BAT conditions continue to apply, but changes have been made to the equipment to improve performance. These are discussed more fully in the application document and include individual collectors of foul air for the different lines, rather than one large mixed one.

37 **For batch rendering processes, cookers should be charged under a sufficiently reduced pressure to prevent the escape of substances prescribed for air or offensive odours, or the charging area should be hooded and the extracted gas vented to a suitable arrestment plant. Automated charging should be used.**

Plant design to comply with the requirements.

38 **All emissions of substances prescribed for air or offensive odours should be prevented or contained and ducted to suitable arrestment plant as approved by the regulator. Sources at rendering processes which must be dealt with include:**

a) odorous emissions arising from the cooker during the cooking process;
b) the intermittent or continuous discharge from cookers;
c) presses or centrifuges receiving hot processed material;
d) driers;

e) ducts and glands on the processing equipment or transfer pipelines;
f) the transfer of processed or semi-processed material.

Odour differentiation is in place and odour sources are extracted to suitable abatement as detailed in the application document and the OMP.

39 **Cooker exhaust gases should pass in turn through an interceptor and then be directed to:**

(i) a thermal oxidiser; or
(ii) an indirect condenser and the non condensable gases directed to suitable arrestment plant and effluent to water treatment plant.
There is a range of condensers acceptable for the purpose of minimising odours. Operators should ensure that the type which they propose to use is acceptable both in relation to the quantity and quality of liquid discharges.

See BAT 49 for discussion of this item.

40 **Good housekeeping should be practised at all times. The adoption of good cleaning and working practices as a routine will reduce process odour emissions and consequently lead to higher arrestment plant efficiency.**

The site operates to an approved HACCP Plan as part of its animal by-products approval and quality management system. This, together with the relevant ISO 14001:2015 EMS sections, ensures a good standard of housekeeping and regular monitoring.

All new processes are reviewed and included in an updated HACCP.

2.3.4 Tallow processing and liquid storage

No changes have been made in this application.

41 **All tanks should be lidded, sealed or vented to suitable arrestment plant to prevent odour emissions. Catchment provisions - for example, bunding or spillage containment kerbs - should be provided.**

Tanks are fully enclosed. Tanks with specific odour release potential have ducts to extraction equipment. It is recognised that certain tanks would benefit from additional control (such as the addition of carbon filters).

42 **Bulk storage tanks should be fitted with a high-level alarm or volume indicator to warn of and thereby minimise the possibility of overfilling.**

Storage tanks are fitted with volume indicators – these are monitored on a screen from the control room and have visual alarms to warn of over filling. The filling can be controlled from the same PC.

Tanks containing feather condensate and blood also have high level alarms.

2.4 Odour

The site changes noted in this application continue to improve the site with regard to building integrity, processing equipment and odour abatement.

2.4.1 Boundary Condition

34 **Permits should include specific technical conditions in accordance with this guidance to prevent or generally reduce the escape of offensive odour across the site boundary. As discussed below, whether the emphasis should be on prevention or on reduction depends on the type of process (and thus the type of odour) under consideration.**

Animal rendering

i Subject to what is said below, in the case of animal rendering - which gives rise to odours that are particularly offensive - conditions should be imposed preventing (rather than just reducing) the escape of offensive odour beyond the site boundary. In these cases the specific technical conditions imposed to prevent such escapes should be supplemented, as a back-up measure, with a general condition (an odour boundary condition) requiring emissions to be free from offensive odour outside the site boundary.

ii When imposing an odour boundary condition local authorities should take account of the fact that there may be circumstances where offensively odorous emissions are released for reasons which are beyond the direct control of the installation operator, for example where there is a total breakdown of arrestment equipment through no fault of' the operator. Allowance should be made for such occurrences by providing in the permit that it will not be a breach of the condition in a particular case if the operator can show that he or she took all reasonable steps and exercised all due diligence to prevent the release of offensive odour.

iii Local authorities will need to investigate incidents where offensive odour escapes across the site boundary to establish whether there has been a breach of any odour boundary condition. The Secretary of State would expect that if a rendering process is properly managed, with the operator taking all reasonable steps and exercising all due diligence, there should be very few escapes of offensive odour beyond the site boundary. Certainly he would expect local authorities to investigate very carefully whether an operator was taking all reasonable steps and exercising all due diligence if there were more than two such occurrences in any 12-month period. In the event of any occurrence the operator should immediately take remedial action to prevent any further escape of offensive odour and he would expect this to be effective within at most two hours. Again, the Secretary of State would expect local authorities to investigate with particular care the management of a rendering activity where remedial action had not been effective within 2 hours*.

iv There may be cases of animal rendering where the escape of offensive odours beyond the site boundary would be unlikely to cause any harm (for example, because the area potentially affected by the release of any offensive odour is uninhabited countryside). In such cases it would not be appropriate to require an operator to ensure that no such odours cross the site boundary and no odour boundary condition should be imposed.

Other Activities

i In the case of the activities covered by this note other than animal rendering, local authorities should consider whether the odour generated by such activities is

comparable in its offensiveness to that generated by animal rendering. If so, the considerations set out above in relation to the imposition of odour boundary conditions will apply equally to such cases. In other cases, where the emissions are likely to be less offensive, specific conditions designed to minimise the escape of offensive odours should be sufficient.

ii inspector and should take into account the nature of the odour.

iii The guidance in BAT 34 supersedes the advice in additional guidance note AQ16(95) in relation to the imposition of odour boundary conditions in the case of the activities covered by this note.

*** Where local authorities are drafting an odour boundary condition in line with the provisions in BAT 34 iii, they should have regard to the following:**

a) include the phrase: "it shall not be a breach of the condition in a particular case if the operator can show that he or she took all reasonable steps and exercise all due diligence to prevent the release of offensive odour" ; and

b) include a qualification of the meaning of "due diligence", confirming (by means of a footnote or otherwise), that the use of these words in the odour boundary condition means that there shall not be a breach of the condition if the operator can show that he/she employed BAT.

Accordingly, any emission of offensive odour where the operator can show that he/she employed BAT ought not to give rise to the regulator issuing proceedings against the operator for the breach of an odour boundary condition.

The various odour control strategies in place on site and proposed as part of this application are designed to ensure compliance with this condition.

2.4.2 Odour arrestment plant

44 **The use of odour-masking agents and counteractants to meet the requirements of BAT 34 of this note should not be permitted.**

Odour masking agents are not employed, other than to add to cleaning operations. Use of this is underlined in Standard Operating Procedure documents.

2.4.3 Existing Plant

45 **Emissions of differing odour intensity are likely to be produced within the process. In the case of rendering processes, the odour streams should normally be kept separate and treated by appropriate treatment plant which has been suitably designed to deal with specific types of odour. For example, high intensity process odours and those containing incondensable gases should be treated by incineration, either within the plant boilers or a dedicated thermal oxidiser, or by alternative means which can be demonstrated to be equally effective. Less intense odours, for example from storage areas, may be vented to chemical scrubbers, biological filters or similar suitable arrestment plant.**

Site employs different capture and abatement strategies for process fume, foul air and general room air. Improvement of primary abatement by the installation of the new

oxidiser (MFO) increases the capacity for process fume and allows room air to be directed here for combustion air as an alternative to treatment by bio filters. In addition, additional carbon filters are in place on tanks containing more odorous materials (blood, feather water) to decrease the loading on secondary abatement.

Further details are covered in the OMP.

46 **Where chemical scrubbers are used, the liquid circulation and scrubber efficiency should be monitored by suitable instruments; for example, pH meters and variable orifice meters to give continuous indication of effective operation and an audible alarm to give an indication of failure. Automatic reagent dosing equipment should be used. Instrument readings should be observed regularly (for example, on start up and then twice per shift) and the readings should be recorded in the log.**

This is incorporated into the operating procedures following improvements to the blood treatment lines. Processing room air will also be directed to a scrubber system in the new offal area.

Chemicals are dosed automatically and the pH/REDOX levels will be monitored. Tests on the outlet air will include regular monitoring of H2S and Ammonia using Gastech tubes and periodic testing by olfactometry to measure efficiency of odour removal. Carry over of product into scrubber reservoirs is prevented by the use of a spray 'curtain', but a cleaning programme will also be in place.

47 **Where condensers are used, the inlet and outlet temperatures should be continuously monitored and recorded. In the case of batch processes, the times when processing took place should be noted.**

Condenser temperatures are recorded. These are used as back up/ intermittent support for production and are not the primary odour abatement. Use is linked with oxidiser controls, providing sufficient vacuum to ensure consistent levels of abatement as the water vapour in the raw material varies. Their use is explained further in the Odour Management Plan (OMP) for the site.

No changes are being made as part of this application apart from changing the location of the units to allow for easier control (both units in one place).

48 **Where biological filters are used, care should be taken at the design stage to ensure that the residence time is adequate for the minimising odour. The temperature of waste gases entering the biological filter media, their humidity and the resistance to the flow of exhaust gases should be continuously monitored and recorded. In the case of batch processes, the times when processing took place should be noted. There should be a programme of regular weed control, agreed with the local enforcing authority, and regular inspection should take place in order that fissures due to low moisture content can be quickly identified and corrective action taken.**

The EMS contains biofilter maintenance and inspection procedures. These are subject to periodic review and amendment, using trends in assessment results to ensure continued effectiveness.

The addition of a fourth biofilter, as outlined in this application will provide more than the essential level of abatement for the proposed changes.

2.4.4 New/Substantially Changed Plant

49 **Any new or substantially changed installation should be fitted with odour arrestment equipment at least as efficient as a dedicated thermal oxidiser. All contained high intensity odorous emissions should be directed through such arrestment equipment. Low intensity emissions should be dealt with in the same manner as BAT 54.**

Thermal oxidation is used as the primary odour abatement option. Upgrades to thermal oxidation plant have been made to ensure continued effectiveness and adequate capacity for the operations on site and the additional ones in this application.

2.4.5 General

There will be no deviation from these conditions from the proposed changes.

50 **All conveyors transporting raw, processed and dusty materials should be fully enclosed.**

Conveyors are enclosed or material is pumped via enclosed pipework.

51 **Without prejudice to BAT 34, in the event of arrestment plant breakdown the system should be fail safe and allow diversion of odour streams to other suitable arrestment plant or cause interruption of the process. For example, where boilers are used for waste gas treatment, in the event of failure to reach the incineration temperatures an automatic diversion facility should be fitted to divert the emissions to alternative equipment. Where necessary flame traps should be fitted. A contingency plan covering arrestment plant failure should be devised and agreed with the regulator.**

Details of the contingency plan are in the OMP for the site which is kept under review.

52 **Gases from process and materials handling equipment should be extracted directly to arrestment to ensure the efficient treatment of odour.**

Specific extraction is in place at presses, metal detectors and centrifuges. Installation of the multifuel oxidiser will allow for further improvement for the treatment of these air streams by using the additional capacity for combustion air.

2.5 Management

The site will continue to use and adapt the management systems as outlined below to ensure that proposed changes are under the same control.

2.5.1 Environmental Management System

53 **Operators should use an effective Environmental Management System with policies and procedures for environmental compliance and improvements. Audits should be carried out against those procedures at regular intervals.**

The installation has an accredited ISO 14001:2015 EMS in place. The site is also accredited to PAS99:2012 following integration of the Health & Safety, Quality and Environmental Management Systems.

2.5.2 Operations and maintenance

54 **Effective operational and maintenance systems should be employed on all aspects of the installation whose failure could impact on the environment. As a minimum this should cover all abatement and extraction equipment. Such systems should be reviewed and updated annually.**

The EMS and HACCP Plan include relevant maintenance and operational procedures to ensure the continued correct performance of abatement and control equipment. This will continue to be based on an agreed list of critical control equipment which is reviewed and updated annually.

55 **Environmentally critical process and abatement equipment (whose failure could impact on the environment) should be identified and listed. The regulator should be provided with a list of such equipment.**

This is covered by the EMS and Preventative Maintenance plans.

56 **For equipment referred to in BAT 55:**

- Alarms or other warning systems should be provided, which indicate equipment malfunction or breakdown.

- Such warning systems should be maintained and checked to ensure continued correct operation, in accordance with the manufacturer's recommendations

- **Essential spares and consumables for such equipment should be held on site or be available at short notice from suppliers, so that plant breakdown can be rectified rapidly.**

The EMS includes references to relevant maintenance and operational procedures in place on site to ensure the continued correct performance of abatement and control equipment. This is based on an agreed list of critical control equipment and appropriate alarms.

57 **Records of breakdowns should be kept and analysed by the operator in order to eliminate common failure modes.**

This is covered by the maintenance procedures, with reviews carried out at scheduled management review meetings.

2.5.3 Competence and training

58 **A competent person should be appointed to liaise with the regulator and the public with regard to complaints. The regulator should be informed of the designated individual(s).**

Within the EMS a staff structure and responsibilities diagram is maintained and communicated to the regulator. This includes the name(s) of appointed competent personnel.

59 **A formal structure shall be provided to clarify the extent of each level of employee's responsibility with regard to the control of the process and its environmental impacts. This structure shall be prominently displayed on the company within the process building at all times. Alternatively, there must be a prominent notice referring all relevant employees to where the information can be found.**

The EMS contains a staff structure and responsibilities diagram. This is also displayed on the staff notice board.

60 **Personnel at all levels shall be given training and instruction sufficient to fulfil their designated duties under the above structure. Details of such training and instruction shall be entered into the employees' record and be made available for inspection by the regulator.**

As part of the site management systems, training needs are assessed by job role and records kept of training given. Instructions are documented as Standard Operating Procedures (SOPs).

61 **The potential environmental risks posed by the work of contractors should be assessed and instructions provided to contractors about protecting the environment while working on site.**

The EMS and Health and Safety requirements address 3rd party working and Risk Assessments are required before work starts.

2.5.4 Accidents/incidents/non conformance

62 **There should be written procedures for investigating incidents, (and near misses) which may affect the environment, including identifying suitable corrective action and following up.**

The EMS and Health & Safety procedures contain detailed accident investigation and reporting procedures.

2.5.5 Resource Efficiency

The raw materials in use will not differ significantly as a result of the proposed changes, therefore the following conditions still apply.

63 **The operator should adopt procedures to control the specification of those types of raw materials with the main potential for environmental impact, in order to minimise any potential environmental impact. An annual review of alternative raw materials should be carried out with regard to environmental impact.**

Raw materials are reviewed annually.

64 **The operator should record materials usage and waste generation in order to establish internal benchmarks. Assessments should be made against internal benchmarks to maintain and improve resource efficiency.**

Raw materials along with waste, water and energy are reviewed annually and monitored as site Key Performance Indicators (KPI's).

65 **The operator should carry out a waste minimisation audit at least as frequently as the permit review period. If an audit has not been carried out in the 2 years prior to submission of the application it should be completed within 18 months of the issue of the first EPR permit. The methodology used and an action plan for optimising the use of raw materials should be submitted to the regulator within 2 months of completion of the audit.**

Raw materials along with waste, water and energy are reviewed annually.

66 **Specific improvements resulting from the recommendations of audits should be carried out within a timescale approved by the regulator.**

See 65.

67 **The operator should carry out a regular review of water use (water efficiency audit) at least as frequently as the permit review period. If an audit has not been carried out in the 2 years prior to submission of the application it should be completed within 18 months of the issue of the first EPR permit.**

See 65.

68 **Using information from the audits (referred to in BAT 76 above), opportunities for reduction in water use should be assessed and, where appropriate, should be carried out in accordance with a timescale approved by the regulator.**

See 65.

69 **Information from audits should be used to establish benchmarks. Operators should keep records of such benchmarks and make measurement against them to reveal whether the process is being maintained "in control" or to track improvements.**

Objectives and targets are set as part of the EMS and site management use KPI reporting to monitor improvements against benchmarks.

70 **The volume of mains and abstracted water used in the activities should be directly measured when the installation is operating once a day for at least a fortnight and there after, once a week with an annual exercise taking daily measurements for at least a fortnight. All measurements should be recorded and the records held on site.**

See 65. This is carried out as routine reporting. Water use is also monitored as a management KPI and meter readings taken daily.

71 **The operator should produce an inventory of the quantity, nature, origin and where relevant, the destination, frequency of collection, mode of transport and treatment method of any waste which is disposed of or recovered.**

See 65.

72 **Operators should ensure that waste stored in containers that are durable for the substances stored and that incompatible waste types are kept separate.**

Wastes are stored in suitable containers pending disposal or recovery .

73 **Operators should ensure that waste storage areas are clearly marked and signed, and that containers are clearly labelled.**

Waste is only to be stored in labelled containers and in designated areas.

74 **The operator should carry out an annual review to demonstrate that the best environmental options are being used for dealing with the waste from the installation**

See 65.

75 **The operator should produce a report annually on the energy consumption of the installation.**

Raw materials along with waste, water and energy are reviewed annually. Additionally the site is in a CCA and permitted under EU-ETS, both of which require detailed monitoring and reporting of energy use. The Energy Management System (EnMS - this is accredited to ISO50001:2018) includes monthly energy reporting to senior management, sets efficiency targets and reviews projects for energy saving.

76 **The operator should monitor energy flows and target areas for reduction which should be updated annually. ("Sankey" diagrams and energy balances would be useful as aids.)**

See 75. Under the EnMS monitoring systems are set up for gas, electricity and tallow using metering and sub-metering. A system has also been introduced (2018-2019) to monitor steam use for processing.

77 **Optimisation of combustion will improve fuel efficiency. Monitoring oxygen in waste gases will enable the operator to ensure that the process of combustion is optimised.**

Burners are serviced annually and residual oxygen monitoring in the flue gases of the oxidisers is in place.

78 **The operator should ensure that all plant is operated and maintained to optimise the use and minimise the loss of energy.**

Equipment and steam lines are lagged to minimise heat losses. Processing takes place for the minimum time commensurate with compliance with the animal by-products approval. See also comments in 75.

79 **The operator should ensure that all appropriate containment methods, (e.g. seals and self-closing doors) are employed and maintained to minimise energy loss.**

Doors are self-closing as part of the odour control strategy and the buildings well sealed to minimise fugitive odour emissions. Both effects will also reduce heat and energy losses.

80 **The following techniques should be considered:**

- **heat recovery from different parts of the processes**
- **minimisation of water use and closed circulating water systems**
- **good insulation**
- **plant layout to reduce pumping distances**
- **phase optimisation of electronic control motors and fans**
- **optimised efficiency measures for combustion plant**
- **preventative maintenance programme targeting energy drops**

These techniques are considered at each energy review and will be reported to the regulator. See also comments in 75.

81 **The following techniques should be considered:**

- **use of Combined Heat and Power (CHP)**
- **generation of energy from waste**
- **use of less polluting fuels**

These techniques are considered at each energy review. The installation of the multifuel oxidiser is an example of energy from ‘waste’, reduction in the use of fossil fuels and with the addition of a steam turbine – the plant will also supplement electricity used by the site.

Energy efficiency is covered by the EnMS, as described in points 75 and 76.

There are no further considerations with this application.

2.5.6 Accidents/incidents/non conformance

The existing management procedures are sufficient to ensure that the following conditions are complied with when the new processes are implemented.

82 **There should be written procedures for investigating incidents and near misses, including identifying suitable corrective action and following up.**

The EMS includes an accident management plan and associated procedures.

83 **The operator should maintain an accident management plan covering the matters listed in paragraphs 3.90 to 3.92 above and to the satisfaction of the regulator. The plan should be available for inspection by the regulator.**

The EMS includes an accident management plan and associated procedures.

84 **In the case of abnormal emissions arising from an accident, such as a spillage for example, the operator should:**

- **Investigate undertake remedial action immediately**
- **promptly record the events and actions taken**
- **ensure the regulator is made aware without delay**

The EMS includes an accident management plan and associated procedures. Included in the emergency procedure is a requirement to contact relevant regulators.

2.5.7 Specific conditions

The existing management procedures are sufficient to ensure that the following conditions are complied with when the new processes are implemented.

85 **Specific conditions may need to be included within permits to prevent accidents. Examples of these are given (in SG8).**

This condition will be complied with as and when it arises in practice.

86 **Operators should provide for safe storage and conveying systems for both liquid raw materials and wastes in order to minimise the potential for vandalism or accidental damage. Regular inspection should be carried out on pipelines, valves and pumps to inspect for damage and wear.**

This condition will be complied with as and when it arises in practice.

87 **The operator should maintain procedures for the control of spills and of firewater to ensure containment and disposal of liquids in order to prevent or minimise pollution.**

The EMS includes an accident management plan and associated procedures. Included in the emergency procedure is a requirement to contact relevant regulators.

88 **Systems should be used to avoid excessive transfer rates of solids by pneumatic conveyors that might lead to over pressurisation and filter failure or tank / silo overfilling leading to spillage of liquids or powders.**

No pneumatic conveyors – screw conveyors and pumps.

89 **Operators should ensure that materials are charged into the correct silo or tank to minimise the potential for causing waste, spillage or uncontrolled chemical reaction.**

Inventory management and signage is in place to ensure that the correct storage points are used. Deliveries of chemicals are supervised.

90 **Operators should design delivery routes to minimise accidental damage by vehicles to any storage facilities for liquids or dusts. Where a risk of vehicular damage to such storage areas has been identified, crash barriers should be fitted.**

Storage tanks are within bunds to provide protection from vehicle damage.

91 **Stockpiles of MBM should be managed that the risk of spontaneous combustion is minimised. Techniques include fire breaks between stockpiles, limiting the height / angle of repose, control of the moisture and oil content and temperature of MBM entering storage.**

MBM stored on site for fuel use is in a designated area and stock is managed to limit the amount stored and to take into account risk of fire. A fire plan for site is in place.

92 **The operator should identify key plant and equipment (or operations) with the potential to give rise to significant noise and take such measures as are necessary by way of mitigation and maintenance of existing plant and equipment in order to minimise noise having regard to paragraph 3.96 and Table 6 above.**

The EMS covers this requirement.

2.6 Monitoring and reporting

The existing management procedures are sufficient to ensure that the following conditions are complied with when the new processes are implemented.

93 **The operator should monitor emissions, make tests and inspections of the process and keep records; in particular the operator should keep records of audits, inspections, tests and monitoring, including all non-continuous monitoring, inspections and visual assessments. Monitoring may include process variables and operating conditions where relevant to emissions. In such cases:**

- Current records should be kept on site and be made available for the regulator to examine

- Records should be kept by the operator for at least two years

Stack and odour emissions are regularly monitored. Records will be kept and made available to the regulator for a minimum of 6 years after production (as per current permit requirements).

94 **The operator should notify the regulator at least 7 days before any periodic monitoring exercise to determine compliance with emission limit values. The operator should state the provisional time and date of monitoring, pollutants to be tested and the methods to be used.**

This condition will be complied with as and when it arises in practice.

95 **The results of non-continuous emission testing should be forwarded to the regulator within 8 weeks of the completion of the sampling. Results from continuous monitoring systems should be recorded and be made available for inspection by the regulator.**

This condition will be complied with as and when it arises in practice.

96 **All results submitted to the regulator should include details of process conditions at the time of monitoring, monitoring uncertainty as well as any deviations from the procedural requirements of standard reference methods and the error invoked from such deviations.**

This condition will be complied with as and when it arises in practice.

97 **Results exceeding the emission limit value from any monitoring activity (both continuous and non-continuous) and malfunction or breakdown leading to abnormal emissions should be investigated and corrective action taken immediately. The operator should ensure that the regulator is notified without delay identifying the cause and corrective action taken. Where there is immediate danger to human health, operation of the activity should be suspended.**

This condition will be complied with as and when it arises in practice.

98 **Sampling points on new plant should be designed to comply with CEN or Other Standards. e.g. BS EN 13284-1 or BS ISO 9096: 2003 for sampling particulate matter in stacks**

This condition will be complied with as and when it arises in practice – these standards have been taken into account in the design of the multifuel thermal oxidiser and the new gas powered oxidiser. There are no new sampling points in this application.

99 **Continuous monitoring is normally expected for the main abated releases in Table 3. Where continuous monitoring is required by the permit instruments should be fitted with audible and visual alarms, situated appropriately to warn the operator of arrestment plant failure or malfunction, the activation of alarms should be automatically recorded and readings should be on display to appropriately trained operating staff.**

This condition will be complied with as and when it arises in practice.

100 **All continuous monitors should be operated, maintained and calibrated (or referenced) in accordance with the appropriate standards and manufacturers' instructions, which should be made available for inspection by the regulator. Instruments should be operated to ensure less than 5% downtime over any 3-month period and all relevant maintenance and calibration (or referencing) should be recorded.**

This condition will be complied with as and when it arises in practice.

101 **Where available, operators should use monitoring equipment and instruments certified to MCERTS and use a stack-testing organisation accredited to MCERTS standards or such alternative requirements as approved by the regulator.**

This condition is complied with as and when it arises in practice.

2.6.1 Monitoring and reporting of emissions to air

102 **Exhaust flow rates of waste gases should be consistent with the efficient capture of emissions, good operating practice and meeting the requirements of the legislation relating to the workplace environment.**

Suitable extraction rates are provided to give effective air changes in most areas. Localised point extraction arrangements are being reviewed and optimised where required – with additional collector vessels and ducting being installed for the new production areas.

103 **The introduction of dilution air to achieve emission concentration limits should not be permitted.**

Dilution air is not used.

104 **Dilution air may be added where justified for waste gas cooling or improved dispersion. In such cases, monitoring should be carried out upstream of the dilution air input or procedures designed to correct for the ratio of input air to the satisfaction of the regulator.**

Dilution air is not used.

105 **Monitoring to determine compliance with emission limit values should be corrected to the following standard reference conditions: temperature, 273.15 K (0oC), pressures 101.3 kPa (1 atmosphere) and measured wet, no correction for water vapour.**

This condition is complied with as and when it arises in practice.

106 **Periodic visual assessment of releases should be undertaken as required by the regulator to ensure that all final releases are colourless, free from persistent visible emissions and free from droplets.**

This condition is complied with as and when it arises in practice.

107 **Frequency of monitoring for all pollutants (including particulate matter) where arrestment equipment is necessary to meet specified emission limits should be at least annually.**

This condition is complied with as and when it arises in practice.

2.6.2 Monitoring and reporting emissions to water and sewer

108 **The appropriateness of the monitoring requirements will vary depending upon the sensitivity of the receiving water and should be proportionate to the scale of the operations, nature of the discharge and receiving water. For each release point the following information is required:**

- the specific volume flow from the process to sewer/controlled water

- the sensitivity of the receiving water

- the volume of discharge compared to the percentage dry river flow of the receiving water

Discharge of effluent is in accordance with the United Utilities Discharge Consent and monitoring is carried out as set out in the consent.

109 **Increased monitoring should be carried out where substances to which the local environment may be susceptible could be released from the installation, e.g. where releases of common pesticides or heavy metals may occur.**

N/A

110 **A full analysis, to include the substances listed in Schedule 5 of the Pollution Prevention and Control (England & Wales) Regulations 2000, should be carried out annually on a representative sample from each release point, unless it is agreed with the regulator that this is inappropriate.**

N/A

2.6.3 Monitoring and reporting of waste

111 **The following should be monitored and recorded:**

- Quantity nature and origin of the waste

- the physical description of the waste

- a description of the composition of the waste

- any relevant hazardous properties (hazard and risk phrases)

- **European Waste Catalogue code**
- **Handling precautions and substances with which it cannot be mixed**
- **Disposal routes for each waste category**

All waste is despatched with due regard to the duty of care requirements which will ensure compliance with the BAT condition.

The main waste streams on site are:

General waste – packaging, office waste

Metal – scrap metal from site engineering activity and/ or replacement of equipment

Wood – mainly from pallets used to deliver items to site

Recycling is carried out where feasible (wood and scrap metal) and the general waste is sent to a waste transfer station where waste streams are segregated for recycling (paper, cardboard, some plastics) to reduce what might end up at landfill. The amounts are less than 1% of the raw material throughput.

The installation of the multifuel oxidiser has added ash compounds as a new waste stream.

There are no further waste streams to add as part of this application.

Abbreviations

BAT	Best Available Technique
BREF	BAT Reference Document
CCA	Climate Change Agreement
DAF	Dissolved Air Flotation
ELV	Emission Limit Value
EMS	Environmental Management System
EnMS	Energy Management System
ETS	Emissions Trading Scheme
KPI	Key Performance Indicator
MBM	Meat and Bone Meal
MFO	Multi-fuel Oxidiser
OMP	Odour Management Plan