Conclusion on BAT from the Slaughterhouse and Animal By-products industries

Conclusions on BAT	Applicability Assessment (describe how the technique applies or not to your installation)	State whether it is in place or state schedule for implementation
5.1 Slaughterhouse and animal by-products installations		
5.1.1 General Processes and operations **For all slaughterhouses and animal by-products installation, BAT is to do all the following:**		
BAT 1. BAT is to use an environmental management system (Section 4.1.1 and 5.1.1.1).	Undertaken. Environmental Management System is in place.	In place
BAT 2. BAT is to provide training (See Section 4.1.2).	Undertaken.	In place
BAT 3. BAT is to use a planned maintenance programme (see Section 4.1.3).	Undertaken. Piranha and Elshire (CMMS System) maintenance system used on site.	In place
BAT 4. BAT is applied dedicated metering of water consumption (See Section 4.1.4).	Undertaken. Water abstraction is metered on site.	In place
BAT 5. BAT is to separate process and non-process wastewater (see Section 4.1.5).	Undertaken. Yes, as per site drainage all water expects from roofs, roads, and building services all	In place

	other water will be treated in the WWTP on site before sent to sewer undertaker.	
BAT 6. BAT is to remove all running water hoses and repair dripping taps and toilets (see Section 4.1.7).	Undertaken. Maintenance team is on site for ongoing repairing when required. Ongoing sufficient cleaning systems are in place.	In place
BAT 7. BAT is to fit and use drains with screens and/or traps to prevent solid materials from entering the wastewater (see Section 4.1.11).	Undertaken. All working areas of the site have a concrete hardstand and wastewater is screened prior to treatment.	In place
BAT 8. Dry clean installations and transport by-products dry (Section 4.1.12), followed by pressure cleaning (Section 4.1.10) using hoses fitted with hand-operated triggers (Section 4.1.9) and where necessary hot water supplied from thermostatically controlled steam and water valves (Section 4.1.23).	Undertaken. Collection of floor waste using dry methods and by utilising a pressure-controlled dedicated water valves supply for wet cleaning. Thermostatically controlled water valves supply hoses with hand operated triggers and hot water.	In place
BAT 9. Apply overfilling protection on bulk storage tanks (Section 4.1.13).	Undertaken	In place
BAT 10. BAT is to provide and use bunds for bulk storage tanks (Section 4.1.14).	Undertaken	In place
BAT 11. Double skin protection of bulk storage tanks, E.g., containing blood or tallow (Section 4.1.15).	To be Implemented on blood tank. Tank is currently single layered, will be upgraded to double skinned.	To be undertaken

Bat 12. BAT is to implement energy management systems (Sections 4.1.16 & 4.1.17).	Undertaken. Energy Efficiency audits are carried out to monitor the plants efficiency.	In place
BAT 13. BAT is to implement refrigeration management system (Section 4.1.18).	Undertaken.	In place
BAT 14. BAT is to operate controls over refrigeration plant running times (Section 4.1.19) and use of binary ice as a colling fluid (Section 4.1.20).	Not Applicable.	N/A
BAT 15. BAT is to fit and operate chill room door for closing switches (Section 4.3.21).	Not Applicable.	N/A
BAT 16. BAT is to recuperate heat from refrigeration plants (Section 4.1.22).	Not Applicable. Not a viable option	N/A
BAT 17. BAT is to use thermostatically controlled steam and water blending valves (Section 4.1.23).	Not applicable.	N/A
BAT 18. BAT is to rationalise and insulate steam and water pipework (Section 4.1.24).	Undertaken. All steam pipes are insulated onsite with design in place for minimal pipework.	In place
BAT 19. BAT is to isolate steam and water services (Section 4.1.25).	Undertaken. Steam and water isolation is in place.	In place
BAT 20. BAT is to implement light management systems (Section 4.1.26).	Undertaken. A light management system has been installed to ensure that site illumination does not	In place

	become a nuisance to the public or the surrounding communities.	
BAT 21. BAT on short and possibly cold storage of animal by-products (Section 4.1.27).	Not Applicable. Applies to rendering	N/A
BAT 22. BAT is to audit odour (Section 4.1.28).	Undertaken. Assessment of Odour impact is in place to assess, record any potential odours from the site.	In place
BAT 23. BAT is enclosed animal by-products during transport, loading/unloading and storage (Section 4.1.29).	Not Applicable.	N/A
BAT 24. BAT to design and construct vehicles, equipment, and premises to ensure that they are easy to clean (Section 4.1.30).	Undertaken. Cleaning/Washing procedures for the factory ensure that the premises are constantly kept clean and tidy, and that all trucks leaving the site are washed.	In place
BAT 25. BAT is to clean materials storage areas frequently – odour prevention (Section 4.1.31).	Undertaken. Procedures for bunds inspection on all bunds/storage areas are checked on a weekly basis and emptied if required. Daily operational control ensures storage areas are emptied as required.	In place
BAT 26. BAT for Transport blood in insulated containers (Section 4.1.32).	Not applicable.	N/A
BAT 27. BAT for Biofilters (Section 4.1.33).	Not applicable.	N/A

BAT 28. BAT for odour control using activated carbon filters (Section 4.1.34) and dilution of odours by capture into one or more chimneys (Section 4.1.35).	Undertaken	In place
BAT 29. BAT is to implement a noise management system (Section 4.1.36).	Undertaken. Procedure to measure noise is in place. Noise monitoring is carried out as per existing condition of the license.	In place
BAT 30. BAT is to reduce noise at e.g., roof extract fans, balance lagoon blowers and refrigeration plants (Sections 4.1.3, 4.1.37, 4.1.38, 4.1.39).	Undertaken. All machines capable of producing loud noise are indoors or sheltered.	In place
BAT 31. BAT is to replace the use of fuel oil with natural gas, where a natural gas supply is available (Section 4.1.40).	Undertaken	In place
BAT 32. BAT for replacement of boiler fuel with tallow (Section 4.1.41).	Not applicable	N/A
5.1.1.1 BAT for environmental management		
BAT 33. BAT is to implement and adhere to an Environmental Management System (EMS) that incorporates, as appropriate to individual circumstances, the following features: (Chapter 4) • Definition of an environmental policy for the installation by top management (commitment of the top management is regarded as a precondition for a successful application of other features of the EMS)	Undertaken. Environmental Management System in place which is subject to external auditing.	In place.

• Planning and establishing the necessary procedures • Implementation of the procedures, paying particular attention to; structure and responsibility, training, awareness and competence, communication, employee involvement, documentation, efficient process control, maintenance programme, emergency preparedness and response, safeguarding compliance with environmental legislation. • Checking performance and taking corrective action, paying particular attention to monitoring and measurement (*see also the Reference document on Monitoring of Emissions*) corrective and preventive action, maintenance of records, independent (where practicable) internal auditing to determine whether the environmental management system conforms to planned arrangement and has been properly implemented and maintained. • Review by top management.		
5.1.2 Integration of same site activities		
BAT 34. For slaughterhouses and/or animal by-products installations, operating on the same site, BAT is to do the following: 1. Re-use heat/power produced in one activity in other activities (Sections 4.4.1, 4.4.2, and 4.4.3). 2. Share abatement techniques, where these are required, e.g., WWTPs. For rendering and incineration on the same site, BAT is to do the following: burn	Not Applicable	N/A

non-condensable gases produced during rendering in a same site incinerator (Section 4.4.2 and 4.4.3).		
5.1.3 Collaboration with upstream and downstream activities		
BAT 35. BAT is to seek collaboration with upstream and downstream partners, to create a chain of environmental responsibility to minimise pollution and to protect the environment (Sections 4.1.27, 4.2.2.1.1, 4.2.2.1.2, 4.3.1.4, 4.3.4.1, 4.3.8.7, and 4.2.2.9.10).	Not Applicable	N/A
5.1.4 Installation and equipment cleaning		
BAT 36. BAT for installation and equipment cleaning (Section 4.1.42) which includes management of quantities of water and detergents consumed (Section 4.1.42.1), selection of those detergents which cause the minimum impact on the environment (section 4.1.42.2), avoid and reduce the use of cleaning and disinfection agents containing active chlorine (Section 4.1.42.3).	Undertaken. Cleaning/Washing Procedure for the facility – staff are trained to minimise water usage where possible during washing and cleaning practices. The site is part of European water Stewardship programme.	In place.
5.1.5 Treatment of Wastewater		
BAT 37. For the treatment of wastewater from slaughterhouses and animal by-products installations, BAT is to do the following: 1. prevent wastewater stagnation (see Section 4.1.43.3) 2. apply an initial screening of solids using sieves (see Section 4.1.43.4) at the slaughterhouse or animal by-products installation	Undertaken. 1. Wastewater is continually recirculated around in the offsite WWTP 2. Wastewater passes through a screen to remove any solids.	In Place

3. remove fat from wastewater, using a fat trap (see Section 4.1.43.9) 4. use a flotation plant, possibly combined with the use of flocculants, to remove additional solids (see Section 4.1.43.10) 5. use a wastewater equalisation tank (see Section 4.1.43.11) 6. provide a wastewater holding capacity in excess of routine requirements (see Section 4.1.43.1) 7. prevent liquid seepage and odour emissions from wastewater treatment tanks, by sealing their sides and bases and either covering them or aerating them (see Sections 4.1.43.12 and 4.1.43.13) 8. subject the effluent to a biological treatment process. Aerobic and anaerobic treatments which are applied to wastewater from slaughterhouses and animal by-products installations are described in Sections 2.3.1.2, 2.3.2.1.3, 4.1.43.14, 4.1.43.15, 4.2.6.2, 4.2.6.3 and 4.3.3.15 9. remove nitrogen and phosphorus. Some information is given in Section 2.3.1.2 10. remove the sludges produced and subject them to further animal by-product uses. These routes and their conditions of application are regulated by ABP Regulation 1774/2002/EC 11. use CH4 gas produced during anaerobic treatment for the production of heat and/or power 12. subject the resulting effluent to tertiary treatment and	3. Traps in place. 4. DAF unit is proposed in the WWTP with the use of flocculation to remove additional solids. 5. A balance tank is proposed to provide a slow steady feed of wastewater to treatment at WWTP. 6. Not applicable. 7. Any leaks are directed to the underground sump which feeds back to the plant by separate drainage system in WWTP. Balance tank will be covered. 8. Not applicable 9. Not applicable 10. Not applicable 11. Not applicable 12. Not applicable 13. Regular lab analysis of raw wastewater is carried out as required.	

13. regularly conduct laboratory analyses of the effluent composition and maintain records (see Section 4.1.43.2). Further information on monitoring techniques is available in the current "Common Wastewater and Waste Gas Treatment/Management Systems in the Chemical Sector" BREF [341, EC, 2002]. Note the emission levels given in Table 5.1 are generally considered to be appropriate for protecting the water environment and are indicative of the emission levels that would be achieved with those techniques generally considered to represent BAT. They do not necessarily represent levels currently achieved within the industry but are based on the expert judgment of the TWG.

Parameter	COD	BOD	SS	Nitrogen (total)	Phosphorus (total)	FOG
Achievable emission level (mg/l)	25 – 125	10 – 40	5 – 60	15 – 40	2 – 5	2.5 – 15

Table 5.1: Emissions levels associated with BAT for minimising wastewater emissions from slaughterhouses and animal by-products installations.

5.2 Additional BAT for Slaughterhouses

BAT 38.

In addition to general measures in Section 5.1, for all slaughterhouses BAT is to do all the following:

1. Dry scrape delivery vehicles (Section 4.2.11)

Undertaken

1. Undertaken
2. Not applicable

1. In place
2. N/A

2. Avoid carcase washing and where this is not possible to minimise it, combined with clean slaughter techniques (Section 4.2.1.4) 3. Continuously collect by-products dry and segregated from each other, along the length of the slaughter-line (Section 4.2.1.6), combined with optimising bleeding and the collection of blood (Section 4.2.2.2.1) and segregation the storage and handling of different kinds of by-products (Section 4.2.5.1) 4. Operate a double drain from the bleed hall (Section 4.2.1.7) 5. Collect floor waste dry (Section 4.2.1.9) 6. Remove all unnecessary taps from the slaughter-line (Section 4.2.1.13) 7. Insulate and cover knife sterilisers (Section 4.2.1.14), combined with sterilising knives using low-pressure steam (Section 4.2.1.17) 8. Operate hand and apron cleaning cubicles, with a “water off” default (Section 4.2.1.18) 9. Manage and monitor compressed air use (Section 4.2.1.19) 10. Manage and monitor ventilation use (Section 4.2.1.20) 11. Use backward bowed centrifugal fans in ventilation and refrigeration systems (Section 4.2.1.21) 12. Manage and monitor the use of hot water (Section 4.2.1.22) 13. Trim all hide/skin materials not destined for tanning immediately after removal from the animals, expect if there is no outlet for the use/valorisation of the trimmings (Section 4.2.2.9.10)	3. Undertaken 4. Undertaken 5. Undertaken 6. Undertaken 7. Not applicable 8. Undertaken 9. Undertaken 10. Undertaken 11. Not applicable 12. Undertaken 13. Not applicable	3. In place 4. In place 5. In place 6. In place 7. N/A 8. In place 9. In place 10. In place 11. N/A 12. In place 13. N/A

5.2.1 Additional BAT for the Slaughter of Large Animals		
BAT 39. In addition to the general measures in Section 5.1 and 5.2, for all large animals' slaughterhouse, BAT is to all the following:	Undertaken	In place
1. Stop feeding animals 12 hours prior to slaughter (Section 4.2.2.1.1), combined with minimising the animals' time in the slaughterhouse to reduce manure production (Section 4.2.2.1.2)	1. Not applicable. Due to animal welfare.	1. N/A
2. Apply demand-controlled drinking water (Section 4.2.2.1.4)	2. Undertaken	2. In place
3. Dry clean the lairage floor and to periodically clean it with water (Section 4.2.2.1.6).	3. Undertaken	3. In place
4. Use a squeegee for the initial cleaning of the blood collection trough (Section 4.2.2.2.2)	4. Undertaken	4. In place
5. Sterilise chest-opening saws in a cabinet with automated hot water nozzles (Section 4.2.2.7.1)	5. Undertaken	5. In place
6. Regulate and minimise the water used for moving intestines (Section 4.2.2.7.2)	6. Not applicable	6. N/A
7. Collect the contents of small intestines dry (Section 4.2.2.9.3) whether they are intended to be used for casings (Section 4.2.2.9.4)	7. Undertaken	7. In place
8. Regulate and minimise the water consumption during small and large intestine washing (4.2.2.9.6)	8. Undertaken	8. In place

5.3.4 Additional BAT for blood processing		
BAT 44. In addition to the general measures in Section 5.1 and 5.3, for blood processing installations BAT is to do one of the following: 1. Concentrate plasma, prior to spray drying, using reverse osmosis (Section 4.3.5.1). 2. Concentrate plasma, prior to spray drying, using vacuum evaporation (Section 4.3.5.2). 3. Remove water from blood, by steam coagulation, prior to spray drying (Section 4.3.3.4).	1. Not applicable 2. Not applicable 3. Water is removed from blood using coagulation. The water goes to an evaporation plant where it is concentrated before being added to a dryer.	1. N/A 2. N/A 3. In Place
5.3.8 Additional BAT for biogas production		
BAT 47. In addition to the general measures in Section 5.1 and 5.3, for biogas production, BAT is to do the following: 1. Re-use heat during biogas production (Section 4.3.10.3)	Not applicable.	N/A
5.3.9 Additional BAT for composting		
BAT 48. In addition to the general measures in Section 5.1 and 5.3, for composting, animals' by-products, BAT is to do the following: 1. Provide sufficient drainage capacity for a window on a hard standing constructed from concrete (Section 4.3.11.1, 4.3.11.2).	Not applicable.	N/A