

Dairy Partners (Cymru Wales) Ltd, Newcastle Emlyn

Odour Management Plan

Review Issue	Issue Date	Description	Authorised By
1.0	12 July 2022	Original Document Issue	HSE Lead
2.0	25 May 2023	Complete review, as per Improvement Condition IC20 of Environmental Permit EPR/WP3231NB V005	HSE Lead – John Potter
3.0	12 September 2023	Amendments made	HSE Lead – John Potter
4.0	May 2024	<i>Next scheduled review</i>	

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1.0 Introduction

This Odour Management Plan (OMP) outlines the methods by which Dairy Partners (Cymru Wales) Ltd will systematically assess, manage, reduce, and prevent potentially odorous emissions from the Wastewater Treatment Plant (WWTP) and the site's other activities. The OMP is a working document, with the specific aim of ensuring that:

- Odour impact is considered as part of routine inspections
- Odour is primarily controlled at source by good operational practices, including physical and management control measures, which are compliant with BAT 15
- All appropriate measures are taken to prevent or, where that is not reasonably practicable, to reduce odorous emissions to air from the WWTP and resultant odour impacts at nearby receptors

This OMP addresses the main sources of potential odour release and the control measures employed to mitigate the risk of odour nuisance at offsite sensitive receptors. These are supported through monitoring procedures to identify elevated levels of odour and to review complaints should they arise. The complaints management procedure, including the management responsibilities, is also addressed.

The methodologies presented in this OMP take full account of Environment Agency (EA), Natural Resources Wales (NRW) and European Commission guidance documentation, as detailed below:

- H4 Odour Management: How to comply with your environmental permit
- Best available techniques (BAT) reference document for waste treatment: Industrial Emissions Directive 2010/75/EU (integrated pollution prevention and control)
- Best Available Techniques (BAT) Reference Document for the Food, Drink and Milk Industries: Industrial Emissions Directive 2010/75/EU (Integrated Pollution Prevention and Control)
- How to comply with your environmental permit (Natural Resources Wales)

2.0 Sources, Releases and Impacts

Following a series of site odour reviews and assessments undertaken by experienced odour practitioners from Air Quality Consultants Ltd (AQC), it was identified significant levels of odour may be released from the following sources at the WWTP:

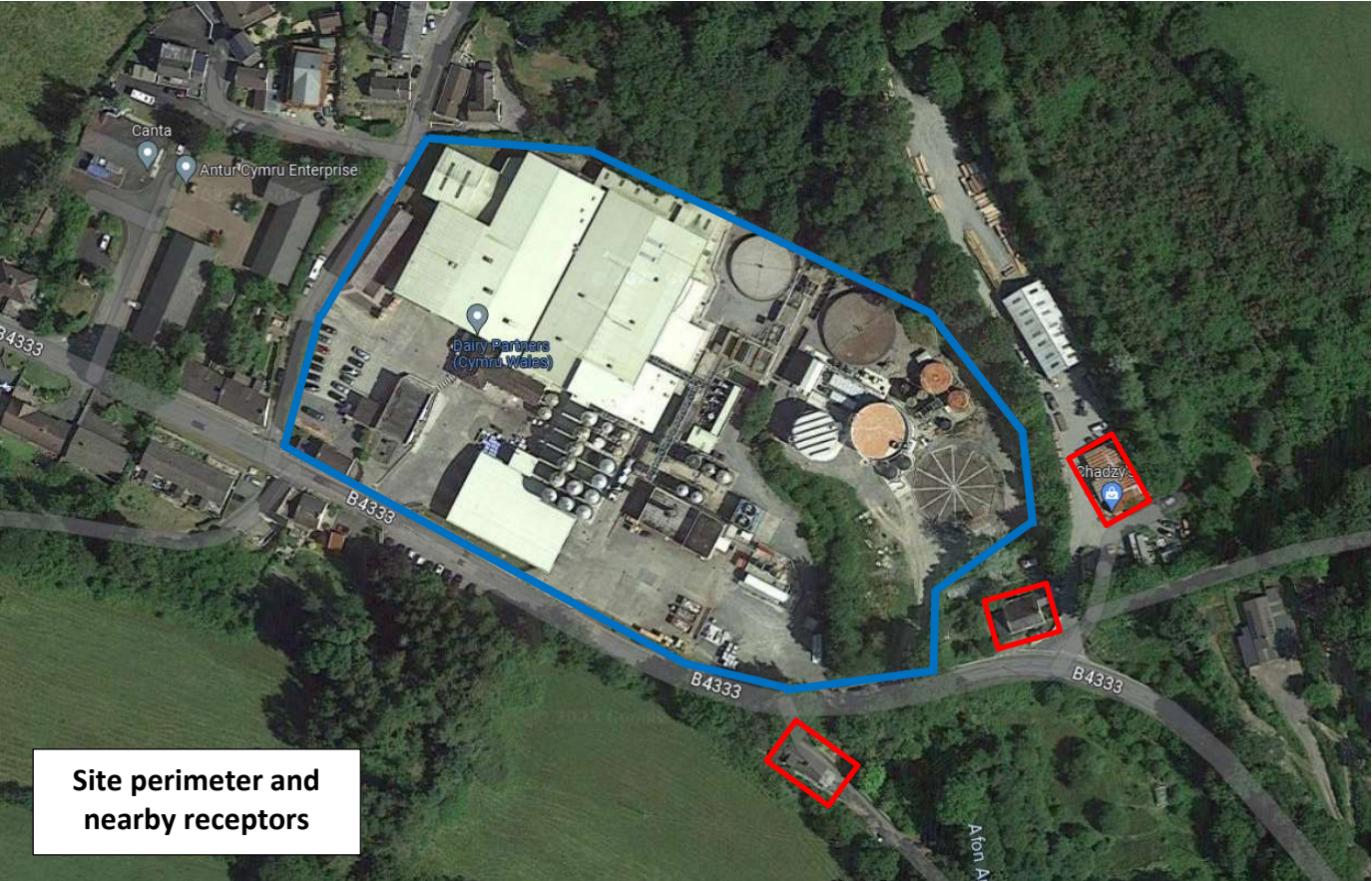
- Dissolved Air Floatation (DAF) tanks 1 and 2 (odour controlled with passive filtration)
- During transfer of sludge from sludge tank to road tanker (odour controlled with passive filtration when connected to the tanker)Decommissioned aeration tank
- Open crude and sludge pits
- Aeration tank (low odour potential if operated efficiently)
- Spillages and plant breakdown (odour controlled with site management measures)

The latest specialist report (October 2022) concluded that, *"This risk assessment was based on the H4 guidance 'FIDOR' factors and concluded a low risk of odour, provided risk management measures listed in the risk assessment, and included within the site's odour management plan, are adhered to"*.

Once released into the atmosphere, the pathway for odour will be through the air. Sensitive receptors

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include the site’s neighbours, particularly the residential properties closest to the boundary fence line of the site. Historical odour complaints have been received from two nearby properties adjacent to the south-west boundary of the site.



All potential odour emission sources have been considered, with those areas judged to generate the highest intensity odours having now been upgraded to include source-specific odour control measures. This includes covers being added to both DAF tanks, the use of passive carbon filters on the DAF units and a dedicated carbon filtration system to treat displaced air from the sludge export tankers during filling events.

The aeration tank, whilst identified by NRW as not being compliant with BAT due to it not being covered, was not identified as a significant source of odour by AQC. The aeration tank, when operating efficiently, does not generate odours high in intensity and offensiveness. Furthermore, the tank itself is raised several metres from ground level which improves the dispersion of odours (odours from elevated sources are generally dispersed more effectively than from ground level sources). Therefore, physical odour control measures are not deemed necessary for the aeration tank. The parameters and effluent treatment performance of the tank is continuously monitored to ensure the process is operating efficiently, and thus potential odour generation from the tank remains low. DAF 2 is downstream of the aeration tank and although it does not constitute a significant source of odour, passive carbon filtration units have been installed to control any residual odour emissions.

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3.0 Odour Control Measures

A comprehensive range of physical control measures have been implemented at the site. These control measures are as follows:

- Enclosed DAF tanks with moveable covers (to allow for inspection and maintenance) and passive carbon filters installed on the vents to reduce the odour emissions released from the tanks' head-space
- Third-party licensed tankers to remove the waste in the event of an aeration tank failure
- Regular cleaning of the sludge pit and removal of sludge to an enclosed tank before offsite tanker removal
- Regular cleaning of the crude pit and removal of accumulated crude pit waste to an offsite tanker
- A dedicated carbon odour control unit to treat odorous displaced air from the tankers during sludge export operations

Furthermore, the following management control measures are implemented at the site to control odours:

- All waste unloading, loading, treatment and storage is undertaken in accordance with operating procedures and operation/management documents issued by the vendor
- All drains are covered to avoid any odour emissions from the enclosed drainage system
- Regular site walkarounds to monitor for odour
- Periodic odour monitoring by an external specialist odour consultant, as required
- WWTP operation is monitored by a designated Operator during normal working hours (seven days per week). Outside of normal working hours, the engineering department is responsible for monitoring use of the WWTP and controlling nuisance sources

If at any time it is necessary to undertake temporary actions that are likely to cause elevated levels of odour (such as plant maintenance), Dairy Partners will contact NRW, the residents, and any other interested parties before such actions are taken. Where practicable, such tasks will be completed when the prevailing wind direction is away from sensitive residential receptors.

4.0 Odour Control Passive Filter Maintenance

Activated carbon, as used in the passive carbon filters on the DAF tanks and the tanker export odour control unit, has a shelf life. Once the carbon media has become "loaded" with pollutants its odour abatement removal efficiency decreases. Therefore, the carbon within these units will be replaced if a breakthrough of odour is observed by site staff during routine weekly odour sniff tests, odour investigations or routine site maintenance.

5.0 Site Management Responsibility

Dairy Partners senior management are responsible for ensuring that nuisances and hazards arising from the facility due to odour are minimised. On a routine basis, this will involve ensuring that any causes of odour are identified (through odour monitoring, identification of malfunctions and complaints recording), actions to reduce odours taken, and any problems rectified.

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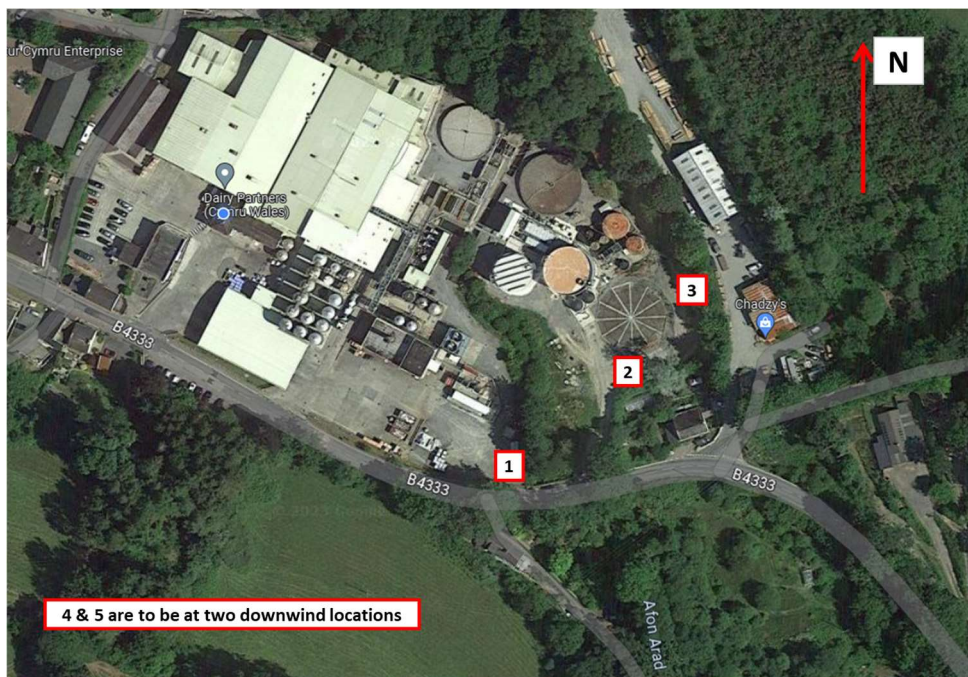
6.0 Odour Monitoring (sniff testing)

Informal, daily sniff testing will be undertaken at locations around the site, as part of a daily walkaround. On normal working days (Monday to Friday), this is carried out by the HSE Lead; at weekends, the site will be monitored for odour by the engineering staff and Production Team Leaders.

The formal sniff test procedure will be used if a significant, noticeable odour is present, in receipt of a complaint (during normal working hours only), or routinely on a weekly basis. The routine weekly test and tests carried out in response to a complaint will be carried out by the HSE Lead only. The results will be recorded on the Sniff Test Form (Appendix 2). Weather conditions (including temperature, wind speed and direction) will be obtained from the MET Office¹ and recorded during to each sniff test. This will enable potential odour issues to be predicted (and investigated) and necessary remedial actions implemented.

All operational staff will be responsible for reporting any odour problems immediately to the WWTP Operator, the Site Manager, the HSE Lead or if during the nightshift, the Production Team Leader. A summary of the sniff test approach is set out as follows:

- In downwind locations along the site boundary, the odour inspector shall record any odours that are detected. The intensity should be noted using the criteria set out in Appendix 2, and a description of the odour characteristics shall be recorded. Observations are to be made at all locations where there is sensitive exposure (i.e.: occupied residential and commercial premises), as well as at least two boundary locations downwind of the WWTP. **NOTE:** If the two downwind locations are the same as locations 1, 2 and/or 3, these two tests can be omitted. Locations 1, 2 and 3, as defined on the map below, are located next to sensitive receptors on the site boundary – these positions must be assessed during every sniff test:



¹ <https://www.metoffice.gov.uk/weather/forecast/gckb43ehx#?date=2022-01-21>

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- Sniff tests will be recorded using the 'FIDOR' methodology, summarised in the Sniff Test Form in Appendix 2. This method is based on the following criteria: frequency, intensity, duration, offensiveness, and receptor
- At each location, records of the meteorological conditions at the time of the test shall be recorded. Wind speed and direction should be measured by the operator using an anemometer, or be obtained from the MET Office website¹, at the time of the test if an anemometer is not available
- Following the identification of an odour at the site boundary or offsite location with sensitive exposure, an onsite inspection will be carried out to trace any odour back to source and enable any corrective or preventative action to take place

Observations including time, date, weather conditions, temperature, wind strength, wind direction, odour intensity and odour character will be recorded in a Sniff Test Form (Appendix 2). Site operating conditions at the time of survey will also be recorded enabling the identification of any 'abnormal' site operating conditions such as sludge transfers to tanker, cleaning or maintenance.

Should elevated levels of odour be identified, the Dairy Partners WWTP Operator will be informed immediately and will initiate the mitigation measures identified in within this OMP.

The HSE Lead is the primary person for carrying out sniff testing on site. However, if he/she is unavailable, odour inspectors shall be chosen from staff that are unlikely to suffer from de-sensitisation to odour (i.e.: someone has been exposed to the odour and thus will not be able to detect it as effectively as someone who has not). All staff responsible for assessing odour will receive appropriate and adequate training from the HSE Lead on the odour inspection procedure. Each inspector carrying out sniff tests will be initially accompanied by a more experienced member of site management to ensure that the nature and offensiveness of any odours detected are being similarly perceived. Staff will be instructed to avoid strong food or drinks for at least one hour beforehand and those members of staff that have a cold, sore throat or sinusitis will not be used to carry out sniff testing.

7.0 Specialist Odour Testing

Dairy Partners commits to conducting a formal odour assessment every three years by a specialist, independent odour consultant. Also, following major infrastructure changes on site, this will also require a specialist assessment to be carried out to gauge the adverse effects of any change.

An action and timeline for specialist odour testing is recorded on a calendar held by the HSE Lead.

8.0 Odour Complaint Recording and Investigation

Odour complaints are typically submitted to NRW via their incident line. Complaint records are logged on the IT network by the HSE Lead, including the company's response.

For complaints made directly to the company, Dairy Partners will use the form in Appendix 1 to record odour complaints, which will be completed by the Dairy Partners management. All completed forms shall be scanned and saved electronically in an accessible location on the company IT network. A basic sniff test will be carried out either by the Engineering Dept and the results recorded in the daily engineering report or the HSE Lead.

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All complaints made via NRW will be forwarded to the Dairy Partners HSE Lead to action and record. Dairy Partners will ensure that:

- All direct complaints will be logged using the Environmental Complaints Log on the company IT network
- The complaint is investigated to identify the cause, if necessary, this may involve direct communication with the complainant
- In the event of elevated levels of odour being detected, the presence of 'abnormal' on-site activity is assessed and, if necessary, preventative action is taken that will prevent a recurrence of the same problem. These actions will be documented
- The complainant will be contacted and given information on the investigations conducted and actions taken, as appropriate
- Where a complaint or query is likely to involve a statutory authority, the emergency services, an insurance company or the media, the Site Manager and Managing Director will be informed
- Complaints involving a location with Local Authority contracts will be reported in line with specific contract requirements and timescales. Local procedures may need to be in place to ensure these are adhered to
- All complaints are reported to the site management team and discussed at daily site meetings
- If the investigation indicates that the complaint has not been justified this will be clearly recorded in the Environmental Complaints Log – due to staffing capacity, investigations may be limited to those carried out during normal working hours only

9.0 Odour Contingency Measures

As part of a continual odour reduction programme, Dairy Partners (Cymru Wales) Ltd will continue to monitor odour with a view to making improvements. Elevated levels of odour may be identified by:

- Testing by an external odour specialist
- Receipt of an odour complaint from a third party suggesting that there is an odour from the WWTP or other area of the site
- Detection of odour at the site boundary as a result of the monitoring procedures detailed within this OMP, including routine and informal sniff testing

Odours will generally arise from one or more of the following:

- Malfunction or bypassing of any odour filtration system installed (i.e.: carbon filters)
- Malfunction of equipment
- WWTP Operator error
- Inadequate odour monitoring and/or reporting
- Poor cleaning
- Inadequate odour control measures at source

Any elevated levels of odour identified by the monitoring program and/or the complaints procedure detailed in this OMP will be mitigated as follows:

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- Dairy Partners will carry out a range of checks at the identified source of the elevated levels to ensure that the plant and physical odour control measures are being operated to the manufacturers' specification
- To further mitigate the elevated odour levels, the following actions shall also be considered:
 - In the event of a serious incident requiring the complete shutdown of the plant for an extended period, Dairy Partners will ensure that adequate waste removal plans are in place for sludge or diverted effluent
 - Dairy Partners will ensure a close liaison with NRW throughout all stages of the process
- Once improvements have been identified, an appropriate timeframe will be assigned to the works depending on aspects such as the purchase of spares, delivery forecasts, the time required to implement the improvement(s) and whether specialist intervention is required – actions and timelines for the implementation of improvements will be recorded and monitored by the HSE Lead for completion in the allotted time, to the appropriate standard
- Once the improvements identified by Dairy Partners have been completed, the management will commission a further odour assessment to ensure that the improvements have addressed the source of the elevated levels. If the elevated levels are still present, then the operator will repeat the request for improvements and subsequent assessments until the limits are met
- If operational failings are identified, the re-training of employees will take place to ensure that all employees operate to the required standards. If the failings are identified as part of the operating techniques, then the problem will be raised as part of a review of control measures

10.0 Reporting Measures

In the event of elevated levels of odour being identified, the event will be recorded in the shift handover record. Dairy Partners will investigate the performance failure event at the earliest opportunity and, if necessary, will report the event to NRW.

11.0 Abnormal Meteorological Conditions

Abnormal meteorological conditions such as low wind speeds or high temperatures may promote elevated levels of odour either on the site or at nearby sensitive receptors. A wind direction towards sensitive receptors may increase the risk of a nuisance odour occurring, and subsequent complaints being submitted. Very low wind strength and temperature inversions may minimise dispersion and potentially create an accumulation of odour. High ambient temperatures may also increase the likelihood of odour emissions.

The mitigation measures to be undertaken in the event of abnormal meteorological conditions are the same as the contingency mitigation measures detailed in this OMP.

12.0 Breakdown of Process Equipment and Plant

The breakdown of the wastewater treatment process or abatement equipment may cause elevated levels of odour due to the build-up of waste or the failure of control equipment. The mitigation measures to be undertaken in the event of process breakdown are the same as the contingency mitigation measures detailed in in this OMP.

13.0 Human Error

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Human error and accidents may cause elevated levels of odour to be created either through the stopping or breakdown of the process or the failure of control equipment. The mitigation measures to be undertaken in the event of staffing issues are the same as the contingency mitigation measures detailed in this OMP.

14.0 Emergency Events

Environmental accidents could result in the loss of control of odorous substances and could have an unacceptable short-term impact on the local community. Emergency situations are to be managed in accordance with the site Environmental Accident Management Plan (EP-017).

15.0 Management Responsibilities and Review

The control of odour will be managed in accordance with the Environmental Management System.

The Dairy Partners WWTP Operator will be supported by the Engineering Lead and HSE Lead. The HSE Lead is responsible for monitoring and evaluation of site performance, which will include ensuring continued compliance with the Environmental Management System.

The Odour Management Plan will be reviewed on an annual basis.

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16.0 Appendices

16.1 Appendix 1 – Odour Complaint Reporting Form

Odour Complaint Report Form	
Time and date of complaint:	Name and address of complainant:
Telephone number of complainant:	
Date of odour:	
Time of odour:	
Location of odour, if not at above address:	
Weather conditions (i.e.: dry, rain, fog, snow):	
Temperature (very warm, warm, mild, cold or degrees if known):	
Wind strength (none, light, steady, strong, gusting):	
Wind direction (e.g.: from NE):	
Complainant's description of odour:	
☐ What does it smell like?	
☐ Intensity (see below):	
☐ Duration (time):	
☐ Constant or intermittent in this period:	
☐ Does the complainant have any other comments about the odour?	
Are there any other complaints relating to the installation, or to that location? (either previously or relating to the same exposure):	
Any other relevant information:	
Do you accept that odour likely to be from your activities?	
What was happening on site at the time the odour	

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Odour Complaint Report Form		
occurred?		
Operating conditions at the time the odour occurred:		
Actions taken:		
Form completed by:	Date:	Signed :

Intensity

- 0 No odour /not perceptible – No odour when compared to clean air.
- 1 Slight/very weak odour – There is probably some doubt as to whether the odour is actually present.
- 2 Slight/weak odour – The odour is present but cannot be described using precise words or terms.
- 3 Distinct odour – The odour character is barely recognisable.
- 4 Strong odour - The odour character is easily recognisable.
- 5 Very strong odour – The odour is offensive. Exposure to this level would be considered undesirable.
- 6 Extremely strong odour – The odour is offensive. An instinctive reaction would be to mitigate against further exposure.

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16.2 Appendix 2 – Sniff Test Form

The form below, which has been adapted from the 'Odour Report Form' set out in the Environment Agency's H4 Odour Guidance (Environment Agency, 2011) should be used for detailing sniff tests. The first column has been completed to provide an example of the information that is required.

A new form should be used for each survey; more than one form will be required if the survey involves more than five sniff test locations. Once completed, the forms shall be logged on a spreadsheet on the site IT network.

Example:

Sniff Test Report Form				Date: 12/07/2019	
Test Number	1	2	3	4	5
Time of Test	14:10				
Location of Test	Location 1 on map				
Weather Conditions	Clear, dry				
Wind Speed	15 mph				
Wind Direction	SE				
Odour Intensity	3				
Duration of Test	2 mins				
Constant Odour?	Yes				
Odour Character	Sewage. Unpleasant.				
Do Odours Relate to Site Operations?	Yes				
Any Other Observations or Comments	Odour was constant. Test was done near to house.				

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Sniff Test Report Form				Date: 12/07/2019	
Test Number	1	2	3	4	5
Investigative or Remedial Action Required?	Yes – <i>inform Site Manager</i>				

Intensity

- 0 No odour /not perceptible - No odour when compared to clean air.
- 1 Slight/very weak odour - There is probably some doubt as to whether the odour is actually present.
- 2 Slight/weak odour - The odour is present but cannot be described using precise words or terms.
- 3 Distinct odour - The odour character is barely recognisable.
- 4 Strong odour - The odour character is easily recognisable.
- 5 Very strong odour - The odour is offensive. Exposure to this level would be considered undesirable.
- 6 Extremely strong odour - The odour is offensive. An instinctive reaction would be to mitigate against further exposure.

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16.3 Appendix 3 – Meeting of Guidance Criteria for an OMP

This OMP details the guidance criteria for an OMP:

16.3.1 BAT Conclusion 1 (xiv) and BAT Conclusion 12 of Waste Treatment BRef Document (EU 2018)

An OMP has been provided, as specified in Conclusion BAT 1 (xiv). The requirements of BAT 12 are set out below:

In order to prevent or, where that is not practicable, to reduce odour emissions, BAT is to set up, implement and regularly review an odour management plan, as part of the environmental management system (see BAT 1), that includes all of the following elements:

- a protocol containing actions and timelines
- a protocol for conducting odour monitoring
- a protocol for response to identified odour incidents, e.g.: complaints
- an odour prevention and reduction programme designed to identify the source(s); to characterise the contributions of the sources; and to implement prevention and/or reduction measures

16.3.2 BAT Conclusion 1 (ii) and BAT Conclusion 15 of Food, Drink and Milk Industries (EU 2019)

Conclusion BAT 1 (ii) has been addressed in this OMP as far as practicable. The “*the identification of characteristics of the installation that are associated with possible risks for the environment*”, i.e. odour, has been set out in the ‘Sources, Releases and Impacts’ section on Page 2 of this document.

The requirements of Conclusion BAT 15 are the same as for Conclusion BAT 12 as set out above.

16.3.3 Horizontal Guidance H4: Odour Management

This OMP meets the requirements as set out in the Environment Agency’s ‘Horizontal Guidance H4: Odour Management’ document, which states that:

OMPs should be designed to:

- employ appropriate methods, including monitoring and contingencies, to control and minimise odour pollution
- prevent unacceptable odour pollution at all times
- reduce the risk of odour releasing incidents or accidents by anticipating them and planning accordingly

All OMPs will need to consider sources, releases and impacts, and use these to identify cost-effective opportunities for odour management. For a particular activity, some methods may be more effective/applicable than others. Sample OMPs, templates or plans produced for other sites are often

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helpful starting points.

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