

Odour Management Plan

Effluent Treatment Plant

Introduction

This Odour Management Plan (OMP) outlines the methods by which Dairy Partners will systematically assess, manage, reduce, and prevent potentially odorous emissions from the Effluent Treatment Plant (ETP).

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; and
- All appropriate measures are taken to prevent or, where that is not reasonably practicable, to reduce odorous emissions to air from the ETP 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 both elevated levels and to review complaints should they arise.

The complaints management procedure, including the management responsibilities, are also addressed.

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

- Technical Guidance Note IPPC H4, Horizontal Guidance for Odour;
- Best Available Techniques (BAT) Reference Document for Waste Treatment under Industrial Emissions Directive 2010/75/EU; and
- Best Available Techniques (BAT) conclusions for the food, drink and milk industries, under Directive 2010/75/EU of the European Parliament and of the Council.

Sources, Releases and Impacts

Following two site odour audits 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 ETP:

- DAF tanks 1 and 2 (odour controlled with physical measures);
- During transfer of sludge from sludge tank to road tanker (odour controlled with physical measures);
- Open crude and sludge pits (odour controlled with physical measures);
- Aeration tank (low odour potential if operated efficiently; see text below); and
- Spillages and plant breakdown (odour controlled with site management measures).

Once released into the atmosphere, the pathway for odour will be through the air. Sensitive receptors include the site's neighbours; in particular, 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 tanks and a dedicated carbon filtration system to treat displaced air from the sludge export tankers during

filling events.

The aeration tank, whilst identified by Natural Resources Wales (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, though, continuously monitored to ensure the process is operating efficiently, and thus odour generation from the tank is very low.

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 maintenance) and carbon filters on the vents to reduce the odour emissions released from the tanks' head-space;
- Third party licensed tankers on site to remove the waste in the event of the aeration tank failing;
- Sheet covers on the crude and sludge pits to reduce the exposed surface area of the pits and to provide containment of odours;
- Regular cleaning of the sludge pit and removal of sludge to an enclosed tank before offsite tanker removal; and
- 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; and
- All drains are covered to avoid any odour emissions from the enclosed drainage system.

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.

Odour Control Unit 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 decrease significantly. Therefore, the carbon within these units will be replaced in accordance with the frequency recommended by the manufacturer, based upon its applied use at the site, or if a breakthrough of odour is observed by site staff during odour investigations or day-to-day site maintenance.

Site Management Responsibility

Dairy Partners operators (or a designated responsible person) will have responsibility for ensuring that nuisances and hazards arising from the facility due to odour are minimised. On a day-to-day 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. Further details on odour identification and reduction are provided below.

Odour Monitoring (sniff testing)

Daily sniff testing will be undertaken at locations around the site. This will be done by the site management team as operators become de-sensitised to the odour. The testing should be carried out before the assessor(s) starts a shift to avoid the desensitisation of the assessor's sense of smell.

Weather conditions (including temperature, wind speed and direction) will be obtained from the MET Office¹ and recorded prior to each sniff test. This will enable potential odour issues to be predicted and necessary remedial actions implemented.

All operational staff will be responsible for reporting any odour problems immediately to the ETP operator, the site manager, the Environment Manager or if during the nightshift, the supervisor/team leader.

A summary of the sniff test approach is set out as follows:

- At regular intervals along the boundary, the odour inspector shall stop and record any odours that are detected. The intensity should be noted using the criteria set out in Appendix 2, and, where relevant, a description of the odour should be recorded. It is recommended that observations are 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 ETP;
- At each location, records of the meteorological conditions at the time of the test should also be recorded, as set out in the table below. 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; and
- 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 ~~an~~ 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 downtime for refurbishment or maintenance.

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

Wherever possible, odour inspectors will be chosen from office-based 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 Dairy Partners 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 perceived similarly.

Staff will be instructed to avoid strong food or drinks for at least one hour beforehand and those members of staff who have a cold, sore throat or sinusitis will not be used to carry out sniff testing.

Odour Complaint Recording and Investigation

Dairy Partners will use the form in Appendix 1 to record odour complaints, which will be completed by the Dairy Partners engineering team. All completed forms should be scanned and saved electronically, with hard copies filed together in an accessible location.

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

All complaints from third parties, including statutory authorities, members of the general public and internal staff members will be forwarded to the Dairy Partners ETP operator to action and record.

Dairy Partners will ensure that:

- All complaints will be logged using the form in Appendix 1;
- 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 reoccurrence of the same problem. These actions must 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 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;
- Details of other complaints are sent to the other Company personnel as appropriate; and
- If the investigation indicates that the complaint has not been justified this will be clearly recorded on the Complaints Report Form.

Odour Contingency Measures

Elevated levels of odour may be identified either by:

- Receipt of an odour complaint from a third party suggesting that there is an odour from the ETP;
- Detection of odour at the site boundary as a result of the monitoring procedures detailed within this OMP; or
- Malfunction or bypassing of any odour filtration system installed (i.e. carbon filters).

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

- 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 Natural Resources Wales throughout all stages of the process, following the emissions limit being exceeded.
- Once the improvements identified by Dairy Partners have been completed, the manager 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; and

- If operational failings are identified, the retraining 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 the review of control measures.

Reporting Measures

In the event of elevated levels of odour being identified, the event will be recorded within the onsite shift diary.

All performance failures will be categorised as one of the following;

- Minor event: quick fix possible, locally resolved;
- Medium event: brief disruption to service, management intervention required; and
- Major event: significant disruption to service. Each cause of odour nuisance has a given deadline for rectification.

Dairy Partners will investigate the performance failure event within two hours and, if necessary, will report the event to NRW.

Once the issue has been resolved, the corrective action taken will be entered onto the system and the issue will be closed.

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 odour annoyance, and thus complaints, developing.

Very low wind strength and temperature inversions may minimise dispersion and potentially create a build-up of odour. High temperatures during periods of high pressure may also increase 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.

Breakdown of Process Equipment and Plant (Aeration tank, DAF etc.)

The breakdown of the effluent treatment process or abatement equipment may cause elevated levels of odour to be created 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 .

Staffing Issues

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.

Emergency Plans

This section considers the potential for accidents (or incidents) which would result in the loss of control of odorous substances and could have an unacceptable short-term impact on the local community.

Should an emergency occur outside of normal operating hours, a nominated representative of the management team will be on site within two hours of notification.

Should an emergency occur out of hours, the nominated representative will contact his operatives and managers, as appropriate, via mobile telephone.

Management Responsibilities and Review

The control of odour will be managed in accordance with the Environmental Management System which has been developed in line with the ISO 14001 standard.

The Dairy Partners ETP operator will be supported by the Operations/Engineering Manager and the Environment Manager. The Environment Manager is responsible for monitoring, auditing and evaluation of site performance, which will include ensuring continued compliance with the Environmental Management System.

Review of odour control measures

Odour control measures will be reviewed through internal audits.

With reference to odour, the internal audits will include, but will not be limited to, the following:

- Monthly spot check inspections of the paper trail of forms to ensure that all data is being entered correctly;
- Checks to ensure that any issues have been resolved correctly;
- Visual inspections to ensure that systems are in place and operating correctly; and
- Checks to ensure that the EWC codes are being used to ensure the identification and separation of sludge waste.

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:	

Odour Complaint Report Form		
Do you accept that odour likely to be from your activities?		
What was happening on site at the time the odour 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.

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 the 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 should be filed in the site office, with an electronic copy also saved if possible.

Sniff Test Report Form				Date: 12/07/2019	
Test Number	1	2	3	4	5
Time of Test	07:10				
Location of Test	Nearby house				
Weather Conditions	Clear, dry				
Wind Speed	5 m/s				
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.				
Investigative or Remedial Action Required?	Yes – inform site manager				

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.

Appendix 3 – Meeting of Guidance Criteria for an OMP

Natural Resources Wales, in exercise of its powers under paragraph 4 of Part 1 of Schedule 5 of the permitting regulations, requires the provision of the information detailed in its schedule. The schedule, in terms of the OMP requirements, sets out the following:

“2. Please provide an odour management plan that accurately reflects the ETP activity in line with the following guidance:

- *BAT Conclusion 1(xiv) and BAT Conclusion 12 of Waste Treatment BRef Document (EU 2018)*
- *BAT Conclusion 1(ii) and BAT Conclusion 15 of Food, Drink and Milk Industries (EU 2019)*
- *Horizontal Guidance H4: Odour Management”*

This OMP adequately addresses these requirements, as set out below.

“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 Conclusion BAT 12 are set out below; this OMP includes all of these requirements. The requirements for odour monitoring will be met using daily sniff testing, as set out in this OMP.

“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 as set out in BAT 10;*
- *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.”*

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

The requirements of Conclusion BAT 15 are the same as for Conclusion BAT 12 as set out above; thus, this OMP includes all of these requirements.

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 [in this case, odour]”* has been set out in the ‘Sources, Releases and Impacts’ section on Page 2 of this document. The other requirements of this conclusion relate to the general Environmental Management System for the facility and are thus not directly relevant to this OMP.

“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 helpful starting points."