

Odour Management Plan

Site details

Site name: MAESYDD AD
Site address: Y Maesydd, Pool Quay, Welshpool, Powys, SY21 9LA
Operator name: Haydn Langford
Permit number: EPR/AB3791FG

Who this plan is for

- All staff members involved with the AD plant
- Any NRW officers
- Any contractors working on site

Document owner

Document author: Haydn Langford
Version number: 1

List of revisions

This OMP is reviewed annually, relevant changes to the plan are listed below:

Revision number	Date	Reason for revision
1	May 2020	New document
2	Oct 2021	Update on odour management system checks and contents page/table
3	July 2026	Update on odour management system checks and contents page

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1. Introduction

1.1 Site description

The Maesydd AD plant is a 210kw Farm Anaerobic Digester.

The site is located in the countryside of Mid-Wales approximately 4 miles north of Welshpool.

The AD plant is in operation 24 hours per day although main activities are for approximately 2 hours per day

1.2 Maintenance and review of the OMP

- The Site Manager, Haydn Langford, is responsible for the OMP and ensures any personnel involved with the site are trained
- The plan is stored electronically in the site office.
- The plan is reviewed annually or more frequent if required.
- The Site Manager has had six months training/advice from the suppliers of the AD plant. Also he has completed and obtained both EPOC and WAMITAB certificates.

1.3 Relevant sector guidance on which this OMP is based

- In line with the Environmental Permit approved for Maesydd AD plant, located at Y Maesydd, Pool Quay, Welshpool, Powys, SY21 9LA, this Odour Management Plan (OMP) forms part of the Management System which regulates operations and emissions for the site.
- Guidance '*H4 Odour Management*' was referred to in the completion of this OMP.

2. Receptors

2.1. Receptor List

Table 2.1. Receptor list

Receptor reference (A, B, C etc. Use to label Fig 2.1)	Land use e.g. house, school, hospital, commercial	Direction from site (North, South, East, West)	Approximate distance to site boundary (m)	Sensitivity to odour Low (e.g. footpath/road) Medium (e.g. industrial / commercial workplace) High (e.g. housing / pub / hotel etc.)
A; Little Maesydd	House	SouthEast	380	High
B; Hollies Cottage	House	North East	350	High
C; Meadow Cottage	House	North East	350	High
D; Red House	Farm	North East	650	Medium
E ; Willows	Farm	South West	565	Medium

Figure 2.1 Map of site location and receptors



3 Sources of odour and site processes

3.1 Process overview

Anaerobic digestion (AD) is a biological process that takes place in the absence of oxygen. This system operates within an enclosed system and is an effective odour abatement technology.

Under normal circumstances the AD process does not result in the release of nuisance odours. The risk of odour release to the atmosphere is limited to feedstock intake, storage and loading of the digester.

Please refer to the Maesydd AD Site Plan that is attached to this document.

3.2 Odorous materials entering the site

Solid agricultural inputs (poultry broiler and layer manure) are stored on a concrete area (11), prior to being loaded in to the solid feedstock premix hopper (2) of the digester. Loading occurs once daily and takes up to 30 minutes. The movement of solid feedstock's and loading of the hopper creates a medium odour level that is only evident during the loading period and for a short period after. The system is then programmed to feed approx 1200 - 1500kg from the hopper into the digester every 2 ½ hours. This is a closed system which minimises odour.

The feedstock pile is sheeted to minimise odour emissions.

Poultry broiler litter arrives every 7 weeks in 350 tonne batches. This occurs over a two day period. The unloaded manure is stock piled and sheeted immediately using a telescopic handler. The level of odour during this short period is classified as medium.

Poultry layer litter arrives every 4 days in a 12t trailer and again is unloaded onto a concrete area (11). This is not covered as it is used within a few days.

All effluent from this area (shaded red) drains into a reception pit (13) and is transferred to the post store using a submersible pump.

Liquid agricultural inputs (cow slurry) are produced and stored in an underground tank within the cow building on the premises. This is pumped when required via an underground pipe work (15) to the reception pit (4) within the AD site. The system is then programmed to feed approx 2 cubic metres from the reception pit into the digester every 2 hours. This again

is a closed system which minimises odour. Ferric Chloride is also added to the reception pit daily. This helps suppress sulphur odour levels in the biogas.

An AD reception and rejection procedure protocol is in place for unacceptable materials being delivered.

3.3 Odorous materials leaving the site

Digestate is pumped from the digester (9) and passes through a separator (3). The liquid fraction is pumped via an underground pipe (16) into an open steel tank (10). This is then spread to land via an injection procedure.

The Solid digestate fraction is dropped below the separator onto a concrete area. This is then moved with a telescopic handler to another storage area (12). From here it is spread directly onto land. The movement of this fresh solid fraction creates a minimal odour that is only temporary until the sample cools down.

The biogas produced by the anaerobic digestion process is contained within the ground mounted gas holder (8). This gas is transferred to the Combined Heat and Power (CHP) unit (6), where it is converted into electricity and heat. During maintenance or in the unlikely event of a breakdown of the CHP unit, gas would be burned off via the fully enclosed flare on site (1) which eliminates any odour.

The only gases released into the environment are exhaust gases from the CHP unit. The exhaust gas comprises mainly carbon dioxide and water vapour, with traces of nitrogen oxides, carbon monoxide and sulphur dioxide. The CHP exhaust gas is within the statutory limits with regards to emissions. These emissions are monitored annually as regulated in the facility permit.

Table 3.2 Odorous materials

Odorous and potentially odorous material (any solid, liquid or gas)	Odour potential High Risk / Medium Risk / Low Risk	Maximum quantity on site at any given day (tonnes per day or litres per day)	Maximum time held on site (hours or days)	Location of odorous materials on site	Additional comments
Poultry broiler litter	Medium	350 tonnes	50 days	Storage area adjacent to AD plant	
Poultry layer litter	Medium	10 tonnes	4 days	Storage area adjacent to AD plant	
Cow slurry	Medium	20m3	20m3	Reception pit	
Liquid treated manure	Medium	3500m3	150 days	Post store adjacent to AD site	
Solid treated manure	Medium	100t	150 days	Concrete pad adjacent to AD plant	

4 Control measures and process monitoring

4.1 Appropriate measures / BAT

Table 4.1 Monitoring procedures for appropriate measures/ BAT

Odorous and potentially odorous process / material	Control measures (Appropriate Measure / BAT)	Monitoring frequency	Monitoring procedure and optimum process parameters	Trigger level	Action taken if outside optimum process parameters
Feedstocks in reception storage area	Sheeting of stock piles	Constant	Visual inspection	N/A	
Liquid treated manure	Applied by Injection into soil	Constant	Visual inspection	N/A	
Excess Biogas	On site flare	Constant	Visual inspection	Gas holder @ 100%	
Digestate	Adding Ferric Chloride (150 litres/day)	Constant	Gas sampling	H ₂ S >30ppm	Extra Ferric Chloride added (upto 350 litres per day)
Digestate	Carbon scrub/filter	Constant	Gas sampling	H ₂ S>150ppm	Change carbon filter

5. Odour reporting

5.1 Complaints reporting

Any complaints received are recorded on a Complaints Record. The source of odour is identified, and suitable action taken.

5.2 Community engagement

The Complainant would be contacted and reassured that the source had been identified and suitable action taken.

5.3 Pro-active odour monitoring

Odour monitoring (sniff-testing) is carried out daily and is incorporated in the daily facility management regime.

It is acknowledged that an individual may become desensitised to the odours of the environment in which they work, therefore, a second person who does not frequent the site, sniff tests the facility periodically.

5.4 Reactive odour monitoring

The procedure should be reviewed annually or sooner if a process variation dictates.

6 Abnormal events

Table 5.1 Abnormal events

Abnormal event	Recovery steps
Power failure	Once the gas holder is full, the flare will burn excess biogas.
Plant breakdown	There is a critical parts list on site. Parts that are not held in stock can be sourced within 48 hrs.