Ammonia and nitrogen assessments for agricultural and anaerobic digestion developments that require a permit or planning permission

This guidance is aimed at helping achieve a stable and sustainable future for Welsh agriculture.

Introduction

If you're setting up a livestock development, installing a new manure/slurry store or a new anaerobic digestion plant; and operate in or near a sensitive site, you must provide us with information to demonstrate your proposal will not harm the habitats and species present there.

If you are applying for an environmental permit or planning permission, you will need to carry out an assessment of the potential impact of ammonia and nitrogen from your development.

Does your development need to carry out an ammonia and nitrogen assessment?

The size of your development and the proximity to a sensitive site will determine whether you need to carry out an assessment.

Find out where all the relevant sensitive sites are. These maps will tell you which Ammonia-CLe and Nitrogen CLo to use for each site. (Instructions)

https://nrw.maps.arcgis.com/apps/MapSeries/index.html?appid=c7770d2881394c899123bae210afe370

If there are no relevant sensitive sites within the screening distance for the size of your development, then you do not need to carry out any more assessment for ammonia and nitrogen. **(Please note this on your application form)**

Appropriate Screening Distances

You need to place the housing at the centre of the screening area and use the following distances in your initial screening

3 KM: For up to 32000 layers with manure removal technology, and chick production (all systems).

5 KM: For up to 60 000 animal places for Broilers, Layers (not included in the rule above), Pullets, Game birds (or 500 m2 floor space), slurry and manure stores up to 4000 m^2

10 KM: Over 60 000 animal places all other poultry (or 500 m^2 floor space)

10 KM: Cattle and pigs over 500 m^2 floor space and for slurry and manure stores over 4000 m^2 and anaerobic digestors.

If your development:

- is closer than 250m to a relevant sensitive site, then you will need to carry out a detailed modelling assessment. **Please proceed to detailed assessment**
- is between 250m and the appropriate screening distance for the number of animal places, you need to carry out an assessment, go to **Assessing the potential damage of your development's emissions** below

Carrying out your assessment

Before you start you will need to know:

- The number of animal places on your development
- The appropriate emission factor for the animal and housing type you propose to use
- The location of sensitive sites within the screening distance in relation to your development
- The background Ammonia concentrations and Nitrogen deposition values
- Whether there are other sources of Ammonia and Nitrogen not already included in the background values

Find out what the appropriate emission factors are.

[https://naei.beis.gov.uk/data/ef-all?q=131018]

If you are unsure which sites to include in your assessment, please contact us.

Ammonia critical levels and nitrogen critical loads

All the sensitive sites that are relevant for this assessment will contain species or habitats that are sensitive to ammonia and nitrogen. Each will have an Ammonia Critical Level (NH_3-CLe) and a Nitrogen Critical Load (N-CLo) assigned to it. You will need to know what these are for the sites within the screening distance for your development.

Be aware that the critical level and critical load are specific to the habitat and the type of plant species present.

They will not be the same at every sensitive site.

Information on the ammonia critical level and nitrogen critical load can be found on the Air Pollution Information Service (APIS) website

[http://www.apis.ac.uk/]

Background values of ammonia and nitrogen at sensitive sites

You will need to know how much ammonia and nitrogen there is already at a sensitive site. These are known as the background values.

You can find out background values from several sources such as,

- Air Pollution Information Service (APIS) http://www.apis.ac.uk/
- National Aerial Emissions Inventory (NAEI) http://naei.beis.gov.uk/

In some areas of Wales, the amount of ammonia and nitrogen is already at, or above the levels that are harmful to some of the species in the sensitive sites.

You must provide us with detailed modelling for your proposal if the background level of ammonia is already at a critical level, prior to any additional outputs from your activity (see page 4*)*

When you need an environmental permit

You will need an environmental permit if you have more than:

- 40,000 places for poultry (includes chickens, turkeys, guinea fowl, ducks, geese, quails, pigeons, pheasants and partridges reared or kept in captivity for breeding, the production of meat or eggs for consumption, or for restocking supplies of game)
- 2,000 places for production pigs (over 30kg), or
- 750 places for sows

As part of the environmental permit application, you will need to carry out an assessment of the potential impact of ammonia and nitrogen from your development.

If you have carried out an Environmental Impact Assessment (EIA) for your planning application, then we will use the same information in the permit determination.

We recommend you apply for your planning and permit application simultaneously.

Assessing the potential damage of your development's emissions

Once you have checked the ammonia critical level and nitrogen critical load at the sensitive sites and the background values are not exceeded, you can carry out an assessment of the effect of emissions from your development.

This can be done using a free, online screening tool called SCAIL Agriculture or by a specialist using an approved model.

SCAIL Agriculture estimates the amount of ammonia and nitrogen emitted from a livestock development. Results can then be used to assess whether impact limits for the sensitive site are exceeded or not. It is useful as an initial screening of sources for permit applications and planning applications.

Get an initial assessment using SCAIL Agriculture

[http://www.scail.ceh.ac.uk/cgi-bin/agriculture/input.pl]

Find emissions factors for your development type here

[https://naei.beis.gov.uk/data/ef-all?q=131018]

The SCAIL tool will tell you what your development's Process Contribution (PC) is at the sensitive sites within the screening distance.

The Process Contribution is the amount of ammonia and nitrogen coming from your development.

For ammonia it is expressed in micrograms per cubic metre (µg/m3).

For nitrogen it is expressed as kilograms of nitrogen per hectare per year (kgN/ha/yr).

You will need to tell us what the PC from your development is and provide it as a percentage of the ammonia critical level and nitrogen critical load.

Once you have the results of the assessment

Are background values at or above critical level at the sensitive site?

Are there any other sources of Ammonia that could affect the sensitive site?

Is your Process contribution more than 1%?

If you can answer (and evidence) NO to all these questions, then no further evaluation is required.

If you cannot answer NO to all these questions, then detailed modelling will be required.

How to carry out detailed modelling

Please model the emissions from your development and other sources of ammonia in combination

Read more about carrying out a detailed modelling assessment.

[https://cdn.naturalresources.wales/media/690820/gn36-checked-2.pdf]

What happens with the results of the detailed modelling?

If you can show that your development will not harm the sensitive species and habitat that we are trying to protect then determination of your permission can continue. If you cannot then we will object to planning applications and refuse the environmental permit.

We will always discuss whether additional mitigation or alternative plans can be put in place to enable a positive solution.

Glossary

Sensitive site: A sensitive site is a place that contains a species that cannot tolerate high levels of Nitrogen. The level considered as 'high' are defined as critical levels, some species have a critical level of 1 µg/m3 whilst others have critical levels of 3 µg/m3. All the sensitive sites we are aware of are on the GIS layer linked in this document.

PLEASE NOTE: Sensitive sites are not limited to those that are designated as protected in some way.

We have made this change to ensure we comply with Section 6 of the Environment Wales act and that we protect those species of most importance.

Harm: If there are sensitive species present the critical level (1ug/m3 or 3 ug/m3) is the point at which we consider definite harm will take place. We consider these levels to be the cut off point for developments that add to the level of Nitrogen, however research indicates that harm can occur below these levels, if your farm is adding to the level of Nitrogen at sensitive sites the amount added must be minimised by applying best available techniques to the design of the housing, abating emissions and to the subsequent storage and use of manure.

Best available techniques: These are a list of techniques detailed in COGAP and Bref documents, all applicable techniques should be considered to minimise the impact of the farm on sensitive species and allow for other farms to operate in the areas.

(COGAP: https://gov.wales/code-good-agricultural-practice)

(Bref: https://eippcb.jrc.ec.europa.eu/reference/intensive-rearing-poultry-or-pigs-0)

Map instruction: Please select your area of the interactive map and zoom in to an appropriate level. In the layer list select 'designations and access' then select 'Habitat Air Quality' and select all the layers within that section. This will show the areas we are concerned about and the critical level above which the habitats and species will be adversely affected.

Appropriate screening distances: These distances have been designed to match up with the requirements for an Environmental Impact assessment under the town and county planning act. We have adjusted the distance to ensure that only the appropriate development screens out. The screening process is deliberately conservative to ensure where there is a risk of harm, detailed modelling is carried out.

Manure Removal Technology: Normally automatic manure removal by belts, other systems can be considered but manure removal must occur at least twice weekly without air drying which can be reduced to once weekly with air drying.

Sites where background is exceeded: Where we are aware of a sensitive site that has elevated background levels then no further addition is acceptable. For farms wishing to operate in those areas the full suite of techniques available to minimise the emission must be used as a minimum standard, only housing types where the emission can be fully channelled for treatment can be considered.

Please contact NRW for assistance.

What do you need to include when looking for other sources of Nitrogen: You will need to include any plan or project in the following stages

a. Applications lodged but not yet determined
b. Projects subject to periodic review e.g. annual licences
c. Refusals subject to appeal and not yet determined
d. Projects authorised but not yet started
e. Projects started but not yet completed
f. Known projects that do not require external authorisation
g. Proposals adopted in plans
h. Proposals in finalised draft plans formally published or submitted for final consultation, examination or adoption.

If a plan or project cannot go ahead for sound legal, technical or other reasons it can be discounted.

Please include all emissions, including those that would have screened out under the old guidance, the de minimis of 1% of the PC does not apply to in combination assessments.

Ref: The Habitats Regulations Assessment Handbook