

Preparing Site Reports for Pig and Poultry Farms

Supplementary Guidance for IPPC Applications

Northern Ireland Environment Agency

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1. INTRODUCTION

1.1 Why do I need to prepare a site report?

The Pollution Prevention and Control (Northern Ireland) Regulations 2003 require that the condition of the site (the area within the site boundary on your site plan) must not deteriorate over time as a result of the permitted operation i.e. pig or poultry farming. In other words it must not be in a more polluted state than it was when the permit was issued. To determine whether the site has become more polluted requires an examination of the site prior to the permit being issued and a second examination when the permit is surrendered for any reason. The findings of these examinations must be recorded in a site report, the first of which forms part of the application. A comparison can then be made of the two site reports to determine if the site has become polluted as a result of the permitted operation.

It is therefore in the interests of the operator to ensure that the condition of the site is accurately described at the time of the application, otherwise they may not be able to prove that any contamination existed before a permit was issued and was not a result of the permitted operation. The Regulations don't consider whether the site is acceptable, they only require that a reference is established against which any deterioration as a result of the permitted activity can be assessed.

1.2 What constitutes the site?

The site includes all of the land where the activities of the installation are carried out. On pig and poultry farms for example this would usually include the following:

- livestock housing;
- hard standing areas around buildings;
- access areas where vehicles manoeuvre;
- swales, constructed wetlands, sediment traps, settlement ponds and soakaways;
- feed mixing and storage facilities;
- litter/manure/slurry storage areas and facilities;
- fuel, oil and chemical storage facilities;
- carcass storage and incinerators;
- waste storage areas.

It would not include fields on which manure litter or slurry are spread as the nutrient status of fields used for land spreading must be recorded in a manure management plan. The site plan required as part of the main application (also required for the accident management plan) should clearly show the outline of the site and details of the activities being undertaken on the site.

1.3 Aim of this guidance

The purpose of this guidance is to provide straightforward advice on how to prepare a site report similar to that shown in the 'Example Applications'¹. This approach is aimed specifically at intensive livestock units, many of which will have been constructed on green-field sites where the risk of previous contamination would normally be lower than brown field sites or those formerly used for industrial purposes. These limitations should be borne in mind if your site has previously been used as an industrial site. In such cases a more detailed site investigation involving intrusive sampling may be required. The guidance will outline the data that is necessary to put together a basic report describing the site when the permit is applied for.

2. PREPARING YOUR SITE REPORT

2.1 What aspects of the site should be examined?

When describing the condition of the site you should consider the surface soils, the subsurface strata, surface waters and ground waters as these are all likely to be affected to a greater or lesser degree as a result of pig or poultry farming operations. Much of the study can be undertaken as 'desk based' study using your own farming records, knowledge about the past history of the site, soil and groundwater maps etc, but it is also important to examine the site and identify any substances that may constitute a pollution risk. An example might be contamination of surface soils with fuel oil around the filling area of a diesel tank. The following list is the minimum that should be investigated and reported:

- description of the site;
- outline of geology and hydrology;
- site history, including any incidents (e.g. spillage, flooding);
- information about materials stored, used or applied to the site (e.g. FYM, slurry, litter, fuels oils etc);
- consultations with other parties;
- other data gathering undertaken.

In addition to 'desk based' gathering of the above information, it is important to identify potential pollution pathways on the site by undertaking a thorough examination of the area. Depending on the size and layout of the site, it may be helpful to divide the area into different zones based on different activities on the site. For example, areas containing housing, manure storage facilities (that are separate from housing) and areas for carcass incineration could be regarded as separate zones within the site. Zoning can be helpful on larger sites e.g. some pig farms, where there is a range of activities.

¹ Pollution Prevention and Control (Northern Ireland) Regulations 2003. Application for a Permit - Example of Supporting Documentation.

2.2 Site description

This section of your report should give details of the site and its environmental setting i.e. where it is, what size it is and a description of the main features of the area. You should refer to your site map provided as part of the main application. The site map should clearly show the main structures and features on the site including details of drainage systems, swales or constructed wetlands. With pig and poultry farms, it will usually be clear what area of land constitutes 'the site'. This would normally include the housing, hard standing areas surrounding the sheds, and areas where associated activities such as carcass incineration, feed storage areas, manure and slurry storage systems, and swales or constructed wetlands associated with the farm. You should clearly show the site boundary. Fields surrounding the farm would not normally be part of the site for the purpose of the site report.

2.3 Geology and hydrology

This information can provide an indication of how any pollution or contaminant can move around the site, and an indication of potential receptors such as groundwater and surface water.

2.3.1 Land use class and soil type

It is expected that sites for intensive livestock farms will be on agricultural rather than industrial land, and the Land Use Class and soil type will provide suitable information about the agricultural capability and geology of the site. Most farms will already have land use capability and soil type data, but if not maps are commercially available or you should contact your local advisory service.

2.3.2 Water courses and groundwater vulnerability

Watercourses and groundwater are sensitive receptors and you should provide details of watercourses that exist on the site or may be affected by pollutants already on the site. You should identify watercourses within 250 metres of the site, and give details of where swales settlement ponds or wetlands discharge to. Groundwater vulnerability maps describe the land in terms of its permeability. Highly permeable land carries a greater risk of pollutants on a contaminated site reaching groundwater. Groundwater vulnerability maps are available for Northern Ireland, or you can contact your local advisory service.

2.4 Site history and history of incidents

Give full details about the historical use of the site, and any works done, for example during the construction of the farm. In most cases farm records should provide an adequate source of information but you may need to consult previous owners. Also provide details any past pollution incidents that are known about, for example spillages of fuel oil, pesticides or other polluting substances. Give details of any historical incident that may exacerbate any existing contamination, or that could have resulted in additional pollution, flooding for example. If

there has been any previous site investigation or assessment you should include the report as an appendix.

2.5 Operation of the site

Describe the operations on the site at the time of applying for the permit. If the site is an existing farm the description will be similar to the non-technical summary in the main IPPC application. If the application is for a new unit describe the current use of the site (e.g. permanent pasture used for grazing and receiving applications of *n* tonnes per annum of litter) and outline the proposed use.

2.6 Substances and emissions

Give full details of any potentially polluting substances that have been used, stored, produced or disposed off on the site in the past. Examples might include fuel and oil stores, pesticides, disinfectant, and manure heaps. If there is an existing farm already on the site consider the main emissions, probably ammonia, odours, dust, manure, slurry or litter. State if the site has received heavy applications of slurry, manure, litter or other organic waste in the past (before construction of current housing) as this may have resulted in elevated levels of copper, zinc, and other metals in the soil. The Table below may be used as a template.

Previous use or activity	Potentially polluting substance(s)	Location

2.7 Potential pollution pathways

You should identify the potential pollution pathways on the site, in other words examine where pollution may be present and establish how it could move and contaminate soil, surface water, ground water, air etc. This is likely to be more complex with older farms. When identifying potential pollution pathways, it may be helpful to consider the characteristics of possible contamination:

- substances likely to be soluble in water;
- other mobile contaminants;
- contaminants that are less soluble or non soluble in water;
- volatile contaminants;
- contaminants immiscible with water;
- possible breakdown products of contaminants.

On an agricultural site the following are examples of potential contaminants that may be present, and their relevant characteristics as described above:

- nutrients from litter/manure/slurry or septic tank outflows – generally soluble in water and mobile, phosphorus may accumulate in soil;
- nutrients and suspended solids from large deposits of dust – nutrients generally soluble, dust particles less so but mobile in water;
- metals from litter/manure/slurry e.g. copper and zinc – although not particularly soluble these elements may bind to soil particles and so accumulate in soil, or get carried into watercourses with eroded soil particles;
- metals from non-agricultural wastes such as sewage sludge – heavy metals, some potentially toxic, may bind to soil particles and accumulate in the soil;
- metals and trace elements such as calcium and phosphorus where ash from incinerators has built up e.g. around incinerator sites – some of these elements may bind to soil particles and so accumulate in soil;
- pesticide and biocide residues – these are soluble in water and mobile;
- ammonia emissions from existing farms, manure stores or land spreading – volatile emissions that may be deposited on vegetation and land, are affected by weather conditions and are potentially damaging to ecosystems;
- fuel and oil – immiscible with water, mobile and slightly volatile (may be detected by smell).

2.8 Site reconnaissance

Once you have established potential pollution pathways, and other desk based information detailed above, you should undertake a thorough visual examination of the site to establish if pollution may have occurred through any of the pathways or by any other means. Evidence of potential contamination may include:

- run-off channels from hard standing areas and visible contamination of vegetation;
- evidence of ponding, wet land, build up of dust or feed;
- signs of leakage around septic tanks, (green vegetation, algae and slime in ditches);
- darkened soils suggesting fuel or oil contamination, smell of fuel in soil;
- lush green vegetation around sheds and in ditches, possibly from ammonia deposition;
- evidence of 'scorching' on needles and leaves of trees very close to sheds;
- build up of ash, bones and bare earth around incinerator sites;
- areas of bare land with poor or little vegetative growth;

- any other obvious signs suggesting potential contamination.

2.9 Statement of site condition

The statement of the site condition should be an accurate reflection of the findings of the desk based information and site reconnaissance. When preparing the statement of site condition, consider the purpose of the site investigation i.e. to provide a baseline condition of the site so that can be compared with a similar report when the installation is decommissioned so that an assessment can be made of whether any pollution has occurred as a result of the permitted process. Remember that any contamination that is found on closure of the site that was not detailed in the initial site report is likely to be attributed to the operation of the installation under IPPC. In such circumstances remediation measures would be required to clean up the site.

3. LIMITATIONS OF ABOVE PROCEDURE

3.1 Adequacy of site reports

The above procedure and the format of the site report provided in the example application documentation is intended to be adequate for sites that have historically been used for normal agricultural production and do not show signs of contamination. It is envisaged that the above approach should suffice for a majority of agricultural sites, but it must be borne in mind that such a simple methodology may not be appropriate for all sites.

3.2 When is a more detailed study required?

If for any reason the initial site investigations reveal that contamination could have occurred in the past or currently exists, then a more detailed or intrusive site investigation may be required. (For example, this may be because of prior uses of the site or previous practices on the site like burial of carcasses or inadequate containment, because the site reconnaissance has indicated some evidence of contamination, or because of known incidents in the past.) In such circumstances applicants are advised to adopt a risk based approach to establish the nature and level of contamination in defined zones on the site. In these circumstances it is probable that soil and water sampling at various locations on the site would be required. The rationale for any sampling strategy should be reported along with the results and a full interpretation of the results. Unless you have specific expertise in this area of work you are advised to seek specialist advice. Your local advisory service will be able to provide further advice.

4. SITE MONITORING

4.1 Site operations and pollution prevention measures

Where the site report submitted with the application indicates that there is a risk of ground pollution, monitoring requirements in addition to the

inspection requirements set out in rules 2.1.1.1 to 2.1.1.3 may be included in the permit.

For example, this may have occurred on sites where there has been pollution from past activities or if it is deemed necessary to prevent further pollution in the future. The additional monitoring will be used along with your site report to demonstrate that you have not caused further pollution and will return the site in a satisfactory state if you apply to surrender the permit.

If required a site monitoring programme can be prepared using the template below. Some aspects e.g. pollution prevention measures will also be relevant when assessing environmental impacts. A template is given below for information with diesel fuel as a completed example, and other potential pollution aspects identified.

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1.Site Operations (storage and use)	2. Substance	3. Relevant activity	4. Possible failure mechanism and potential for pollution	5. History/records or visual evidence of leaks of potentially polluting substances to land (e.g. cracking in hardstanding, leaking tank or bund). Detail any incidents of pollution or spills. This can be based on visual assessment during Site inspection, or other records.)	6.Do pollution prevention measure exist for relevant activity? Yes/No	7.Provide details of pollution prevention measures. To include primary (e.g. tanks or pipework), secondary (e.g. bund or hardstanding) and where present tertiary (e.g. oil interceptor)	8.Testing and Inspection of pollution prevention measures (Note: If you are not
Fuel	Diesel	Main Storage	Failure of containment leading to spillage to land	(e.g. no evidence/records of spills or leaks)	(e.g. Yes)	(e.g. bunded tank and concrete bund containing tank and fill point)	(e.g. visually inspected monthly and following any notified spill)
		Road tanker off-loading	Spillage from road tanker or delivery pipework to land	(e.g. Visual inspection indicates land impacted with fuel oil)	(e.g. Yes)	(e.g. delivery in secure vehicle. Tankers park when filling tank on Impermeable pavement with kerbs.)	(e.g. tanker compliant to British Standard and Department of Transport Regulations)
		Fuel supply to boiler plant from storage/incinerator (specify use)	Failure of underground pipeline between the oil storage tank and boiler plant leading to loss of product to land	(e.g. None)	(e.g. Yes)	(e.g. Underground steel pipeline)	(e.g. Annual pressure test)
		Incinerator	Spillage within boiler room to land or Site drainage	(e.g. None)	(e.g. Yes)	(e.g. Kerbed concrete floor with no surface drainage)	(e.g. 6 monthly maintenance and inspection programme)
Feed	Nutrients Organic matter Liquids e.g. soya	Delivery to storage area					
		Transfer from delivery vehicle to storage					
		Storage					
		Transfer to animal rearing units					
		Storage in animal rearing units					

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Slurry	Nutrients – N, P, K, metals	Storage in animal rearing units					
		Transfer from rearing units to storage					
		Storage					
		Transfer from storage to tanker.					
		Transfer by tanker for off-Site disposal					
Manure	Nutrients – N, P, K, metals	Storage in animal rearing units					
		Transfer from rearing units to storage area					
		Storage area					
		Transfer from storage area					
		Transfer for off-Site disposal					
		Transfer from storage to other areas of the Site					
		Areas treated or storage (specify areas e.g. wheel wash)					

Dirty water/wash water	Nutrients Metals Biocides Pesticides	Wash waters from rearing units/yard					
		Drainage from rearing units/Yard area					
		Transfer from wash/yard areas to storage					
		Below ground Storage					
		Above ground storage					
		Transfer from storage to slurry tanker.					
		Transfer by slurry tanker for off-Site disposal					