

**Pollution Prevention and Control (Northern Ireland)
Regulations 2003**

Application for a Permit Variation

**Example of Supporting
Documentation - Broiler Chickens**

Northern Ireland Environment Agency

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Northern Ireland Environment Agency
Industrial Pollution and Radiochemical Inspectorate
Klondyke Building
Cromac Avenue
Gasworks Business Park
Lower Ormeau Road
Belfast
BT7 2JA
Tel: 028 9056 69299 Fax: 028 9056 9299

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Introduction.

This document is intended to be used for guidance purposes only. It has been written to illustrate the type of information that should be contained in an application for a permit variation using the example of a broiler unit proposing to increase the capacity of broilers contained on the site. As each farm situation and potential permit variation application will be different the answers given here are not likely to exactly match your particular situation.

It is therefore important that any information submitted in support of an application for a permit variation is relevant and factual in relation to the farm for which the variation is being applied for. A copy of a completed application form (Q57/4 Part C – Application for a variation to a pig and poultry rearing permit) should be submitted along with this supporting documentation.

C1.2 The Proposed Variation.

The proposed variation is to increase the number of broilers on the installation by **xx,xxx** birds with the total site capacity increasing from **xxx,xxx to xxx,xxx** birds. This will involve the construction of an additional house with the capacity for **xx,xxx** birds and a floor area of approx. **x m²**, on the land immediately to the east of the existing installation, increasing the number of houses from **3 to 4**. The new house will be constructed within the existing site boundary and the site size will remain at approx. 1ha.

The Proposed House

The proposed house will be of steel construction with box profile green painted steel roofs and concrete bases. The working area where vehicles operate will be laid with concrete, and the house will be screened with trees. An additional underground tank (shuttered concrete) will be installed to collect waste water. An electronic control system will regulate heating and ventilation within the shed. Ventilation will be by means of roof-mounted fans that draw air into the sheds via openings in the side walls and blow the exhaust air out above the roof ridge. An interval timer will operate the fans to control the amount of fresh air entering the buildings in combination with adjustable inlets that allow further control of airflow. Maximum and minimum temperatures will be monitored and recorded daily and adjustments made as necessary to ensure that birds are in the optimum environment for their age and weight. Target levels for relative humidity will be 50% - 70%. Nipple drinkers will be used to reduce wastage of water and to maintain dry litter, which is expected to have a dry matter content of 65% - 70%. Water consumption will be monitored and recorded daily.

The installation is operated and will continue to be operated in a manner which prevents pollution. "Best Available Techniques" (BAT) will be employed in order to minimise the impact on the environment.

C1.3 Site maps and site reports.

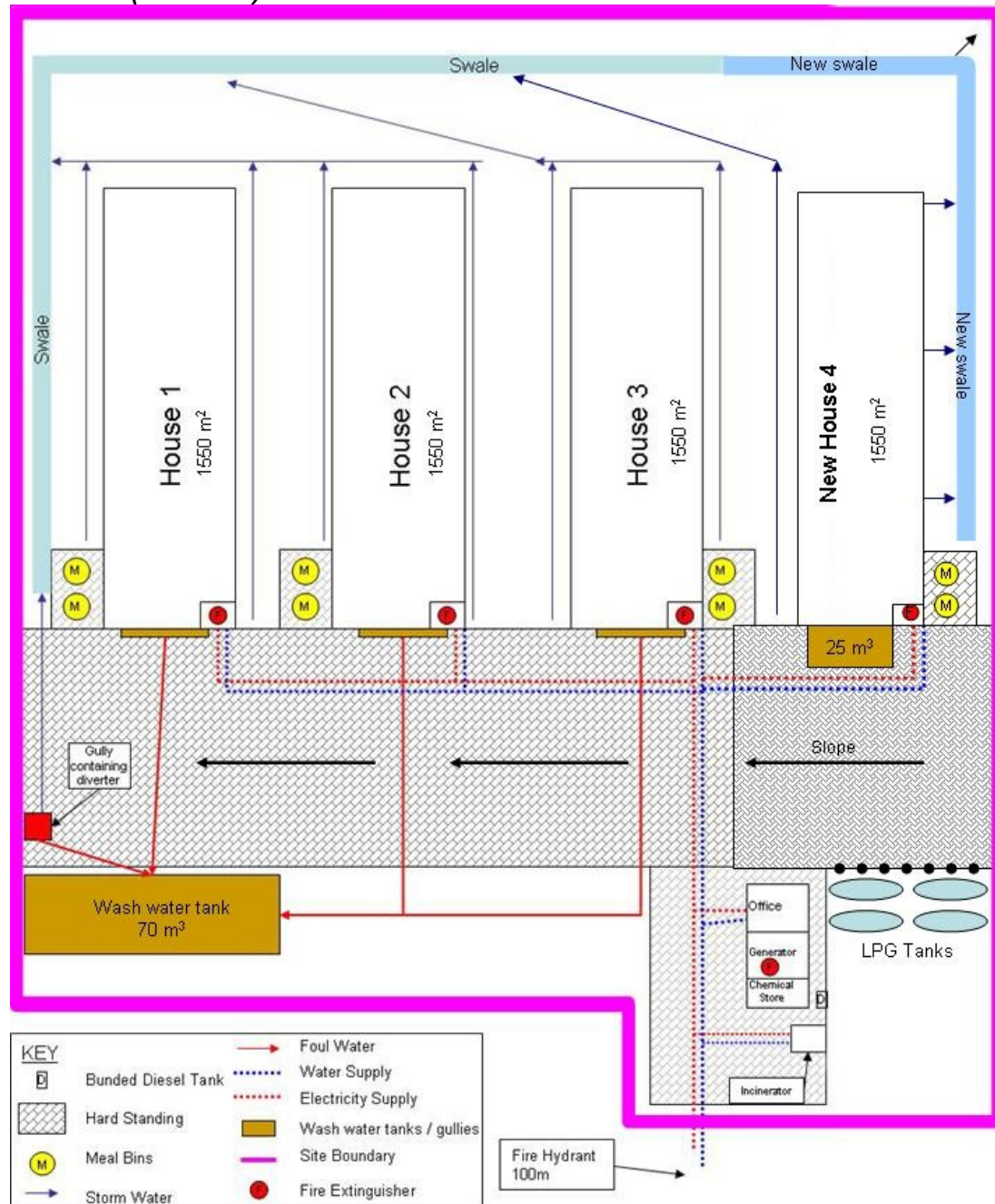
The proposed new house will be located adjacent to house 3 as indicated on the attached map and will be within the original site boundary (see attached site plan table 3.1). An updated site location map is also attached showing the location of any local sensitive receptors eg. dwellings. The site report submitted with the original permit application is still considered valid.

The area adjacent to the existing poultry sheds is considered to be in a condition commensurate with a green field area used for agricultural production, it is considered unlikely that contamination is present. The land surrounding the poultry sheds is still used for agricultural production and although a small amount of manure spreading is undertaken on this land, the presence of contaminants is considered unlikely.

[Note: If there is a possibility of contamination on any area of the new site, for example areas around old fuel tanks and incinerators, applicants are advised to adopt a risk based approach to establish the level of contamination in defined zones of the site. In circumstances where pollution was suspected, monitoring requirements in addition to the inspection requirements set out in

rules 2.1.1.1 to 2.1.1.3 of the Standard Farming Installation Rules may be included in the permit variation. See the Site Report Guidance (Preparing Site Reports for Pig and Poultry Farms: Supplementary Guidance for IPPC Applications) for more information on preparing a site report for your application].

Site Plan (Table 1.3)



C2.1.1 Inspection and maintenance.

The proposed broiler shed will be of a similar design and construction as the existing three sheds. As such the Inspection and Maintenance checklist which is currently in use is considered appropriate for the expanded installation. Scheduled inspections are undertaken by the farm owner [Mr X] on a bi-monthly/crop basis. The findings are recorded using the form detailed in the original IPPC permit application and any defects noted and corrective action stated. In addition to the bi-monthly schedule a number of daily checks are made as part of monitoring the production process.

C2.1.2 Staff Training.

The farm owner [Mr X] has already completed relevant training in Pollution Prevention and Control ie. a LANTRA IPPC poultry course. The proposed new broiler shed will be managed in a manner similar to the existing sheds. The ventilation controls in the new shed will be of a design with which the farm owner [Mr X] is unfamiliar and so he/she will receive extensive training in the operation of this equipment prior to birds being placed for the first time.

C2.2.1 Selection and use of raw materials.

All chemicals and disinfectants used on the site are listed in the approved lists (MAFF/HSE Reference Book 500, National Office for Animal Health (NOAH) compendium, and DARD approved list of disinfectants). Details of the inventory are given in the table in section C2.2.1 of the application form. No new raw materials will be used as a result of the proposed expansion. Total quantities of chemicals used and stored on the installation will increase by approx. one third.

C2.2.2 Selection and use of feedstuffs.

The type of feed, feed regime and supplier will remain as currently used in the existing three sheds and as detailed in the original IPPC permit application. However protein levels and phosphorus levels in the diets may have changed marginally since the original application was made. The current levels are as follows.

Currently 3 diets are fed:

- Starter crumb (Crude Protein = nn.n%; Phosphorus = n.nn%)
- Grower pellet (Crude Protein = nn.n%; Phosphorus = n.nn%)
- Finisher pellet (Crude Protein = nn.n%; Phosphorus = n.nn%).

[**Note:** give details of the crude protein and phosphorus levels in diets.]

All diets contain the digestive enzymes xylanase and beta-glucanase to improve the digestibility of feeds. Phytase is used in the diets to permit a reduced phosphorus level in the feed. Improved digestibility can prevent excess water consumption, thus helping to maintain dryer litter.

All feeds except finisher withdrawal pellets contain an anti-coccidial to control coccidiosis. Anti-biotic growth promoters are not used.

C2.2.3 Optimising water use.

Water is from a mains supply on the site. Average consumption for the existing houses is 6.3m³ per 1000 birds per crop and it is estimated that the proposed increase of **xx,xxx birds** will consume **xxx m³** water per year, with a further **xx m³** per year used for washing (ie. based on 7.5 litres per m² floor area per crop) which will be collected in the new underground waste water tank. The following practices will be used in the proposed house to ensure that water use is optimised and waste is avoided:

- Nipple drinkers with drip trays will be used to minimise losses and help maintain dry litter.
- Water consumption will be monitored and recorded daily from individual meters within each shed. Any variation from normal levels is investigated immediately.
- Daily checks are made by staff to ensure that drinkers are at the correct height for the birds. Having drinkers at the correct height and adjusting pressure and flow to allow birds to utilise water efficiently minimises wastage and improves litter quality. These checks also allow staff to attend to problems at an early stage, e.g. leaks in drinking lines.
- The shed will be fully insulated and provided with an efficient ventilation system to maintain an optimum environment for birds at all times including extremes of weather. Water consumption should not therefore increase significantly in hot weather.
- The shed will be constructed with a smooth concrete floor and plastic coated walls and ceiling. As a result the shed will be easily washed and require a minimum of wash water.

A water audit has previously been completed for the existing site.

C2.3.1 Feed delivery, milling and preparation.

The storage capacity of feed storage will increase by 40 tonnes ie. 2 new meal bins. The feed will be supplied by the UFAS credited mill that currently supplies the existing installation. Feed will be blown directly into sealed storage bins that will be set back from high traffic areas to minimise risks from collision in a similar fashion to the existing bins. Containment will be provided around the base of the bins in the form of a lip or kerb to ensure that any dust from blowing in feed is contained.

C2.3.2 Storage of Agricultural Fuel Oil, other Oils and Chemicals

The following facilities are used for storage of fuels and chemicals:

Product stored	Method of storage	Current Storage Capacity	Storage Capacity after expansion	Location (see also site map)
Liquid petroleum gas	LPG tanks in purpose built secure compound	12000 litres (3 tanks)	16000 litres (4 tanks)	SE corner of site
Diesel	Bunded tank	200 litres	No	Beside

			Change	generator house
Biocides and pesticides	Proprietary chemical safe	200 litres	No Change	Farm store
Petrol	Proprietary fuel container	max 10 litres	No Change	Farm store
Veterinary medicines	Refrigerator	35 litres	No Change	Farm store

With the exception of the LPG tanks the existing storage facilities are of sufficient capacity to serve the needs of the expanded installation. All agricultural fuel oil storage on the installation is bunded.

C2.3.3 Minimising Emissions from Housing

In the design and management of the proposed new broiler shed the following measures will be adopted to prevent or minimise emissions to air, water and land.

Housing:

- Walls and roofs in sheds will be insulated with 100 mm glass wool and lined with smooth boarding to allow easy washing with a minimum amount of water. The building will be well maintained and watertight.
- The floor will be of polished concrete for easy cleaning and run towards an underground waste water tanks.
- Roof fans and side inlets will operate via an electronically monitored system to ensure the internal environment is kept warm and dry to ensure dry litter. Fans will also run intermittently to save energy.
- Two gas heaters per shed will provide heating in the early stages of the production cycle.
- Nipple drinkers will be used to reduce wastage of water and maintain dry litter, thus reducing emissions of ammonia and odours.
- Pan feeders will supply ad-lib feed. Less feed is wasted and birds are less likely to push food out of feeders into litter.
- Low energy fluorescent lighting will be used and the house will have double glazed windows to reduce the requirement for artificial light.

Site drainage:

- Rain water will be kept separate from potentially contaminated wash-down water.
- The site will be concreted to allow a high standard of cleanliness and controlled drainage of clean water (including roof water).

- Clean run-off from the existing site is channelled to a vegetated ditch or 'swale' running along the east and north side of the site. This swale will be extended along the east side of the site to provide sufficient capacity for the run-off from the proposed new shed. The swale then discharges to a field ditch.
- Contaminated wash down water is contained within the sheds and directed to an underground wash water tank. An additional wash water tank will be constructed to store the wash water from the proposed new house – washings from this house will be routed directly to the tank and not rely on a diverter system.
- A diverter is provided so that in the event of the hard-standing areas becoming contaminated, for example during cleaning out periods or when cleaning up dust, run-off from these areas can also be diverted to waste water tanks rather than the swale. The existing diverter arrangement will satisfy the needs of the expanded installation,
- Waste water tanks are emptied and disposed of in accordance with the requirements of the DARD code of good practice for prevention of pollution of water.

Litter utilisation:

- The current permit allows litter to be utilised for mushroom composting, combustion and land-spreading on land belonging to the farm.
- Additional land, under the control of a third party has been secured to utilise the additional litter produced by the expanded unit. The litter will be applied to land in accordance with the attached nutrient management plan.
- At some time in the future all the litter from the installation may go for combustion.

Management practices

The principal emissions from the new house will be ammonia, odours, dust, and at certain times noise. Good litter quality is a significant factor in minimising ammonia and odour emissions, and measures described above under housing all help reduce these emissions. Good management practice is also important. Causes of wet litter include sick animals, leaking equipment, poor ventilation, inadequate heating and high humidity within the shed. The following management checks are currently carried out for the existing houses and will be made for the activities associated with the new house:

- daily checks of animal welfare;
- daily checks and records of water consumption and equipment;
- daily checks of temperature and ventilation;
- regular maintenance and cleaning of fans and other equipment e.g. feeding and drinking systems;

- site kept clean and tidy and free from sources of odour e.g. spilled feed, uncovered bins for mortalities.

The main causes of dust are birds, feed and litter. Dry litter is essential to reduce ammonia and odours, and a consequence of this is the potential for slightly higher dust levels. Excitable birds disturb litter and generate dust. Good husbandry practice lessens the likelihood of birds becoming stressed and thus helps to reduce dusts. Feed is delivered in pellet form and this too helps to reduce dust levels in the shed. Landscaping with trees and shrubs also helps to minimise the impact of dust emissions from some types of housing.

Sources of noise on poultry farms include vehicle movements, feed deliveries (blowing into bins) and fan noise. Feed deliveries are only permitted between the hours of 0700 and 2200 and fans are fitted within cowls to reduce noise.

C2.3.4 Slurry, Litter and Manure Storage

Litter production will increase from approximately **XXX** tonnes to **XXX** tonnes of litter per annum at 65% - 70% dry matter per annum as a by-product from the expanded installation. *(Note: litter quantities should be accurate as possible and can be based on standard or actual production figures.)* All litter is and will be contained within the sheds until the clean out period, when it is loaded directly into trailers close to the door of each shed. Some litter is currently removed for utilisation as mushroom compost or for combustion (copies of consignment notes are held in the farm office). The remainder of the litter is land-spread on the farm in accordance with a manure management plan. The litter from the proposed new shed will be utilised for land-spreading on land controlled by a third-party in accordance with the Nutrient Management Plan submitted with this application. When conditions are not suitable for spreading, litter may be stored for short periods in a covered shed close to the installation. This shed is large enough to accommodate the additional litter produced by the proposed new broiler house.

C2.3.5 Control of Slurry, Litter and Manure Spreading Operations

The current installation produces approximate **XXX** tonnes of litter per year which is utilised for mushroom compost, combustion and land-spreading on the farm. There will be no change to these operations.

The proposed new broiler shed will produce a further **XXX** tonnes of litter per year. This will be utilised for land-spreading on land controlled by a third party in accordance with the nutrient management plan submitted with this application. This nutrient management plan demonstrates, by way of soil testing, that the land available is able to utilise the nutrients contained in the litter.

Example nutrient analysis of broiler litter at 65% dry matter

	N	P ₂ O ₅	K ₂ O
Total nutrients, kg tonne ⁻¹	29	25	18

[Note: Details of your arrangements for spreading litter must be appended to this application. Please note that on an expanded (or new) installation any litter spread to land must be in accordance with a manure/nutrient management plan which demonstrates that nutrients will be utilised in line with crop requirements using actual soil analysis.]

For further information on preparing a manure management plan you can refer to the NIEA “Guidance for operators on slurry and manure management planning for IPPC installations”.

C2.3.6 Measures for Controlling Odour

An odour management plan was submitted as part of the original permit application and is in place for the existing installation – a revision of this plan is not considered necessary as a result of the proposed expansion.

There was a complaint about odour from the installation in **month of year [enter date]**. The complaint was from the occupants of a dwelling 150m east of the installation and related to odour during a time when the houses were being cleaned out. On the occasion in question the litter was to go to a mushroom composter. However, the litter was pushed out of the houses but the haulage contractor was unable to lift it and as a result it remained in the yard until the next morning. As a result of this incident the odour management plan was reviewed and the following measures have been put in place:

- Consideration is given to weather conditions on the day that clean out is planned. If strong winds are forecast, particularly in the direction of third party dwellings, clean out is proposed (assuming it is possible to do so).
- The haulage contractor is contacted before clean out commences to confirm that his plans for collecting the litter have not changed.
- Litter is not pushed into the yard but piled up just inside the doors of the broiler houses. It is then loaded from here direct onto the lorry.
- Any split litter is brushed up as soon as the lorry leaves the yard.

[Note: An assessment of potential odour impacts from the expanded installation may be required in some cases, for example where third party dwellings are located nearby and/or there has been a history of odour complaints. An air dispersion modelling study may be necessary in order to be able to provide sufficient demonstration that odour impacts are likely to be acceptable. Please contact NIEA if you have any queries in relation to the appropriate assessment required.]

For further information on odour management you can refer to the NIEA “Guidance for operators on odour management at intensive livestock IPPC installations.”

C2.4.1 Disposal or Discharge of Dangerous Substances to Land or Water

There is no disposal or discharge of dangerous (List I or List II) substances to land or water. During routine disinfection of poultry sheds, all wash water and dilute disinfectant is collected in underground waste water tanks and disposed of by applying to land in accordance with DARD Codes of Good Agricultural Practice for prevention of pollution of water.

C2.5 Avoidance, Recovery and Disposal of Wastes (including carcass disposal)

No new types of wastes will be produced as a result of the proposed expansion. Litter production will increase from approximately **XXX** tonnes to **XXX** tonnes of litter per annum. It is estimated that there will be approximately a 30% increase in waste from packaging items such as chemical containers, chick papers and bale wrapping. These will be disposed of in accordance with the waste management plan which is place for the installation. There will be an approx. 30% increase in mortalities and these will continue to be disposed of by rendering through the Fallen Stock Scheme. A waste audit has previously been completed for the site.

The production of waste will be avoided where possible. If this is not possible waste production will be reduced and recycled in order to minimise the impact on the environment.

C2.6 Energy Use

The farm is not yet part of a Climate Change Levy Agreement but may become part of such an agreement in the future. An energy audit has previously been completed for the existing sheds and the recommendation from that audit will be adopted in the design and management of the proposed new house.

The following design features will be incorporated in the design of the new shed to reduce energy consumption:

- A high level of insulation in walls and roofs.
- Efficient automatically controlled ventilation systems to maintain optimum internal temperature.
- Good airflow within sheds to minimise the amount of ventilation air and heating required.
- Intermittent or 'stepped' operation of fans to conserve energy.
- Precise electronic control of the system maintains constant temperature conditions thus avoiding large variations and consequent increased demands on heating and ventilation systems.
- Low wattage fluorescent lighting used throughout and double glazed windows to limit dependence on artificial light.
- Well maintained ventilation and feeding systems to help reduce energy consumption (power consumption can increase as a result of increased friction in feeding systems, or dust laden fan blades reducing efficiency).

C2.7 Accident Prevention and Management

The new site plan (table 1.3) will be incorporated into the Accident Management Plan. It is expected that as a result of the proposed expansion of the installation one extra staff will be employed on a part-time basis and they will made aware of their duties and the procedures to follow to prevent

pollution in the event of unforeseen circumstances. All possible measures are taken to prevent accidents.

C2.8 Measures for Controlling Noise and Vibration

A noise management plan was submitted as part of the original permit application and is in place for the existing installation – a revision of this plan is not considered necessary as a result of the proposed expansion.

There was a complaint about noise from the installation in *month of year [enter date]*. The complaint was from the occupants of a dwelling 150m east of the installation and related to noise from a lorry blowing feed into bins on the site. On the occasion in question the site unexpectedly ran out of feed and an emergency delivery had to be ordered. As a result feed was delivered at 1am. It was a warm and still summer night when the windows in the complainants dwelling are likely to have been open. As a result of this incident the noise management plan was reviewed and the following measures have been put in place:

- Regular contact is maintained between the site management, the feed haulier and the feed mill
- Regular contact is maintained between the site management and the processing plant.
- All feed bins are checked on a daily basis and the rate of feed usage logged.
- All feeders are checked on a daily basis for spillage or wastage.

C2.9 Measures for monitoring emissions

The nearest sensitive receptor is approx. *X metres* from the boundary of the site, and therefore the impact of this expansion on odour, dust and noise is considered to be minimal. Other receptors such as businesses, schools and sensitive habitats are all at least 3Km from the installation.

Estimated emissions to air, water and land from the expanded installation are detailed in the table in section C3.1 of the attached application form.

Emissions to air

Emissions of ammonia and dust to air are monitored using standard factors provided in Section C3.1 of the IPPC variation application form. In addition to the factors in Section C3.1, a small (less than 50 kg per hour) incinerator is used for burning carcasses. Temperature in the combustion chamber of the incinerator is monitored to demonstrate that 850°C is achieved thus ensuring complete combustion. A monthly check is made of the incineration site (as per the inspection and maintenance schedule) to ensure that there is no build up of ash or other residues, and no potential for contaminated run-off from the area. [Note: if an incinerator is used the temperature must be monitored.]

Emissions to water

Emissions of contaminated run-off directly to water are prevented by diverting drainage from hard standing areas to under ground waste water tanks during cleaning out. Waste water tanks are emptied and disposed of in accordance with the requirements of the DARD code of good practice for prevention of

pollution of water. Records are kept of when tanks are checked (maintenance schedule) and when they are emptied.

Emissions to land

Emissions to land include deposition of ammonia and dust from air, and litter spread on land. Measures for monitoring ammonia and dust are described above under 'Emissions to air'. Land spreading of litter is undertaken according to the manure/nutrient management plan and records of quantities and location of spreading are kept.

C2.10 Closure and decommissioning.

As the design and operation of the proposed new house is similar to the existing three houses the Site Closure Plan submitted with the original permit application is still considered valid.

[Note: If there has been an incident on the installation such as a spillage or other pollution the Site Closure Plan if not already revised may need to be updated to take account of this.]

C4.1 Identifying Significant Environmental Impacts

Sensitive receptors around the farm are shown on the location map attached to this application. In addition to the owners property there are three private houses within 400 metres of the farm, one of these dwellings has been constructed since the original permit was issued. The nearest third party dwelling is approx. **X metres** from the boundary of the installation. No designated sites such as ASSIs have been identified within 2 km of the farm. [Identify on a map all houses, schools, businesses, etc. within a 400 metre radius of the site boundary. Also where known, identify any ecologically sensitive sites with a statutory designation e.g. an ASSI, within a 2km radius of the site.]

[Note: An assessment of potential ammonia impacts from the expanded installation may be required in some cases, for example where the installation is in close proximity to a sensitive designated habitat(s) and emissions from the farm have the potential to cause damage to the habitat. An air dispersion modelling study may be necessary in order to be able to provide sufficient demonstration that ammonia impacts are likely to be acceptable. Please contact NIEA if you have any queries in relation to the appropriate assessment required.]

The environmental impacts from the farm are assessed in the table below.

For further information on carrying out an assessment of environmental impact from your poultry farm refer to NIEA Guidance "Assessing environmental impacts of poultry farms – supplementary guidance for IPPC application".

Source of Impact	Impact e.g. odour, noise, dust, ammonia, run-off, spillage	Receptor Air, water, land Humans, plants	Description of Negative Impact Nature of impact i.e. short term ST, medium MT or long term LT	Significance of negative impacts after mitigating measures applied: major +++ moderate ++ minor + nil 0	Mitigation / Management Measures e.g. site planning, technical measures
Livestock housing	Ammonia	Air Land Plants	Possible direct toxic effect on trees ST Increased acidification of soil close to housing MT Changes to sensitive ecosystems LT	0 + 0	<ul style="list-style-type: none"> • Dry litter maintained • No sensitive woodland or other ecological receptors close to housing • Appropriate soil pH maintained by liming
	Odour	Humans	Nuisance ST	++	<ul style="list-style-type: none"> • Dry litter maintained • Hard standing areas kept clean and spillages prevented • Emissions are discharged via high velocity roof vents
	Dust	Humans Plants Land Water Air	Nuisance ST Contributes to odours ST Health issues - inhalation LT Covers leaves stopping photosynthesis ST Nutrient enrichment of water courses MT Impacts on air quality ST	+ + 0 + + +	<ul style="list-style-type: none"> • Emissions are discharged via high velocity roof vents • Regular clearing of dust to prevent build up on surfaces and around vents • No sensitive vegetation around sheds • Houses far enough away not to be affected • Hard standing cleaned to prevent dust being washed into water courses • Run-off treated by swale
	Noise	Humans	Nuisance ST	+	<ul style="list-style-type: none"> • Feed delivery times restricted, vehicles well silenced • Doors in housing sited away from neighbours • Stocking and destocking during daylight hours

	Used disinfectants	Water	Possible toxic effects on wildlife ST Increased biochemical oxygen demand (BOD) of watercourses ST	+ +	<ul style="list-style-type: none"> Spent disinfectant disposed of into dirty water tanks Use of Defra/NOAH approved disinfectants
Disposal of carcasses	Odour	Humans	Nuisance ST	0	<ul style="list-style-type: none"> Good husbandry to minimise mortalities Use of covered/sealed skips to store carcasses Carcasses disposed of weekly
	Disease	Humans	Health risks ST	0	<ul style="list-style-type: none"> Use of covered/sealed containers No contact with people
		Livestock	Biosecurity issues ST	+	<ul style="list-style-type: none"> Use of covered containers Carcasses disposed of daily Bait traps used
	Incinerator stack emissions (if used)	Air	Odour nuisance ST Emission of acid gases contributing to acid deposition LT	+ +	<ul style="list-style-type: none"> Incinerator fully complies with requirements of Animal By-Products Regulations Performance is monitored
Cleaning out	Contaminated run-off	Land Water	Increase in nitrogen and phosphorus levels in soil MT Potential for increased mineral or metal content of soils LT Increased biochemical oxygen demand (BOD) of watercourses ST Nutrient leaching from soil to surface waters and groundwater LT Nutrient enrichment (eutrophication) of watercourses and ground water LT	+ + + ++ ++	<ul style="list-style-type: none"> All run-off diverted to waste water tanks Hard standing has kerbing Waste water disposed of in line with DARD Water Code Dirty water tanks are emptied prior to clean out All lightly contaminated run-off treated by swales when not cleaning out

	Noise	Humans	Nuisance ST	++	<ul style="list-style-type: none"> • Machinery operated at reasonable times, wherever possible • Equipment maintained to optimum standards • Need for scraping minimised due to reduced yard area • Machinery and equipment sited as far as possible from neighbours • Idling of machines avoided • Voices not raised unnecessarily • Roads and tracks maintained to minimise noise produced
	Odour	Humans	Nuisance ST	++	<ul style="list-style-type: none"> • Cover loads • Load close to the shed door or inside • Avoid outdoor heaps • Clean yard areas at the end of each day • Cover dirty water collection systems • Empty dirty water tanks promptly
Litter / manure /slurry spreading	Ammonia and major nutrients (N:P:K)	Air Land Plants	Contributes to climate change LT Contributes to odours LT Nutrient enrichment or 'fertilising' effect on crops, plants and water. LT Changes to sensitive ecosystems such as natural woodland, heathland or peatland. LT Nutrient enrichment of soils, particularly phosphorus LT Potential for increased mineral and metal content of soils Eutrophication caused by run-off MT Reduced biodiversity LT	+ ++ ++ 0 + ++ + +	<ul style="list-style-type: none"> • Litter applied in accordance with manure management plan • Balanced diets fed to reduce N & P in litter • Litter incorporated within 24 hours • Application in accordance with DARD codes of good practice • Only temporary field heaps used • No ecologically sensitive receptors near the site • On cleanout all litter removed from site
	Odours	Humans	Nuisance ST	++	<ul style="list-style-type: none"> • No spreading in adverse weather conditions • No spreading at weekends or on Bank Holidays • No spreading close to neighbours' houses • Litter incorporated within 24 hours • Litter applied in accordance with manure management plan

Storage of fuel, chemicals etc.	Leakage	Water	Contamination of surface and groundwaters ST Killing of animals, plants and aquatic life ST	+ 0	<ul style="list-style-type: none"> • All tanks are bunded and compliant with legislation • Use of chemicals least hazardous to the environment • Spill kits available