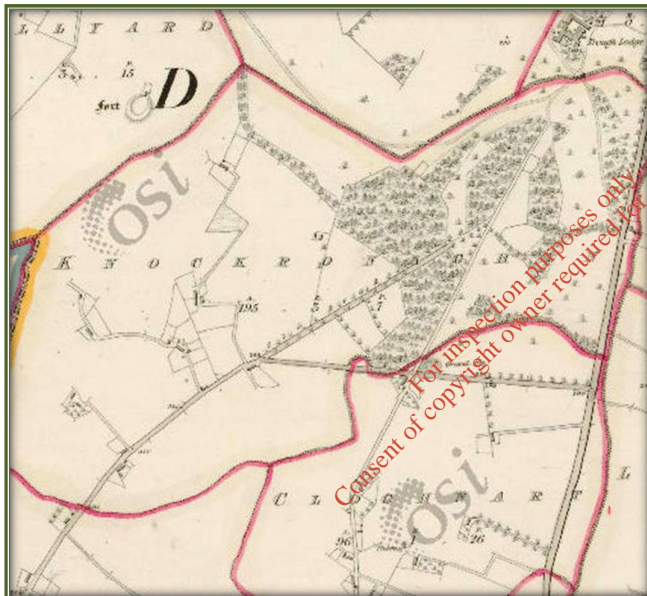


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**NATURA IMPACT STATEMENT OF AN APPLICATION FOR A
LICENCE AT KNOCKRONAGHAN, MONAGHAN, CO MONAGHAN
(EPA LICENSE APPLICATION NO. P1160-01)**



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March 2022

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1 INTRODUCTION

1.1 REQUIREMENT FOR AN APPROPRIATE ASSESSMENT

This Natura Impact Assessment was prepared to accompany an EPA License for a poultry farm at Knockkronaghan, Monaghan, Co. Monaghan. It followed on from an Appropriate Assessment Screening Determination made by the EPA in February 2022 regarding this License application.

Having regard to the location of the application site and its proximity to certain sites designated under the Natura 2000 network, an Appropriate Assessment of the proposed development was prepared in accordance with Article 6 of the Habitats Directive.

The purpose of the assessment is to determine the appropriateness of the proposed project, in the context of the conservation status of the site or sites. In Ireland, an Appropriate Assessment takes the form of a Natura Impact Statement (NIS), which is a statement of the likely impacts of the plan or project on a Natura 2000 site. The NIS comprises a comprehensive ecological impact assessment of the plan or project and it examines the direct and indirect impacts that the plan or project might have on its own or in combination with other plans or projects on one or more Natura 2000 sites in view of the sites' conservation objectives.

1.2 THE AIM OF THIS REPORT

This Natura Impact Statement (NIS) has been prepared in accordance with the current guidance (DoEHLG, 2009, Revised February 2010), and it provides an assessment of the potential impacts of the atmospheric emissions from a poultry farm at Knockkronaghan, Monaghan, Co. Monaghan on designated European sites.

An NIS should provide the information required in order to establish whether or not a proposed development is likely to have a significant impact on certain Natura sites in the context of their conservation objectives and specifically on the habitats and species for which the Natura 2000 conservation sites have been designated.

Accordingly, a comprehensive assessment of the ecological impacts of this application was carried out in March 2022 by Noreen McLoughlin, MSc, MCIEEM of Whitehill Environmental. This assessment allowed areas of potential ecological value and potential ecological constraints associated with this proposed development to be identified and it also enabled

potential ecological impacts associated with the proposed development to be assessed and mitigated for.

1.3 REGULATORY CONTEXT

RELEVANT LEGISLATION

The Birds Directive (Council Directive 2009/147/EC) recognises that certain species of birds should be subject to special conservation measures concerning their habitats. The Directive requires that Member States take measures to classify the most suitable areas as Special Protection Areas (SPAs) for the conservation of bird species listed in Annex 1 of the Directive. SPAs are selected for bird species (listed in Annex I of the Birds Directive), that are regularly occurring populations of migratory bird species and the SPA areas are of international importance for these migratory birds.

The EU Habitats Directive (92/43/EEC) requires that Member States designate and ensure that particular protection is given to sites (Special Areas of Conservation) which are made up of or support particular habitats and species listed in annexes to this Directive.

Articles 6(3) and 6(4) of this Directive also call for the undertaking of an Appropriate Assessment for plans and projects not directly connected with or necessary to the management of, but which are likely to have a significant effect on any European designated sites (i.e. SACs and SPAs).

The Water Framework Directive (WFD) (2000/60/EC), which came into force in December 2000, establishes a framework for community action in the field of water policy. The WFD was transposed into Irish law by the European Communities (Water Policy) Regulations 2003 (S.I. 722 of 2003). The WFD rationalises and updates existing legislation and provides for water management on the basis of River Basin Districts (RBDs). RBDs are essentially administrative areas for coordinated water management and are comprised of multiple river basins (or catchments), with cross-border basins (i.e. those covering the territory of more than one Member State) assigned to an international RBD. The aim of the WFD is to ensure that waters achieve at least good status by 2021 and that status does not deteriorate in any waters.

Appropriate Assessment and the Habitats Directive

Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Fauna and Flora – the 'Habitats Directive' - provides legal protection for habitats and species of European importance. Article 2 of the Directive requires the maintenance or restoration of habitats and species of European Community interest, at a favourable conservation status. Articles 3 - 9

provide the legislative means to protect habitats and species of Community interest through the establishment and conservation of an EU-wide network of sites known as *Natura 2000*. Natura 2000 sites are Special Areas of Conservation (SACs) designated under the Habitats Directive and Special Protection Areas (SPAs) designated under the Conservation of Wild Birds Directive (79/409/EEC).

Articles 6(3) and 6(4) of the Habitats Directive sets out the decision-making tests for plans or projects affecting Natura 2000 sites. Article 6(3) establishes the requirement for Appropriate Assessment:

"Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public."

Article 6(4) deals with the steps that should be taken when it is determined, as a result of appropriate assessment, that a plan/project will adversely affect a European site. Issues dealing with alternative solutions, imperative reasons of overriding public interest and compensatory measures need to be addressed in this case.

Article 6(4) states:

"If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member States shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.

Where the site concerned hosts a priority natural habitat type and/or a priority species, the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest."

The Appropriate Assessment Process

The aim of Appropriate Assessment is to assess the implications of a proposal in respect of a designated site's conservation objectives.

The 'Appropriate Assessment' itself is an assessment which must be carried out by the competent authority which confirms whether the plan or project in combination with other plans and projects will have an adverse impact on the integrity of a European site.

Screening for Appropriate Assessment shall be carried out by the competent authority as set out in Section 177U(1) and (2) of the Planning and Development Act 2000 (as amended) as follows:

(1) A screening for appropriate assessment of a draft Land use plan or application for consent for proposed development shall be carried out by the competent authority to assess, in view of best scientific knowledge, if that Land use plan or proposed development, individually or in combination with another plan or project is likely to have a significant effect on the European site.

(2) A competent authority shall carry out a screening for appropriate assessment under subsection (1) before—

(a) a Land use plan is made including, where appropriate, before a decision on appeal in relation to a draft strategic development zone is made, or

(b) consent for a proposed development is given.'

The competent authority shall determine that an Appropriate Assessment is not required if it can be excluded, that the proposed development, individually or in combination with other plans or project will have a significant effect on a European site.

Where the competent authority cannot exclude the potential for a significant effect on a European site, an Appropriate Assessment shall be deemed required.

Where an Appropriate Assessment is required, the conclusions of the Appropriate Assessment Report (Natura Impact Statement (NIS)) should enable the competent authority to ascertain whether the plan or proposed development would adversely affect the integrity of the European site. If adverse impacts on the integrity of a European site cannot be avoided,

then mitigation measures should be applied during the appropriate assessment process to the point where no adverse impacts on the site remain. Under the terms of the Habitats Directive consent can only be granted for a project if, as a result of the appropriate assessment either (a) it is concluded that the integrity of any European sites will not be adversely affected, or (b) after mitigation, where adverse impacts cannot be excluded, there is shown to be an absence of alternative solutions, and there exists imperative reasons of overriding public interest for the project should go ahead.

Section 177(V) of the Planning and Development Act 2000 (as amended) outlines that the competent authority shall carry out the Appropriate Assessment, taking into account the Natura Impact Statement (amongst any other additional or supplemental information). A determination shall then be made by the competent authority in line with the requirements of Article 6(3) of the Habitats Directive as to whether the plan or proposed development would adversely affect the integrity of a European site, prior to consent being given.

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2 METHODOLOGY

2.1 APPROPRIATE ASSESSMENT

This NIS has been prepared with reference to the following:

- European Commission (2018). Managing Natura 2000 Sites: The Provisions of Article 6 of the 'Habitats' Directive 92/43/EEC.
- European Commission (2001). Assessment of Plans and Projects Significantly Affecting Natura 2000 sites: Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC.
- European Commission (2006). Nature and Biodiversity Cases: Ruling of the European Court of Justice.
- European Commission (2007). Clarification of the Concepts of: Alternative Solution, Imperative Reasons of Overriding Public Interest, Compensatory Measures, Overall Coherence, Opinion of the Commission.
- Department of Environment, Heritage and Local Government (2009). Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities.

The EC Guidance sets out a number of principles as to how to approach decision making during the process. The primary one is the 'precautionary principle' which requires that the conservation objectives of Natura 2000 should prevail where there is uncertainty.

When considering the precautionary principle, the emphasis for assessment should be on objectively demonstrating with supporting evidence that:

- There will be no significant effects on a Natura 2000 site;
- There will be no adverse effects on the integrity of a Natura 2000 site;
- There is an absence of alternatives to the project or plan that is likely to have an adverse effect to the integrity of a Natura 2000 site; and
- There are compensation measures that maintain or enhance the overall coherence of Natura 2000.

This translates into a four stage process to assess the impacts, on a designated site or species, of a policy or proposal.

The EC Guidance states that "each stage determines whether a further stage in the process is required". Consequently, the Council may not need to proceed through all four stages in undertaking the Appropriate Assessment.

The four-stage process is:

Stage 1: Screening – The process which identifies the likely impacts upon a Natura 2000 site of a project or plan, either alone or in combination with other projects or plans, and considers whether or not these impacts are likely to be significant;

Stage 2: Appropriate Assessment – The consideration of the impact on the integrity of the Natura 2000 site of the project or plan, either alone or in combination with other projects or plans, with respect to the site's structure and function and its conservation objectives. Additionally, where there are adverse impacts, an assessment of the potential mitigation of those impacts;

Stage 3: Assessment of Alternative Solutions – The process which examines alternative ways of achieving objectives of the project or plan that avoid adverse impacts on the integrity of the Natura 2000 site;

Stage 4: Assessment where no alternative solutions exist and where adverse impacts remain – An assessment of the compensatory measures where, in the light of an assessment of imperative reasons of overriding public interest (IROPI), it is deemed that the project or plan should proceed.

In complying with the obligations set out in Articles 6(3) and following the guidelines described above, this screening statement has been structured as a stage by stage approach as follows:

- Description of the proposed project;
- Identification of the Natura 2000 sites close to the proposed development;
- Identification and description of any individual and cumulative impacts on the Natura 2000 sites likely to result from the project;
- Assessment of the significance of the impacts identified above on site integrity. Exclusion of sites where it can be objectively concluded that there will be no significant effects;
- Description of proven mitigation measures.

2.2 STATEMENT OF COMPETENCY

This NIS report was carried out by Noreen McLoughlin, BA, MSc, MCIEEM. Noreen has an honours degree in Zoology and an MSc in Freshwater Ecology from Trinity College, Dublin and she has been a full member of the Chartered Institute of Ecology and Environmental Management for over fifteen years. Noreen has over 17 years' experience as a professional ecologist in Ireland.

2.3 DESK STUDIES & CONSULTATION

Information on the site and the area of the proposed development was studied prior to the completion of this statement. The following data sources were accessed in order to complete a thorough examination of potential impacts:

- National Parks and Wildlife Service - Aerial photographs and maps of designated sites, information on habitats and species within these sites and information on protected plant or animal species, conservation objectives, site synopses and standard data forms for relevant designated sites.
- Environmental Protection Agency (EPA)- Information pertaining to water quality, geology and licensed facilities within the area, correspondence from the EPA regarding this License application;
- Myplan.ie – Mapped based information;
- National Biodiversity Data Centre (NBDC) – Information pertaining to protected plant and animal species within the study area;
- CLW Environmental Planners – Site plans, development description and information on potential emissions.
- Monaghan County Council – Information on planning history in the area for the assessment of cumulative impacts.

2.4 ASSESSMENT METHODOLOGY

The proposed development was assessed to identify its potential ecological impacts and from this, the Zone of Influence (Zoi) of the proposed development was defined. Based on the potential impacts and their Zoi, the Natura 2000 sites potentially at risk from direct, indirect or in-combination impacts were identified. The assessment considered all potential impact sources and pathways connecting the proposed development to Natura 2000 sites, in view of the conservation objectives supporting the favourable conservation condition of the site's Qualifying Interests (QIs) or Special Conservation Interests (SCIs).

The conservation objectives relating to each Natura 2000 site and its QIs/SCIs are cited generally for SACs as “to maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or Annex II species for which the SAC has been selected”, and for SPAs “to maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA”.

As defined in the Habitat’s Directive, the favourable conservation status of a habitat is achieved when:

- Its natural range and area it covers within that range is stable or increasing;
- The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future;

The favourable conservation status of a species is achieved when:

- The population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats;
- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future;
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

Where site-specific conservation objectives (SSCOs) have been prepared for a European site, these include a series of specific attributes and targets against which effects on conservation condition, or integrity, can be measured. Where potential significant effects are identified, then these SSCO should be considered in detail.

3 DESCRIPTION OF THE PROPOSED PROJECT

3.1 PROJECT DESCRIPTION

OVERVIEW

In 2019, Monaghan County Council granted planning permission to Knockronaghan Farm Ltd (applicant was Paul McCarron) for the development of a new poultry farm on a 2.11ha greenfield site at Knockronaghan, Monaghan, Co. Monaghan. The development consisted of the construction of three new poultry houses and all associated site works. One house is now constructed and operational.

The farm is currently operating with a capacity of 40,000 broilers in one house and this will increase to 100,000 broilers across the three houses when construction works are complete. Low emission housing will be applied retrospectively to existing House 1 and Houses 2 and 3 will additionally be constructed to the low emission spec. Details of the low emission housing (BWL 2010.13.V7& BWL 2009.14.V7) is provided in Appendix I.

The applicant is now seeking a License from the EPA for the operation of this farm (License Registration Number P1160-01).

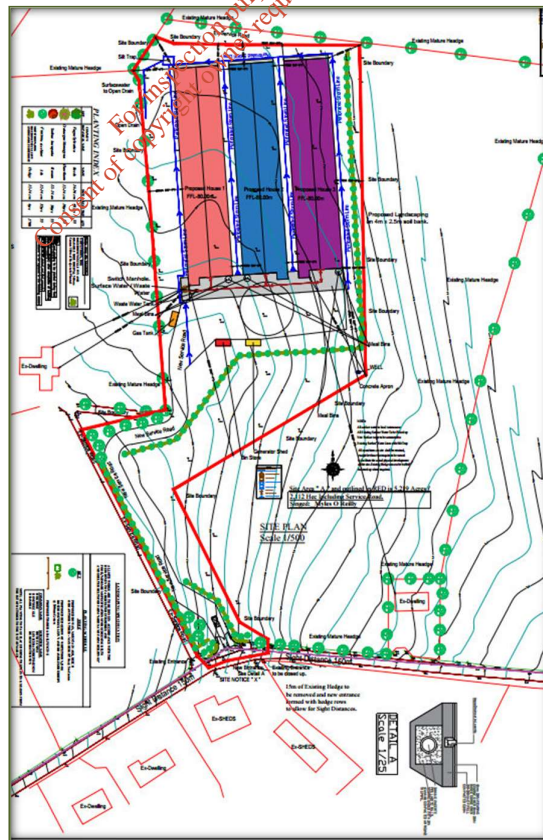


Figure 1 –Site Plan (M O'Reilly Engineering)

Once operational, the proposed development will house 100,000 broilers in total. The operation of the farm will involve the rearing of the chickens from day olds over a period of approximately 6-7 weeks. There will be approximately 7 cycles of per annum, with a break between batches during which time the cleaning of the houses and yards is carried out. The spent poultry litter and manure will be removed from the farm by a registered contractor where it will be composted and used in the mushroom industry. All records for the movement of fertiliser will be kept on site and presented to the Department of Agriculture, Food and Marine as requested.

Construction methods will be standard and will follow best practice guidelines at all stages. All structures will be complaint with the recommendations of the Department of Agriculture, Food and the Marine. The operation of the farm and all its associated activities will be done in accordance with S.I. 605 of 2017.

S.I. 605 OF 2017 (AS AMENDED)

The European Union (Good Agricultural Practice for Protection of Waters) Regulations 2017 provides a basic set of measures to ensure the protection of waters, including drinking water sources, against pollution caused by nitrogen and phosphorus from agricultural sources, with the primary emphasis being on the management of livestock manures and other fertilisers. The purpose of these Regulations is to give effect to Ireland's Nitrates Action Programme. This directive outlines measures that must be followed during the land-spreading of manure. These measures are summarised in the points below.

- The amount of livestock manure applied in any year to land on a holding, together with that deposited to land by livestock, shall not exceed an amount containing 170 kg nitrogen per hectare.
- The spreading of any organic fertiliser during certain times of the year is prohibited (The prohibited spreading period, generally between Mid-October and Mid-January).
- Farmers must keep within the overall maximum fertilisation rates for nitrogen and phosphorus.
- Farmers must have sufficient storage capacity to meet the minimum requirements of the regulations.
- All storage facilities must be kept leak proof and structurally sound.
- Records for the movement of fertilisers must be kept.
- Chemical fertilisers, livestock manure and other organic fertilisers, effluents and soiled water must be spread as accurately and as evenly as possible.

- An upward-facing splash plate or sludge irrigator on a tanker or umbilical system must not be used for the spreading of organic fertiliser or soiled water.
- Chemical fertilisers, livestock manure, soiled water or other organic fertilisers must not be spread when:
 - The land is waterlogged;
 - The land is flooded, or it is likely to flood;
 - The land is frozen, or covered with snow;
 - Heavy rain is forecast within 48 hours;
 - The ground slopes steeply and there is a risk of water pollution, when factors such as surface run-off pathways, the presence of land drains, the absence of hedgerows to mitigate surface flow, soil condition and ground cover are taken into account.
- Chemical fertilisers must not be spread on land within 2 metres of a surface watercourse.

Table 1 shows the buffer zones for various water bodies (lakes, rivers, wells etc.). Soiled water, effluents, farmyard manures or other organic fertilisers must not be spread inside these buffer zones.

Water Feature	Buffer Zone
Any water supply source providing 100m ³ or more of water per day, or serving 500 or more people	200m (or as little as 30m where a local authority allow)
Any water supply source providing 10m ³ or more of water per day, or serving 50 people or more	100m (or as little as 30m where a local authority allows)
Any other water supply for human consumption	25m (or as little as 15m where a local authority allows)
Lake shoreline or a turlough likely to flood	20m
Exposed cavernous or karstified limestones features	15m
Any surface watercourse where the slope towards the watercourse exceeds 10%	10m
Any other surface waters	5m

Table 1 – Requirements for the Application of Fertilisers and Soiled Water as set out in S.I. 605 of 2017.

Prior to its implementation, S.I. 605 of 2017 was subjected to Appropriate Assessment (AA) and a Strategic Environmental Assessment (SEA) Screening at draft stage (March 2017). At this stage, it was referred to as Ireland’s Fourth Nitrates Action Programme (NAP). This draft NAP was assessed in terms of the likely significant effects of the programme and where it

would adversely affect the integrity of European sites. The NIS identified that the existing and proposed measures would be predominantly positive for European sites. The measures of the NAP were influenced to avoid, as appropriate, measures that would have an adverse effect upon the integrity of the European sites. Any project falling under the requirements of the NAP will be required to conform to the mitigation measures contained within the NIS prepared and to any further regulatory provisions aimed at preventing pollution or other environmental effects. The applicant is fully aware of his obligations under S.I. 605 of 2017 and they will meet all the requirements under this Directive with the proposed application.

3.2 SITE LOCATION AND SURROUNDING ENVIRONMENT

The site in question is located in a rural area within the townland of Knockkronaghan. Access to the site will be via a proposed access road that will be just off a local, third class road. The site is 3.3km south of Emyvale and 2.9km north-east of Tedavnet. Land-use surrounding the site is predominantly agricultural and the main habitat is improved agricultural grassland. Other habitats represented include small areas of broadleaved woodland, scrub, hedgerows, treelines and watercourses. Site location maps can be seen in Figures 2 and 3, whilst an aerial photograph of the site and its surrounding habitats can be seen in Figure 4.

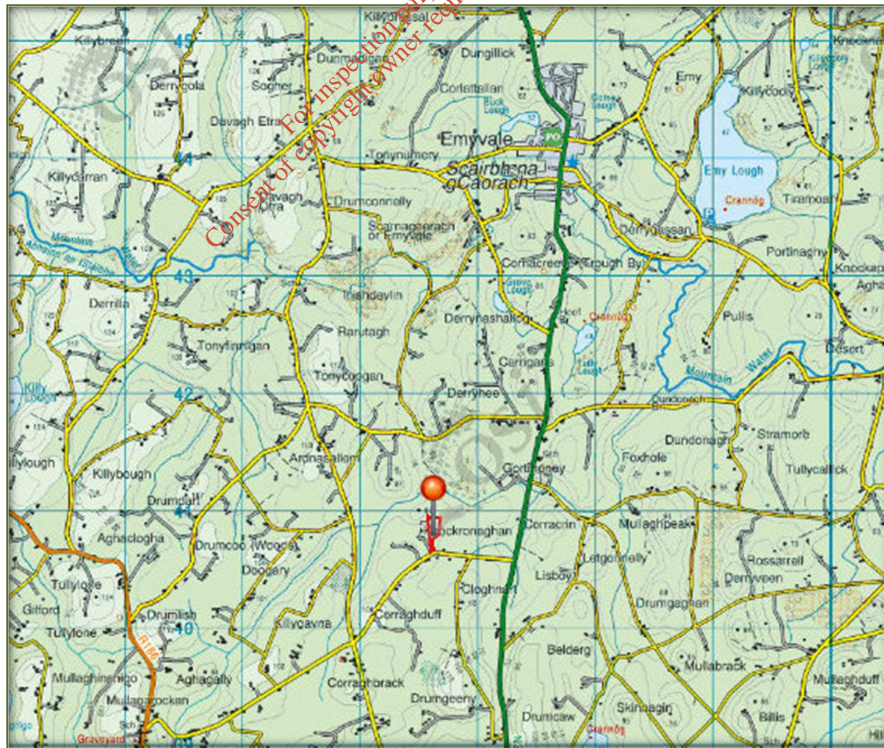


Figure 2 – Map showing the Location of the Proposed Development Site (Pinned)



Figure 3 – Map showing the Location of the Proposed Development Site (Outlined in Red)

HABITATS AND SPECIES

Currently, the dominant habitat within the application site itself is improved agricultural grassland. This is a habitat of low ecological value. The site boundaries consist of hedgerows to the north and west (partial) and a small section of hedgerow along the southern (roadside) boundary. The remaining are currently unbounded.

An examination of the website of the National Biodiversity Data Centre revealed that there are no records for the presence of any protected species from within the relevant one km² (H6640) of this proposed development.

WATER FEATURES AND QUALITY

The application site lies within the Lough Neagh and Lower Bann Hydrometric Area and Catchment, and the Mountain Water Sub-Catchment/Sub-Basin. There is an open drain along the western boundary of the application site and clean surface water from this development will be directed into this drain. Water in this drain is likely to flow in a northerly direction towards a tributary of the Mountain Water River, which is 272m north of the application site.

The EPA have defined the ecological status of the Mountain Water River and its tributaries at point close to the application site as poor. Under the requirements of the Water Framework Directive in Ireland, this is unsatisfactory and good status must be achieved by 2021.

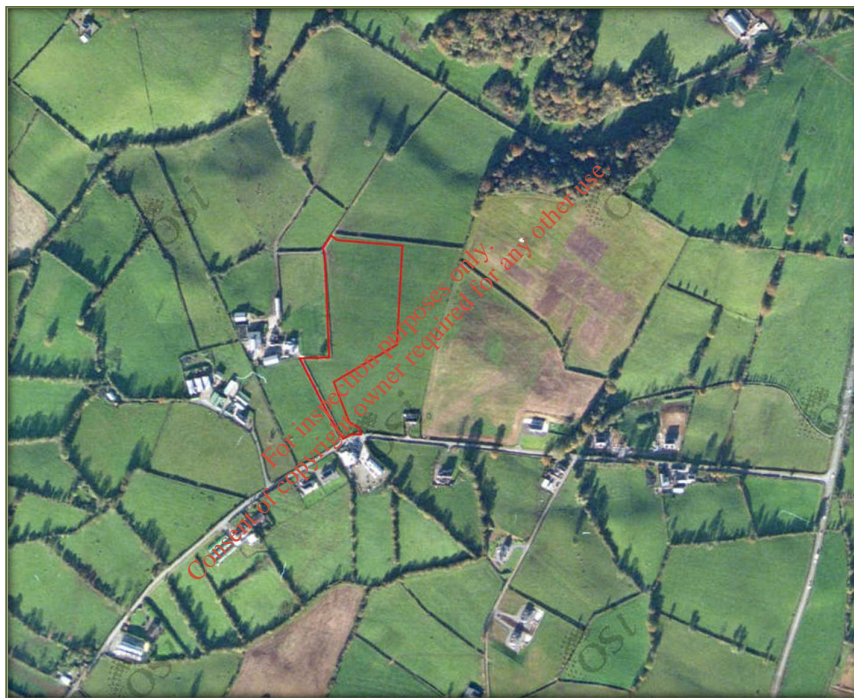


Figure 4 – Aerial Photograph of the Site (Outlined in Red) and its Surrounding Habitats

3.3 NATURA 2000 SITES IDENTIFIED

In accordance with the guidelines issued by the Department of the Environment and Local Government, a list of Natura 2000 sites within 15km of the proposed development have been identified and described according to their site synopsis, qualifying interests and conservation objectives. In addition, any other sites further than this, but potentially within its zone of interest were also considered. The zone of impact may be determined by an assessment of the connectivity between the application site and the designated areas by virtue of hydrological connectivity, atmospheric emissions, flight paths, ecological corridors etc.

There are four Natura 2000 designated sites within 15km of the application site. These sites are summarised in Table 2 and a map showing their locations relative to the application site is shown in Figure 5. Sites beyond 15km were also included here following the AA screening determination that was issued by the EPA. A full description of the sites can be read on the website of the National Parks and Wildlife Service (www.npws.ie) and the Joint Nature Conservation Committee (jncc.defra.gov.uk).

Site Name & Code	Distance	Qualifying Interests	Potential Impacts
Slieve Beagh SPA 004167	5.7km west	Hen Harrier <i>Circus cyaneus</i>	<i>Potential impacts arising from atmospheric emissions will be considered further</i>
Slieve Beagh- Mullaghafad- Lisnaskea SPA UK9020302	9.5km north-west	<ul style="list-style-type: none"> Hen Harrier <i>Circus cyaneus</i> 	<i>Potential impacts arising from atmospheric emissions will be considered further</i>
Slieve Beagh SAC UK0016622	11.6km west	<ul style="list-style-type: none"> Natural dystrophic lakes and ponds European dry heaths Blanket bogs 	<i>Potential impacts arising from atmospheric emissions will be considered further</i>
Magheraveely Marl Loughs SAC UK0016621	13.9km south-west	<ul style="list-style-type: none"> Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. Alkaline fens 	<i>Potential impacts arising from atmospheric emissions will be considered further</i>
Kilroosky Lough Cluster SAC 001786	21km south-west	<ul style="list-style-type: none"> Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. Calcareous fens with <i>Cladium mariscus</i> and species of the Caricion <i>davallianae</i> Alkaline fens 	<i>Potential impacts arising from atmospheric emissions will be considered further</i>

		<ul style="list-style-type: none"> • <i>Austropotamobius pallipes</i> (White-clawed Crayfish) 	
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Table 2 – Natura 2000 Sites within 15km of Application Site

The generic conservation objectives of these sites are:

1. To maintain the favourable conservation status of the qualifying interests (outlined above) of this SAC and SPA.
2. To maintain the extent, species richness and biodiversity of the entire site.
3. To establish effective liaison and co-operation with landowners, legal users and relevant authorities.

The favourable conservation status of a habitat is achieved when:

- Its natural range and area it covers within that range is stable or increasing and the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future;
- The conservation status of its typical species is favourable.

The favourable conservation status of a species is achieved when:

- The population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats;
- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future;
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

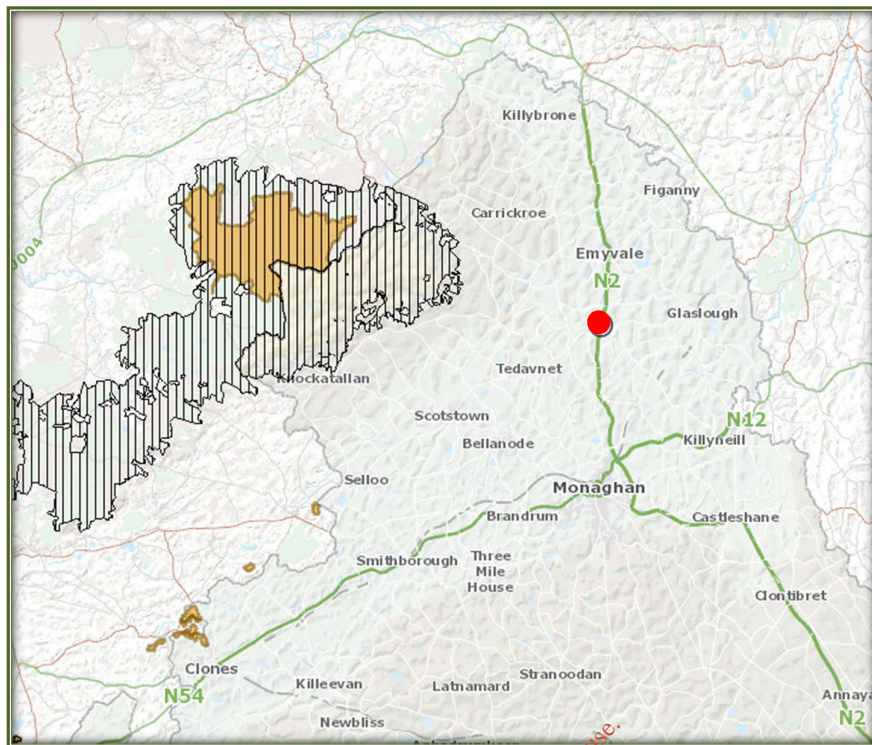


Figure 5 – The Application Site (Red Dot) in relation to the Natura 2000 sites. SACs – Brown Hatching, Hatching, SPAs – Vertical Hatching

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4 IDENTIFICATION AND ASSESSMENT OF POTENTIAL IMPACTS

4.1 INTRODUCTION

An Appropriate Assessment Screening undertaken by the EPA (15/2/2022) identified the following impacts:

Air emissions from the installation have the potential for adverse impact on sensitive receptors due to elevated ammonia levels and / or nitrogen deposition at European sites.

In general, the identification of potential impacts and the assessment of their significance typically requires the identification of the type and magnitude of the impacts. For example, will the impacts be short term or long term, direct, indirect or cumulative and will they occur during construction or operation.

In their screening report, the EPA identified the following sites as having the potential to be impacted upon from emissions arising from the proposed development:

- Slieve Beagh SPA 004167
- Slieve Beagh-Mullaghafad-Lisnaskea SPA UK9020302
- Slieve Beagh SAC UK0016622
- Magheraveely Marl Loughs SAC UK0016621
- Kilroosky Lough Cluster SAC 001786

Significant Effects on Natura 2000 sites arising from Atmospheric Emissions

The EPA have recently produced guidance documents for the assessment of impacts of emissions on Natura 2000 sites (*Assessment of the Impact of Ammonia and Nitrogen on Natura 2000 sites from Intensive Agriculture Installations, EPA 2021*). This document contains a step-by-step assessment process which allows the applicant to ascertain the level of assessment and information needed when determining potential effects from emissions on Natura 2000 sites. Step 6c of the flow chart (Figure 6) makes a provision for applicants to demonstrate that the emissions from the new installations will result in an overall reduction in emissions from the baseline numbers.

The proposed development consists of the upgrading of an existing poultry house (House 1) to low emission spec and the construction of two new low emission poultry houses (House 2 and 3). The more modern and efficient houses will lead to an overall reduction in emissions from the farm from 0.08kg/yr/bird to 0.021-0.035kg/yr/bird as follows:

- **Existing House 1** – 40,000 birds @ 0.08kg/yr/bird = 3,200kg ammonia
- **Phase 1 (2 Houses upgraded to Low emission spec.)** - Proposed – not greater than 90,000 birds @ 0.035kg/yr/bird (BWL 2009.14.V7) = 3,150kg Ammonia
- **Phase 2 (3 Houses - stocking density in existing House 1 and 2 dropped to 37,500 birds (higher welfare) and House 3 completed to new spec)** – Proposed – not greater than 75,000birds @ 0.035kg/yr/bird (BWL 2009.14.V7) = 2,625kg ammonia and not greater than 25,000 birds @ 0.021kg/yr/bird (BWL 20010.13.V7) = 525kg ammonia. Total following Phase 2 is 3,150kg ammonia.
- Therefore, an overall reduction of 50kg ammonia compared to current emissions.

As the final emissions from the farm upon completion of the total development will be lower than the current baseline levels, detailed atmospheric modelling is not required in this instance.

Annex 1: Flow Chart

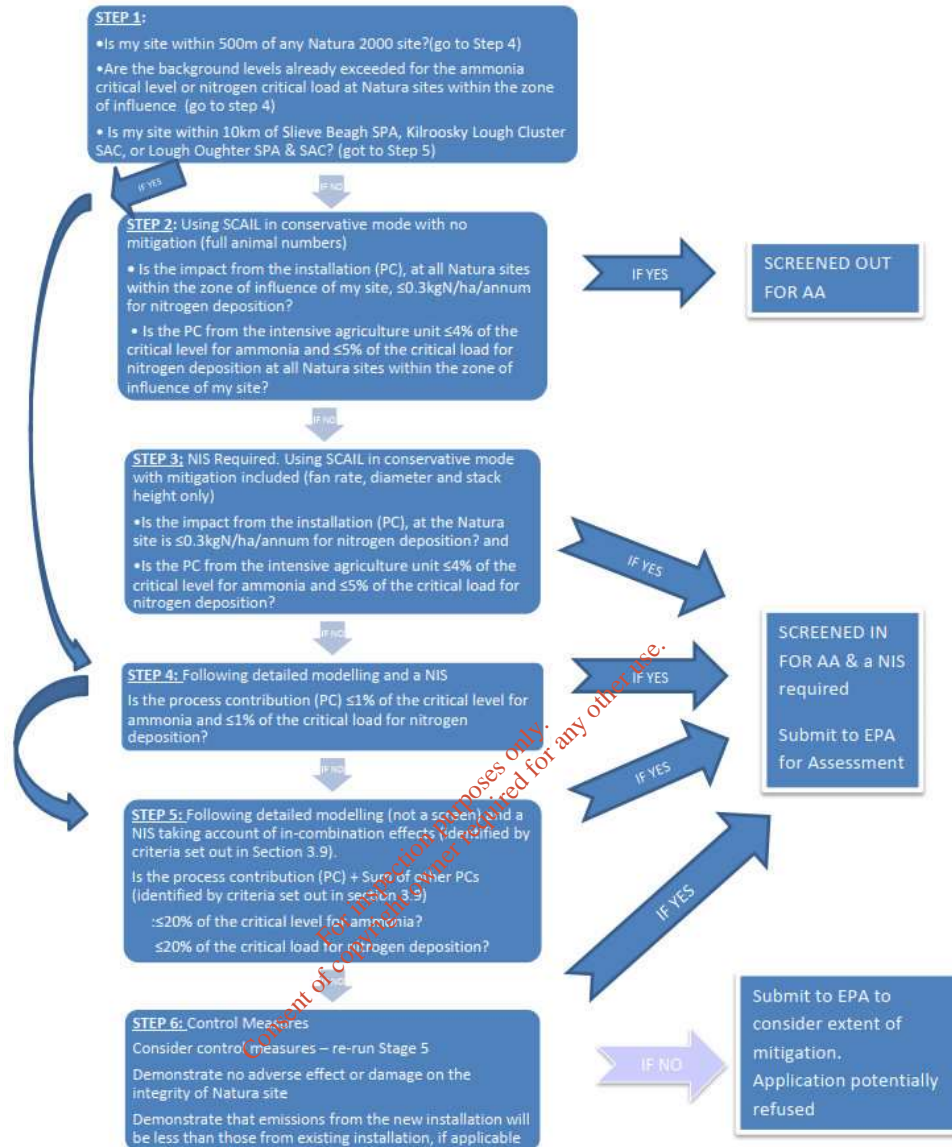


Figure 6 – EPA Flow Chart, Taken from Annex I of the Assessment of the Impact of Ammonia and Nitrogen on Natura 2000 sites from Intensive Agriculture Installations, EPA 2021

4.2 CUMULATIVE IMPACTS

There are other agricultural activities ongoing close to the current application site, therefore cumulative impacts arising from the operation of these farms together were considered. All farms, regardless of whether licensed by the EPA or not, are required to operate within the legalisation defined in S.I. 605 of 2017 regarding manure storage, minimisation of soiled water and general good agricultural practice, etc. Therefore, cumulative impacts arising from the combined operation of these activities with the proposed operation of the poultry farm at Knockronaghan will be negligible.

The land-spreading of the poultry manure produced at the proposed facility has also been considered as part of this process. Records for the distribution and movement of all the manure produced will be kept on site and presented to the Department of Agriculture, Food and Marine if necessary. All organic fertiliser will replace the use of chemical fertiliser; therefore there will be no overall increase in the amount of nutrients spread.

All farmers that receive the manure from the proposed farm will do so under the European Union (Good Agricultural Practice for the Protection of Waters) Regulations 2017 (S.I. 605 of 2017). Upon the receipt of the manure, they will be informed of their obligation under this legalisation. Compliance with these regulations will minimise cumulative impacts as well as any impacts

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5 MITIGATION MEASURES

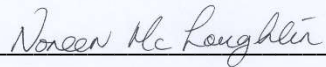
In order to further minimise emissions from the poultry facility at Knockronaghan, a number of mitigation measures should be implemented and followed.

- Techniques for the reduction of emissions from the poultry houses must be employed on the farm. These are outlined in the document *Best Available Techniques Reference Document for the Intensive Rearing of Poultry or Poultry* (http://eippcb.jrc.ec.europa.eu/reference/BREF/IRPP/JRC107189_IRPP_Bref_2017_publiched.pdf).
- Post construction surface water run-off from hardcore / concreted / tarmac areas should be directed into a soak-pit. If soak-pit disposal is not viable or practical, then surface water run-off from these areas should be treated via serviced sediment and oil interceptor traps, prior to discharge into the local watercourse.
- The applicant must follow the guidelines set out in the Department of Agriculture's *Explanatory Handbook for Good Agricultural Practice Regulations*.

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6 NIS CONCLUSIONS

This Natura Impact Statement has concluded that with the mitigation measures outlined in this document and with the construction of the houses to a low emissions specification, the proposed operation of the poultry farm at Knockronaghan will not lead to any significant impacts upon the designated sites identified. Although the stock numbers on the farm will increase, the upgrading of the houses to low emissions spec will lead to an overall reduction in atmospheric emissions from the farm.



Noreen McLoughlin, MSc, MCIEEM.
Ecologist.

(PI Insurance details available on request)

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Appendix I: LOW EMISSIONS HOUSING SPECIFICATIONS

HEAT EXCHANGER STANDARD SPECIFICATIONS

Number system

BWL 2009.14.V7

System name

Stable with heating system with heaters and fans

Animal category

Rearing hens and cocks of laying breeds (E 1.11), (grand) parent stock

of broilers in rearing (E 3.4), broilers (E 5.10), parent stock

of meat turkeys in rearing up to 6 weeks and 6 to 30 weeks (F 1.3), (F.

2.3), and meat turkeys (F 4.5)

System description of

January 2020

Replaces

BWL 2009.14.V6 of November 2017

Working principle

Ammonia emission control is based on drying and heating the fertilizer / litter layer by means of (indirectly fired) heat heaters and fans. These ensure that there is warm air from the top of the house is brought down. Then this air is heated by a heat exchanger equipped with a fan (heater) and over it litter blown out. By mixing the barn air, a uniform temperature throughout the house The fertilizer / litter layer is dried and the heavy CO₂ is expelled from the animals.

THE TECHNICAL EQUIPMENT OF THE SYSTEM ; ARCHITECTURAL

Part

Execution requirement

1 Floor version

The total barn floor construction including any underlying sand layer must have a heat resistance (Rc value) of at least 0.5.

THE TECHNICAL EQUIPMENT OF THE SYSTEM ; TECHNICAL EQUIPMENT

Part

Execution requirement

2 Housing form

In breeding hens and cocks of laying breeds:

Slatted floors with bins in combination with a litter floor. Maximum 2/3

part of the living area

1

is slatted floor. In the middle of the stable

a litter floor are present.

With the other animal categories:

Full litter floor

3 Drinking water

Drinking water supply with anti-spill system

1 No definition has been included in legislation and regulations for the concept of living area in rearing hens. In the

In practice, the following parts of the barn equipment are included: all present

grids, landing platforms up to 40 cm wide and perches (per cm of perch 30 cm² area). As several

perches are arranged next to each other (as in a platform), the outer perches and the

length of the system (as with grilles)

2

4a Heating and

air circulation system

There must be low maintenance and fireproof (indirect

fired) heat heaters consisting of a convector with fan,

possibly supplemented with a combustion chamber for gas.

4b

Heat theater with hot water

Heater connected to heat source outside the space available for

animals.

Indirectly fired heat heater

Stainless steel indirect fired heat heater with propane or natural gas as fuel. Combustion air supply from outside the house and discharge from flue gases also go outside the barn, through a double-walled chimney.

4c

Heat theater with hot water

Heater at the top with flexible square shaft or detachable fixed shaft. The top of the shaft is on maximum 2 meters from the highest point of the ceiling of the house.

In naturally ventilated stables with an open ridge, the shaft may be omitted stay to prevent outside air from being drawn in.

Indirectly fired heat heater

In addition to the above specifications, flexible combustion air supply and flue gas discharge ducts

4d

The heaters are hung under the ridge, spread over the length of the house.

The heaters are no more than 25 meters apart.

4th

The heat heater is provided with a hexagonal at the bottom distribution box fitted with movable blades or with a square one transfer box, equipped with both vertical and horizontal movable blades or a round conical distribution plate. The position of the slats is such that the air is well distributed over the litter surface blown, execution according to supplier's specification.

4f

A covered floor area of up to 450 m² per heater.

4h

Fans capacity to be installed: at least 16 m³ per m² of shed area per hour

5 Side hopper at

breeding hens and cocks

of laying breeds

The sides of the wells must be open and meshed

shielded from the litter floor.

6 Recording equipment

The following recording equipment must be present:

- equipment for registering the operation of the heat heaters

(hour meter)

- equipment for registering the realized temperature curve;

- equipment for registering the realized ventilation flow rate

7 Capacity existing

stables

Meat turkeys: Installable capacity of the heaters is at least 125

Watt per m2 at 25°C ambient temperature. Capacity according to specification
supplier.

Other animal categories: The capacity of the heaters to be installed is minimal

125 Watt per m2 at 35°C ambient temperature. Capacity according to specification
supplier.

Capacity of new stables Meat turkeys: The capacity to be installed of the heaters is at least 100

Watt per m2 at 25°C ambient temperature. Capacity according to specification
supplier.

Other animal categories: The capacity of the heaters to be installed is minimal

100 Watt per m2 at 35°C ambient temperature. Capacity according to specification
supplier.

3

HEAT USING THE SYSTEM

Part

Usage requirement

a Living surface

In breeding hens and cocks of laying breeds:

Minimum 625 cm² and maximum 714 cm² per animal at setup (14-16 animals per m²)

In (grand) parent animals of broilers in rearing up to 19 weeks:

minimum 900 cm² and maximum 1100 cm² per animal with intent (8.3 to 11.1 animals per m²)

In parent animals of meat turkeys in rearing up to 6 weeks:

At least 625 cm² per animal at setup (16 animals per m²)

In parent animals of meat turkeys in rearing up to 6-30 weeks:

At least 1330 cm² per animal at setup (7.5 animals per m²)

With meat turkeys:

Male animals: Minimum 3330 cm² / animal at intent (3.0 animals per m²)

Female animals: Minimum 2040 cm² / animal at intent (4.9 animals per m²)

b Distance between floor and

underside of heater

In breeding hens and cocks of laying breeds:

The heat heaters should be a maximum of 0.5 m above the litter floor in it

in the middle of the house, so that the air is partly under the

beunen is blown out.

With the other animal categories:

The heaters should be a maximum of 1.5 m above the floor

applied.

c

Air flow

The air from the top part of house 2 is sent through the square or round

shaft and heat heaters led down and then well

distributed over the litter surface.

With rearing hens and cocks of laying breeds, the air must be at least 50%

be aimed at manure storage under the slatted floors of the hoppers.

d Setting

temperature curve

The heating is switched on as needed for extra

heat in the house, for this the temperature curve is followed.

e Fan setting

heater when there

is heated

The heating is switched on when the room temperature is 0.5 ° C

below the temperature curve.

The fan in the heater runs at minimum level and starts to run at 100%

when the return water is warm enough (this is at 60 ° C water temperature in

a central heating heater) or as the indirectly fired heater at maximum power

burns.

F Fan setting

heater when not there

is heated

When there is no additional heat requirement and therefore not heated

the fan switches to a frequency-controlled control

must run at a minimum of 20% of the maximum capacity.

g Registration

For the purpose of verifying the operation of the system, the

following data is automatically recorded:

- the heater being switched on;

- the on of the fan in the heater if there is none

hot water supply is;

- the temperature curve.

Emission factor

In breeding hens and cocks of laying breeds:

0.088 kg NH₃ per animal place per year

(Grand) parent animals of broilers in rearing up to 19 weeks:

0.129 kg NH₃ per animal place per year

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Broilers (including free-range and organic):

0.035 kg NH₃ per animal place per year

2 This concerns the air under the roof / ridge of the barn. The air there is warmer than elsewhere in the house.

4

Parent animals of meat turkeys in rearing up to 6 weeks:

0.08 kg NH₃ per animal place per year

Parent animals of meat turkeys in rearing up to 6-30 weeks:

0.024 kg NH₃ per animal place per year

Meat turkeys:

0.350 kg NH₃ per animal place per year

Reference measurement report

Investigation of ammonia emissions Wesselmanheaters (BL2009.3756.01)

Update of ammonia emission factors for poultry; Advice for adjustment of ammonia emission factors from poultry in the Ammonia Regulation and animal husbandry (Rav). Wageningen Livestock Research. Report 1015.

Cross-section when using heat heaters with central heating pipes

Cross-section when using indirectly fired heat heaters

5

Cross-section when using heat heaters in combination with barns in a barn with rearing hens and roosters rearing up to 18 weeks

Name:

stable with

heating system

with (indirectly fired)

heat heaters and

fans

Number:

BWL 2009.14.V7

System description:

January 2020

BWL 2010_13_v7

Rav number	BWL 2010.13.V7
System name	Stable with air mixing system for drying litter in combination with a heat exchanger
Animal category	Broilers (E 5.11), (grand) parents of broilers in rearing (E 3.8), parent stock of broiler turkeys in rearing up to 6 weeks (F 1.7) and 6 to 30 weeks (F 2.7) and meat turkeys (F 4.9)
System description of	January 2020
Replaces	BWL 2010.13.V6 of November 2017

Working principle

Ammonia emission control is based on drying and heating the manure/litter layer by means of a maintenance-friendly heat exchanger in combination with:

- continuously running circulation fans, or;
- a height-adjustable divider system with animal-level tubes.

With warm ventilation air from the stable, one or more heat exchanger(s) fresh air heated.

The heated fresh ventilation air is used when using circulation fans installed at the top of the ridge of the stable. Next, this air mixed with warm air at the top by circulating fans the house and pushed to one or both ends of the house. Via the gable wall(s), the air is led back over the litter layer.

When using distribution pipes, the heated fresh ventilation air through a height-adjustable distributor system evenly guided over the litter layer.

By mixing the air in the house, an even temperature is achieved in the entire barn. The manure/litter layer is dried and the carbon dioxide (CO₂), other gases (including ammonia) and water vapor are discharged from the animals.

THE TECHNICAL IMPLEMENTATION OF THE SYSTEM ; ARCHITECTURAL

Part	Execution requirement
1 Stable floor design	The total stable floor construction, including any underlying sand layer, must be have a thermal resistance (Rc value) of at least 0.5.

THE TECHNICAL IMPLEMENTATION OF THE SYSTEM ; TECHNICAL EQUIPMENT

Part	Execution requirement
2 Housing form Complete litter floor	
3 Drinking water	Drinking water supply with anti-spill system
4a Heating and air circulation system	There must be at least one heat exchanger that heats fresh air, for one or two stables. This air is mixed with circulation fans with warm air present in the ridge of the stable or via a height adjustable divider system guided evenly over the litter. Additional heating must be available to achieve the desired to reach the stable temperature. This can be done in the stable as well as at the heat exchanger.
4b Heat exchanger	Heat exchanger(s) can be installed outside next to the house, or are placed inside the stable. The heat exchanger heats freshly incoming ventilation air before it enters the house. The thermal efficiency of the exchanger is at least 70% with heat demand on the basis of: (T = temperature) $\frac{(T_{inlet} - T_{outside}) \times 100\%}{T_{extraction} - T_{outside}}$

Page 2

4c	The minimum installed capacity of the heat exchanger(s) is 0.35 m ³ per animal place per hour (or at least 8 m ³ per m ² stable area) .
4d When applied circulation-fans	The air must be brought into the ridge of the stable. When setting up the heat exchanger outside the barn, this can be done by means of a tube up to the ridge or by means of an inlet system with slats in the side wall and a air trap in the ridge of the barn. When using several heat exchangers distributed over the length of house, the fresh air is directed in the same direction at the heat exchanger as the air flow direction of the circulation fans.
4th	The circulation fans are placed at the top of the ridge of the house on a mutual distance of a maximum of 20 meters and a maximum of 1.5 meters below the ridge of the stable. These circulation fans continuously keep the air movement in the stable started.
4f	The minimum fan capacity of the circulation fans is at least 20 m ³ per m ² stable surface.
4g When applied tubes	When using distribution pipes, the air must flow over the entire length of the house distributed at animal level.
4h	The air must be suspended lengthwise via at least two rows horizontally height-adjustable tubes. In the width of in the stable there is a proportional distribution of the pipes
4i	The number of tubes is according to the supplier. The tubes are on both sides provided with holes. Distance, diameter and angle according to specification of supplier.

5 Registration-equipment	The following registration equipment must be present: - equipment for registering the heat exchanger on (hour counter); - equipment for recording the realized temperature curve, indoor, supply and outdoor temperature; - equipment for recording the realized ventilation flow rate in heat exchanger and fan capacity circulation fans
6 Capacity	Installation in existing stables: Capacity of the heat exchanger and additional heating to be installed is minimum 125 Watt per m ² at 35°C ambient temperature. Capacity according to statement supplier New construction : : Capacity of the heat exchanger and additional heating to be installed is minimum 100 Watt per m ² at 35°C ambient temperature. Capacity according to specification supplier.

THE USING THE SYSTEM

Part	Usage requirement
a Living area	In (grand)parents of broilers in rearing up to 19 weeks: A minimum of 900 cm ² and a maximum of 1100 cm ² per animal when set up (8.3 to 11.1 animals per m ²) In parent stock of broiler turkeys reared up to 6 weeks:

¹ For broilers, a production method can be applied in which chicks hatch from the egg in the barn and afterwards reared for a limited period in this barn. After the rearing period, the animals are transferred to a follow-up housing. This production method, with the associated ages for transferring, is laid down in category E 5.9. Depending on the age of transfers, the ventilation requirement in the hatching/rearing house possibly lower than the minimum capacity requested here. In that case, the installed capacity of the hatching/rearing house are maintained.

² The date for 'new construction' is 1 January 2000. Stables built before that date must meet the requirement of existing stables.

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b1 Airflow at application circulation-	At least 625 cm ² per animal when set up (16 animals per m ²) In parent stock of broiler turkeys in rearing up to 6-30 weeks: At least 1330 cm ² per animal when set up (7.5 animals per m ²) With meat turkeys: Males: Minimum 3330 cm ² /animal at 10 weeks of age (3.0 animals per m ²) Females: At least 2040 cm ² /animal at 10 weeks of age (4.9 animals per m ²) The air in the upper part of the house is supplied via circulation fans through the end facade(s) guided downwards and then well distributed over the litter surface blown
--	--

fans	
b2 Airflow at application pipes	The heated fresh ventilation air is fed through the pipes to a height adjustable distributor system evenly blown over the litter surface. The height of the tubes is adjusted with the age curve of the animals varying from a minimum of 50 cm to a maximum of 150 cm. While cleaning the pipes can be hoisted from the stable to the roof.
c Institution temperature curve	At least the first 12 days of a round, the heat exchanger in the complete minimum ventilation needs of a barn. During this period, the regular ventilation openings are closed and all ventilation air is exchanger on and off. The heating is switched on as soon as there is a need for extra heat in the house, for this the temperature curve is followed.
d Fan setting in heat exchanger when there is heated	The amount of exhaust air is measured with a measuring fan. The heating is switched on when the room temperature is 0.5 °C below the temperature curve. The fan in the heat exchanger turns on when the animals are placed minimum level and will run at 100% when the ventilation requirement of the animals ask for this. The exhaust fan follows the supply ventilation curve.
e Fan setting in exchanger when there isn't is heated	When there is no additional heat requirement and therefore no additional heating is provided via the heat exchanger, the capacity may be reduced to a maximum 50% of the fan capacity. The exchanger may be switched off if the temperature difference between the setpoint of the house and outside temperature is less than 12 °C or if the animals are older than 4 weeks.
f1 Setting at application circulation-fans	The circulation fans run at a minimum of 20% when the animals are placed of the capacity in conventionally reared animals. At a lower occupancy from due to welfare requirements, the capacity can be adjusted in proportion to this occupation be adjusted ⁴ . The capacity becomes proportional to the increase of the barn ventilation increased to 100%.
f2 Setting at application pipes	The aeration through the heat exchanger is started from day 1 and follows the minimum ventilation requirement of the animals from 10% to 100% of the capacity. After reaching the maximum ventilation capacity of the heat exchanger the blowing capacity must remain the same for the rest of the period.
g Registration	For the purpose of checking the operation of the system, the following data is automatically registered: - operating the heat exchanger and its fan(s); - the running of the circulation fans and the course over a round. This to determine that there is continuously sufficient drying air over the bedding bed is blown;

³ This concerns the air under the roof/ridge of the stable. The air is warmer there than elsewhere in the barn.
⁴ Example: The capacity of 20 m³/m²/hour has been determined on the basis of the measurements at 24 broilers/m². Bee an occupancy of 15 animals/m² when set up, the capacity can be reduced to 15/24 x . at minimum setting 20% = 12.5%. Converted this is 2.5 m³/m²/hour instead of 4 m³/m²/hour.

- the temperature curve.

Emission factor	Broilers (including free-range and organic): 0.021 kg NH ₃ per pig place per year (Grand) parent stock of broilers in rearing up to 19 weeks: 0.077 kg NH ₃ per pig place per year Parent stock of broiler turkeys reared up to 6 weeks: 0.05 kg NH ₃ per pig place per year Parent stock of broiler turkeys reared up to 6-30 weeks: 0.15 kg NH ₃ per pig place per year Meat turkeys: 0.21 kg NH ₃ per pig place per year
Reference measurement report	Emission measurements in housing systems with Agro Clima Unit (ECN-E-10-087, Sep 2010) Updating ammonia emission factors for poultry; Advice for adjusting ammonia emission factors from poultry in the Ammonia and Livestock Farming Regulation (Rav). Wageningen Livestock Research, Report 1015

Sample drawings:

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Floor plan and cross section when using heat exchanger and circulation fans:
 A) placement of heat exchanger outside the house and introducing air via tube to the ridge of the house (tube can may also be fitted on the inside of the roof).
 B) placement of heat exchanger in the barn (number depends on required capacity).
 C) introducing air from the heat exchanger with fins in the side wall and collection in the ridge.

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Example of slats (Louvre system) in the side wall and air collection in the ridge.

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E)

When using compact heat exchangers in the house with circulation fans:
D) principle sketch of compact heat exchanger with horizontal discharge.
E) image barn with compact heat exchangers and circulation fans.

Floor plan and cross section when using a heat exchanger with a tube system:

- A) placement of heat exchanger outside the house.
- B) placement of heat exchanger in the barn.

Name:
stole with
air mixing system for
drying litter layer in
combination with a
heat exchanger

Number:
BWL 2010.13.V7
System description:
January 2020

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