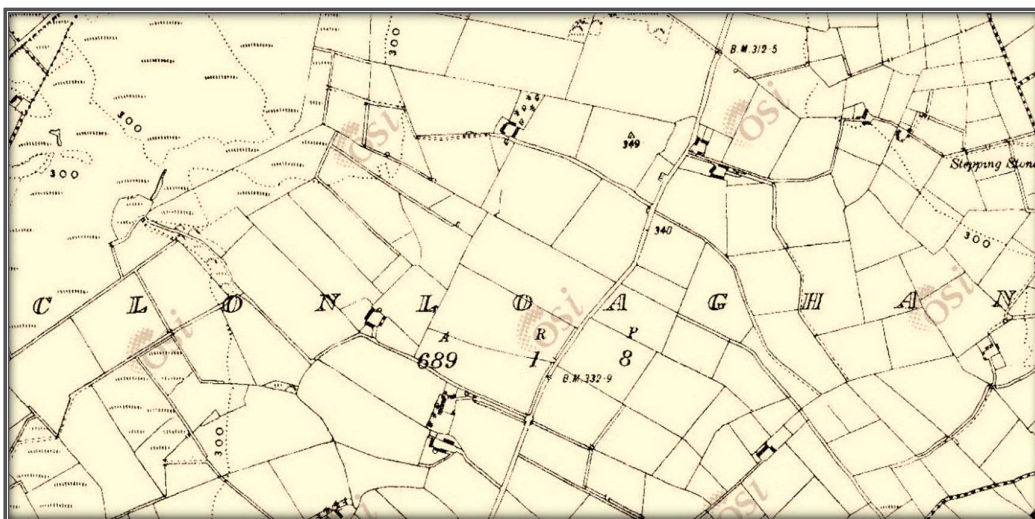


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## NATURA IMPACT STATEMENT OF AN APPLICATION FOR A LICENCE AT CLONLOAGHAN, KILCOGY, CO CAVAN

IN LINE WITH THE REQUIREMENTS OF ARTICLE 6(3) OF THE  
EU HABITATS DIRECTIVE



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# **1 INTRODUCTION**

## **1.1 REQUIREMENT FOR AN APPROPRIATE ASSESSMENT**

This Natura Impact Assessment was prepared for the proposed development of a poultry farm at Clonloaghan, Kilcogy, Co. Cavan.

Having regard to the location of the proposed development 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 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 a poultry farm at Clonloaghan, Kilcogy, Co. Cavan 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 January 2021 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**

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). This is explained in greater detail in the following section (Section 1.2.2 and Section 1,2.3).

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 2027 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.

## SECTION 2      METHODOLOGY

### 2.1 APPROPRIATE ASSESSMENT

This Statement of Screening for Appropriate Assessment (Stage 1) 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 (2021) 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 AA 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 thirteen years. Noreen has over 15 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;
- Myplan.ie – Mapped based information;
- National Biodiversity Data Centre (NBDC) – Information pertaining to protected plant and animal species within the study area;
- Bing maps & Google Street View – High quality aerials and street images;
- CLW Environmental Planners – Plans and Information Pertaining to the Development, including Information on emissions.
- Cavan 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.

## 2 STAGE 1 - SCREENING

### 2.1 PROJECT DESCRIPTION

#### OVERVIEW

Mr Killian Smith has applied to the E.P.A. for a Licence for the operation of this poultry farm at Clonloaghan, Kilcogy, Co. Cavan. Planning permission has been approved for 3 houses and all associated site works and services and an increase to 130,000 birds. This phase of the development (and the extent of the development for which a licence is currently sought) is limited to 1 additional house and to facilitate an increase in stock on the farm from 39,000 birds in the previously approved and operational single house, to 89,142 birds in total in the two houses. Planning permission also pertains to all associated site works and services.

The existing house and the additional house will be constructed or upgraded to a low emission spec. The more modern and efficient upgraded houses will lead to no change or an overall reduction in emissions from the farm, even when the increased numbers are considered. The existing poultry house has a standard emission factor of 0.08kg/yr/bird resulting in 3120 kg ammonia (39,000 birds). The proposed and upgraded houses will either have (1) Circulating fans, or (2) Heaters with an air mixing system with an emission factor 0.035 kg @ 89,142 birds =3,119.97 Kg Ammonia (Same as Existing) The specs of these are provided in Appendix 1.

The applicant is now seeking a License from the EPA for the operation of this farm

An extract from the planning drawings can be seen in Figure 1.

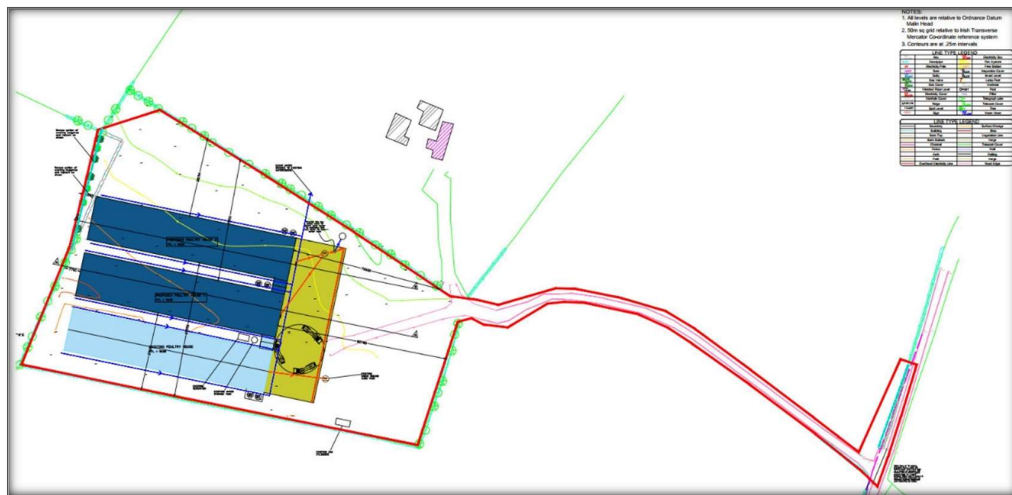


Figure 1 – Extract from Planning Drawing (By Horizon Group)

Construction methods for the new structures will be standard and will follow best practice guidelines at all stages. All structures will be compliant 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. 113 of 2022.

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 specialised contractors where it will be composted and used in the mushroom industry or it will be used as an organic fertiliser in accordance with S.I. 113 of 2022. All records for the movement of fertiliser will be kept on site and presented to the Department of Agriculture, Food and Marine as requested.

### **S.I. 113 OF 2022**

The European Union (Good Agricultural Practice for Protection of Waters) Regulations 2022 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.
- 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 <sup>3</sup> 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 <sup>3</sup> 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. 113 of 2022

Prior to its approval, a Natura Impact Statement was prepared for the Nitrates Action Programme (NAP) by RPS (2022). This Natura Impact Statement considered the potential of the measures proposed within the NAP to give rise to adverse effects on the integrity of European Sites, with regard to their qualifying interests, associated conservation status and the overall site integrity, alone and in combination with other relevant plans and programmes.

The NIS concluded that the adoption of the NAP will not adversely affect the integrity of any European Site either alone or in combination with other relevant plans or programmes and subject to securing the mitigation measures prescribed in the NIS.

The applicant is fully aware of his obligations under S.I. 113 of 2022 and he will meet all the requirements under this Directive with the proposed application.

## 2.2 SITE LOCATION AND SURROUNDING ENVIRONMENT

The site in question is 2.2 hectares and it is located in a rural area, in the townland of Clonloaghan. The site will be accessed via an existing access road and this is located just off a local, third-class road. The site is 2.2km north-east of Kilcogy and it is 5.3km south-west of Kilnaleck.

The main land-use surrounding the application site is agriculture and improved agricultural grassland is the dominant habitat locally. Other natural habitats represented in the area include areas of wet and neutral grasslands, raised bogs, small areas of broadleaved woodland and scrub, along with 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.

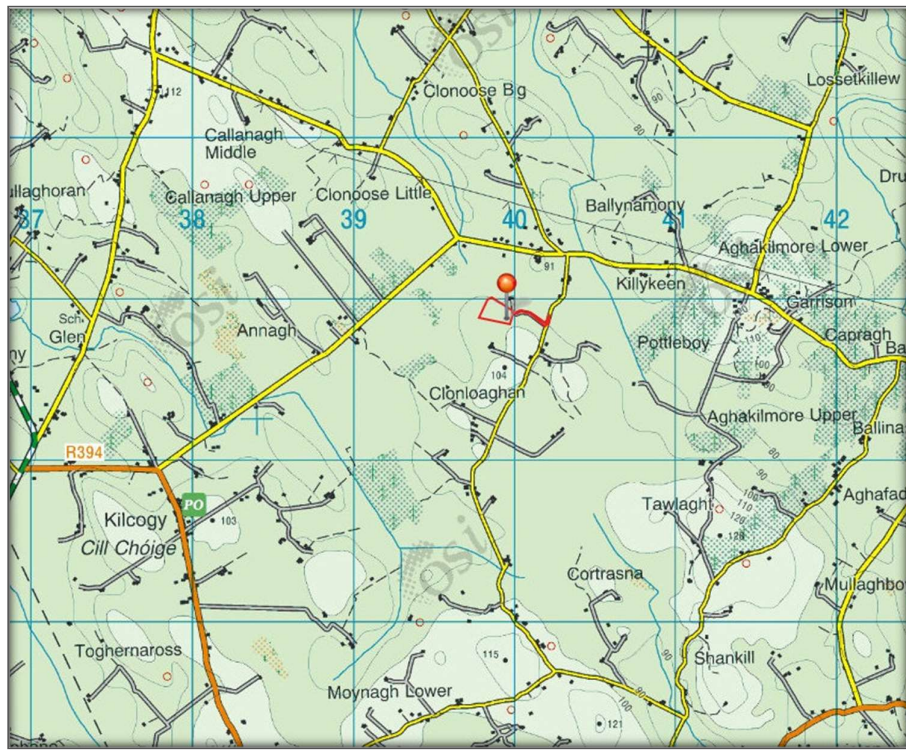


Figure 2 – Map showing the Location of the Proposed Development Site (Pinned)

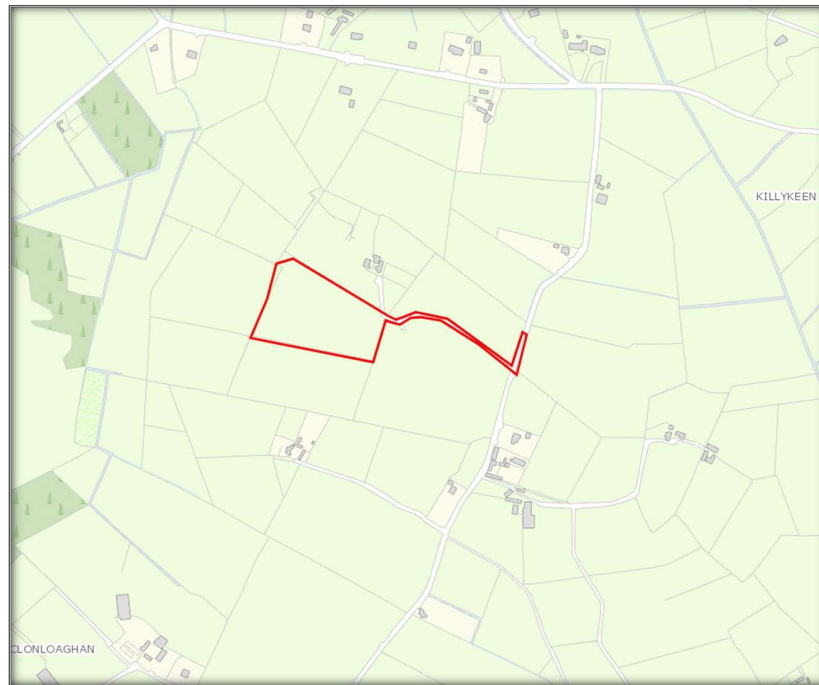


Figure 3 – Map showing the Location of the Proposed Development Site (Outlined in Red).

### HABITATS AND SPECIES

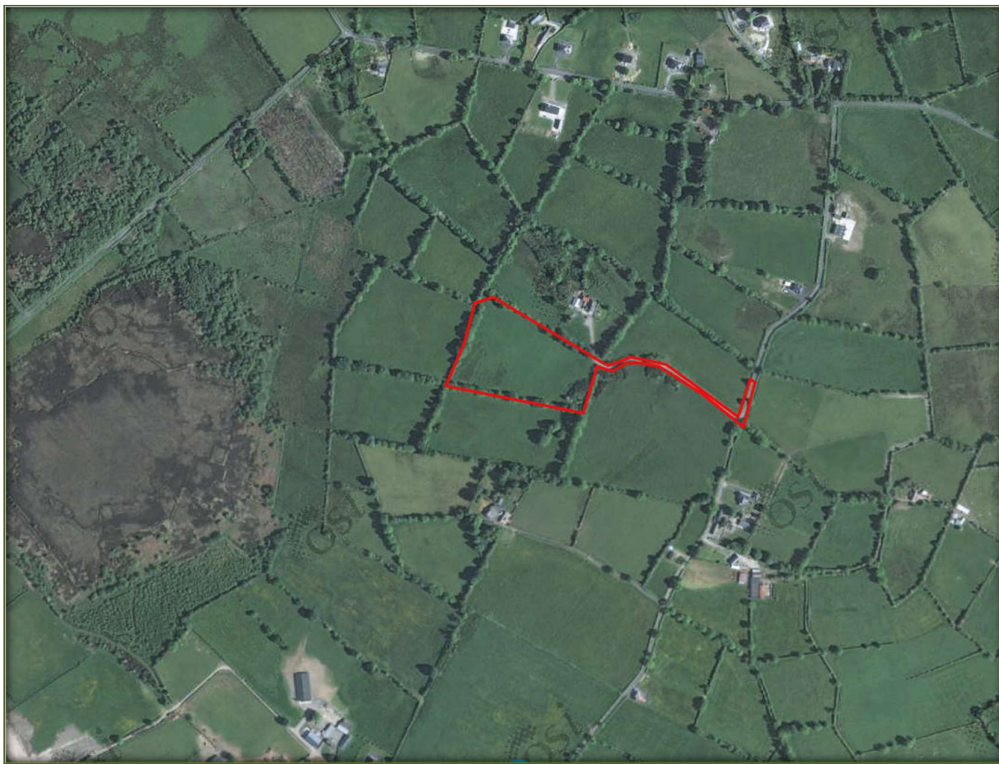
The application site does not lie within or adjacent to any site that is designated for nature conservation purposes. The dominant habitat within the application site currently is improved agricultural grasslands. The site boundaries consist of treelines / hedgerows.

An examination of the website of the National Biodiversity Data Centre revealed that there are records for the presence of one notable species from within the relevant one km grid squares (N3987) of this proposed application site. This species is the badger *Meles meles* and it is fully protected under the Irish Wildlife Acts. A custom polygon that was generated for this site revealed that these records do not pertain to the application site itself.

### **WATER FEATURES AND QUALITY**

The application site lies within the Erne Hydrometric Area (36) and Catchment (36), and the Erne Sub-Catchment (010) and Sub-Basin (040). Clean surface water from the site will be directed to local drains, which lead to the Killydream Stream which is 200m west of the application site. Water in this stream flows in a north-westerly direction until its confluence with the River Erne at a point approximately 4.3km north-west (4.6km downstream) of the application site.

The EPA have defined the ecological status of the Killydream Stream and its tributaries at points close to the application site as moderate. Under the requirements of the Water Framework Directive, this is unsatisfactory and good status must be achieved in these waterbodies within a specified time frame.



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



### 2.3 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.

For significant effects to arise, there must be a potential impact facilitated by having a *source*, i.e., the proposed development and activities arising out of its construction or operation, a *receptor*, i.e., the European site and its qualifying interests and a subsequent *pathway* or *connectivity* between the source and receptor, e.g., a water course. The likelihood for significant effects on the European site will largely depend on the characteristics of the source (e.g., nature and scale of the construction works), the characteristics of the existing pathway and the characteristics of the receptor, e.g., the sensitivities of the Qualifying Interests (habitats or species) to changes in water quality.

There are seven 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. A full description of the sites can be read on the website of the National Parks and Wildlife Service ([www.npws.ie](http://www.npws.ie)).

Site Name & Code	Distance	Qualifying Interests	Potential Impacts
Lough Sheelin SPA 004065	3.7km south-east	<ul style="list-style-type: none"> <li>Great Crested Grebe <i>Podiceps cristatus</i></li> <li>Pochard <i>Aythya ferina</i></li> <li>Tufted Duck <i>Aythya fuligula</i></li> <li>Goldeneye <i>Bucephala clangula</i></li> <li>Wetlands &amp; waterbirds</li> </ul>	<p>No hydrological connectivity therefore significant effects arising from emissions to surface water can be ruled out.</p> <p>Significant effects arising from atmospheric emissions will be considered further.</p>
Lough Kinale and Derragh Lough SPA 004061	6.1km south	<ul style="list-style-type: none"> <li>Pochard <i>Aythya ferina</i></li> <li>Tufted Duck <i>Aythya fuligula</i></li> <li>Wetlands &amp; waterbirds</li> </ul>	<p>Given the hydrological separation distance, significant effects arising from emissions to surface water can be ruled out.</p> <p>Significant effects arising from atmospheric emissions will be considered further.</p>
Moneybeg and Clareisland Bog SAC 002340	7.2km south-east	<ul style="list-style-type: none"> <li>Active raised bog</li> <li>Degraded raised bog</li> </ul>	<p>No hydrological connectivity therefore significant effects arising</p>

		<ul style="list-style-type: none"> <li>• Depressions on peat substrates of the Rhynchosporion</li> </ul>	<p><i>from emissions to surface water can be ruled out. Significant effects arising from atmospheric emissions will be considered further.</i></p>
Derragh Bog SAC 002201	7.6km south	<ul style="list-style-type: none"> <li>• Degraded raised bogs still capable of natural regeneration</li> <li>• Bog woodland</li> </ul>	<p><i>No hydrological connectivity therefore significant effects arising from emissions to surface water can be ruled out. Significant effects arising from atmospheric emissions will be considered further.</i></p>
Lough Oughter and Associated Loughs SAC 000007	14.3km north / 33km downstream	<ul style="list-style-type: none"> <li>• Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i>-type vegetation</li> <li>• Bog woodland</li> <li>• Otter <i>Lutra lutra</i></li> </ul>	<p><i>Given the hydrological separation distance, significant effects arising from emissions to surface water can be ruled out. Significant effects arising from atmospheric emissions will be considered further.</i></p>
Lough Oughter Complex SPA 004049	14.3km north / 33km downstream	<ul style="list-style-type: none"> <li>• Great Crested Grebe (<i>Podiceps cristatus</i>)</li> <li>• Whooper Swan (<i>Cygnus cygnus</i>)</li> <li>• Wigeon (<i>Anas penelope</i>)</li> <li>• Wetlands &amp; Waterbirds</li> </ul>	<p><i>Given the hydrological separation distance, significant effects arising from emissions to surface water can be ruled out. Significant effects arising from atmospheric emissions will be considered further.</i></p>
Ardgullion Bog SAC 002341	14.5km south-west	<ul style="list-style-type: none"> <li>• Active raised bog</li> <li>• Degraded raised bog</li> <li>• Depressions on peat substrates of the Rhynchosporion</li> </ul>	<p><i>No hydrological connectivity therefore significant effects arising from emissions to surface water can be ruled out. Significant effects arising from atmospheric emissions will be considered further.</i></p>

Table 2 – Natura 2000 Sites within 15km of Application Site

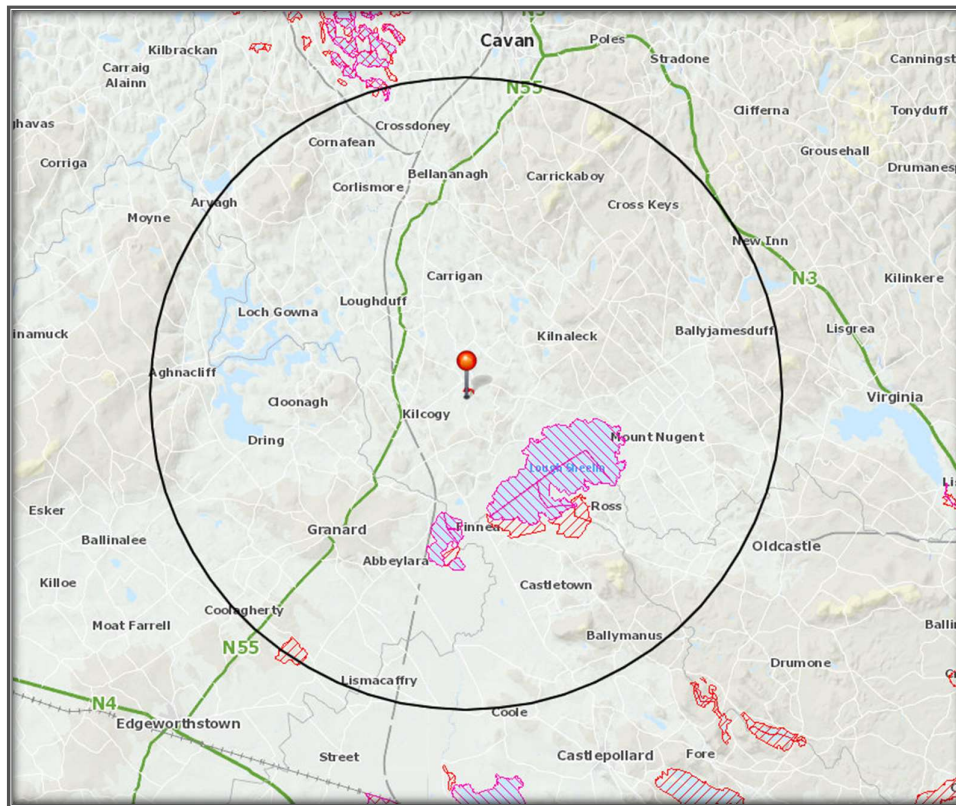


Figure 5 – The Application Site (Red Dot) in relation to the Natura 2000 sites. SACs – Brown Hatching, Hatching, SPAs – Vertical Hatching

## 2.4 IDENTIFICATION OF POTENTIAL IMPACTS

Only those features of the development that have the potential to affect the integrity and conservation objectives of the identified Natura 2000 sites and protected species have been considered. A number of factors were examined at this stage and dismissed or carried forward for Appropriate Assessment as relevant. Assessment of the potential impacts on the integrity of the identified Natura 2000 sites is also conducted utilising a standard source-pathway-receptor model. In order for an impact to be established all three elements of this mechanism must be in place. The absence or removal of one of the elements of the mechanism is sufficient to conclude that a potential effect is not of any relevance or significance. The following areas were examined in relation to potential impacts from the proposed development on the Natura 2000 sites identified:

- Effects upon the designated sites within 15km from atmospheric emissions arising from the operation of the proposed development, either individually or in combination with other ongoing activities.
- Cumulative impacts.

## 2.5 SCREENING CONCLUSIONS

The proposed development is not directly connected with or necessary to the nature conservation management of the designated site. Therefore, following consideration of the location of designated sites in relation to the

proposed development and the potential impacts that may occur from atmospheric emissions, this project must proceed to the next stage of Appropriate Assessment, namely the Natura Impact Assessment (Stage II, Natura Impact Statement).

### 3 STAGE II – APPROPRIATE ASSESSMENT

#### 3.1 INTRODUCTION

The main objective of this stage (Stage 2, Natura Impact Statement) in the Appropriate Assessment is to determine whether the proposed development at Clonloaghan (either alone or in combination with other plans, programmes and projects) will result in significant adverse impacts to the integrity of the Natura 2000 site identified in the previous section with respect to the site's structure, function and/or conservation objectives. This stage also outlines the mitigation measures that should be taken in order to avoid any negative impacts of this proposed development.

#### 3.2 IDENTIFICATION AND ASSESSMENT OF POTENTIAL IMPACTS

##### INTRODUCTION

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. This section will establish whether the impacts of the proposed development at Clonloaghan that were identified in the previous section, are likely to occur and whether or not they are significant. These potential impacts will be examined with respect to the conservation objectives of the Natura 2000 site identified.

In the screening section of this report, the following possible impacts on the designated sites within 15km were listed. These potential impacts are assessed in greater detail below.

##### 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, updated 2023*). 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 construction of one additional low emission poultry house along with the upgrading of the existing poultry house to low emission spec. The more modern and efficient upgraded houses will lead to an overall reduction in emissions from the farm. The existing poultry house has a standard emission factor of 0.08kg/yr/bird resulting in 3120 kg ammonia. The new and upgraded house combined will have either:

1. Circulating fans with an emission factor 0.035 kg @ 89,142 birds =3,119.97 Kg Ammonia (same as existing),  
or:
2. Heaters with an air mixing system for drying litter with an emission factor 0.035 kg @ 89,142 birds =3,119.97 Kg Ammonia (same as existing), The specs of these are provided in Appendix 1.

As the final emissions from the farm upon completion of the additional house will be lower than the current baseline levels, neither modelling in SCAIL not detailed atmospheric modelling is required in this instance.

Annex 1: Flow Chart

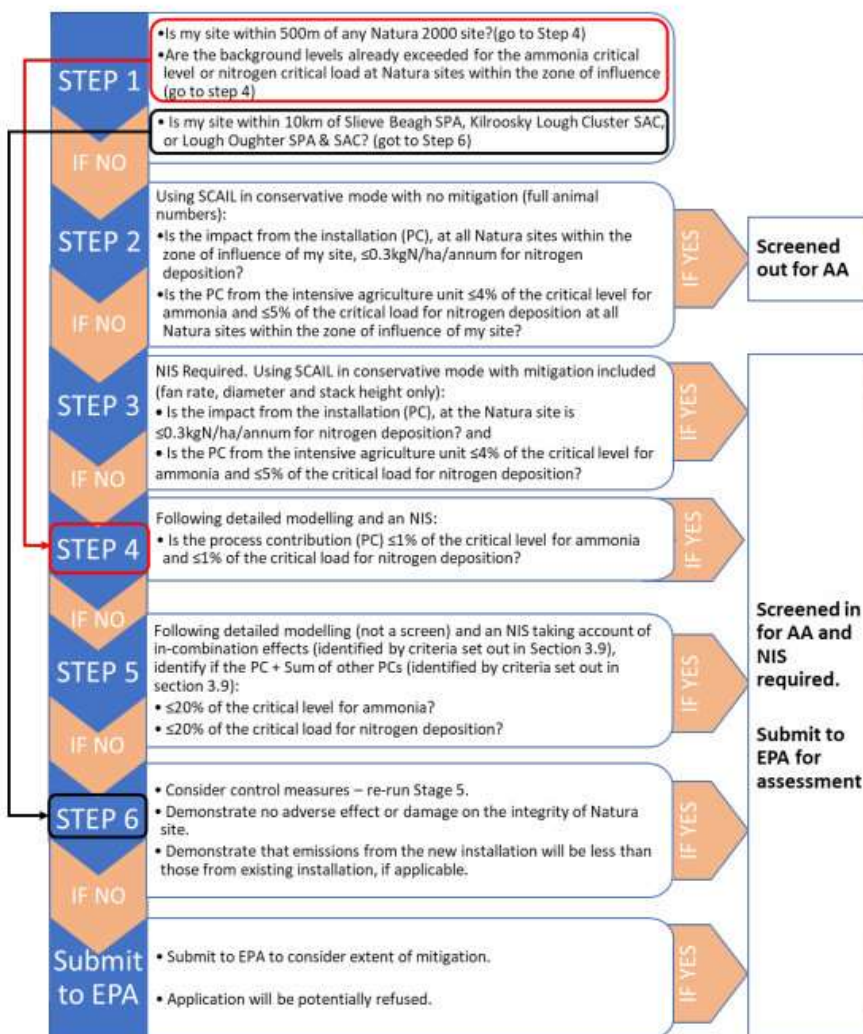


Figure 6 – EPA Flow Chart, Taken from Annex I of the Assessment of the Impact of Ammonia and Nitrogen on Natura 2000 sites from Intensive Agriculture Installations, EPA 2021

### **3.3 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. 113 of 2022 regarding manure storage, minimisation of soiled water and general good agricultural practice, etc.

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 2021 (S.I. 113 of 2022). 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

## 4 MITIGATION MEASURES

In order to minimise emissions from the poultry facility at Clonloaghan and in order to protect certain designated sites and species, a number of mitigation measures must be implemented and followed. Measures have also been suggested that will help to protect the local biodiversity of the surrounding area and to ensure the protection of local wildlife.

- 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 Pigs* ([http://eippcb.jrc.ec.europa.eu/reference/BREF/IRPP/JRC107189\\_IRPP\\_Bref\\_2017\\_published.pdf](http://eippcb.jrc.ec.europa.eu/reference/BREF/IRPP/JRC107189_IRPP_Bref_2017_published.pdf)).
- Although impacts upon designated sites that are downstream of the site can be ruled out due to the hydrological distance, it is vital that there is no deterioration in water quality in the water courses that are close to the development site. This will protect both habitats and species that are sensitive to pollution. Therefore, strict controls of erosion, sediment generation and other pollutants associated with the construction process should be implemented where necessary, including the provision of attenuation measures, silt traps or geotextile curtains to reduce and intercept sediment release into any local watercourses. *The protection of water quality in this area is vital.*
- 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*.
- The proposed storage tanks must adhere to the Department of Agriculture's Farm Building and Structures Specifications. Before use, they should undergo an integrity test that is performed by a suitably qualified person. They should be inspected regularly for deficiencies.
- The applicant must ensure that any excavated soil is used / disposed of responsibly. Its disposal should not lead to the loss or damage of any natural or semi-natural habitats elsewhere. It should not be spread close to any local watercourse as it may result in an increase in the sediment load of that watercourse.
- Fuels, oils, greases and hydraulic fluids must be stored in bunded compounds well away from watercourses. Refuelling of machinery, etc., should be carried out in bunded areas. Stockpile areas for sands and gravel should be kept to a minimum size, well away from any drain or watercourse. .
- Any hedgerows that remain should be protected and maintained where possible. They should be carefully cordoned off from the development activities on site. If possible, a natural verge should be allowed to remain along these hedgerows. This will maintain the biodiversity on the site once the development is operational. It is illegal to remove hedgerows and trees during the bird nesting season.
- Any landscaping should involve the planting of native Irish species that are indigenous to the site. The characteristics of newly planted hedgerows should mimic those in the surrounding area.



- Bare soil should be seeded as soon as possible with grass seed. This will minimise erosion into local drains and watercourses.

## 5 APPROPRIATE ASSESSMENT CONCLUSIONS

This NIS has been undertaken to evaluate the potential impacts of the proposed development with regard to the effects upon the conservation objectives and qualifying interests (including the habitats and species) of the Natura 2000 sites identified. It is considered that following mitigation, that the proposed project does not have the potential to significantly affect the conservation objectives of these aforementioned Natura 2000 sites and the integrity of these sites as a whole will not be adversely impacted.

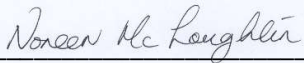
The qualifying interests of the site and their potential to be impacted upon from the potential development were listed in Section 4.2. It is considered that these potential impacts can be successfully mitigated against. With implementation of the mitigation measures there will be no impacts upon any designated habitat or any species dependent on these designated habitats.

In light of the above, it is considered that the proposed works do not have the potential to significantly affect the conservation objectives or qualifying interests of the Natura 2000 sites. The integrity of the site will not be adversely affected. Table 5 follows the integrity of the SAC / SPA checklist, which shows that the integrity of the site would not be affected by the proposed development.

Conservation Objective: Does the project have the potential to:	Yes / No
Cause delays in progress towards achieving the conservation objectives of the site?	N
Interrupt progress towards achieving the conservation objectives of the site?	N
Disrupt those factors that help to maintain the favourable conditions of the site?	N
Interfere with the balance, distribution and density of key species that are the indicators of the favourable condition of the site?	N
Other Objectives: does the project have the potential to:	
Cause changes to the vital defining aspects (e.g. nutrient balance) that determine how the site functions as a habitat or ecosystem?	N
Change the dynamics of the relationships (between, for example, soil and water or plants and animals) that define the structure and/or function of the site?	N
Interfere with predicted or expected natural changes to the site (such as water dynamics or chemical composition)?	N

Reduce the area of key habitats?	N
Reduce the population of key species?	N
Change the balance between key species?	N
Reduce diversity of the site?	N
Result in disturbance that could affect population size or density or the balance between key species?	N
Result in fragmentation?	N
Result in loss or reduction of key features (e.g. tree cover, tidal exposure, annual flooding, etc.)	N

**Table 5– Integrity of Site Checklist (From NPWS, Information Checklist for AA, Box 6, EC (2002))**



Noreen McLoughlin, MSc, MCIEEM.  
Ecologist.

(PI Insurance details available on request)

## **Appendix I: LOW EMISSIONS SPECIFICATIONS**

Rav number - BWL 2011.13.V5

System name - Barn with heaters with air mixing system for drying litter layer

Animal category - Broilers (E 5.14), (grand) parent stock of broilers in rearing (E 3.7), parent animals of fattening turkeys in rearing up to 6 weeks (F 1.6) and from 6 to 30 weeks (F 2.6), and meat turkeys (F.4.8)

System description of November 2017 Replaces BWL 2011.13.V4 of June 2016

### **Working principle**

Ammonia emission limitation is based on drying and heating the fertilizer / litter layer by means of heaters and continuously rotating circulation fans mixing of the house air creates an even temperature in the entire barn. The fertilizer / litter layer is dried and the carbon dioxide (CO<sub>2</sub>) 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 Full litter floor

3 Drinking water

Drinking water supply with anti-spill system

4a Heating and air circulation system

It must be well maintained and fireproof

heat heaters : consisting of a heat source with fans for the warm air distribution

4b

The heat heaters for heating the house are distributed over the shed length under the ridge of the shed and / or along the side wall of the shed hung up.

When the heat heaters are placed under the ridge, it is maximally suspended 1.5 meters below the ridge.

When the heat heaters are placed along the side wall, it is suspended maximum 1.5 meters from the facade and maximum 1.5 meters distance above the floor 2 .

The heated air is mixed with circulation fans warm air in the house.

The point is that air can be heated and that this air is distributed. The combustion chamber in which a fuel is burned may be present in the heater (directly fired heater). The combustion chamber must have a supply duct for the supply of combustion air from outside the house and exhaust channel for the discharge of flue gases to the outside of the house (closed combustion). Also it is possible that elsewhere outside the animal area there is a combustion device and the heat is supplied via pipes transferred to the heaters (indirectly fired heater)

2 The distances are measured from the outside of the heater.

4c

The minimum installed fan capacity of the heat heater amounts to  $0.35 \text{ m}^3$  per animal place per hour (or  $8 \text{ m}^3$  per  $\text{m}^2$  shed area).

If the fan capacity of the heat heater is adjustable, is a frequency inverter available for this.

4d

When the heat heaters are placed in the ridge, the blowing direction of the heaters to one as well as from the center to both end walls be targeted.

When installing the heaters along the side wall, the blowing direction of the heaters are equal to the direction of rotation of the hands of the clock.

4th Circulation fans

The circulation fans are in line with the heaters on one mutual distance of up to 20 meters.

When the heat heaters are placed under the ridge of the house, the circulation fans at a maximum of 1.5 meters below the ridge of the house.

When installing the heat heaters, hang along the side wall of the barn the circulation fans at a maximum distance of 1.5 meters from the facade and at a maximum distance of 1.5 meters above the floor 3 .

4f

The circulation fans continuously stop the air movement in the house hallway. The blowing direction of the circulation fans is equal to the blowing direction of the heat heater.

4g

The minimum installed capacity of the circulation fans is  $20 \text{ m}^3$  per  $\text{m}^2$  shed area.

5 Registration

equipment

The following recording equipment must be present:

- equipment for registering the on of the heat heaters (hour counter);
- equipment for registering the realized temperature curve, indoor and outdoor temperature;
- equipment for registering the realized ventilation flow
- equipment for registering the fan capacity curve circulation fans

6 Capacity

As a rule of thumb, the following heating capacities to be installed are listed used (at a desired house temperature of  $35^\circ \text{C}$ ):

- new-build stables;  $100 \text{ W} / \text{m}^2$

- existing stables; 125 W / m<sup>2</sup>

Different situations may occur for meat turkeys:

- in addition to the space heating by the heaters is also local heating available: the capacity of the heaters can then be increased reduced (the desired room temperature is 25 - 28 ° C).

- some of the animals (usually the roosters) are transferred to another stable transferred after a rearing period of approx. 6 weeks: in this stable need a lower room temperature, of 20 - 23 ° C. The capacity of the heaters can be adjusted to this.

The following applies in all situations: calculation of heaters capacity by supplier.

<sup>3</sup> The distance is measured from the outside of the circulation fan.

## HEAT USING THE SYSTEM

### Part

#### Usage requirement

a

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

minimum 900 cm<sup>2</sup> and maximum 1100 cm<sup>2</sup> per animal with intent (8.3 to 11.1 animals per m<sup>2</sup>)

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

At least 625 cm<sup>2</sup> per animal with intent (16 animals per m<sup>2</sup>)

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

At least 1330 cm<sup>2</sup> per animal with intent (7.5 animals per m<sup>2</sup>)

With meat turkeys:

Male animals: Minimum 3330 cm<sup>2</sup> / animal with intent (3.0 animals per m<sup>2</sup>)

Female animals: Minimum 2040 cm<sup>2</sup> / animal at setup (4.9 animals per m<sup>2</sup>)

b Air flow

The stable air is generated by the continuous operation of the circulation fans

well distributed over the litter surface.

c

Institution

temperature curve

The heating is switched on as needed for extra heat in the house, for this the temperature curve is followed.

d Fan setting

in heat theatre when there is heated

The heating is switched on when the room temperature falls below the temperature set for this purpose is reached, the fan in the heater.

e Fan setting

in heat theater

when not there is heated

When there is no additional heat requirement and therefore not heated

the fan in the heater is off.

f1 Circulation setting fans

The circulation fans run at minimum when the animals are placed 20% capacity. This is increased to a minimum of 30% as soon as the maximum capacity of the heaters has been reached. The capacity is allowed are controlled based on the fan capacity for total ventilation. When there is no more heating, the circulating fans at a minimum of 30% of the capacity. Bee maximum ventilation requirement should be the capacity of the circulation fans also have to be 100%.

f2

The circulation fan located within a few feet of the ejector the heat heater may be used during heating

disabled 4 .

g Registration

For the purpose of verifying the operation of the system, the following data is automatically recorded:

- switching on the heat heaters;

- the on of the circulation fans and the course of the capacity over a round. This to establish that there is continuous

sufficient drying air is blown over the litter bed;

- the temperature curve.

**Emission factor**

Broilers:

0.035 kg NH<sub>3</sub> per animal place per year

Free-range broilers:

0.035 kg NH<sub>3</sub> per animal place per year

Organic broilers:

0.035 kg NH<sub>3</sub> per animal place per year

Large) parent animals of broilers in rearing:

4 The operation of the circulation fan is taken over by the fan in the heating system during heating

heater.

0.129 kg NH<sub>3</sub> per animal place per year

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

0.08 kg NH<sub>3</sub> per animal place per year

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

0.24 kg NH<sub>3</sub> per animal place per year

Meat turkeys:

0.35 kg NH<sub>3</sub> per animal place per year

**Reference measurement report**

Investigation of ammonia emissions Wesselmannheaters

(BL2009.13756.01, version 3, March 2009)

Update of ammonia emission factors for poultry; Advice for adjustment of ammonia emission factors from poultry in the Ammonia and Livestock Farming Scheme (Rav). Wageningen Livestock

Research, Report 1015

**Floor plan and cross-section when using heat heaters and circulation fans**

Versions with longitudinal ventilation:

Note: the direction of blowing of the heat heaters can also be from the center to both sides. Versions for ridge ventilation (or combination of ridge and facade ventilation):

Note: The heaters can also be placed in the ridge with this variant. However, because of

this is not preferred to have a negative effect on the air movement.

Name:

Stable with heaters with **air mixing system for** drying litter layer

Number:

BWL 2011.13.V5

System description

November 2017



<b>System number</b>	<b>BWL 2009.14.V7</b>	
<b>System name</b>	<b>Stable with heating system with heat heaters and fans</b>	
<b>Diercategorie</b>	<b>Rearing hens and roosters of laying breeds (E 1.11), (large) parents of broiler chickens in rearing (E 3.4), broiler chickens (E 5.10), parents of broiler turkeys reared up to 6 weeks and 6 to 30 weeks (F 1.3), (F 2.3), and veal turkeys (F 4.5)</b>	
<b>System description of</b>	<b>January 2020</b>	
<b>Replaces</b>	<b>BWL 2009.14.V6 of November 2017</b>	
<b>Principle of operation</b>	<p>Ammonia emission control is based on drying and heating the manure/litter layer by means of (indirectly fired) heat heat burners and fans. These ensure that warm air is brought down from above the barn. Next, this air is heated by a heat exchanger equipped with a fan (heater) and blown out over the litter. By mixing the barn air, an even temperature is achieved throughout the barn. The manure/litter layer is sprayed and the heavy CO<sub>2</sub> is expelled from the animals.</p>	
<b>DE TECHNICAL IMPLEMENTATION OF THE SYSTEM; ARCHITECTURAL</b>		
	<b>Part</b>	<b>Uitvoeringseis</b>
1	Vloeruitvoering	The total barn floor construction including any underlying sand layer must have a heat resistance (Rc value) of at least 0.5.
<b>DE TECHNICAL IMPLEMENTATION OF THE SYSTEM; TECHNICAL FACILITIES</b>		
	<b>Part</b>	<b>Uitvoeringseis</b>
2	Huisvestingsvorm	<p><u>In the case of rearing hens and roosters of laying breeds:</u> Slatted floors with beunen in combination with litter floor. A maximum of 2/3 part of the living surface<sup>1</sup> is slatted floor. In the middle of the barn there should be a litter floor.</p> <p><u>For the other animal categories:</u> Full litter floor</p>
3	Drinking water	Drinking water supply equipped with anti-spill system

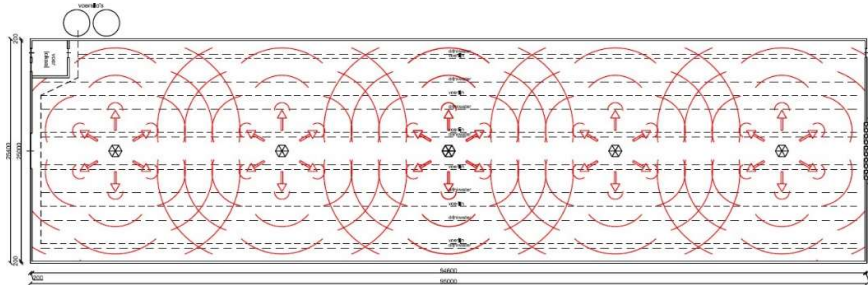
- 
- 1 The concept of living area in chickens reared for laying is not defined in legislation and regulations. In practice, the following parts of the barn equipment are included: all available grids, approach platforms up to 40 cm wide and perches (per cm per cm per perch 30 cm<sup>2</sup> surface). If several perches are placed next to each other (as if in a platform), the size is the outer perches and the length of the system (just like with grids).

4a	Heating and air circulation system	There must be low-maintenance and fire-safe (indirectly fired) heat heaters consisting of a convector with fan, possibly supplemented by a gas combustion chamber.
4b		<p><u>Heat heater with hot water</u> Heater connected to heat pump outside the room available for animals.</p> <p><u>Indirectly fired heat heater</u> Stainless steel indirectly fired heat heater with propane or natural gas as fuel. Combustion air supply from outside the barn and exhaust of flue gases also outside the barn, via a double-walled chimney.</p>
4c		<p><u>Heat heater with hot water</u> Heater on top of the shaft with flexible square shaft or removable fixed shaft. The upper side of the shaft is located at a maximum distance of 2 meters from the highest point of the ceiling of the stable. <u>In naturally ventilated stables with an open ridge, the shaft may be omitted to prevent outside air from being sucked in.</u></p> <p><u>Indirectly fired heat heater</u> In addition to the above specifications, flexible combustion air supply and flue gas exhaust ducts</p>
4d		The heaters are hung under the ridge, spread over the stall length. The heaters hang a maximum of 25 meters apart.
4E		The heat heater is equipped at the bottom with a hexagonal distribution box with movable slats or with a square distribution box, with both vertical and horizontal movable slats or a round conical distribution plate. The position of the slats is such that the air is well distributed over the litter surface, according to the supplier's specification.
4f		A covered floor area of up to 450 m <sup>2</sup> per heater.
4h		Fan capacity to be installed: minimum 16 m <sup>3</sup> per m <sup>2</sup> barn area per hour
5	Side beunen in rearing hens and roosters of laying breeds	The sides of the beunen should be open and shielded from the litter floor with mesh.
6	Registratieapparaat	<p>The following recording equipment shall be provided:</p> <ul style="list-style-type: none"> <li>- equipment for recording the lighting of the heat heaters (hour meter)</li> <li>- equipment for recording the realized temperature curve;</li> <li>- equipment for recording the realized ventilation flow rate</li> </ul>
7	Capacity of existing stables	<p>Veal turkeys: The capacity of the heaters to be installed is at least 125 Watts per m<sup>2</sup> at 25°C ambient temperature. Capacity according to supplier's statement.</p> <p>Other animal categories: The capacity of the heaters to be installed is at least 125 Watts per m<sup>2</sup> at 35°C ambient temperature. Capacity according to supplier's statement.</p>
	Capacity of new stables	<p>Veal turkeys: The capacity of the heaters to be installed is at least 100 Watts per m<sup>2</sup> at 25°C ambient temperature. Capacity according to supplier's statement.</p> <p>Other animal categories: The capacity of the heaters to be installed is at least 100 Watts per m<sup>2</sup> at 35°C ambient temperature. Capacity according to supplier's statement.</p>

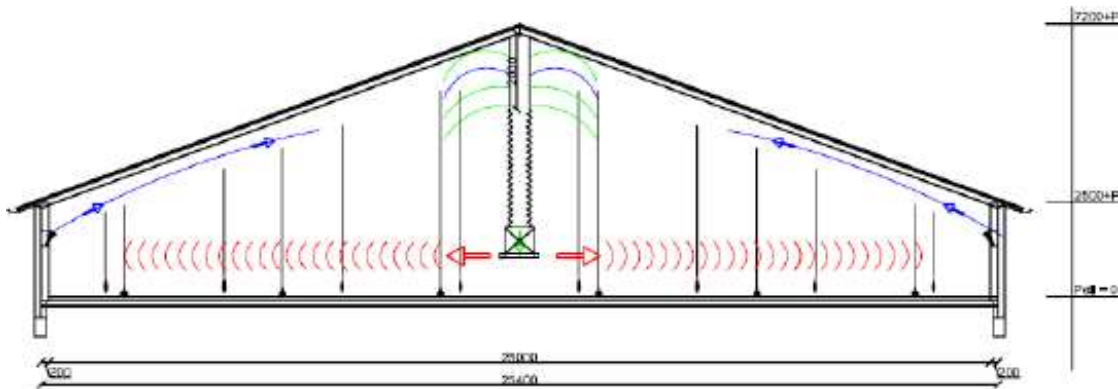
USE OF THE SYSTEM		
	Part	Gebruikseis
a	Leefoppervlak	<p><u>In the case of rearing hens and roosters of laying breeds:</u> Minimum 625 cm<sup>2</sup> and maximum 714 cm<sup>2</sup> per animal when set up (14-16 animals per m<sup>2</sup>)</p> <p><u>In the case of (large) parents of broiler chickens rearing up to 19 weeks:</u> minimum 900 cm<sup>2</sup> and maximum 1100 cm<sup>2</sup> per animal by design (8.3 to 11.1 animals per m<sup>2</sup>)</p> <p><u>In parents of broiler turkeys rearing up to 6 weeks:</u> Minimum 625 cm<sup>2</sup> per animal at set-up (16 animals per m<sup>2</sup>)</p> <p><u>In parents of broiler turkeys rearing up to 6-30 weeks:</u> Minimum 1330 cm<sup>2</sup> per animal at set-up (7.5 animals per m<sup>2</sup>)</p> <p><u>In broiler turkeys:</u> Male animals: Minimum 3330 cm<sup>2</sup>/animal by design (3,0 animals per m<sup>2</sup>) Female animals: Minimum 2040 cm<sup>2</sup>/ animal by design (4,9 animals by m<sup>2</sup>)</p>
b	Distance between floor and bottom heater	<p><u>In the case of rearing hens and roosters of laying breeds:</u> The heat heaters should be installed a maximum of 0.5 m above the litter floor in the middle of the barn, so that the air is partly blown out under the gels.</p> <p><u>For the other animal categories:</u> The heat heaters must be installed a maximum of 1.5 m above the floor.</p>
c	Airflow	<p>The air from the upper part of the stall<sup>2</sup> is led down through the square or round shaft and the heat heaters and then blown well distributed over the litter surface.</p> <p>In the case of rearing hens and roosters of laying breeds, the air must be directed for at least 50% towards the manure storage under the slatted floors of the beunen.</p>
d	Temperature curve setting	The heating is switched on as there is a need for extra heat in the barn, for this the temperature curve is followed.
and	Fan setting in heater when heating	<p>The heating is switched on when the room temperature falls below the temperature curve by 0.5 °C.</p> <p>The fan in the heater runs at minimum level and starts running 100% when the return water is warm enough (this is at 60°C water temperature in a central heating heater) or if the indirectly fired heater is burning at maximum power.</p>
f	Fan setting in heater when not heated	When there is no extra heat requirement and therefore no heating is done, the fan switches to a frequency-controlled control, which must run at at least 20% of the maximum capacity.
g	Registration	<p>For the purpose of checking the operation of the system, the following data shall be recorded automatically:</p> <ul style="list-style-type: none"> <li>- turning on the heater;</li> <li>- turning on the fan in the heater if there is no hot water supply;</li> <li>- of temperatuurcurve.</li> </ul>
<b>Emission factor</b>		<p><u>For rearing hens and roosters of laying breeds:</u> 0.088 kg NH<sub>3</sub> per animal place per year</p> <p><u>(Large) parents of broiler chickens reared up to 19 weeks:</u> 0.129 kg NH<sub>3</sub> per animal site per year</p> <p><u>Broiler chickens (including free-range and organic):</u> 0.035 kg NH<sub>3</sub> per animal place per year</p>

<sup>2</sup>This concerns the air under the roof/ridge of the stable. The air there is warmer than elsewhere in the barn.

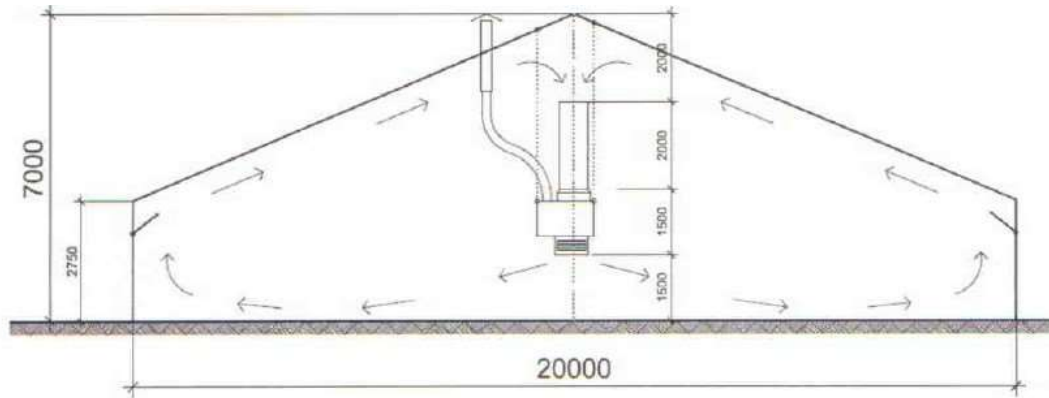
	<p><u>Parents of broiler turkeys in rearing up to 6 weeks:</u> 0.08 kg NH<sub>3</sub> per animal site per year</p> <p><u>Parents of broiler turkeys in rearing up to 6-30 weeks:</u> 0.024 kg NH<sub>3</sub> per animal site per year</p> <p><u>Vleeskalkoenen:</u> 0,350 kg NH<sub>3</sub> per animal pitch per year</p>
<p><b>Reference measurement report</b></p>	<p>Research ammonia emissions Wesselmanheaters (BL2009.3756.01)                  Update ammonia emission factors poultry; Advice for adjusting ammonia emission factors of poultry in the Regulation on ammonia and livestock farming (Rav). Wageningen Livestock Research, Report1015.</p>



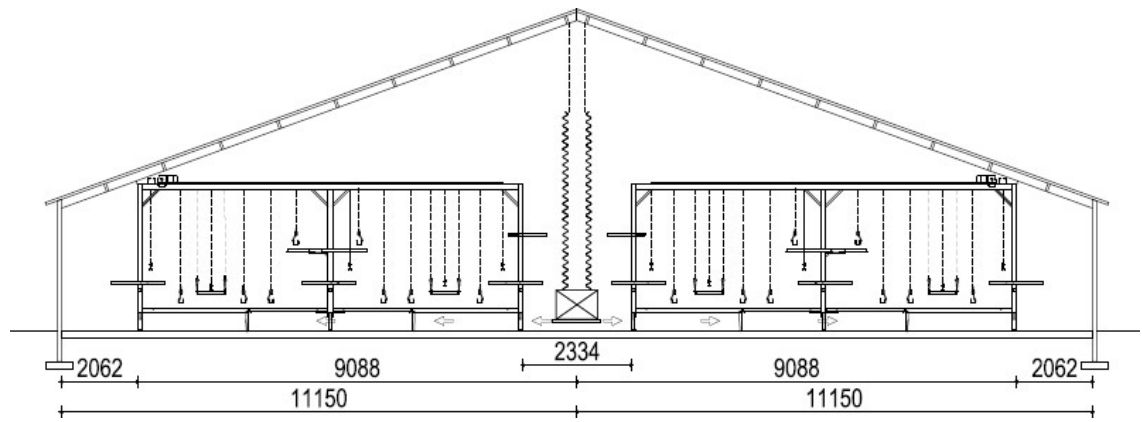
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## 6 CROSS-SECTION WHEN USING HEAT HEATERS WITH CENTRAL HEATING PIPES



Cross-section when using indirectly fired heat heat burners



**Cross-section when applying heat heaters in combination with beunen in a stable with rearing hens and roosters up to 18 weeks of rearing**

Name: stable with Heater with (indirectly fired) heat heaters and ventilators	Number: BWL 2009.14.V7
	System Description: January 2020



## PIPE HEATING STANDARD SPECIFICATIONS

<b>Ray number</b>	<b>BWL2017.01.V2</b>
<b>System name</b>	<b>Stable with pipe heating</b>
<b>Animal category</b>	<b>Broilers (E 5.15), (large) parent animals of broilers reared (E 3.9) and parents of meat turkeys in rearing; up to 6 weeks (F 1.8)</b>
<b>System description of</b>	<b>July 2018</b>
<b>Replaces</b>	<b>BWL2017.v1 of November 2017</b>
<b>Working principle</b>	The ammonia emission is reduced by drying the litter with warm air and the removal of evaporated moisture with heated air. This system uses the thermal rise of hot air from the heating pipes which are on the inside of the side walls of the stable are placed. The heat from the heat pipes rises on by thermic and moves along with the incoming air of the air inlet valves along the ceiling to the middle of the house. Over there the air flows from both sides of the stable come together and move down and then back to the side walls. The heated air can absorb moisture that evaporates from the litter. A part of the stall air is extracted so that the evaporated moisture from the stable immediately becomes drained. Due to the uniform heat dissipation of the heat pipes over it entire stable surface ensures that there is uniform drying of the litter.

**THE TECHNICAL IMPLEMENTATION OF THE SYSTEM ; ARCHITECTURAL**

<b>Part</b>	<b>Implementation requirement</b>
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 IMPLEMENTATION OF THE SYSTEM ; TECHNICAL EQUIPMENT**

<b>Part</b>	<b>Implementation requirement</b>
2 Housing form Complete	litter floor
3 Drinking water	Drinking water supply equipped with antimor system
4a Heating and ventilation system	There must be combustion device , which is not in the animal housing space is placed. The hot water from the combustion device is via a pipe system (heat pipes) in the house.
4b	The heat pipes are located on the inside of the side walls at the inlet valves.
4c	Shape and thickness of the heat pipes according to the supplier.
5 Registration-equipment	The following registration equipment must be present: - equipment for recording the realized temperature curve; - equipment for recording the realized ventilation flow rate; - equipment for recording the humidity in the house.
6a Capacity new construction	The dimensioning of the combustion device and the heat pipes must be to join the requested capacity of at least 100 W / m , or at the te install total capacity required according to the heat balance calculation. The to install total heat capacity with a heat balance calculation are determined.

1 The point is that air can be heated and that this air is distributed. The combustion device

is in a separate room. The exhaust duct for the discharge of flue gases must be outside the barn.

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6b Capacity existing stables The dimensioning of the combustion device and the heat pipes must be to join the requested capacity of at least 125 W / m<sup>2</sup> or at the te install total capacity required according to the heat balance calculation. The to install total heat capacity with a heat balance calculation are determined.

**THE USE OF THE SYSTEM**

Part	Use requirement
a Living surface	In (large) parent animals of broiler chickens in rearing up to 19 weeks: a minimum of 900 cm <sup>2</sup> and a maximum of 1,100 cm <sup>2</sup> per animal at set-up (8.3 to 11.1 animals per m <sup>2</sup> ).
b Air flow	The heat rises through the thermals and moves together with the incoming air from the air intake valves along the ceiling to it middle of the stable. There are the air flows from both sides of the barn together and move down and then back to the side walls.
c1 Humidity	The humidity in the house must be permanently measured with a humidity sensor which is connected to the climate computer. When the humidity of the litter increases and therefore the stable air humidity, the computer should respond to this by the temperature of the water in the to increase pipe heating so that more moisture is vaporized in the house and drained via the ventilation system.
c2	The air humidity may not exceed 75%.
d Setting temperature curve	The heating is switched on as and when there is a need for extra heat the stable, for this the temperature curve is followed.
e Registration	For the purpose of monitoring the operation of the system, the following data are automatically recorded: - the temperature curve; - the realized ventilation flow rate; - the realized humidity.

**Emission factor**  
 Broilers:  
 0.012 kg NH<sub>3</sub> per animal site per year  
 (Large) parent animals of broilers in rearing:  
 0.044 kg of NH<sub>3</sub> per animal site per year  
 Parents of meat turkeys in rearing:  
 0.03 kg NH<sub>3</sub> per animal site per year

**Reference measurement report** Investigate ammonia emission to broiler houses with pipe heating (BL2016.6349.02-V11, September 2016)  
 • Updating ammonia emission factors poultry; Advice for adjustment of ammonia emission factors of poultry in the Scheme ammonia and livestock farming (Rav). Wageningen Livestock Research, Report 1015

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**NAME:**  
Stable with pipe heating

**NUMBER:**  
BWL 2017.01.V2  
**SYSTEM DESCRIPTION:**  
July 2018