7.2.4. An archaeological evaluation has been commissioned and the Written Scheme of Investigation has been agreed with the Archaeological Advisor (see Appendix 7.2). The archaeology evaluation took place on the 5th and 6th October. The report is expected in due course and will be submitted as Additional Information (the planning application has been re-submitted prior to completion of the report in order to meet the 12 month time period for revised applications). Following review of the report and through consultation with the County Archaeologist options to minimise impacts on the archaeology resource will be agreed. These may include the potential to raise the units to minimise ground disturbance.

## 7.3 Unregistered Park and Garden and Historic Landscape

7.3.1. Following review of the comments and further discussions with the Senior Landscape Officer (see Chapter 3) the landscape proposals have been revised to address the issues raised.

7.3.2. The full landscape proposals are provided in Appendix 3.2. Woodland planting is proposed to the northeast of the proposed poultry units to screen views from the Lodge and Moor Court Drive. Woodland planting is also more in keeping with the character of the area, which is characterised by the presence of small areas of woodlands.

7.3.3. The previously proposed straight hedges have been replaced with a hedge along the historic boundary by the watercourse as recommended. Additional hedge planting is proposed along the track and by the new woodland planting.

7.2.2. Further information is provided on the PastScape website (Ref. 7.2):

> *A moated site at (SO 351563) to the North of a farmhouse called The Yeld - Helde is the AS for steep slope or bank and is frequently found in the modern form of Yeld - The average depth of the ditch is six feet. (1)*
>
> *The site lies close to the S bank of a small stream but is at present under corn. No irregularities could be seen when looking at the field from higher ground to the N, but about 1970 several small fields including an orchard within which the above siting fell, were combined to make one large field and the moat may have been filled in. The land changed hands at the same time and the present owner, Mr Maxie of Lyonshall, could offer no information. (2)*
>
> *Shortly after the moat was surveyed, the field was completely levelled and the circular ditch filled with material from the mound. The levelled site was then examined and the remains of some structures and a few pottery sherds were found. One cess pit, containing large amounts of charcoal fragments of ash and some elder berry seeds, was found along with a stone lined pit of uncertain use. Most pottery, which indicated a 13th to 14th century date, came from the stone foundations of a hut. The excavated area was not sufficient to indicate the arrangement of any principal buildings. The entry was presumably from the north north-west in an area where the ditch was absent for some 7 metres. (3)*

7.2.3. Consultation has been carried out with the Archaeological Advisor from Herefordshire Council regarding the buried archaeological site. The Archaeological Advisor recommended that although the site is likely to already have been subject to a degree of damage (sited within an arable field), and is not likely to be especially well preserved, an archaeological evaluation is carried out by a qualified archaeologist to determine the significance of the buried remains (see Appendix 7.1).

# 7. CULTURAL HERITAGE

## 7.1 Introduction

7.1.1. The Countryside Adviser (Archaeology) provided comments on the impact on cultural heritage. These included:

- Archaeology - development site will have an impact on a buried archaeological site, (HSM1575 - Moat, N of 'The Yeld', Pembridge) which has not been adequately addressed;
- Unregistered Park and Garden – landscaping proposals are not sufficient to screen the proposal from the historic park (in relation to views out from the drive between the lodge (SO351566) and SO353564);
- Historic Landscape Character – landscaping proposals are discordant with the historic landscape character and should consider reinstating historic boundaries.

## 7.2 Archaeology

7.2.1. The Herefordshire Sites and Monuments Records Database on the Herefordshire Through Time website (Ref. 7.1) provides the following description for the archaeological site HSM1575 - Moat, N of 'The Yeld', Pembridge:

> *The site is no longer visible as a moated site, though its former location may be discerned. The site was bulldozed and infilled following survey by the Woolhope Archa Research Society. (4) Average depth of ditch 6'. (1) Under corn. No irregularities could be seen, moat may have been filled in. (2) Survey by Woolhope ARS immediately before levelling. Site examined after, remains of some structures & few sherds of pottery, indicating C13-14 date; small hut built on edge of ditch & to rear of main buildings (? cesspit) stonelined pit. Entry from NNW where ditch absent for c7m (circular moat). (3)*

## 6.3 Consultation

6.3.1. Further consultation was carried out with Herefordshire Council's Area Engineer regarding traffic. The above points were provided to the Area Engineer and he has confirmed on 4th January 2010 that as the applicant does not control the land on either side of the land, widening the lane would be difficult and that given the vehicle control and monitoring system that is in place, he also acknowledges that HGV conflicts will be infrequent, as they would only occur between vehicles operated by firms other than Cargill (see email in Appendix 6.1). The requirement to widen the lane has thus been removed.

3) Cargill Meats Europe has nearly 100 grow out farms currently servicing their plants across varied geographical locations, a very high percentage of these are with single lane access routes (Yeld being just one of those).

4) Cargill Meats Europe completes approximately 60 trips a day across an average of 6 farms per day. To operate and control this critical part of their process they need to ensure vehicles do not meet in those lanes/narrow roads.

5) Cargill Meats Europe operates a very strict procedure of drivers ringing the duty Chargehand prior to entering "the lane" to a farm or leaving the site when loaded. Responsibility is placed on the driver of the loaded vehicle to "ring before leaving" to ensure he has a clear run to get out of farm or the narrow lane. Drivers will also communicate direct with each other to enhance this process, outgoing vehicles from the farm will often ring the oncoming driver to ensure he is safe to leave the farm. The ability to also track each vehicle enables Cargill Meats Europe to monitor and control this process.

6.2.3. The Transport & Security Manager has confirmed that they have worked successfully with this procedure over many years and he is confident that it provides them with a robust system of control for this part of their operation.

# 6. HIGHWAYS

## 6.1 Introduction

6.1.1. Herefordshire Council's Area Engineer (Development Control) requested that the entrance to the A44 is widened to 7.3m for a distance of 20m to provide adequate space for increased traffic to pass.

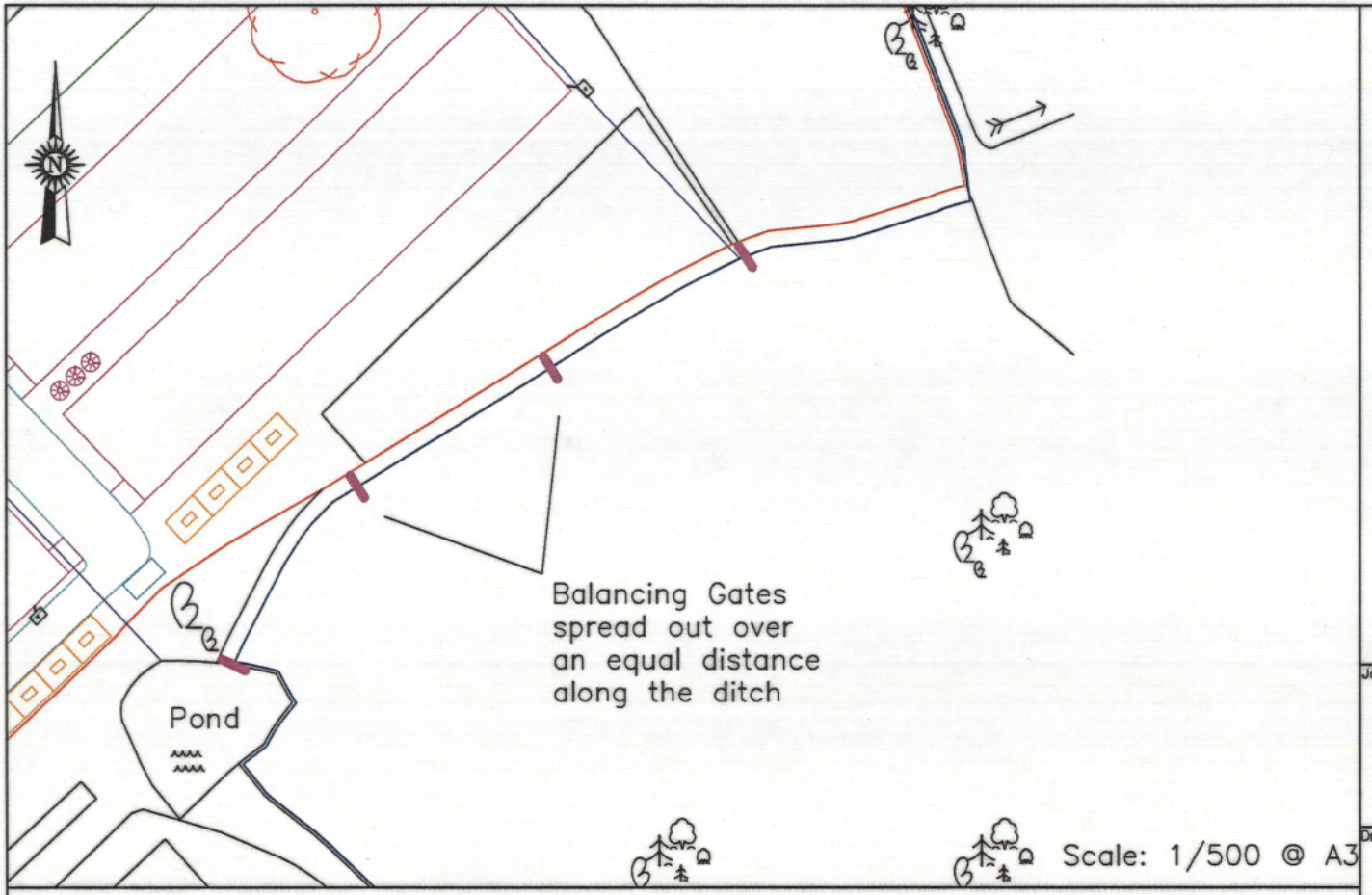
## 6.2 Entrance to the A44

6.2.1. The existing site has been operating for a considerable time and there has never been an incidence where one heavy good vehicle (HGV) has not been able to enter the site or has met another HGV leaving. This is because Yeld Farm is the only site served by this entrance and the applicant Mr Eckley has total control over HGVs entering and leaving. It is rare to have HGVs visiting the farm which are not under the control of Sun Valley. All the HGVs operate on a system which means that a HGV leaving will not do so until the next HGV arrives or vice versa. The highest number of movements is when the birds are being removed to the factory, this occurs over a maximum of 3 days, approx 7 times a year. All the HGVs are in contact with each other to ensure that protocol is adhered to.

6.2.2. Cargill Meats Europe's (formally Sun Valley) Transport & Security Manager has detailed the following process of bird removal:

1) All vehicles are equipped with modern satellite tracking devices and hands free cab phones.

2) The Livehaul Transport office is manned 24hrs by a "duty chargehand" from the time the office starts up on Sunday night through to lock up on Friday evening.

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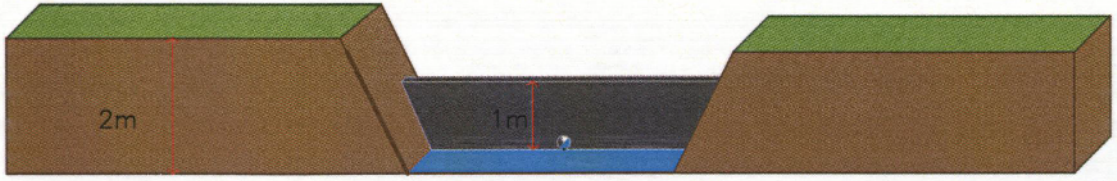


Scale: 1/75 @ A3

Ditch leading to Balancing Pond

Proposed Location of Balancing Gates

Job Title

S ECKLEY ESQ.
YELD FARM
LYONSHALL
HEREFORD
HR5 3LY

Drawing Title

PROPOSED POULTRY UNITS AT
YELD FARM
Drainage Gate Layout and Spec

Drawing No

ECK0002/CFL3017/DG01

Scale: 1/1250 @ A3

| Drawn by: | | Checked by: | |
|---|---|---|---|
| DW | 03/02 | NR | 03/02 |



CERTIFICATE NO. 936649

ADAS

ADAS, ROSEMAUND, PRESTON WYNNE, HEREFORD, HR1 3PG
tel: 01432 821025, fax: 01432 821023.

5.3.5. The ditch will be designed based on the calculations in the Environmental Statement and the soil permeability figures which will be assessed during the ditch widening. Figure 5.1 provides drawings of the preliminary attenuation ditch design.

5.3.6. The ditch will be maintained and regular inspection and periodic cleaning will be undertaken.

5.2.3. Storm water run-off from the current hard standing areas and the existing poultry unit roofs is collected in pipes and discharged into a ditch system. The ditch system eventually drains into the Curl Brook.

## 5.3 New Poultry Units Drainage Proposals

5.3.1. As with the existing units, washing down water from the new poultry units would be piped into dirty water tanks for storage before being taken away for landspreading. A stoned access track would be required along the side of the eastern poultry units to allow for access to the dirty water tanks.

5.3.2. Landspreading will be in accordance with the Nitrate Pollution Prevention Regulations 2008 and 'Protecting our Water, Soil and Air: A Code of Good Agricultural Practice for farmers, growers and land managers' (Ref. 5.1).

5.3.3. Storm water would be piped to the same ditch system that the storm water from the existing units is piped to. Storm water from the southern most new units would be piped into the on-site pond and storm water from the northern most new units would be piped to the ditch coming off from the pond.

5.3.4. The Environmental Statement calculated the amount of the storm water requiring attenuation based on the 1 in 100 year storm. In order to accommodate the additional requirement, it is proposed to modify the existing ditch into a balancing/attenuation ditch. The ditch will be widened to 4m and four barriers installed. The barriers will include a pipe passing through it which will allow a limited flow through the barrier and limit the discharge into the brook to that of the existing green field rate. The compartments that the barriers create provide for temporary storage of water during heavy rain as the flow is restricted through the barrier. As the barrier will not be as high as the ditch it will allow for some overflow into the next compartment during heavy rain.

# 5. Drainage

## 5.1 Introduction

5.1.1. Natural England requested that detailed designs of the Sustainable Drainage System are agreed. The Environment Agency had no objection to the proposed development but did recommend that prior to the site becoming operational further details needed to be provided as to the proposed disposal methods to ensure that they pose no pollution risk to the pond and associated watercourses.

## 5.2 Existing Site Drainage Information

5.2.1. Washing water used during the cleaning and washing down of the existing poultry units between production cycles is retained on site in dirty water storage tanks, prior to spreading on land as fertiliser. The existing tanks on site are shown in Table 5.1 below.

**Table 5.1: Existing Dirty Water Tanks**

| Existing Poultry Units | Tanks |
|---|---|
| Unit 1 | 800 gallon tank |
| Unit 2 | 1,200 gallon tank |
| Units 3, 4, 5 | 2,500 gallon tank |
| Unit 6 | 1,200 gallon tank |

5.2.2. The Environment Agency regulates the site under the Environmental Permitting Regulations and inspects the poultry site every six months. The dirty water tanks are inspected by the Environment Agency and found to be in good condition. The applicant has confirmed that no issues have been identified in any of the site inspections.

## 4.5 Mature Oak Tree

4.5.1. The proposal requires the loss of one mature oak tree. A detailed inspection for bat roosts was commissioned which revealed that there was no evidence that bats use or had used the tree for roosting (see Environmental Statement).

4.5.2. Consideration has been given to whether the oak tree could be retained, however due to the size of the field and due to the requirement to maintain appropriate separation distances to the cottages north-west of the site (in the interests of residential amenity), it is not possible to amend the development design so that the tree is retained. The loss of the mature oak tree will be compensated through the planting of three semi-mature oak trees.

## 4.6 Habitat Enhancement

4.6.1. The landscaping proposals provided in Appendix 3.2 will provide habitat enhancement. Three new species-rich native hedgerows are proposed which will qualify as a UK and Local BAP habitat once established and provide additional habitat and increase connectivity. Woodland planting is proposed at the north-east end of the site which would increase potential terrestrial habitat for Great Crested Newts in the medium to long-term. Three semi-mature oak trees are also proposed to compensate for the loss of the mature oak tree. Further details are provided in Appendix 3.2.

## 4.7 Water Quality

4.7.1. The site is operated under an Environmental Permit, to which a variation has been granted to increase the bird numbers on site (see Appendix 2.1). Periodic inspections take place to ensure the site is operating in accordance with the Permit, which would include inspection of the pond and ditches taking the roof water. A long term plan will be put in place to improve water quality.

| No. | Policy | Comment |
|---|---|---|
| NC7 | Compensation for loss of biodiversity<br><br>Where development is permitted, the use of conditions and/or planning obligations will be considered in order to provide appropriate mitigation and compensatory measures to avoid, minimise or offset the loss of or damage to any biodiversity feature covered by policies NC2 to NC6. Such measures will be at least proportionate to the scale of the loss or impact. | Three replacement semi-mature oak trees are proposed to compensate for the loss of the mature oak tree. Loss of field margins will be compensated for by the additional habitat enhancement measures which are proposed (see below). |
| NC8 | Habitat creation, restoration and enhancement<br><br>The design of new development and the restoration and reclamation of derelict and degraded sites and landscapes, should wherever possible, enhance existing wildlife habitats and provide new habitats for wildlife as opportunities arise. In bringing forward such measures proposals should:<br><br>1. retain and enhance existing semi-natural habitats, wildlife corridors or geological features within their layouts and design;<br><br>2. demonstrate that they will have no adverse effects on any adjacent nature conservation resource;<br><br>3. help to create or restore habitat networks in particular through the creation of new wildlife corridors and /or stepping stones; and<br><br>4. contribute towards one or more targets in the UK and Herefordshire Biodiversity Action Plans. | Proposals have been put forward to provide habitat enhancement in line with Policy NC8 as discussed below. |

N/112894/F

| No. | Policy | Comment |
|---|---|---|
| NC5 | European and nationally protected species<br><br>Development proposals which would have an adverse impact on badgers or species protected by Schedules 1, 5 or 8 of the Wildlife and Countryside Act as amended, will not be permitted. Where an over-riding need for the development is demonstrated, conditions on the planning permission will be imposed or a planning obligation entered into to:<br><br>1. facilitate the survival of individual members of the species;<br><br>2. reduce disturbance to a minimum; and<br><br>3. provide adequate alternative habitats to sustain at least the current levels of population of the species. | The impact on projected species has been assessed in the ecological impact assessment (see Environmental Statement) and measures put forward to reduce the impacts such as the timing of construction works to avoid the nesting season and backfilling of trenches/or installation of ramps at night to avoid trapping nocturnal species. |
| NC6 | Biodiversity Action Plan priority habitats and species<br><br>Developments should have regard to those habitats and species listed in the UK and Herefordshire Biodiversity Action Plans in order to protect, manage and enhance priority species and habitats. Proposals that might result in a threat to such priority species or habitats will not be permitted unless the reasons for the development clearly outweigh the need to safeguard the habitat or species. | The ecological impact assessment (see Environmental Statement) considered Biodiversity Action Plan (BAP) priority habitats and species. A desk study was undertaken to identity records of UK and Herefordshire BAP species. The results of the record search are provided in Table 8.4 of the Environmental Statement. The Extended Phase 1 Habitat survey considered which habitats were BAP priority habitats. BAP priority habitats and species were considered in the assessment of ecological receptors to take forward for assessment and in the proposals for habitat enhancement. |

| No. | Policy | Comment |
|---|---|---|
| NC3 | Sites of national importance<br><br>Development in or likely to affect Sites of Special Scientific Interest or National Nature Reserves will be subject to special scrutiny. Where such development may have an adverse effect, directly or indirectly on the special interest of the site it will not be permitted unless the reasons for the development clearly outweigh the nature conservation value of the site itself and the national policy to safeguard the network of such sites.<br><br>Where development is permitted proposals should make provision for the enhancement of such sites in order to improve their nature conservation status. | Sites of national importance are considered in Chapter 7 of the Environmental Statement as well as Section 8.4 and 8.9 of Chapter 8 of the Environmental Statement. |
| NC4 | Sites of local importance<br><br>Development proposals which could directly or indirectly affect a Special Wildlife Site, Site of Importance to Nature Conservation, Local Nature Reserve, a Regionally Important Geological/Geomorphological Site or a site subject to an agreement under section 39 of the Wildlife and Countryside Act will not be permitted unless it can be demonstrated that there would be no harm to the substantive nature conservation value of the site, or that appropriate mitigation and compensatory measures can be taken in accordance with policy NC7, or that the reasons for the development clearly outweigh the need to safeguard the nature conservation value of the site. | Sites of local importance are considered in Chapter 7 of the Environmental Statement as well as Section 8.4 and 8.9 of Chapter 8 of the Environmental Statement. |

**Table 4.1: UDP Nature Conservation Policies**

| No. | Policy | Comment |
|---|---|---|
| NC1 | Biodiversity and development<br><br>In determining all development proposals, the effects upon biodiversity and features of geological interest will be taken fully into consideration. Prior to determination of applications for development on sites where there is reason to believe that such features of importance exist, a field evaluation may be required. Proposals should:<br><br>1. seek to retain existing semi-natural habitat, wildlife corridors, species or geological features within their layouts and design; and<br><br>2. demonstrate that the proposal will have no adverse effects on any adjacent biodiversity and features of geological interest, or lead to the fragmentation, increase isolation, or damage to protected or priority habitats and / or priority or protected species. | An ecological impact assessment is provided in the Environmental Statement. |
| NC2 | Sites of international importance<br><br>Development which may affect a European Site, a proposed or candidate European Site or a Ramsar site will be subject to the most rigorous examination. Development that is not directly connected with or necessary to the management of the site for nature conservation, which is likely to have significant effects on the site (either individually or in combination with other plans or projects) and where it cannot be ascertained that the proposal would not adversely affect the integrity of the site, will not be permitted unless:<br><br>1. there is no alternative solution; and<br><br>2. there are imperative reasons of over-riding public interest for the development.<br><br>Where the site concerned hosts a priority natural habitat type and/or a priority species, development or land use change will not be permitted unless the authority is satisfied that it is necessary for reasons of human health or public safety or for beneficial consequences of primary importance for nature conservation. | Sites of international importance are considered in Chapter 7 of the Environmental Statement as well as Section 8.4 and 8.9 of Chapter 8 of the Environmental Statement. |

4.3.4. If Great Crested Newts are encountered, further work on removing the bund should be halted pending the issue of a site specific license to allow Great Crested Newt removal and further works to take place. Requesting a pre-emptive licence was considered disproportionate to the low risk of potentially harming newts.

## 4.4 Nature Conservation Policies

4.4.1. Nature Conservation Policies from the Herefordshire Unitary Development Plan (UDP) (Ref. 4.1) are provided in Table 4.1.

## 4.3 Great Crested Newt Survey

4.3.1. The Great Crested Newt survey was carried out in April and May 2011 and the report is provided in Appendix 4.2. The survey recorded that in the farmhouse pond, Great Crested Newt eggs were found folded into submerged leaves on the first survey occasion. A maximum of three Great Crested Newts were caught on two of six bottle-trapping occasions. During torchlight surveys a maximum of three Great Crested Newts were observed on one occasion.

4.3.2. The report concluded that it is likely that the majority of the Great Crested Newts associated with the farm house pond would seek refuge in its immediate vicinity during their terrestrial phase. Great Crested Newts are very unlikely to utilise the arable field comprising the application site. Due to the low population level in the farm house pond and the presence of adjacent apparently suitable terrestrial habitat nearer to the pond, in the balance of probability few if any Great Crested Newts are likely to utilise the bund which is located between the existing units and the site of the new units. Further details are provided in Appendix 4.2.

4.3.3. The following measures are proposed to reduce the risk of harming newts in relation to the removal of the earth bund:

- the duration of groundworks should be kept as short as possible,
- the works should only take place during the day
- any trenches and other excavations should be back-filled before nightfall, or leave a ramp to allow newts to easily exit.
- an ecologist should oversee vegetation removal, by strimming, on the bund prior to removal of the bund. The ecologist should then conduct a hand-search of the bund to establish if any Great Crested Newts are present.

# 4. ECOLOGY

## 4.1 Introduction

4.1.1. Herefordshire Council's Senior Ecologist raised concerns over the following:

- a small pond to the immediate north of Yeld Farmhouse which was not assessed for the presence of Great Crested Newts;
- identification of the root protection areas of the trees in the area of wet woodland (addressed above in Chapter 3);
- impact on the adjacent Ancient Woodland (addressed above in Chapter 2);
- need to refer to Nature Conservation Policies, in particular NC6, NC7 and NC8;
- the removal of the mature Oak tree.

## 4.2 Ecology Consultation

4.2.1. A brief meeting was held with the Bridgit Symons, Senior Ecologist on Thursday 16th December at the council offices and a site visit was held on 16th February 2011. A Great Crested Newt survey was undertaken of the pond immediately north of the Yeld Farmhouse and the report issued to Bridgit Symons on 18th July 2011. The response to the report is provided in Appendix 4.1.

3.2.2. Following the meeting the landscape proposals have been revised and the new landscaping proposals, detailed landscaping plan and specification and arboricultural report submitted to Mandy Neil for comment.

3.2.3. The revised landscaping proposals were confirmed as being more suitable, as long as they accord with any additional habitat requirements (email dated 5th May 2011, see Appendix 3.1). It was requested that the width and length of the stone track was specified and that the landscape plans show the surface water attenuation proposals.

## 3.3 Revised Landscaping Proposals

3.3.1. The revised landscaping proposal plans and detailed specification are provided in Appendix 3.2. The detailed landscape plan also includes the hard and soft landscaping details. Apart from the hard surface track for HGVs to access the poultry units, a 2.5m wide stoned track is also proposed along the side and then the back of the eastern poultry unit to allow access to the dirty water tanks. The area between the poultry units will consist of grass.

## 3.4 Arboricultural Report

3.4.1. The Arboricultural Report is provided in Appendix 3.3. The report assessed the root protection areas of the trees on site and proposed measures proposed to ensure their protection.

# 3. LANDSCAPE

## 3.1 Introduction

3.1.1. Herefordshire's Senior Landscape Officer objected to the application as being contrary to Policy LA2 and AL4. If the proposal were to go ahead the mitigation proposals would need to be amended and the following further information supplied:

- A plan at scale 1:200 or 1:500 showing the layout of proposed tree, hedge and shrub planting and grass areas. This needs to be accompanied by a written specification describing the species, sizes, densities and numbers of the planting. A method statement should also be provided. This applies to the 'habitat extension area', the orchard and the hedgerows.
- Details of the origin, cultivation, planting method and establishment of the replacement semi-mature specimen oak tree.
- Hard landscaping details of surfaces between the poultry units.
- An arboricultural report, to BS5837:2005, is required to ensure protection of the existing boundary hedge and trees (on the edge of the adjacent woodland). This should include a tree protection plan with details of root protection fencing during construction.

3.1.2. The requirement for an arboricultural report was also raised by Herefordshire's Senior Ecologist.

## 3.2 Landscape Consultation

3.2.1. A meeting was held with Mandy Neil, the Senior Landscape Officer, to discuss the landscape issues and proposed mitigation measures on Thursday 16th December 2010.

# 2. AMMONIA

## 2.1 Introduction

2.1.1. Comments from Natural England indicated that the woodland known as 'Bluebell Woods' on the land adjoining the application has been designated as an ancient semi-natural woodland (ASNW). Although originally excluded due to being less than 2ha in size, Natural England has reviewed the historic evidence and confirmed that this is ancient woodland. Natural England requested that this ASNW is included within the ammonia screening assessment. This was also requested by Herefordshire Council's Senior Ecologist.

## 2.2 Ammonia Assessment

2.2.1. Following comments by Natural England, the Environment Agency reassessed the ammonia issue in light of the adjacent Bluebell Woods. Air dispersion modelling indicated that the predicted process contribution to the ammonia concentration in air at the woodland was greater than the allowable thresholds.

2.2.2. Following the agreement of suitable mitigation measures which aim to reduce ammonia emissions by at least 40%, the Environment Agency has granted a variation to the Environmental Permit to cover the increase in bird numbers. The variation notice number is EPR/SP3939UH/V002 and a copy is provided in Appendix 2.1.

2.2.3. The granting of the variation indicates that the Environment Agency is satisfied that ammonia emissions are unlikely to cause a significant environmental impact with the addition of the mitigation measures agreed.

# 1. INTRODUCTION

1.1.1. This Addendum to the Environmental Statement has been produced by ADAS UK Ltd. on behalf of the applicant Mr. S. Eckley to accompany the planning application for four proposed new poultry units at Yeld Farm in Lyonshall, Hereford.

1.1.2. The applicant Mr. S. Eckley submitted a planning application for four proposed new poultry units at Yeld Farm in Lyonshall, Hereford in August 2010. The application DMN/102200/F was registered as valid on 1st November 2010. An Environmental Statement was submitted with the planning application, detailing the results of the Environmental Impact Assessment (EIA).

1.1.3. A number of comments were received from the statutory consultees with regard to the application DMN/102200/F. Copies of the comments are provided in Appendix 1.1. In order to address the comments fully the application was withdrawn in December 2010. The application has been resubmitted on resolution of the issues raised by the statutory consultees and this Environmental Addendum provides the additional information requested. The Environmental Addendum should be read in conjunction with the original Environmental Statement. Description of the proposed development is provided in Chapter 2 of the Environmental Statement and within the Design and Access Statement.

APPENDICES

APPENDIX 1.1 – STATUTORY CONSULTEE COMMENTS

APPENDIX 2.1 – ENVIRONMENTAL PERMIT VARIATION

APPENDIX 3.1 – SENIOR LANDSCAPE OFFICER CONSULTATION

APPENDIX 3.2 – LANDSCAPING PROPOSALS

APPENDIX 3.3 – ARBORICULTURAL REPORT

APPENDIX 4.1 – SENIOR ECOLOGIST CONSULTATION

APPENDIX 4.2 – GREAT CRESTED NEWT SURVEY

APPENDIX 6.1 – HEREFORDSHIRE COUNCIL'S AREA ENGINEER CONSULTATION

APPENDIX 7.1 – HEREFORDSHIRE COUNCIL ARCHAEOLOGICAL ADVISOR CONSULTATION

APPENDIX 7.2 – WRITTEN SCHEME OF INVESTIGATION

CONTENTS

**Highways**

Herefordshire Council's Area Engineer (Development Control) requested that the entrance to the A44 is widened to 7.3m for a distance of 20m to provide adequate space for increased traffic to pass. Following the provision of further information detailing the process of bird removal (activity which generates to most heavy goods vehicles during operation) including the vehicle control and monitoring measures used to ensure road safety, the Officer has removed the requirement to widen the lane.

**Cultural Heritage**

Comments were received from the Countryside Adviser (Archaeology) regarding the impact on a buried archaeological site as well as impact on the Unregistered Park and Garden and the historic landscape character. Following consultation with the Herefordshire Archaeological Advisor an archaeological evaluation has taken place to determine the significance and state of the buried archaeological site. This resultant report will be submitted as shortly as 'Additional Information'.

Comments regarding the impact on the Unregistered Park and Garden and the historic landscape character have been taken into consideration in the revision of the landscaping proposals. In particular woodland planting which is in keeping with the character of the area is proposed to screen views of the one area of open views from the Park. It is also proposed to reinstate a new hedge along the historic field boundary.

**Ecology**

Herefordshire Council's Senior Ecologist raised some additional concerns to those raised by Natural England and the Landscape Officer. The main concern was regarding a small pond immediately north of the Yeld Farmhouse. In response a Great Crested Newt survey was carried out in April and May 2011. Great Crested Newts were confirmed as breeding in the farmhouse pond. The number of individuals indicate a small population. Great Crested Newts are unlikely to use the arable fields in which the development is proposed due to more suitable habitat in the immediate vicinity. A number of mitigation measures are proposed to reduce the risk of harming newts in relation to the planned removal of the earth bund to the east of the proposed units.

Other concerns related to the need to refer to nature conservation policies and the removal of the mature oak tree. The nature conservation policies have been considered in the ecological impact assessment. Consideration has been given to retaining the mature Oak tree in the design stage but this did not prove feasible. As compensation three semi-mature Oak trees are proposed as part of the landscaping proposals. The landscaping proposals, in particular the woodland and hedge planting will also provide for habitat enhancement.

**Drainage**

Natural England and the Environment Agency requested further details on drainage designs. Washing down water from the cleaning of the poultry units is collected in tanks and then spread on land as fertiliser. Storm water run-off from the current hard standing areas and the existing poultry unit roofs is collected in pipes and discharged into a ditch system. The existing arrangements are regulated under the Environmental Permit and the Environment Agency carries out regular site inspections. Similar arrangements will apply to the new units. It is proposed to modify the existing ditch into a balancing/attenuation ditch so that it will provide attenuation in the event of a 1 in 100 year storm. The ditch will be designed based on the calculations provided in the Environmental Statement.

# NON-TECHNICAL SUMMARY

## Introduction

This Addendum to the Environmental Statement has been produced by ADAS UK Ltd. on behalf of the applicant Mr. S. Eckley to accompany the planning application for four proposed new poultry units at Yeld Farm in Lyonshall, Hereford. The Environmental Statement had been submitted with the original planning application DMN/102200/F in 2010, which was later withdrawn. The addendum provides additional information to address the comments made by statutory consultees with regard to the previous application DMN/102200/F.

## Ammonia

Natural England and Herefordshire Council's Senior Ecologist requested that 'Bluebell Woods' is included within the ammonia screening assessment. The Environment Agency has since reconsidered the application to vary the Environmental Permit for Yeld Farm with regard to including 'Bluebell Woods' in its assessment of ammonia impact. Following agreement of suitable mitigation measures to reduce ammonia emissions, a variation to the Environmental Permit has been granted by the Environment Agency. This indicates that the Environment Agency is satisfied that ammonia emissions are unlikely to cause a significant environmental impact with the addition of the mitigation measures proposed.

## Landscape

Herefordshire's Senior Landscape Officer required that the landscaping proposals were amended to enhance mitigation. Revised landscaping measures were discussed at a meeting with the Senior Landscape Officer and the revised proposals and requested documents including an Arboricultural Report were submitted. The revised proposals were confirmed as being more suitable.

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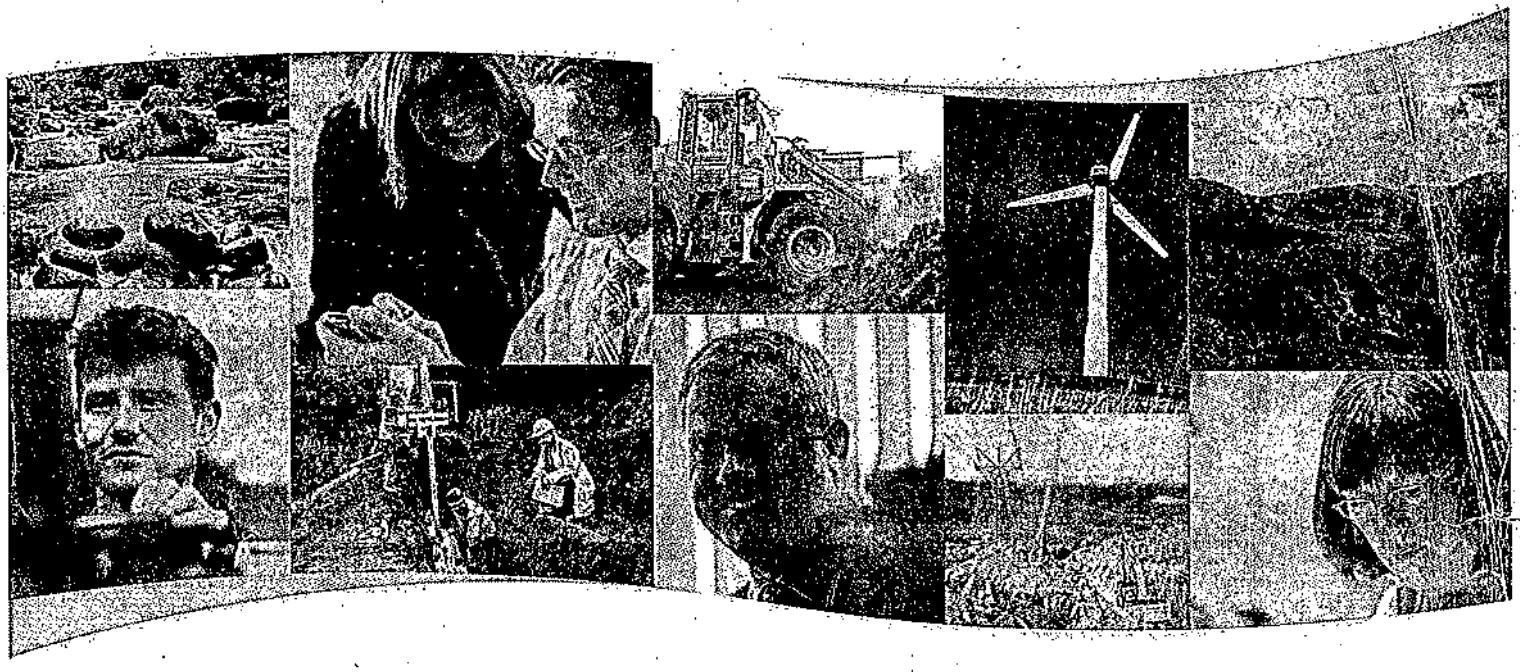
# Environmental Addendum for the Proposed Poultry Units at Yeld Farm, Lyonshall




Report by: Nisha Rehm, BA, MSc, AIEMA
Checked by: Robert Edwards, BSc, MSc, MIEMA


Date: October 2011

Submitted on behalf of:
Mr S Eckley
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Lyonshall,
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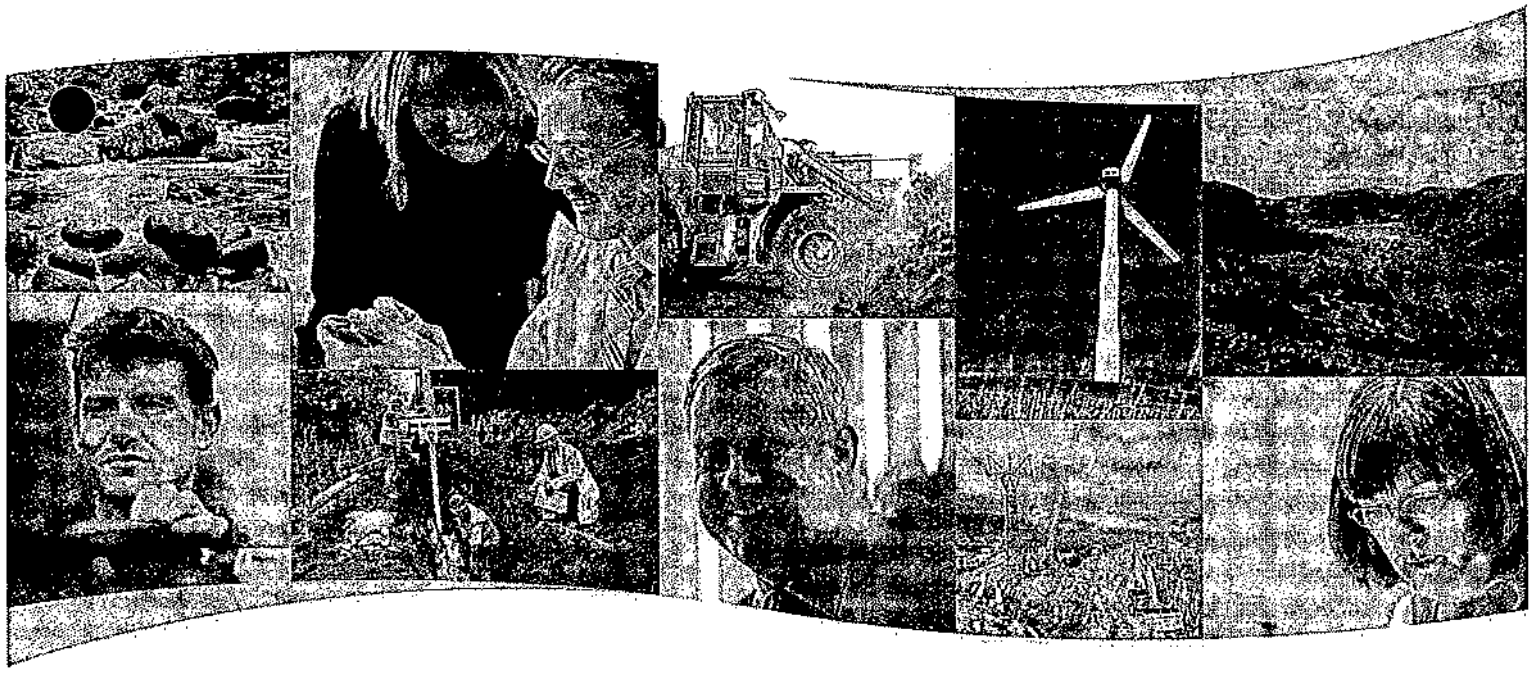
# Environmental Statement for the Proposed Poultry Units at Yeld Farm, Lyonshall




Report by: Nisha Rehm, BA, MSc, AIEMA
Checked by: Robert Edwards, BSc, MSc, MIEMA


Date: August 2010

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# NON-TECHNICAL SUMMARY

## Introduction

ADAS UK Ltd. has been appointed by Mr. S. Eckley to undertake an Environmental Impact Assessment (EIA) to accompany the planning application for four proposed new poultry units at Yeld Farm, Lyonshall, Herefordshire.

The proposed development falls under Schedule 1 of the Town & Country Planning (Environmental Impact Assessment) Regulations 1999 which states that an EIA is mandatory. This was confirmed by Herefordshire Council in their Screening Opinion (Letter dated 18th January 2010, ref. ENQ/10/047673).

A scoping study was undertaken and the Scoping Report issued to the Herefordshire Council in November 2009. The final scope of the EIA was determined by responses from the Environment Agency (EA), Natural England and through additional consultation with Herefordshire Council's Team Leader for Landscape & Biodiversity.

## The Proposed Development

The applicant, Mr. S. Eckley, owns the poultry enterprise at Yeld Farm. The farm currently has six existing poultry units on site, used for rearing broilers. Three of the units measure 18.29 x 82.296m, two measure 18.29 x 91.44m and one measures 21.34 x 91.44m. The site currently has a capacity for 187,381 birds on site.

The proposal is to expand the existing poultry enterprise by adding four new poultry units. The proposed site for the units is within a cultivated arable field located to the northwest of the existing units. The site does not have any environmental designations.

Each poultry unit would be 18.289 x 91.605m with an eaves height of 2.59m and a ridge height of 5.4m. Each poultry unit would include a control room measuring 3.05 x 4.57m. Ancillary development would include:

- six feed bins (7.4m high);
- eight gas tanks (in sets of two located on concrete base measuring 4.6 x 21.4m);
- generator shed and office (3.05 x 6.10m);
- shower block (3.05 x 6.10m);
- concrete vehicle access (area of 1,120.3m$^2$);
- bund.

The development of the four new units will lead to an increase of 127,760 broilers, this will take the total number of birds on site to 315,141 birds.

The birds are reared for Sun Valley Foods Ltd, who supply poultry products to retail, food service and food manufacturing customers. The birds are grown over a 47 - 49 day cycle.

At the end of the rearing cycle the poultry units are cleaned and mucked out. All poultry litter would be sold and there would be no spreading of litter from the proposed development on the applicant's land. Dead birds would be collected and taken off site under the fallen stock scheme.

Waste water would consist of surface and roof water, and washing down water. Roof water would be discharged via a ditch and a Sustainable Urban Drainage System would be used to control run-off rates. Washing down water would be conveyed to a tank and spread on land. Foul water from the shower block would be discharged into a soakaway via a septic tank.

The existing access to the farm would be used and an access track constructed into the field the units are proposed to be located in.

**Need for the Development**

The development is required to meet the strong demand for British reared poultry products in the UK. The lack of investment in poultry units over the last decade has meant that many units are becoming obsolete and incapable of supplying the growing demand.

**Consideration of Alternatives**

The location of the units was selected because as being next to the existing units, it would meet local policy, result in less negative environmental impacts and be the most cost-effective.

Alternative layouts were considered during the design process. The current layout was chosen as it would result in less odour and noise impact and would integrate with the existing units already present on site.

**Planning Policy**

The development needs to comply with national, regional and local planning policies. The local development policies are a material consideration in determining planning applications. Those policies relevant to the development will be taken into account.

**Odour**

A study of odour emissions from the proposed poultry units at Yeld Farm was undertaken in November 2009 and revised in June 2010. Odour emissions from both current and proposed poultry units have been assessed and quantified using an emissions 'blueprint' developed by ADAS, the Met Office and Silsoe Research Institute. Odour dispersion modelling has been conducted using the AERMOD version 6.5 model to assess the impact of these odour emissions in surrounding areas.

Under the baseline scenario, the area affected by the 98$^{th}$ percentile hourly mean concentrations of 4 $ou_E/m^3$ (this is the level chosen to represent the point at which some loss of amenity may occur in the surrounding area) or more lies within 350m of the farm. Only the buildings at the Yeld, which are owned by the applicant, have exposure levels in excess of this value.

The proposed expansion of the poultry farm with the four new units is predicted to increase the area affected by 98$^{th}$ percentile hourly mean concentrations of 4 $ou_E/m^3$ or more to about 500m. The only additional residences at which the exposure level is predicted to be in excess of that value are Yeld Cottages. Even at this location, the concentration still lies below the range in which ADAS has previously found that the risk of nuisance increases. Consultation was carried out with the Environment Agency, who is the statutory consultee for odour, and no issues were raised in respect of the odour assessment. In addition, odour would be mitigated by following the practices within the Code of Good Agricultural Practice and through the implementation of an Odour Management Plan.

**Ammonia**

Intensive livestock installations can give rise to ammonia emissions. Nitrogen deposition (in the form of ammonia) can lead to effects on vegetation communities and the main concern is usually the impact on designated nature conservation sites where vegetation communities are an integral part of the features of interest.

The recognised method for assessing the impact of ammonia emissions from agricultural developments is as established by the Environment Agency's Environmental Permitting Guidance Document. This recommends a two-tiered approach to the assessment. The first tier establishes if the emissions are 'insignificant' and if not, the second tier involves dispersion modelling of the emissions. A search was undertaken for international designated nature conservation sites within 10km, national designated nature conservation sites within 5km and local sites within 2km.

The Tier 1 assessment was carried out by the Environment Agency using its own H1 screening tool on the designated nature conservation sites within the search area. The Tier 1 assessment demonstrated that the process contribution would be 'insignificant' at the Special Area of Conservation, Sites of Special Scientific Interest and Ancient Woodland within the search area. There was a marginal exceedance at one Special Wildlife Site based on the most stringent level which is normally applicable to sensitive plants such as bryophytes and lichens. Based on the Special Wildlife Site citation there is no evidence that these sensitive plants form a key reason for the site's designation and therefore the less stringent general vegetation level was applied. The process contribution was well within this limit. Therefore no further assessment or mitigation of impacts is required.

**Ecology**

The ecological impact assessment was carried out by an ADAS ecologist following the guidelines for ecological impact assessment provided by the Institute of Ecology and Environmental Management and the Institute of Environmental Management and Assessment.

The assessment of the baseline conditions involved a desk study to collect ecological records of the site and surroundings and an Extended Phase 1 Habitat Survey of the study area, which included an assessment for protected species.

The desk study identified one Special Area of Conservation within 10km of the site, two Sites of Special Scientific Interest and 32 non-statutory sites within 5km. There would be no direct impact on the designated sites and the indirect impact of ammonia deposition is discussed in the ammonia section.

The large majority of the area due to be developed is part of a cultivated arable field, but includes a mature in-field Oak (*Quercus robur*) tree.

The site could support only a limited range of mainly common and widespread bird species although some could be Red list or Biodiversity Action Plan species. It is possible that birds will nest in the arable field (depending on its annual cropping and management regimes) on the site.

A detailed survey revealed no evidence of bats roosting in the mature in-field Oak tree. Depending on its particular cropping regime, Brown Hares (*Lepus europaeus*) could occur on the site at times.

The development would lead to the loss of one mature Oak tree and would be mitigated by the planting of one semi-mature Oak. The loss of the oak would be a minor negative impact. Approximately 1,500m of arable field margin would be lost (a minor negative impact) to be replaced with 2.7ha of cider apple orchard (a moderate to minor positive impact).

Adequately planned site drainage would protect the nearby ditches from contaminated run-off during construction and operation of the poultry units and any impact would be minor. The proposed site drainage would also protect the off-site pond.

The planting of approximately 1,200m$^2$ of scrub/woodland would buffer the site from an existing ditch and woodland and lead to a net increase in this latter resource, therefore leading to a moderate to minor positive impact.

Approximately 317m of species-rich hedgerow would be planted with a potential for a moderate to minor positive impact on the local hedgerow resource. The new hedge would also mitigate for any increased disturbance during the operation of the new poultry units as it would provide a buffer.

There may be an impact on nesting birds but this would be mitigated by undertaking any removal of vegetation outside the main bird nesting season, considered to be March to August inclusive or if this is not possible, through inspection by an ecologist prior to removal taking place. The new hedgerow would provide additional habitat which is a moderate to minor positive significant impact.

In order to avoid trapping nocturnal mammals or other wildlife species, during construction, trenches would be back-filled at nights or have ramps installed.

In summary, the majority of the habitats on site and the majority of the site area are of relatively low ecological value. Even without mitigation, the loss of part of these areas would not affect the ecological integrity of the local area. With mitigation in the form of a gain of 1,200m$^2$ of scrub/woodland plantation, 316m of species-rich hedgerow and a 2.7ha cider apple orchard, there is likely to be positive ecological impact as a result of the development.

**Water**

It was identified during scoping that an assessment of the proposed development on the water environment should be carried out.

At present storm water run-off from hard standing areas and the existing poultry unit roofs runs into a system of drains that empties into a pond before entering a ditch leading to Curl Brook. This water has no contact with the poultry litter and it does not contain any dust as high speed roof fans are in use. The water accumulated from washing the units at the end of the cycle contains dilute contamination from the litter, feed and dust and at present this is managed by being retained on site in storage tanks prior to land spreading.

Best practice measures will be put in place during construction of the units to protect the watercourses from contamination.

The same drainage system will be used with in the operation of the new poultry units. As with the existing units, there will be no contamination of roof and surface water as all operations take place within the units and the high speed roof fans will ensure dust does not settle on the roofs or immediate surface areas.

The change of land cover from farmland to impermeable roofs and yards will increase the flow rates that rainfall will discharge from the developed area. This can lead to an increased risk of flooding to areas downstream. This will be mitigated through the provision of additional storage to store the attenuated rainwater during and after storms, until infiltration and the controlled discharge allows the escape of the water. There is adequate space available on site to install Sustainable Urban Drainage Systems, this will ensure that the additional flow is managed correctly and allow a controlled discharge to farm ditch and Curl Brook.

**Landscape**

A landscape and visual impact assessment was carried out based on recommendations given in 'Guidelines for Landscape and Visual Impact Assessment' (Second Edition) as produced jointly by the Landscape Institute and the Institute of Environmental Management and Assessment.

The development would not impact on, or be seen from, any designated landscape area, such as an Area of Outstanding Natural Beauty. The proposed units are situated at the periphery of the Unregistered Parkland of Moor Court, in an area which has undergone the most landscape change since the 19$^{th}$ century. As such, it would not directly impact on any vestigial landscape structure other than the loss of one Oak.

The site lies within the strongly defined Landscape Character type of the Principal Timbered Farmlands with its mosaic of small, complex fields and woodlands. This suggests that the site is within an area of moderate rather than high sensitivity to landscape change. The landscape therefore has capacity to accept new development, subject to it consolidating existing built-form and being integrated into the local landscape, which the submitted landscape proposals seek to achieve.

Mitigation in the form of ground modelling, hedgerow planting and a proposed orchard would integrate the development into the local landscape and reduce the visual impact. There are a limited number of private properties with views of the site, and from the majority of these, views are either oblique or partially obstructed. From the closest private properties, the proposed ground modelling and to an extent the proposed orchard, will substantially screen the development. The A44 affords only brief views of the site from a short section of the road, whilst other minor roads offer very limited and, again, fragmented views of the site. In all viewpoints, the new units would not be seen against the skyline and in most instances would be viewed against the dark backdrop of existing woodland. The nearest public footpath (PM43) to the west of the site appears little used and undefined on the ground.

The proposed units would only be visible in a few fragmented close range views from the north and west. From the few longer range elevated views, the new units would be difficult to identify in the surrounding landscape of woodlands, tree belts and dense hedge lines. Other than the loss of one Oak tree, the development would not lead to the loss of any significant landscape features and it is concluded that the development is not in conflict with any relevant landscape policies.

**Traffic**

The operation of a poultry farm generates vehicle movements in the form of heavy goods vehicles (HGVs) and light vehicles. The addition of the four poultry units would lead to a proportional increase in vehicle movements.

The proposed development would lead to approximately 7.2 additional HGVs per week which is approximately an additional 1.02 HGVs per day over the existing situation. The number of tractors and trailer loads required to remove spent litter would be increased by approximately 15 per flock cycle to 33. It is unlikely that other light vehicle movements would increase.

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CONTENTS

APPENDICES

APPENDIX 1.1 - SCREENING AND SCOPING OPINION

APPENDIX 2.1 - ODOUR MANAGEMENT PLAN

APPENDIX 2.2 - NOISE MANAGEMENT PLAN

APPENDIX 6.1 - CLEARING SPENT FLOOR LITTER: ODOUR MITIGATION OPTIONS

APPENDIX 8.1 - LEGISLATION

APPENDIX 8.2 - HBRC DATA

APPENDIX 8.3 - BAT ROOST TREE INSPECTION REPORT FORM

# 1. INTRODUCTION

1.1.1. ADAS UK Ltd. has been appointed by Mr. S. Eckley to undertake an Environmental Impact Assessment (EIA) to accompany the planning application for four proposed new poultry units at Yeld Farm in Lyonshall, Hereford.

## 1.2 Purpose

1.2.1. As the proposed development would lead to 127,760 additional places for broilers it falls under Schedule 1 of the Town & Country Planning (Environmental Impact Assessment) Regulations 1999 (Ref. 1.1) which states that an EIA is mandatory if:

*Installations for the intensive rearing of poultry or pigs with more than -*

*(a) 85,000 places for broilers or 60,000 places for hens;*

1.2.2. Herefordshire Council was requested to provide a 'Screening Opinion' as to whether the development was classed as EIA development or not. Herefordshire Council confirmed the development as being EIA development (Letter dated 18th January 2010, ref. ENQ/10/047673, see Appendix 1.1).

1.2.3. The regulations require that the developer must provide information about the likely significant environmental effects of the proposal and that this information must be taken into account when determining the application. The purpose of this Environmental Statement (ES) is therefore to provide that information both to the relevant authorities and to any member of the public who wishes to be informed about the environmental issues surrounding the application.

## 1.3 Scope

1.3.1. Scoping is a process within the EIA which identifies what the EIA should cover. Although it is not a statutory requirement, it is good practice and ensures that the ES does not miss potentially significant issues, or incur time and expense considering issues that are not of significant concern for the proposed development.

1.3.2. A scoping study was undertaken and the Scoping Report issued to the Herefordshire Council in November 2009. Herefordshire Council were requested to provide a Scoping Opinion based on the information in the report. Herefordshire Council consulted the Environment Agency (EA) and Natural England, advising that their responses (letter dated 13th January 2010, ref. SV/2009/103893/01-Lo1 and letter dated 18th December 2009, ref. SO35/WM09/10.303) should be referred as the Scoping Opinion.

1.3.3. Additional consultation was undertaken with the EA to determine whether a Flood Risk Assessment (FRA) was required. The EA confirmed that due to the site being in Flood Zone 1 (low risk Flood Zone) and less than 1ha in area, a full FRA would not be required however, some assessment was required to show that there would be no increased run-off post development (email dated 16th March 2010).

1.3.4. Consultation was also undertaken with Herefordshire Council's Team Leader for Landscape and Biodiversity to determine whether a landscape assessment was required. It was confirmed that this was required as well as consideration of the historic landscape impact due to part of the site being within an unregistered parkland (email dated 16th April 2010).

**Table 1.1: Issues to be addressed within the EIA**

| Issue | Chapter |
|---|---|
| Land quality | Chapter 2, Section 2.3.7 |
| Waste disposal | Chapter 2, Section 2.3.12 – 2.3.13 |
| Air Quality | Odour assessment in Chapter 6 |
| Odour Management Plan (OMP) | OMP which will be part of the environmental permit is provided in Appendix 2.1 |
| Ammonia Assessment | Chapter 7 |
| Biodiversity (include need for an Extended Phase 1 Habitat survey) | Chapter 8 |
| Surface water quality, flow and drainage | Chapter 9 |
| Landscape and historic landscape | Chapter 10 |
| Traffic | Chapter 11 |

## 1.4 Content of the Environmental Statement

1.4.1. The Regulations require that the minimum information to be included in an ES is as follows:

- description of the proposed development;
- an outline of the main alternatives studied by the applicant;
- a description of the aspects of the environment likely to be significantly affected by the development;
- a description of the likely significant effects of the development on the environment;
- a description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment;

- a Non Technical Summary of the information provided under the above five bullet points;
- an indication of difficulties encountered in compiling the above information.

1.4.2. This ES has been produced in accordance with these requirements, and will be submitted with the planning application for the proposed development.

## 1.5 Obtaining Copies of the Environmental Statement

1.5.1. Copies of this ES and Non Technical Summary can be obtained from:

ADAS UK Ltd.
11d Milton Park
Milton
Oxfordshire
OX14 4RS

1.5.2. A charge will be made for each copy of the report provided, based on the cost of reproducing and posting the documents. A charge of £50 will apply for provision of the ES in paper form, or £15 for a copy on CD. Copies of the Non Technical Summary are provided free of charge.

## 1.6 Viewing Copies of the Environmental Statement

1.6.1. Copies of the ES may be viewed at Herefordshire Council.

# 2. THE PROPOSED DEVELOPMENT

## 2.1 The Applicant

2.1.1. Mr. S. Eckley owns the poultry enterprise at Yeld Farm, Herefordshire. The farm currently has six existing poultry units on site, used for broiler rearing. Three of the units measure 18.29 x 82.296m, two measure 18.29 x 91.44m and one measures 21.34 x 91.44m. The site currently has a capacity for 187,381 birds on site.

## 2.2 Location and Site Description

2.2.1. Yeld Farm is situated in the rural area located just off the A44, between Lyonshall and Weston in Herefordshire, close to the border of England and Wales. The farm is approximately 1.5km to the east-northeast of Lyonshall and 1.5km to the west of Weston.

2.2.2. Yeld Farm is located at an elevation of around 140m. The land immediately around the farm is gently sloping from west to east and largely consists of open fields, apart from the area to the northeast, which is wooded. The site itself is located on a flat area of land. To the southeast, the land slopes down to Curl Brook, approximately 150m away from the existing poultry units. There are a number of farmhouses and other dwellings situated within a 1 to 2km radius. Of these, the closest are Yeld Cottages which are about 250m to the northwest.

2.2.3. The surrounding area is hilly, reaching a height of over 200m within 3km to the west.

2.2.4. The application site is located in a field to the northwest of the existing poultry units. The site is not located within any environmental designations.

### Existing Land Use

2.2.5. The application site currently comprises a cultivated arable field.

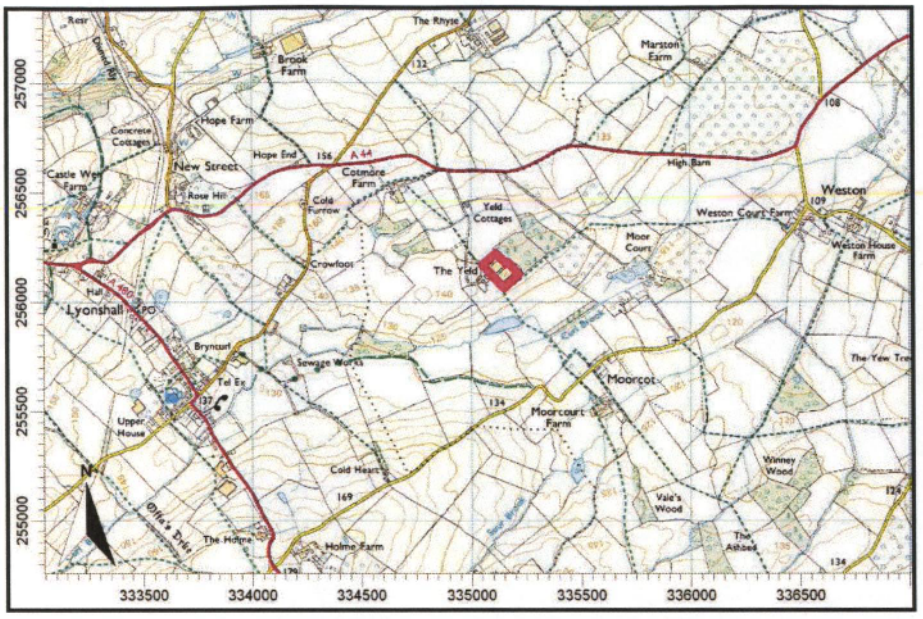


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**Figure 2.1: Location of Yeld Farm (existing units outlined in Magenta)**

## 2.3 General Project Description

2.3.1. The proposal is to expand the existing poultry enterprise by the addition of four new poultry units and ancillary structures. The development would include the following elements:

- four poultry units with control rooms attached;
- six feed bins;
- eight gas tanks;
- generator shed and office;
- shower block;

- concrete vehicle access;
- bund.

**Layout**

2.3.2. Two of the units would be located to the northwest of the existing poultry units. The other two new units would be located opposite the two proposed units to the north. Three feed bins would be located between each pair of poultry units. The gas tanks would be located to the southeast of the new units. The shower block would be located between the new units and the existing access track (it was originally proposed to locate the shower block in the amenity grass area opposite of the new track, however in order to mitigate against potential impacts on trees, the shower block was moved to its current proposed location). A bund (contoured to marry-in with surrounding ground levels) would be created to the northwest of the new units and to help screen the new units. Figure 2.2 shows the proposed layout of the poultry units and the ancillary structures.

**Design**

2.3.3. Each poultry unit would be 18.289 x 91.605m with an eaves height of 2.59m and a ridge height of 5.4m. Each poultry unit would include a control room measuring 3.05 x 4.57m. The generator shed and office and the shower block would be 3.05 x 6.10m and there would be two sets of four gas tanks located on a concrete base, measuring 4.6 x 21.4m. The feed bins would be 7.4m high. Figure 2.3 shows the floor and elevation plan.

2.3.4. The roof of the new units would be constructed out of 0.5mm thick box profile polyester, complete with all the necessary foam fillers and flashings. The ventilation for the new units is in the form of high speed roof fans.

2.3.5. The gables and sides of the new units to be constructed of 4x2 PSE clad with polyester box profile. Two side inlets per bay would be included. The floor of the new units will be made from concrete. The units would be painted to a colour approved by Herefordshire Council, muted green is suggested (see Chapter 10).

**Construction**

2.3.6. The proposed units are to be constructed on a cultivated arable field. The top soil would be stripped off and reused on site in the formation of a landscaping bund to reduce the waste generation. Due to the relatively flat terrain, there is no requirement for earthworks (cutting into the slope). There would be no infilling or regrading using imported or non-indigenous materials.

**Site Operation**

2.3.7. Each new unit would house up to 31,940 broilers. The proposed development would increase the site capacity by 127,760 leading to a total maximum site capacity of 315,141 birds. The birds are reared for Sun Valley Foods Ltd., which supplies poultry products to retail, food service and food manufacturing customers.

2.3.8. The birds are grown over a 47 - 49 day cycle, with the birds being thinned at 35 days by removing approximately half of the birds. There is a period of approximately one week between flock cycles, in which the units are cleaned and disinfected prior to the arrival of the next batch of broilers.

2.3.9. An extension to the Environmental Permit will be applied for under the Environmental Permitting Regulations 2007. The application for the extension will be applied for by Sun Valley Foods Ltd. This will include an Odour Management Plan and a Noise Management Plan which are provided in Appendix 2.1 and 2.2.

2.3.10. The site would be operated in accordance with best practice and adhere to guidance such as the European Commission's Reference Document on Best Available Techniques for Intensive Rearing of Poultry and Pigs (July 2003) and the EA's Technical Guidance Notes for intensive poultry farming.

**Waste**

2.3.11. At the end of the rearing cycle the poultry units are cleaned and mucked out. All spent poultry litter would be sold and there would be no spreading of spent litter from the proposed development on the applicant's land.

2.3.12. The dead birds would be collected daily and stored in sealed vermin proof containers prior to removal by a licensed waste carrier under the fallen stock scheme.

**Waste Water**

2.3.13. Waste water would arise from the following main sources:

- run-off water off poultry unit roofs and yard surface;
- washing down water arising from the cleaning of the units in preparation for a new batch.

2.3.14. Roof and surface water would be discharged to a ditch and incorporate Sustainable Urban Drainage Systems (SUDS) (see Chapter 9). Washing down water would be conveyed to a storage tank and spread on land.

2.3.15. The use of the shower block would also lead to waste water. This would be discharged into a soakaway via a septic tank.

**Access**

2.3.16. Access to the site would be via the existing farm access off the A44. No changes would be required to this farm track or the access into the A44.

2.3.17. A track would be created from the existing farm track into the field to enable vehicle access to the poultry units as shown in Figure 2.2.

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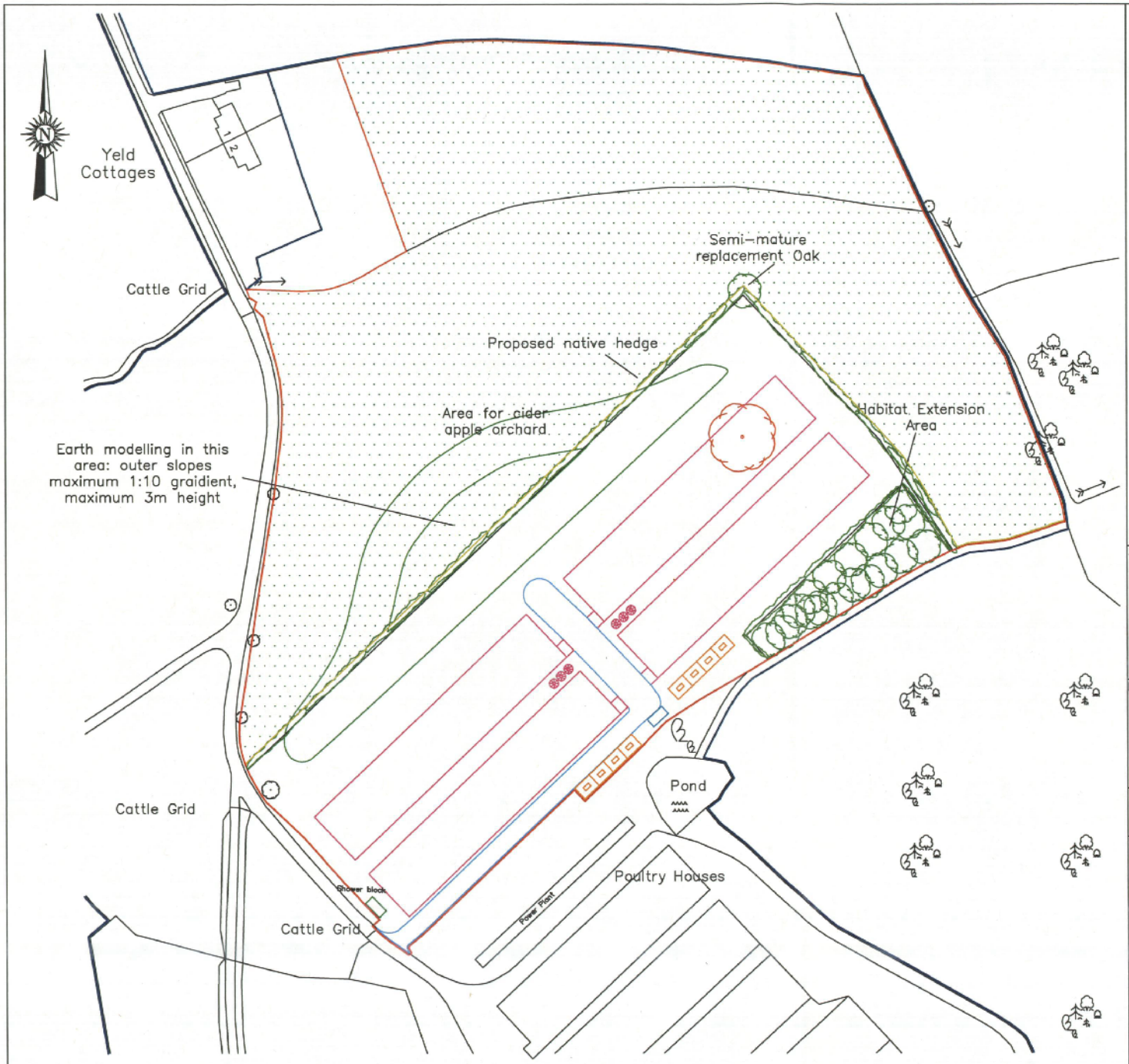



- Proposed poultry unit
- Proposed concrete extension area
- Proposed new shower block
- Proposed generator shed & office
- Proposed new gas tanks with concrete base
- Proposed new bund
- Existing trees (approximate position only)
- Oak tree to be removed
- Ownership boundary
- Application area
- Area for Cider Apple Orchard

Job Title

S ECKLEY ESQ.
YELD FARM
LYONSHALL
HEREFORD
HR5 3LY

Drawing Title

PROPOSED POULTRY UNITS AT YELD FARM

FIGURE 2.2 LAYOUT PLAN

Drawing No

ECK0002/CFL3017/PPU 01

Scale: 1/1250 @ A3

| Drawn by: | | Checked by: | |
|---|---|---|---|
| DW | 09/08/10 | NR | 09/08/10 |

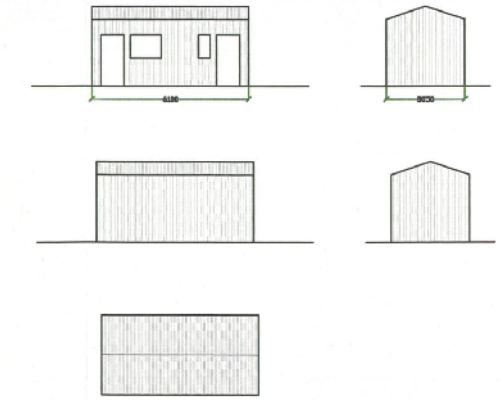


CERTIFICATE NO. 936648

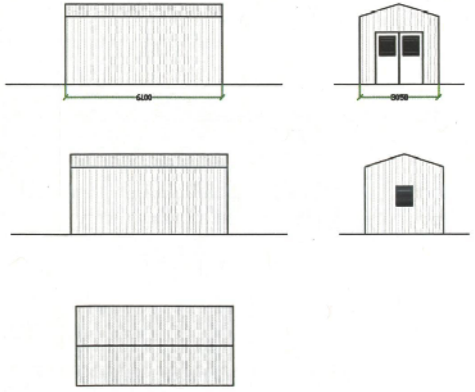
ADAS

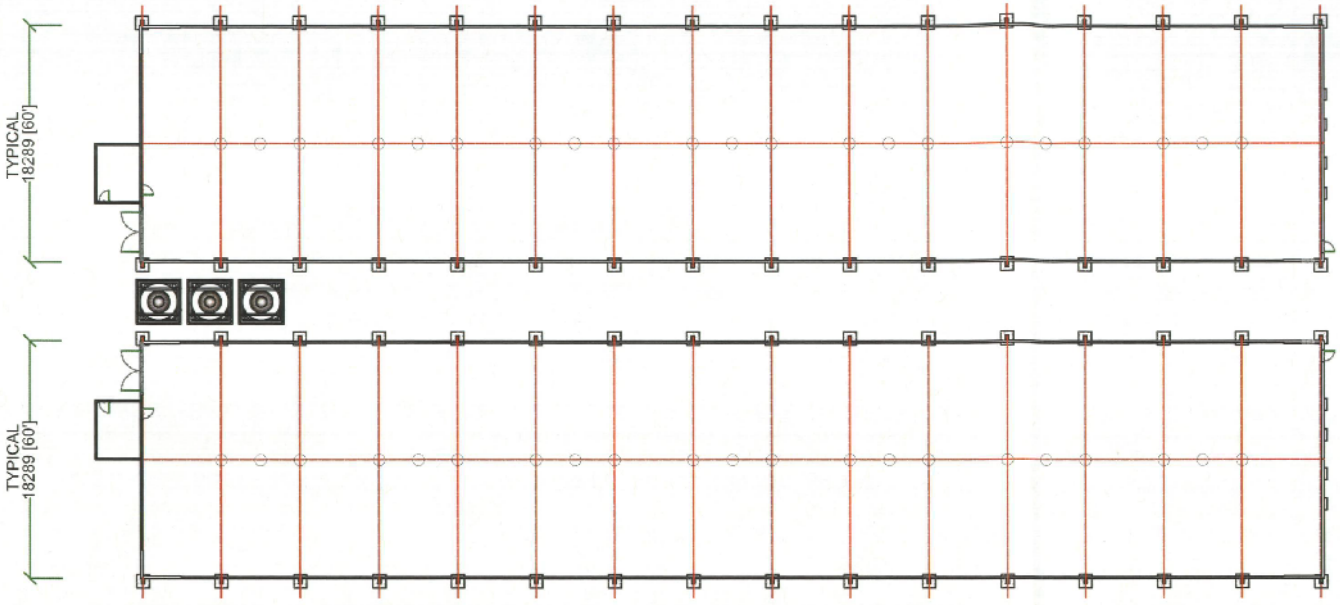
ADAS, ROSEMAUND, PRESTON WYNNE, HEREFORD, HR1 3PG
tel: 01432 821025, fax: 01432 821023.

shower block N /112894 F

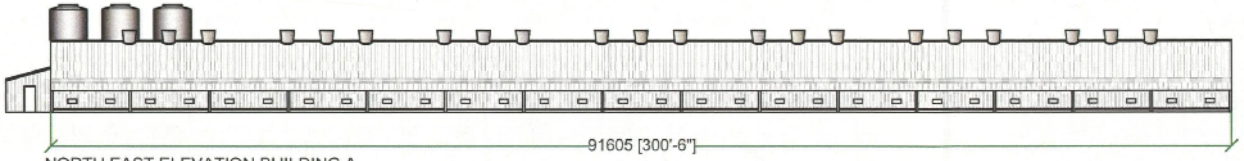


generator shed

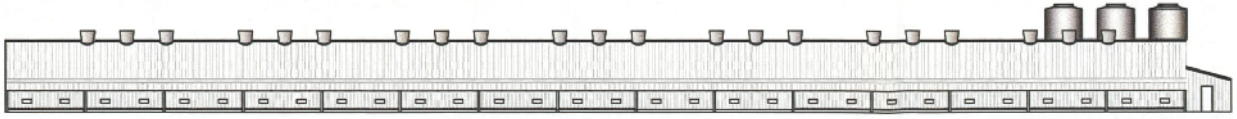




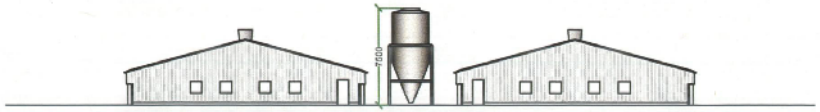

GROUND PLAN



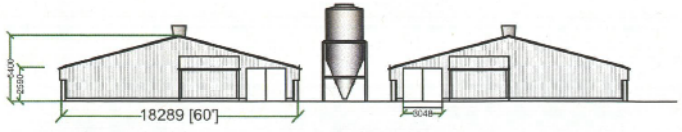

NORTH EAST ELEVATION BUILDING A



SOUTH WEST ELEVATION BUILDING B



NORTH WEST END ELEVATION BUILDINGS B+A




SOUTH EAST END ELEVATION BUILDINGS A+B

ROOF CONSTRUCTION:
15° PITCH ROOF
0.5mm THICK BOX PROFILE POLYESTER PAINTED (TO LOCAL AUTHORITY APPROVAL) COMPLETE WITH ALL NECESSARY FOAM FILLERS AND FLASHINGS.
VENTALATION IN THE FORM OF HIGH SPEED ROOF FANS AS SHOWN ALONG RIDGE

FLOOR CONSTRUCTION:
100mm CONCRETE FLOOR THICKENED TO 200mm THICK BELOW PERIMETER WALLS
1000ga POLYTHENE DPM MINIMUM125mm
CONSOLIDATED AND BLINDED HARDCORE

GABLES & SIDES:
TO BE CONSTRUCTED OF 4x2 PSE, CLAD WITH POLYESTER PAINTED BOX PROFILE TO LOCAL AUTHORITY APPROVED COLOUR.
TO INCLUDE SIDE INLETS 2 PER BAY.


POWELL & Co
CONSTRUCTION LTD
Longmoor, Shirlheath, Kingsland,
Leominster, Herefordshire. HR6 9RG
Tel: 01568 708819
Fax: 01568 708109


| | |
|---|---|
| CLIENT: | SIMON ECKLEY |
| Date: | 9/SEP/2009 |
| SUBJECT: | PROPOSED POULTRY UNITS |
| DWG.NO.: | 0063A1PA |
| Scale: | 1:200 / 1:100 ( Do Not Scale) |
| APPROVED BY: | DRAWN BY: BP |

| REV | DATE | DESCRIPTION |
|---|---|---|
| A | 20.05.2010 | Shower & Generator Building |

Figure 2.3

# 3. NEED FOR THE DEVELOPMENT

3.1.1. There is a strong demand for British reared poultry products in the UK. British sourced meat products typically benefit from a well founded greater consumer confidence in animal welfare and food safety standards. The increased drive for more sustainable and carbon efficient food supplies also favours UK produced poultry over that imported from overseas.

3.1.2. Many poultry units are becoming too old for efficient production and are being phased out. Due to a significant lack of investment in this sector in the past decade, the units available to grow poultry are not sufficient to meet the growing demand.

3.1.3. The proposed development is therefore needed to meet an existing market demand for UK sourced poultry. It is economically and environmentally preferable to meet this demand through expansion of existing sites, such as that at Yeld Farm, rather than through development of entirely new ones.

# 4. CONSIDERATION OF ALTERNATIVES

## 4.1 Location

4.1.1. The proposed location was selected for the following reasons:

- The new units adjoin existing units and are therefore not on a new 'green field' site.
- Local planning policies require that new agricultural buildings are located within existing groupings of agricultural buildings.
- As the new units adjoin existing units all facilities such as water and electricity can be used. This would reduce cost and possible disruption of services.
- Access to the new units is via the existing access off the public highway.
- Traffic movements would be minimised as visitors such as vets and company managers would visit the existing units and the new units within one visit.

## 4.2 Layout

4.2.1. Two alternative layouts were considered:

- Four units in one row;
- Two rows of two units (see Figure 2.2).

4.2.2. The current layout, two rows of two units separated by the vehicle access hardstanding, was chosen as it enabled the distance to Yeld Cottages (nearest residential properties apart from the applicant's residence) to be maximised thereby reducing impacts of odour and noise at these cottages.

## 4.3 Poultry Unit Design

4.3.1. The proposed poultry unit design is the standard design for this type of building as it is cost effective and incorporates modern standards of energy efficiency, animal welfare and biosecurity.

# 5. PLANNING POLICY CONTEXT

## 5.1 National Planning Polices

5.1.1. Planning Policy Statement 7: Sustainable Development in Rural Areas (Ref. 5.1) provides the national polices for rural areas. It provides policy guidance to ensure that proposals for developments in rural areas still allow rural regeneration, but are carried out in ways that protect the countryside. It encourages polices in the Regional Spatial Strategies (RSSs) and local development plans to support developments which will enable farming and farmers to become more competitive, to adapt to changing markets and comply with changing legislation among other things.

5.1.2. Regarding agriculture PPS7 states that "*The Government recognises the important and varied roles of agriculture, including the maintenance and management of the countryside and most of our valued landscapes.*

*Planning policies in RSS and LDDs should recognise these roles and support development proposals that will enable farming and farmers to:*

*(i) become more competitive, sustainable and environmentally friendly;*

*(ii) adapt to new and changing markets;*

*(iii) comply with changing legislation and associated guidance;*

*(iv) diversify into new agricultural opportunities (e.g. renewable energy crops); or*

*(v) broaden their operations to 'add value' to their primary produce."*

## 5.2 Regional Planning Policies

5.2.1. The West Midlands Regional Spatial Strategy (WMRSS) is the relevant regional planning policy for the area of the proposed development. This was initially published by in June 2004. A revised WMRSS was issued in January 2008 following the publication of the Phase One Revision (Ref. 5.2). The WMRSS guides the long term land use and transport planning framework for the Region.

5.2.2. Policy PA15 is specific to agriculture and recognises the importance of continuing agricultural activity. The strategy also mentions "*Of particular significance to the Region will be the continued development of Regional and local food products...*"

## 5.3 Local Planning Polices

5.3.1. The Herefordshire Unitary Development Plan (UDP) was adopted in March 2007 and covers the period up to 2011 (Ref. 5.3). The local development policies are a material consideration in determining planning applications.

5.3.2. Chapter 4 of the UDP provides a range of policies against which all development proposals will be assessed. Relevant polices are DR1 Design, DR2 Land use and activity, DR3 Movement, DR4 Environment, DR6 Water resources, DR9 Air quality, DR13 Noise and DR14 Lighting.

5.3.3. The following two policies particularly apply to the erection of poultry units:

***E13 Agricultural and forestry development***

*Proposals for agricultural and forestry development subject to planning controls including prior approval of details will be permitted where:*

*1. in the case of new buildings, development is sited with existing groups of buildings where practicable, having regard to the functional relationship with other buildings and services;*

*2. where new buildings cannot be located with existing buildings, that such development is sited so as to be readily assimilated into the landscape, avoiding isolated or skyline locations and taking advantage of natural land form;*

*3. adverse impacts on residential amenity and the environment are avoided; and*

*4. proposals are well related to existing development and the landscape in terms of scale, design, colour and materials.*

***E16 Intensive livestock units***

*Proposals for intensive livestock units and associated structures and facilities for the storage and disposal of waste will be permitted provided that the siting, design and methods of operation proposed:*

*1. serve to protect the amenity of residential properties or other buildings normally occupied by people, or in the case of extensions can demonstrate a positive improvement in existing conditions;*

*2. make adequate provision for the management and disposal of waste materials, liquids and litter which will not lead to pollution, particularly of surface and ground waters;*

*3. serve to minimise landscape impact and incorporate suitable landscaping proposals; and*

*4. are not contrary to the interests of highway safety and do not generate a significant increase in traffic volumes and HGV movements.*

*Intensive livestock unit proposals will be considered both in terms of their individual impact and having regard to the cumulative effect of other existing and proposed units within the locality.*

*Proposals for residential or other protected buildings within 400m of established intensive livestock units will be subject to special consideration. Such proposals, which would as a consequence be subject to significant adverse environmental impact, will not be permitted.*

# 6. Odour

## 6.1 Introduction

6.1.1. A study of odour emissions from the proposed poultry units at Yeld Farm was undertaken in November 2009 and revised in June 2010. The aim was to focus in particular upon how the emissions affect the surrounding area and how their impact might change if the four new poultry units are added to those already in existence.

6.1.2. Odour emissions from both current and proposed poultry units have been assessed and quantified using an emissions 'blueprint' developed by ADAS, the Met Office and Silsoe Research Institute. The emission figures obtained were then used in atmospheric dispersion modelling in order to assess the likely impact of odour in the area around the farm.

**Background to Site**

***Geography***

6.1.3. Yeld Farm is located at an elevation of around 140m, approximately 1.5km to the east-northeast of the village of Lyonshall in the county of Herefordshire (see Figure 2.1). The land immediately around the farm is gently sloping and largely consists of open fields, apart from the area to the north-east, which is wooded. To the south-east, the land slopes down to Curl Brook, approximately 150m away from the existing poultry units. The village of Weston lies 1.5km to the east and there are a number of farmhouses and other dwellings situated within a 1 to 2km radius. Of these, the closest are Yeld Cottages which are about 250m to the north-west. The surrounding area is hilly, reaching a height of over 200m within 3km to the west.

***The Poultry Farm***

6.1.4. There are currently six poultry units on the site. A further four units are planned for the adjacent field immediately to the northwest of these as shown in Figure 2.2. The existing poultry enterprise has no history of substantiated odour complaints relating to the operations at the site within the last three years.

**Design Optimisation**

6.1.5. An initial odour modelling run was carried out based on a layout of four poultry units in one row along the access track. Due to the odour impact at Yeld Cottages, the layout was amended to the current layout in order to increase the distance between Yeld Cottages and the proposed units. This Chapter provides the assessment and results of the amended layout.

## 6.2 Odour Sources

6.2.1. Odour emission rates from poultry houses depend upon the odour concentration within the building and the ventilation rate to the outside atmosphere. Internal odour concentrations depend upon many factors including the number of birds housed, building design and management, methods of provision of drinking water, age of the birds and manure management techniques. The minimisation of odour production is addressed by Department for Environment Food and Rural Affairs (Defra) in Section 4 of its Code of Good Agricultural Practice (Ref. 6.1) in which paragraphs 229 and 319-328 are especially relevant.

**Odour Sources at Yeld Farm**

6.2.2. The primary sources of odour at the farm are the existing six poultry units. These measure from 18 to 21m in width, from 82 to 92m in length and are all 4.7m high. Their positions are shown in Figure 6.1. They have a total capacity for 187,381 broilers and operate on a stocking cycle of 47-49 days with 7 days empty between flock cycles. Half the birds are removed after 35 days.

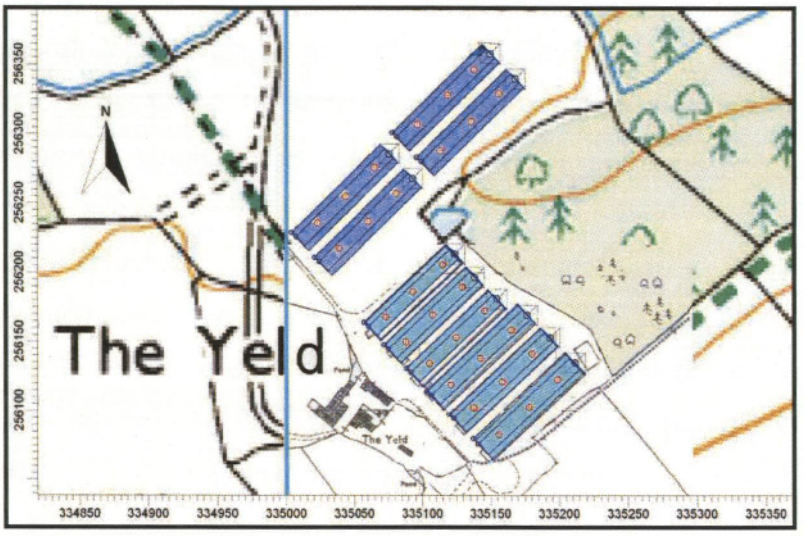





**Figure 6.1: Locations of existing poultry houses (light blue), proposed poultry houses (dark blue) and their associated point sources (red cross-hairs) and volume sources (grey squares) in the model**

6.2.3. Ventilation is mainly by high speed roof mounted fans, with air being drawn in at low level through wall vents and expelled vertically. Since the outflow will not be obstructed by any caps or other obstacles, this should improve air dispersion, especially under low wind speed conditions. However, on particularly hot days, additional fans located in the north-eastern gable-ends of the sheds provide tunnel ventilation as well and exhaust air from these is emitted at low level. It is estimated that these are normally required on about 10 days per year.

6.2.4. Drinking water is supplied through low spillage nipple drinkers which have been shown to maintain low poultry litter moisture levels and, as a consequence, reduce odour emission rates from the building.

6.2.5. Outside the poultry units, no spent litter is stored on the site, thus other odour sources are expected to be insignificant. However, odour emissions are most likely to reach a cyclical peak during the period when the buildings are being cleared of spent floor litter. This will occur at the completion of each flock cycle and the time taken to complete the task is normally less than four hours per unit. Little factual information exists on the magnitude of odour emission rates during cleaning out. These are likely to be highly variable and heavily dependent upon the management of the process. Based upon the Code of Good Agricultural Practice (Ref. 6.1) and additional comment from specialists, a list of Best Management Practices is included at Appendix 6.1 of this report. Through the adoption of techniques such as those listed here, odour emissions can be mitigated and minimised during the clearing out process.

6.2.6. It is proposed that four additional poultry houses are built. These will be of similar type and operated in a similar manner to the existing ones and will have capacity for 127,760 broilers. They will have a width of 18.289m, a length of 91.605m and a height of 5.4m. The location of the proposed houses is shown in Figure 6.1.

**Estimation of Odour Emission Rates**

6.2.7. Based upon many years of research and measurement, ADAS, in conjunction with the Silsoe Research Institute and the Met Office, has developed an emission 'blueprint' which covers odour emissions from a wide range of agricultural sources, including poultry farms. Odour emissions vary seasonally, diurnally and throughout the growing cycle and are also affected by litter type, feeding and drinking systems. All of these factors have been taken into account in the calculation of emission estimates.

6.2.8. For the existing units, with a total of 187,381 broilers, the average summer odour emissions are calculated to be 69,539 European odour units per second ($ou_E/s$). This is split between the six units as shown in Table 6.1. If built, the proposed units would have 127,760 broilers (31,940 birds in each unit) with overall average summer odour emissions of 47,412 $ou_E/s$ (11,853 $ou_E/s$ per unit).

**Table 6.1: Numbers of birds and their associated odour emissions ($ou_E/s$) in the six existing poultry houses**

| Shed | Dimensions (m) | Number of birds | Emissions ($ou_E/s$) |
|---|---|---|---|
| 1 | 18 x 82 | 28,746 | 10,668 |
| 2 | 18 x 82 | 28,746 | 10,668 |
| 3 | 18 x 82 | 28,746 | 10,668 |
| 4 | 18 x 92 | 31,940 | 11,853 |
| 5 | 18 x 92 | 31,940 | 11,853 |
| 6 | 21 x 92 | 37,263 | 13,829 |
| TOTAL | | 187,381 | 69,539 |

## 6.3 Methodology

### Background to Odour and Benchmarks

***Assessment of the Impact of Odour***

6.3.1. It is important when assessing the potential impact of odours on a local community, to study both the concentration of odours and their frequency of occurrence. This approach forms part of the most recent guidance from the EA (Ref. 6.2). In adopting the Frequency, Intensity, Duration, Offensiveness and Location (FIDOL) protocol, the EA is advocating an objective methodology for the assessment of odour nuisance.

6.3.2. The probability of complaints from odour sources depends on:

- **Frequency of exposure:** Complaints are more likely if the frequency of exposure increases.

- **The concentration / intensity of the odour:** There is a greater probability of complaint when the odour concentration exceeds a threshold or guideline.

- **Duration of odour events:** Short or fleeting odour events are less likely to cause a nuisance than is a prolonged exposure.

- **Nature or offensiveness of the odour:** More offensive odours have a higher risk of causing complaint.

- **Local tolerances and background levels:** This is strongly influenced by the nature of the area in which complainants live and the nature of the odour. As an example, people who live or work in suburban areas (large villages or towns) may be relatively intolerant of "countryside" odours.

***Dispersion of Odour***

6.3.3. A plume of odour naturally disperses through the turbulent motion of the atmosphere as it moves downwind from the point of release. Due to turbulent mixing processes in the atmosphere, odour concentrations downwind from a source will not be uniform. Characteristically, in any given hour, there are short duration peaks in concentration that last for a few seconds, separated by longer periods when the concentrations are low or zero. Consequently, it is necessary to predict the frequency of particular odour concentrations at various points around an odour source.

6.3.4. Once released to the atmosphere, the direction of spread of odours is totally dependent upon the direction of the wind. The rate of dispersion depends mainly on the wind speed, but other meteorological parameters such as air temperature also influence dispersion rates. The stability of the atmosphere also plays an important role in atmospheric dispersion.

6.3.5. There are also non-meteorological factors which influence downwind odour concentrations:

- **Distance from odour source:** The closer a receptor is to an odour source; the higher the odour concentration is likely be at that location and the greater the probability of impact or complaint.
- **The height of release:** Generally, the higher the point of release, the lower the odour concentration in the vicinity of the odour source.
- **Emission characteristics:** Stronger odour sources tend to affect a larger area than weaker sources.
- **Building downwash:** Pollutant emissions may be subject to highly turbulent wind flows in the wake of buildings.

***Guideline Values and Benchmarks***

6.3.6. The EA published draft guidelines on odour regulation, assessment and control (IPPC H4: Horizontal Odour Guidance Parts 1 & 2 (Ref. 6.3)) in 2002. This has recently been withdrawn and an updated version, for consultation purposes, is now available. While these documents have received some publicity, they are currently only in draft form, with no statutory powers. The comments made in this section of the report reflect the material contained in the earlier document.

6.3.7. Whether an odour is considered offensive or not is discussed in some detail in Appendix 2 of the 2002 H4. This attempts to define the concept of a concentration that may constitute "*no reasonable cause for annoyance*". This is further enumerated in Appendix 6 of the 2002 document, where indicative odour concentration criteria were presented for odours of varying degrees of offensiveness. Expressed as a 98$^{th}$ percentile of the hourly mean odour concentrations, a value of 6.0 European Odour Units per cubic metre of air ($ou_E/m^3$) was suggested in H4 as being appropriate for the least offensive odours. This means that a situation should be acceptable, provided that the value of 6.0 $ou_E/m^3$ is not exceeded on more than 2% of occasions. For moderately offensive and highly offensive odours, the criteria are 3.0 $ou_E/m^3$ and 1.5 $ou_E/m^3$ respectively.

6.3.8. ADAS has generally found that a range of odours, including those from poultry housings, are unlikely to cause complaints with 98$^{th}$ percentile odour concentrations of less than 5 $ou_E/m^3$. In general, once exposure exceeds 5 to 10 $ou_E/m^3$ at the 98$^{th}$ percentile, then there is an increasing risk of annoyance and complaints.

6.3.9. Odour from poultry housings is not cited as an example of odour in the most offensive category and it is normally placed in the moderately offensive category. The target suggested in H4 for moderately offensive odours was an hourly mean odour concentration of 3 $ou_E/m^3$ at the 98$^{th}$ percentile. When assessing the impact of agricultural odours in a farming area, it is considered reasonable and in line with the original guidance from the EA, to relax this target if circumstances allow. As the area is rural and local residents may reasonably be expected to be relatively tolerant to agricultural odours, there is justification to do so in this case. Consequently, a guideline value of 4 $ou_E/m^3$, expressed as an hourly mean concentration at the 98$^{th}$ percentile, is used to assess the point above which some loss of residential amenity may occur.

6.3.10. The prediction that a particular property lies above the guideline concentration does not necessarily imply that a loss of residential amenity (or a nuisance) will follow. However, it is suggested that the probability of such an occurrence is increased in proportion to the exceedence of the guideline.

**Dispersion Modelling Methodology**

***Model Description***

6.3.11. The choice of model for this study is AERMOD version 6.5 from the US Environmental Protection Agency. The model has been chosen because it is 'fitted for the purpose of the modelling procedure' as defined by the guidelines published by the Royal Meteorological Society (Ref. 6.4 and Ref 6.5).

6.3.12. AERMOD is a steady-state atmospheric dispersion model that incorporates air dispersion based on modern atmospheric physics. It can include treatment of both surface and elevated sources and both simple and complex terrain. The model calculates downwind odour concentrations in the surrounding area over each hour of a five year weather file. Statistics on the frequency and concentration of odours at the receptor sites are based upon these hourly calculations.

6.3.13. A grid referencing system within the computer model allows both the location of the sources and receptors to be specified to an accuracy of within 1m. AERMOD also allows the use of nested grids which offer improvements in model resolution in areas of particular interest. If necessary, the model can also incorporate the effects of buildings on the odour plume, known as building downwash.

6.3.14. Published studies have shown that atmospheric dispersion models are reliable at predicting the pattern of downwind odour concentrations (as statistical distributions) over a period of time (Ref. 6.6). The ADAS modelling study reported here is based on calculations made over a period of 43,800 hours (5 years) and represents a suitably long period for such a statistical study. Based on such findings, there is a high level of confidence in the results from odour impact studies.

6.3.15. A summary of the model parameters is given in Table 6.4.

***Meteorology***

6.3.16. A statistical dispersion modelling run requires a minimum of five years of hourly meteorological records. There is also a requirement to limit the amount of missing records (Ref. 6.7) through station selection and pre-processing the weather file. Where only a small number of missing records arise, Defra recommends a procedure of 'in-fill' by interpolation or near-neighbour substitution. The occurrence of calm conditions must also be considered so that they are not excluded from the modelling study. One method used in the pre-processing of a meteorological file is to replace calm conditions with a default minimum wind speed, together with an appropriate wind direction. This is the approach which has been used in this study. Therefore, each hour of calm winds has been replaced by a wind speed of 1m/s blowing in the direction of the wind at the preceding non-calm hour.

6.3.17. The nearest meteorological station to Yeld Farm that regularly records all the weather elements required for dispersion modelling is at Shobdon, 6km to the northeast. The meteorological station at Shobdon is at an altitude of 99m and has a similar exposure to the area around the farm. Normally, the weather data from this station would be considered to provide the best available representation of the required weather elements. However, the wind records at Shobdon contain a higher than expected proportion of calm observations which, in ADAS's opinion, would potentially degrade the model output. There is a weather station at RAF Shawbury approximately 70km to the north northeast of Yeld Farm and at an altitude of 72m. Shawbury has a normal frequency of calms and other weather elements are likely to be reasonably representative of the weather in the area of this study. However, the distribution of wind directions at Shawbury is unlikely to be similarly representative and the overall mean wind speed is somewhat higher than the climatological mean around the farm. Consequently, an in-house programme was run to adjust the wind data used in the model as follows:

- the wind speeds at Shawbury were reduced by a constant factor so that the mean speed is consistent with the climatological mean in the area of this study;
- any remaining calm observations were replaced with a wind speed of 1m/s blowing from the direction recorded at the previous non-calm hour;
- the wind directions from Shobdon were imposed on the data from Shawbury.

6.3.18. In ADAS's opinion, this combination of the adjusted records from Shawbury and the wind directions from Shobdon provides the best representation of the weather in the area of this study.

6.3.19. A meteorological pre-processor, AERMET, has been used to prepare the meteorology file for use within AERMOD. This pre-processor allows surface type to be varied by sector, for example to take into account less turbulent wind flow when the wind fetch is from open water or more turbulent flow when the fetch is from urban and industrial areas. In this case, one sector has been assigned a tree covered surface type, in order to take account of the wooded area just to the north of the existing poultry houses. Apart from that, all sectors have an agricultural surface type. AERMET also allows variation of surface type parameters. Surface roughness, Bowen Ratio and albedo have therefore been varied on a monthly timescale to take into account seasonal changes in vegetation. All these parameters affect the stability and amount of turbulence, or mixing, in the lower layers of the atmosphere and are of primary importance to the rate of dispersion of odour.

6.3.20. The wind rose for the weather file, derived from data from Shobdon and Shawbury (2004-2008) is shown in Figure 6.2a and illustrates the relative frequency of wind directions and wind speeds used in the modelling study. For comparison the wind rose for observations from Shobdon (2004-2008) is shown in Figure 6.2b.

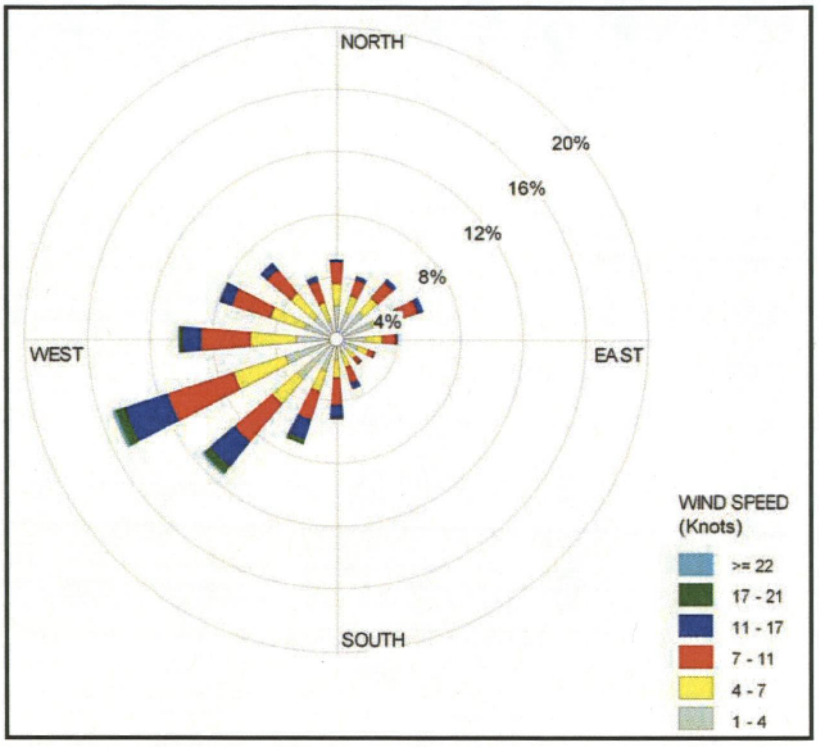



**Figure 6.2a: The wind rose for Yeld Farm, derived from data from the Met Office stations at Shobdon and Shawbury (2004-2008)**

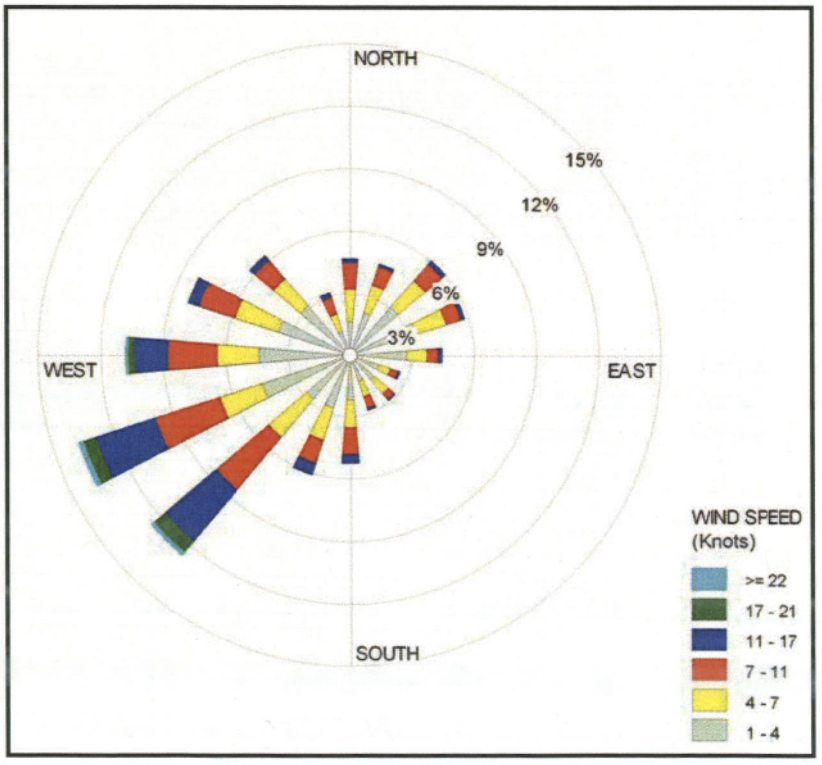



**Figure 6.2b: The wind rose derived from data from the Met Office station at Shobdon (2004-2008)**

## Model Parameters

### *Modelling of the Odour Emissions*

6.3.21. Within AERMOD, 18 point sources (ridge fans) and 6 volume sources (gable-end fans) have been used to represent the odour emissions from the existing poultry units in the first scenario. A further 12 point sources and 4 volume sources were introduced for the additional four proposed units in the second scenario. The positions of all these are shown in Figure 6.1. The averages of summer emission rates though the growing cycle, known as baseline odour emissions, are given in Table 6.2 for each poultry unit. Within AERMOD, these values were split evenly between the point sources associated with each building. They were then varied seasonally and diurnally according to an emissions template derived by ADAS and, in addition, 10% of the emissions from each poultry unit were reallocated from the point sources to the volume sources during summer daytime only. This was done in order to simulate the limited use of the gable-end fans on hot days. Details of the other parameters used for the sources are shown in Table 6.3.

**Table 6.2: Baseline odour emissions ($ou_E/s$) for the poultry units**

| Poultry units | Baseline emissions ($ou_E/s$) |
|---|---|
| Existing units | |
| 1 | 10,668 |
| 2 | 10,668 |
| 3 | 10,668 |
| 4 | 11,853 |
| 5 | 11,853 |
| 6 | 13,829 |
| Sub-total | 69,539 |
| Proposed units | |
| 7 | 11,853 |
| 8 | 11,853 |
| 9 | 11,853 |
| 10 | 11,853 |
| Sub-total | 47,412 |
| TOTAL FOR ALL UNITS | 116,952 |

**Table 6.3: Source parameters for the poultry units**

| Poultry units | Point Sources | | | |
|---|---|---|---|---|
| | Height (m) | Diameter (m) | Emission velocity (m/s) | Temperature of emission (°C) |
| Existing | 5.0 | 0.7 | 7 | 21 |
| Proposed | 5.5 | 0.7 | 7 | 21 |
| | Volume sources | | | |
| | Height (m) | | Vertical extent (m) | |
| Existing | 1.0 | | 2.33 | |
| Proposed | 1.0 | | 2.56 | |

***Buildings***

6.3.22. The poultry units are likely to have a significant effect on the behaviour of the plumes from the point sources. Consequently they are modelled in some detail, with two tiers to represent the pitched roofs. A 3D view of the modelled buildings can be seen in Figure 6.3. Only the nearest 6 existing buildings were included in the first scenario. All ten rearing units were included in the second one.

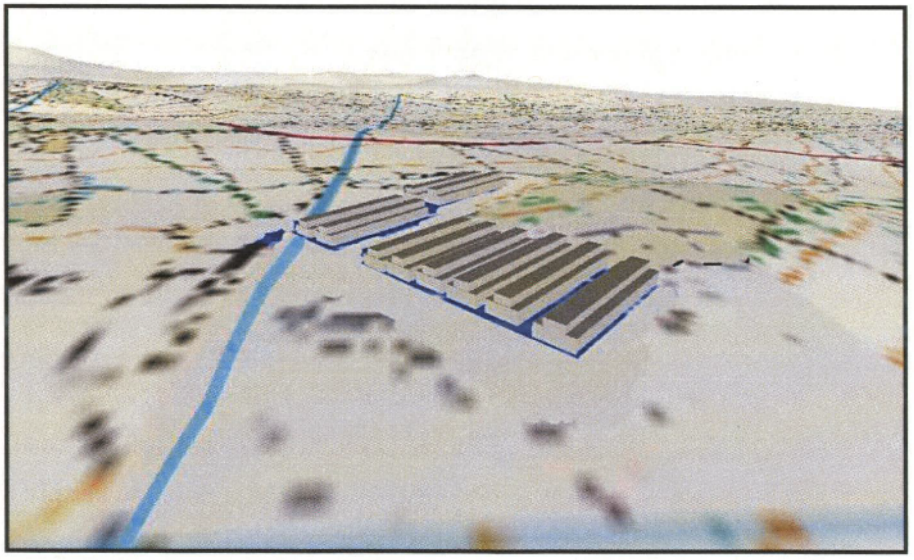


**Figure 6.3: A 3D view of the existing and proposed buildings modelled (vertical scale enhanced by a factor of three)**

***Discrete Receptors***

6.3.23. Nineteen discrete receptor points were defined within the model to represent a selection of nearby properties. These discrete receptors were taken to be at a height of 1.5m above ground level and their locations are shown in Figure 6.4, marked by red triangles. The exact positions of the discrete receptors and their approximate distances from the poultry farm are given in Table 6.5, in Section 6.4.

***The Nested Grid***

6.3.24. A nested grid set up within AERMOD has been used to produce the contour maps presented in the results of this study. This allows a higher resolution to be used in areas of particular interest, potentially capturing important detail that might otherwise be lost. In this case, a 600 x 600m area around Yeld Farm was defined at a resolution of 50m and a 100m resolution grid extended a further 1300m from this. The grid points were defined at a height of 1.5m above ground level and details of the nested grid can be seen in Figure 6.4, where each grid point is marked by a green cross.

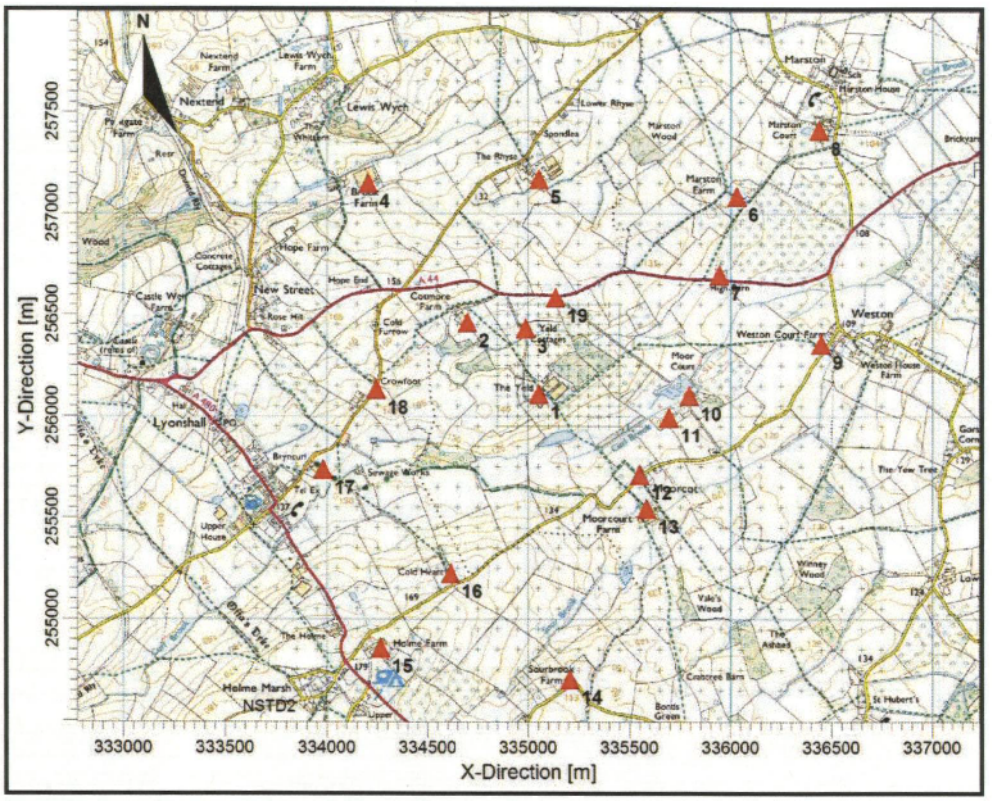



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**Figure 6.4: Details of the nested grid (green crosses) and discrete receptor points (red triangles) used in the modelling study**

***Terrain***

6.3.25. The area around Yeld Farm is hilly, which is likely to have an effect on ground level odour concentrations. Consequently, terrain data has been used within AERMOD. The terrain data is based on the SRTM3 data which is derived from Space Shuttle mission RADAR measurements and has a resolution of approximately 90m.

**Table 6.4: A summary of model parameters**

| Atmospheric Dispersion Model Description | |
|---|---|
| Dispersion model | AERMOD version 6.5 (Lakes Environmental) |
| Weather file | Shawbury/Shobdon adjusted: 5 years sequential data (2004-2008) - UK Met Office |
| Default minimum wind speed | 1m/s |
| Topography file | .xyz file based on Shuttle RADAR measurements |
| Surface option | Rural |
| Pollutants | Odour |
| Modelling domain | Nested grid, 600x600m at 50m resolution, 3200x3200m at 100m resolution |
| Flag pole height | 1.5m |
| Discrete receptors | 19 |
| Building downwash | BPIP calculations |
| Sources | Existing buildings – 18 point and 6 volume sources<br>Proposed buildings - 12 point and 4 volume sources |
| Emissions | Continuous : 24/7 (varied seasonally and diurnally) |

6.3.26. AERMOD calculates hourly average odour concentrations at the nested grid points and the discrete receptor points for each hour over a five-year period. From these calculations, statistics have been produced of the predicted 98$^{th}$ percentile odour concentrations. That is, the odour concentration which is exceeded for only 2% of all hours (around 14 hours per month).

6.3.27. Two runs of AERMOD were made for this study. The first run included emissions from the existing units only, the second included emissions from both the existing and proposed units.